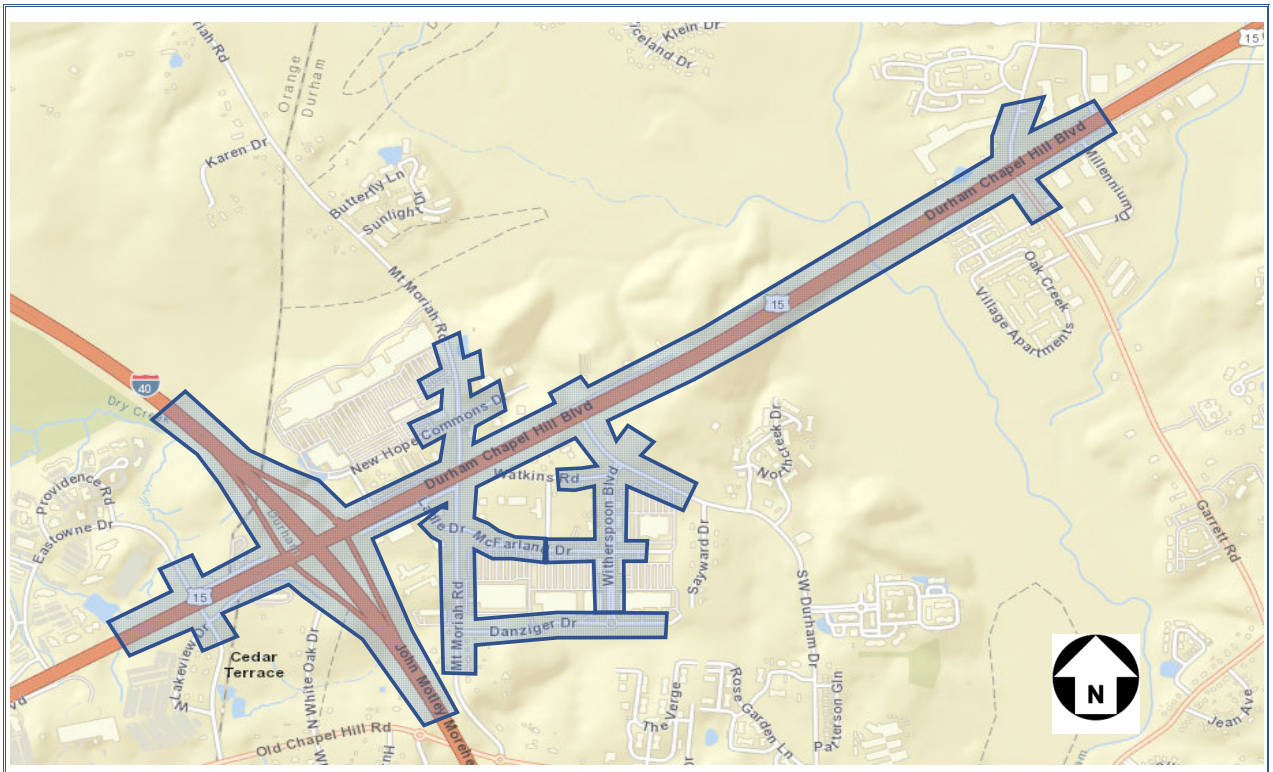
Preliminary – Do Not Use for Construction

Express Design Traffic Analysis (EDTA) Report

US 15/US 501 Durham County from I-40 to US 15/US 501 BUS in Durham
Upgrade Corridor to Expressway

STIP No. U-6067 **SPOT ID:** H090366-A **WBS No.** 34263.1.1

Durham/Orange **DIVISION 5/7**



PROJECT STUDY AREA

PREPARED BY: **Patriot Transportation Engineering, PLLC**
3/17/2023

NORTH CAROLINA PROFESSIONAL SEAL 042875 ENGINEER LEE E. KLIEMAN

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Alternatives Evaluated in Study

Alternative 1
Corridor Improvements

Convert existing I-40 interchange to DDI; Extend New Hope Commons Dr west to Eastowne Dr with connections on I-40 ramps; Grade separate US 15-501 and Mt Moriah Rd; Extend SW Durham north to Mt Moriah Rd; Realign Service Rd and Indigo Corners Access to SW Durham Dr extension; Convert existing US 15-501/SW Durham Dr intersection to SPUI; Apply turn restrictions at SW Durham Dr/Witherspoon Blvd intersection

Intersections Included in Study

Int_ID	Intersection
1	US 15-501 (Durham-Chapel Hill Blvd) @ Eastowne Dr
2	I-40 @ US 15-501 (Durham-Chapel Hill Blvd)
3	15-501 (Durham Chapel Hill Blvd) @ Mt Moriah Rd (SR 22
4	US 15-501 (Durham-Chapel Hill Blvd) @ SW Durham Dr
5	S 15-501 (Durham-Chapel Hill Blvd) @ Garrett Rd (SR 111
6	Mt Moriah Rd @ Danziger Dr
7	Mt Moriah Rd @ McFarland Dr/Ladle Dr
8	Mt Moriah Rd (SR 2294) @ New Hope Commons Rd
9	Mt Moriah Rd (SR 2294) @ Shopping Center Ent
10	SW Durham Dr (SR 1100) @ Witherspoon Blvd
11	Witherspoon Blvd @ Watkins Rd
12	Witherspoon Blvd @ McFarland Dr
13	Witherspoon Blvd @ Danziger Dr

Measures of Effectiveness

Intersection Delay/LOS (Overall)	☑
Intersection Delay/LOS (Lane Group)	☑
Intersection Queue Length (95th %)	☑
Intersection Queue Length (max)	☑
Freeway Density/LOS (Overall)	☑
Freeway Speed (Heat Map)	☑
Travel Time Savings (31-year)	☒

Scenarios Analyzed

Base Year No-Build	☑
Base Year Build	☒
Future Year No-Build	☑
Future Year Build - Alternative 1	☑

Recommended Traffic Level: **Level 2**

Recommended Analysis Software **TransModeler**

BASE YEAR: **2019** **FUTURE YEAR:** **2050** **REPORT STATUS:** ***Final*** **CORRIDOR PROJECT:** *No*

1. Project Alternatives

Alternative 1

Alternative 1 includes a number of modifications to the roadway network. These include:

- Convert the existing I-40/US 15-501 interchange from a diamond configuration to a diverging diamond interchange (DDI) with dual turn lanes as needed. The I-40 ramps north of US 15-501 would be realigned to support connections to the extension of New Hope Commons Dr (see below).
- Remove the at-grade intersection of US 15-501/Mt. Moriah Rd and provide a grade separation.
- Extend SW Durham Dr northwest from US 15-501 to Mt. Moriah Rd. The existing service road (which has future growth potential) would be realigned to intersect with the SW Durham Dr extension. Access to Indigo Corners would be provided from the SW Durham Dr extension.
- Convert the existing at-grade intersection of US 15-501/SW Durham DR to a Single-Point Urban Interchange (SPUI).
- Construct a new road, the Indigo Corners Connector Rd from Mt. Moriah Rd to the SW Durham Dr extension.
- Provide a traffic signal at the Mt. Moriah Rd/New Hope Commons Dr intersection with full movements provided on the west leg and added turn lanes.
- Extend New Hope Commons Dr west from its current terminus to Eastowne Dr, across I-40, with roundabouts provided at the extension's intersections with the I-40 ramps.
- Provide a traffic signal at the Mt. Moriah Rd/McFarland Dr/Ladle Dr intersection.
- Redesign the SW Durham Dr/Witherspoon Blvd intersection to include turn restrictions and added lanes.
- Provide a traffic signal at the Witherspoon Blvd/McFarland Dr intersection with a new eastbound left-turn lane.

In addition to the above network modifications, changes were made to the US 15-501 grade-separated intersection design from Project U-5717. A second northbound left-turn lane was added from Garrett Rd onto the US 15-501 westbound on-ramp, and the northbound right-turn lane from Garrett Rd onto the US 15-501 eastbound on-ramp was converted to a through-right lane. This maintained the same number of northbound through lanes from the design, while adding another left-turn lane. Widening the westbound on-ramp was not necessary because the design already included dual lanes on the ramp. These changes were applied to the 2050 Build scenario and the 2050 No-build scenario.

2. Traffic Volume Data

The traffic volumes utilized for the traffic analysis are included in the *Express Design Traffic Volume Report (*1/23/2023). The analysis included traffic volume data developed utilizing the Express Design Traffic Volume (EDTV) utility with origin-destination data derived from traffic counts. The 2050 volumes are based on engineering judgment that considered historic growth rates and projections from the North Carolina Statewide Travel Model (NCSTM) and the Triangle Regional Model v6.2. The following table includes the 2019 and 2050 AADT volumes utilized in the analysis.

Roadway Segment	2019 AADT	2050 AADT	2019-2050 CAGR*
I-40 north of US 15-501	79,500	118,600	1.3%
I-40 south of US 15-501	99,000	139,000	1.1%
US 15-501 west of Eastowne Dr	39,100	47,100	0.6%
US 15-501 from Eastowne Dr to I-40	44,000	59,900	1.0%
US 15-501 from I-40 to Mt Moriah Rd	57,000	77,600	1.0%
US 15-501 from Mt Moriah Rd to SW Durhan Dr	48,700	66,300	1.0%
US 15-501 from SW Durham Dr to Garrett Rd	52,500	80,800	1.4%
US 15-501 east of Garrett Rd	56,000	86,200	1.4%
Mt Moriah Rd north of New Hope Commons Rd	5,400	15,700	3.5%
Mt Moriah Rd from New Hope Commons Rd to US 15-501	17,700	21,300	0.6%
Mt Moriah Rd from US 15-501 to McFarland Dr	12,900	18,700	1.2%
Mt Moriah Rd south of McFarland Dr	6,300	9,100	1.2%
SW Durham Dr from US 15-501 to Witherspoon Blvd	10,400	29,300	3.4%
SW Durham Dr east of Witherspoon Blvd	6,700	18,900	3.4%
Eastowne Dr north of US 15-501	4,400	7,000	1.5%
Lakeview Dr south of US 15-501	2,400	12,600	5.5%
Garrett Rd north of US 15-501	16,400	22,300	1.0%
Garrett Rd south of US 15-501	13,500	24,900	2.0%
New Hope Commons Rd west of Mt Moriah Rd	8,500	10,600	0.7%
McFarland Dr east of Mt Moriah Rd	7,600	14,900	2.2%
Witherspoon Blvd south of SW Durham Dr	5,400	11,600	2.5%
Service Rd north of US 15-501	400	6,500	9.4%

* denotes Compound Annual Growth Rate

3. Fiscal Constraint

The proposed project is located within the planning jurisdiction of the Durham-Chapel Hill-Carrboro MPO. The DCHC 2050 Metropolitan transportation Plan (MTP) includes the following fiscally constrained projects that overlap the study area for the proposed project:

- I-3306A – I-40 widening from Durham County Line to NC 86
- U-5717 – new grade-separated intersection at US 15-501/Garrett Rd
- U-5304 – US 15-501 capacity improvements from Ephesus Church Rd to I-40

For purposes of this analysis, the above listed projects were included in both the Future Year No-Build and Build scenarios.

4. Summary of Traffic Operations Analysis

4.1 2019 Base Year No-Build Scenario Results

Analysis Type	Type	AM Peak Hour			PM Peak Hour		
		LOS D or better	LOS E or Worse	% LOS D or better	LOS D or better	LOS E or Worse	% LOS D or better
Signalized Intersection	Overall LOS	8	0	100%	3	5	38%
	Lane Group LOS	39	39	50%	27	51	35%
Unsignalized Intersection	Lane Group LOS	31	1	97%	27	5	84%
Roundabout Intersection	Overall LOS	1	0	100%	1	0	100%
	Lane Group LOS	3	0	100%	3	0	100%
Freeway Facility	Basic	6	2	75%	6	2	75%
	Merge/Diverge	3	1	75%	3	1	75%

4.2 2050 Future Year No-Build Scenario Results

Analysis Type	Type	AM Peak Hour			PM Peak Hour		
		LOS D or better	LOS E or Worse	% LOS D or better	LOS D or better	LOS E or Worse	% LOS D or better
Signalized Intersection	Overall LOS	3	6	33%	2	7	22%
	Lane Group LOS	24	55	30%	16	63	20%
Unsignalized Intersection	Lane Group LOS	14	18	44%	5	27	16%
Roundabout Intersection	Overall LOS	1	0	100%	0	1	0%
	Lane Group LOS	3	0	100%	0	3	0%
Freeway Facility	Basic	4	2	67%	4	2	67%
	Merge/Diverge	2	2	50%	2	2	50%

4.3 2050 Future Year Build Scenario Results

Alternative 1

Analysis Type	Type	AM Peak Hour			PM Peak Hour		
		LOS D or better	LOS E or Worse	% LOS D or better	LOS D or better	LOS E or Worse	% LOS D or better
Signalized Intersection	Overall LOS	11	3	79%	11	3	79%
	Lane Group LOS	49	39	57%	43	45	49%
Unsignalized Intersection	Lane Group LOS	16	2	89%	13	5	72%
Roundabout Intersection	Overall LOS	3	0	100%	3	0	100%
	Lane Group LOS	10	0	100%	10	0	100%
Freeway Facility	Basic	5	1	83%	5	1	83%
	Merge/Diverge	3	1	75%	3	1	75%

5. Conclusions/Recommendations

The study area includes US 15-501 with existing traffic volumes around 50,000 vehicles per day (vpd), Mt Moriah Road (around 12,000 vpd), SW Durham Dr (around 10,000 vpd), as well as an interchange with I-40. The base year volumes and the expected growth in the area lead to a 2050 No-build scenario in which the simulation analysis shows that the majority of intersections and lane groups are expected to operate at LOS E or F. The 2050 No-build scenario features several intersections with queuing severe enough to spillback into other intersections. In the PM peak hour, this essentially creates gridlock in the network.

Based on the simulation analysis, the Build Alternative is expected to substantially improve operations in the study area. Although there would still be some intersections operating at LOS E or F, the percentage of intersections and lane groups operating at LOS D or better would be substantially higher when compared to the 2050 No-build scenario. The proposed Build design also substantially reduces queuing along US 15-501. Additionally, the reduced delays and queuing on US 15-501 would have a positive impact on the freeway operations of I-40, with more segments operating at LOS D or better than in the 2050 No-build scenario.

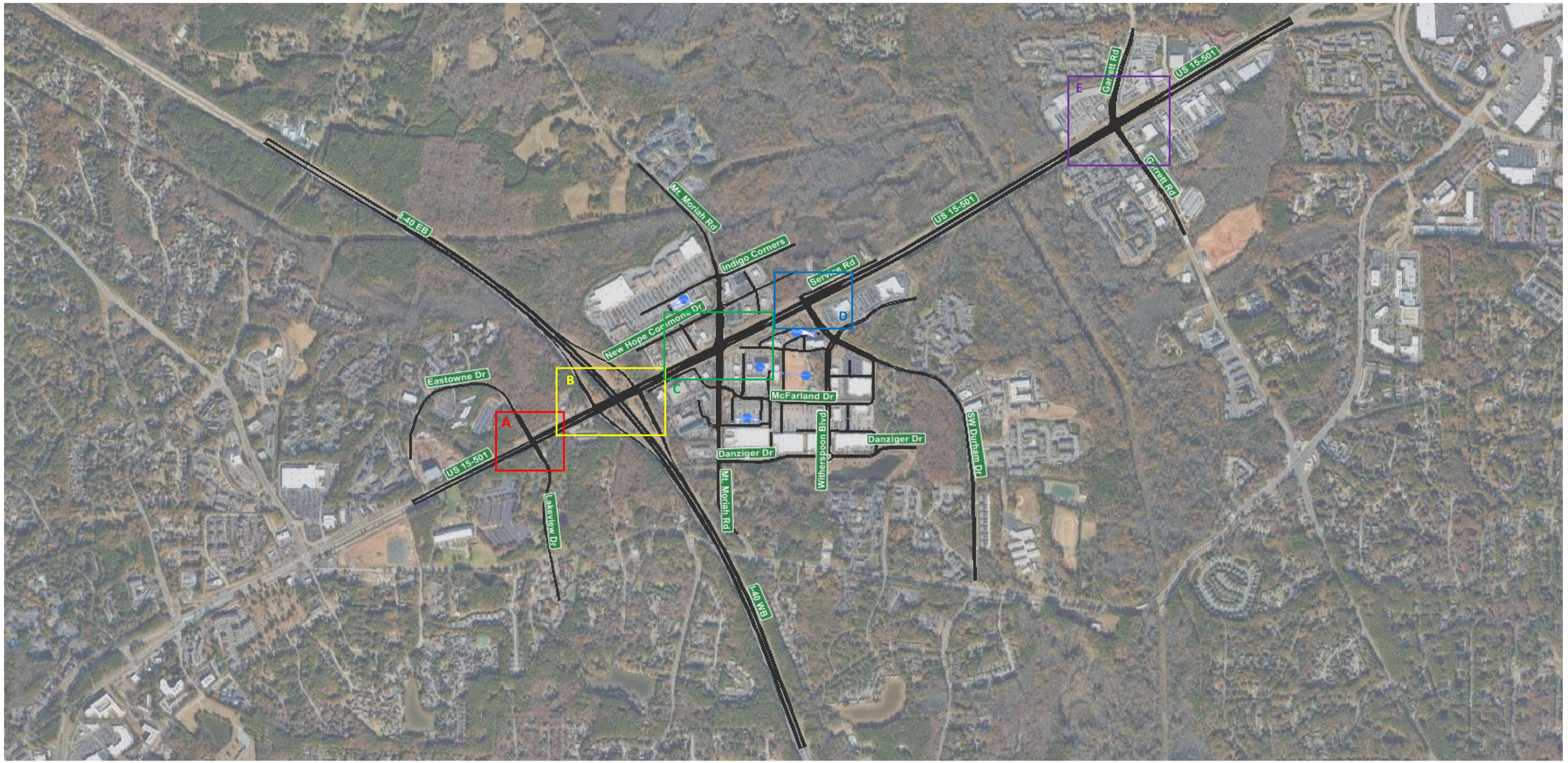

Figure 1-1	2019 No-Build	SHEET 1 OF 5
LEGEND	TIP: U-6067	WBS: 34263.1.1
	COUNTY: Durham/Orange	DIVISION: 5/7
	DATE: March 17, 2023	
	PREPARED BY: Patriot Transportation Engineering, PLLC	
	LOCATION: US 15/US 501 Durham County from I-40 to US 15/US 501 BUS in Durham	
	PROJECT: Upgrade Corridor to Expressway	

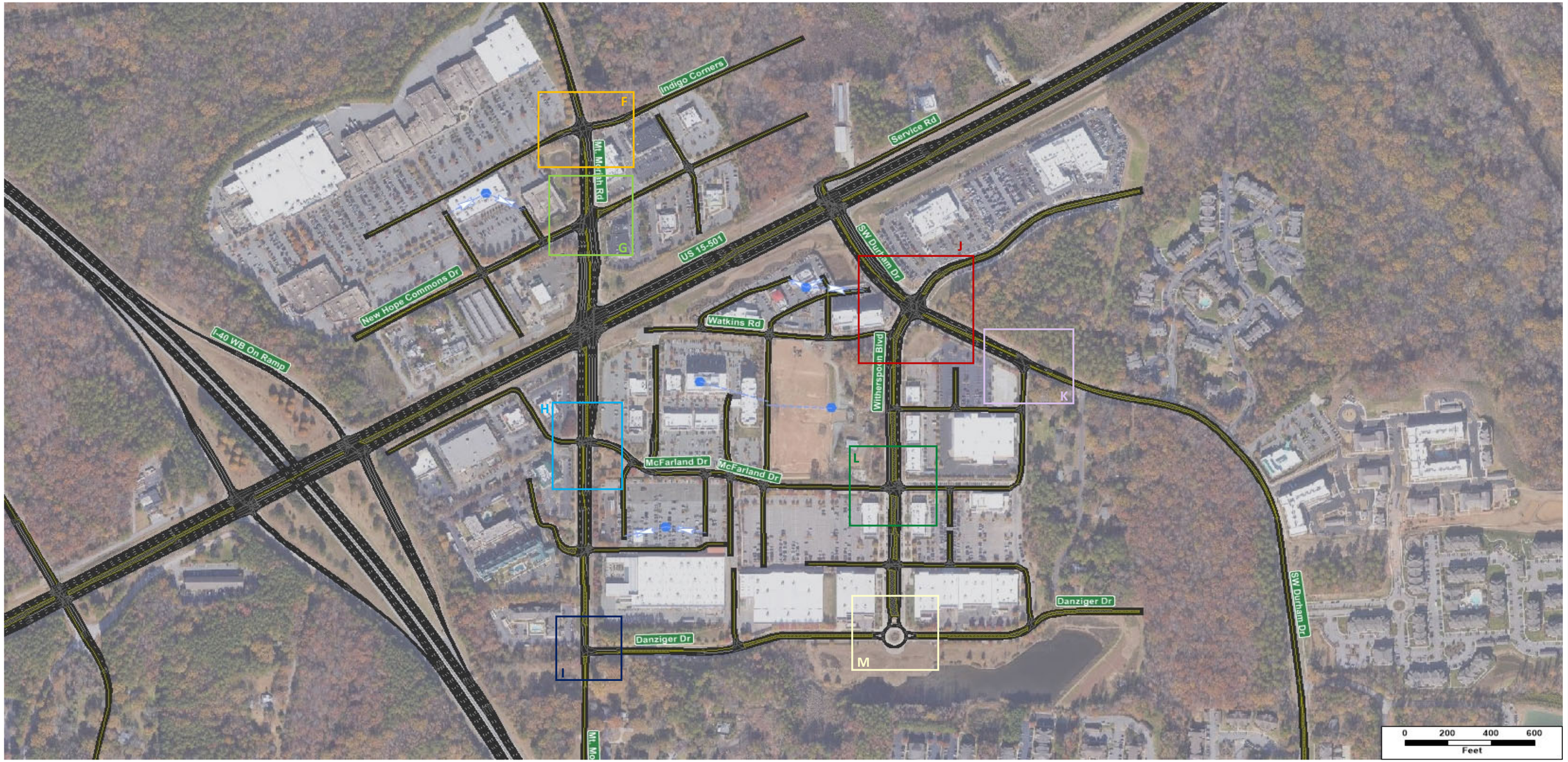

Figure 1-2

2019 No-Build

SHEET 2 OF 5

LEGEND

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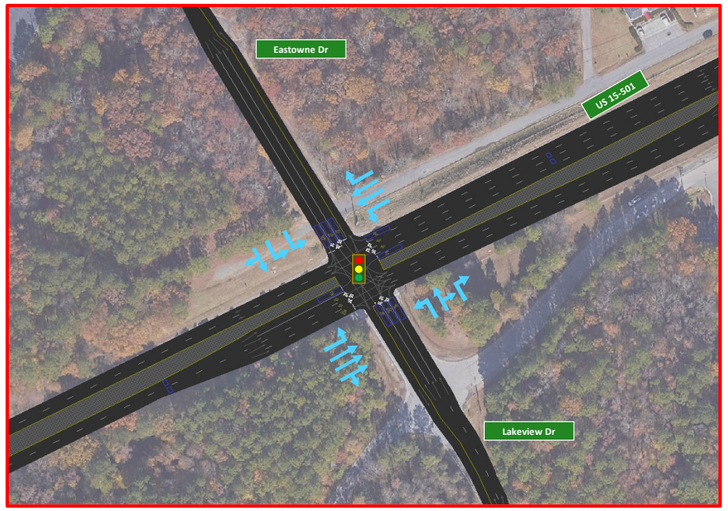

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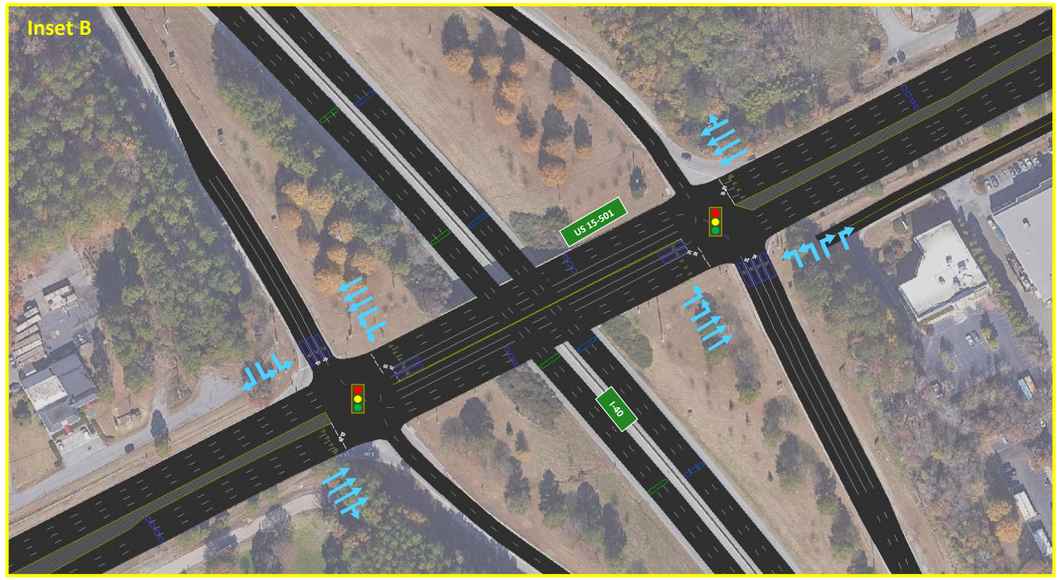

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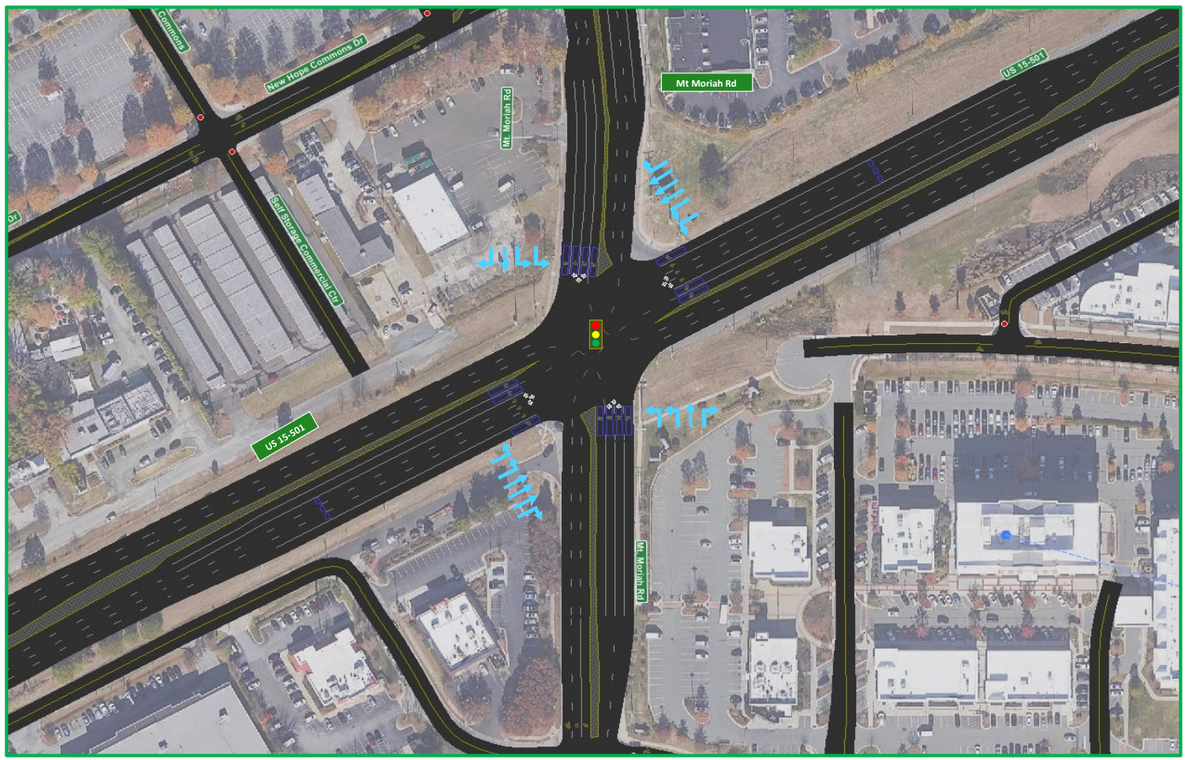

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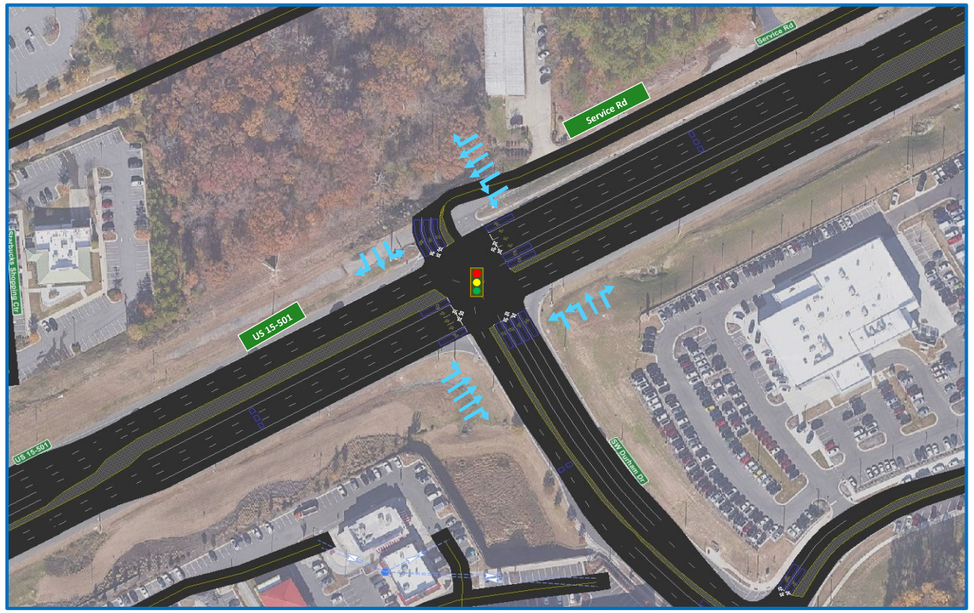

Figure 1-3

2019 No-Build

SHEET 3 OF 5

LEGEND

Existing Lanes

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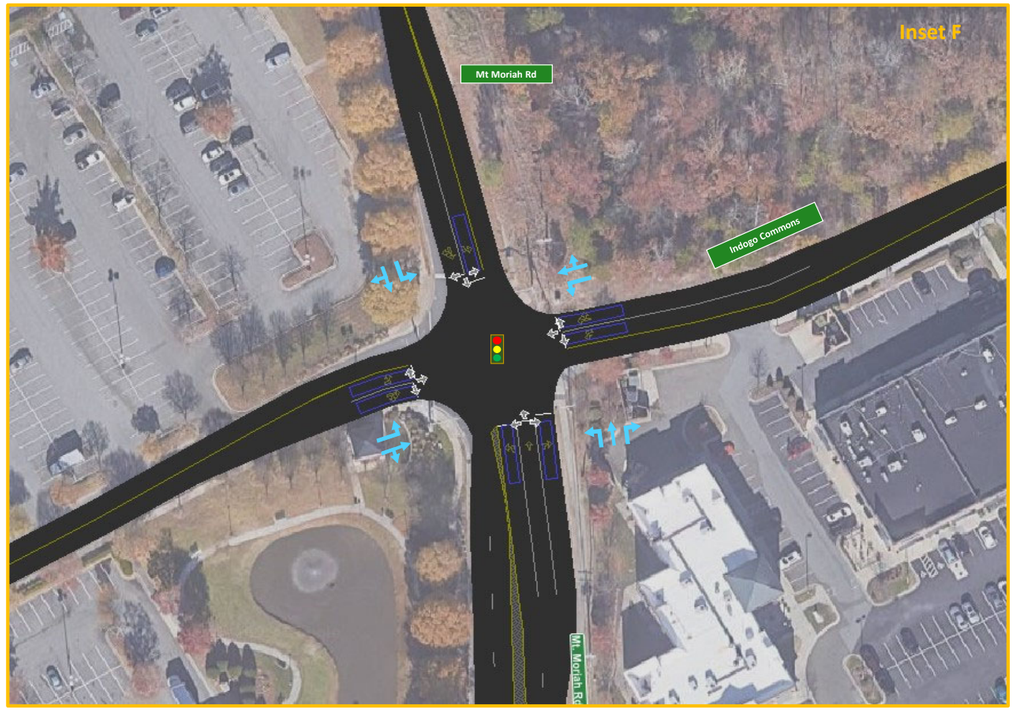

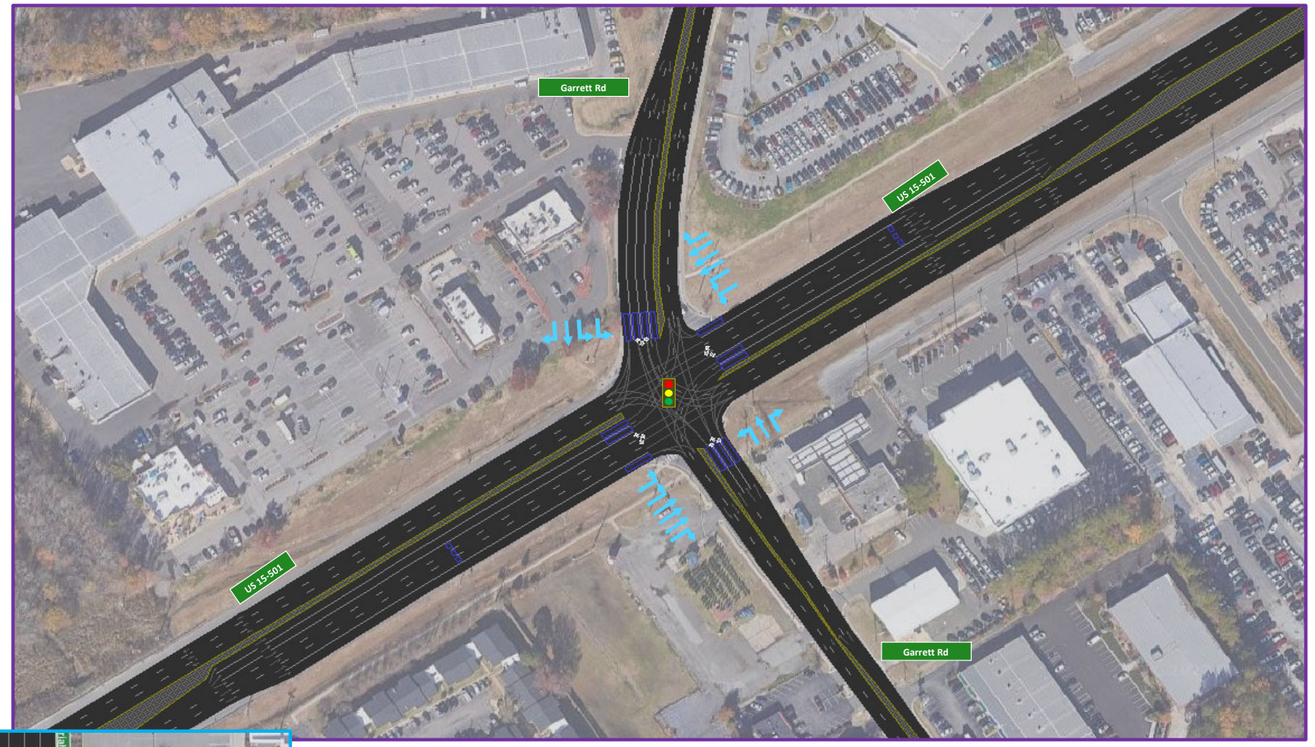

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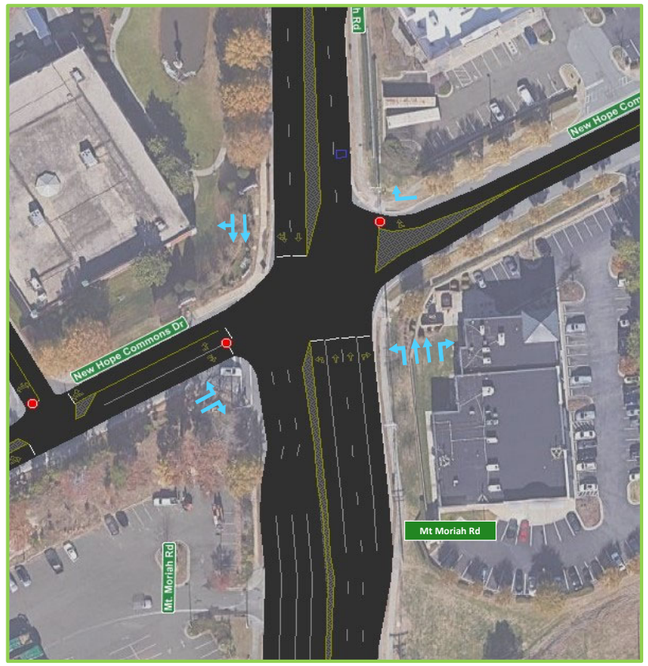

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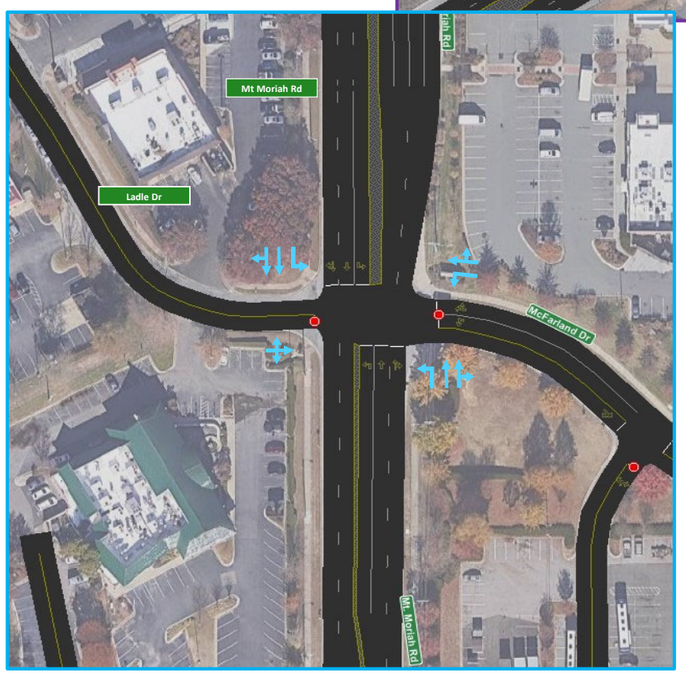

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Figure 1-4	2019 No-Build	SHEET 4 OF 5

LEGEND

Existing Lanes

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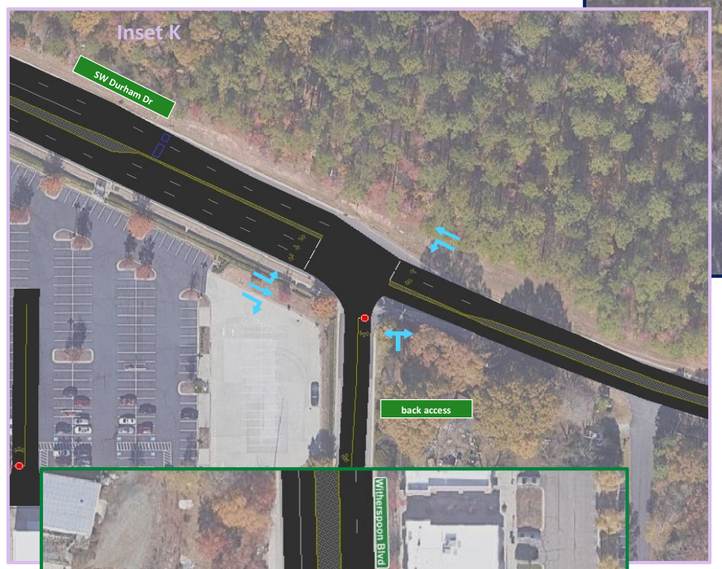

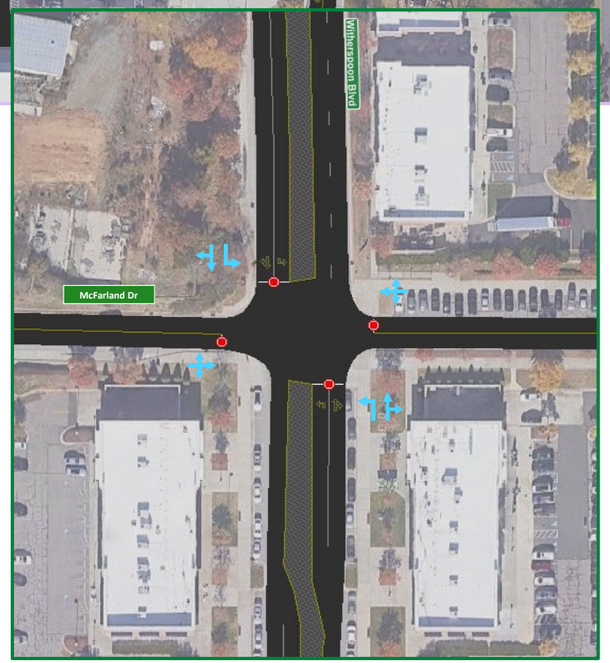

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Figure 1-5

2019 No-Build

SHEET 5 OF 5

LEGEND

Existing Lanes

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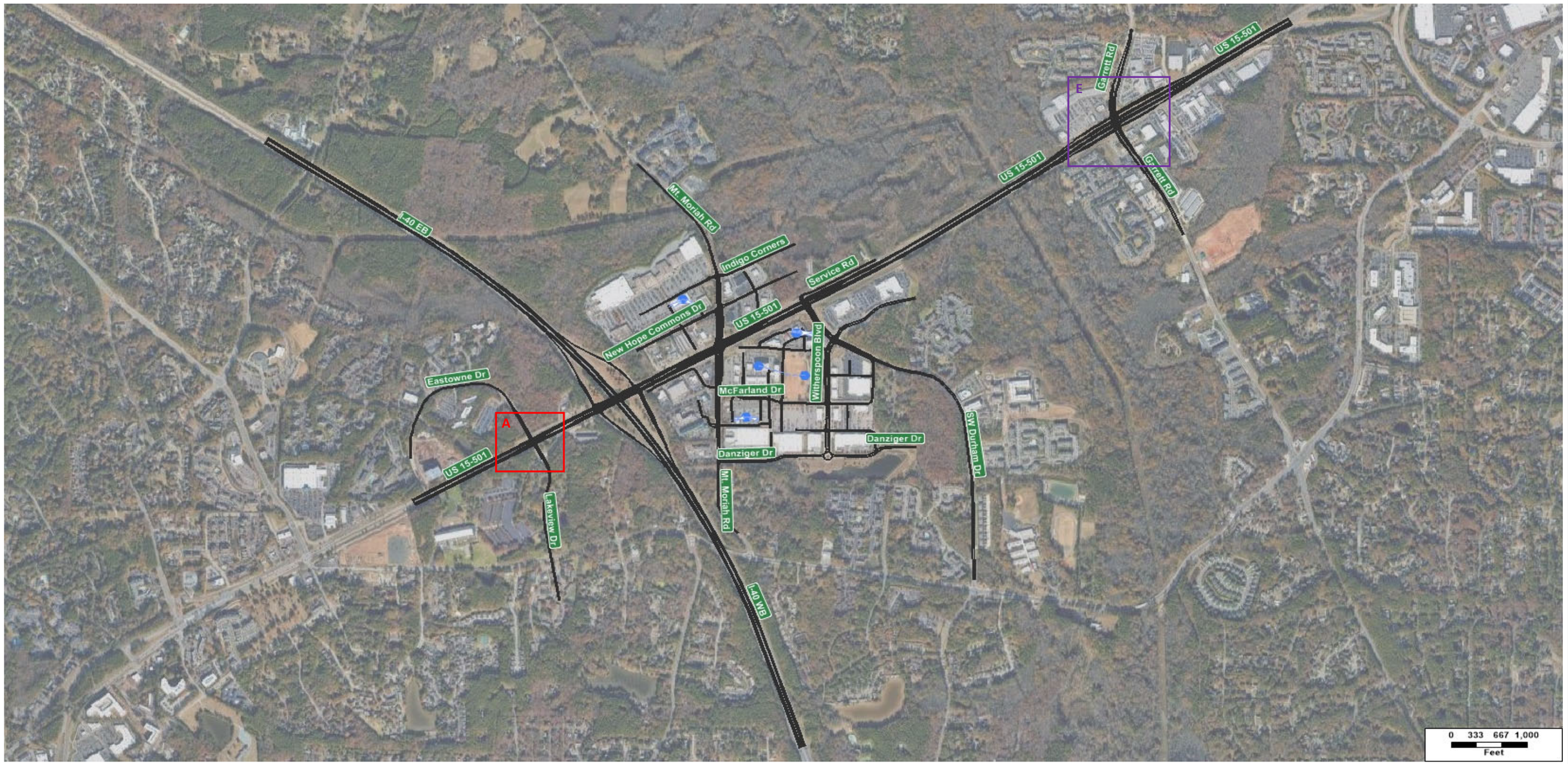

Figure 2-1

2050 No-Build

SHEET 1 OF 2

LEGEND

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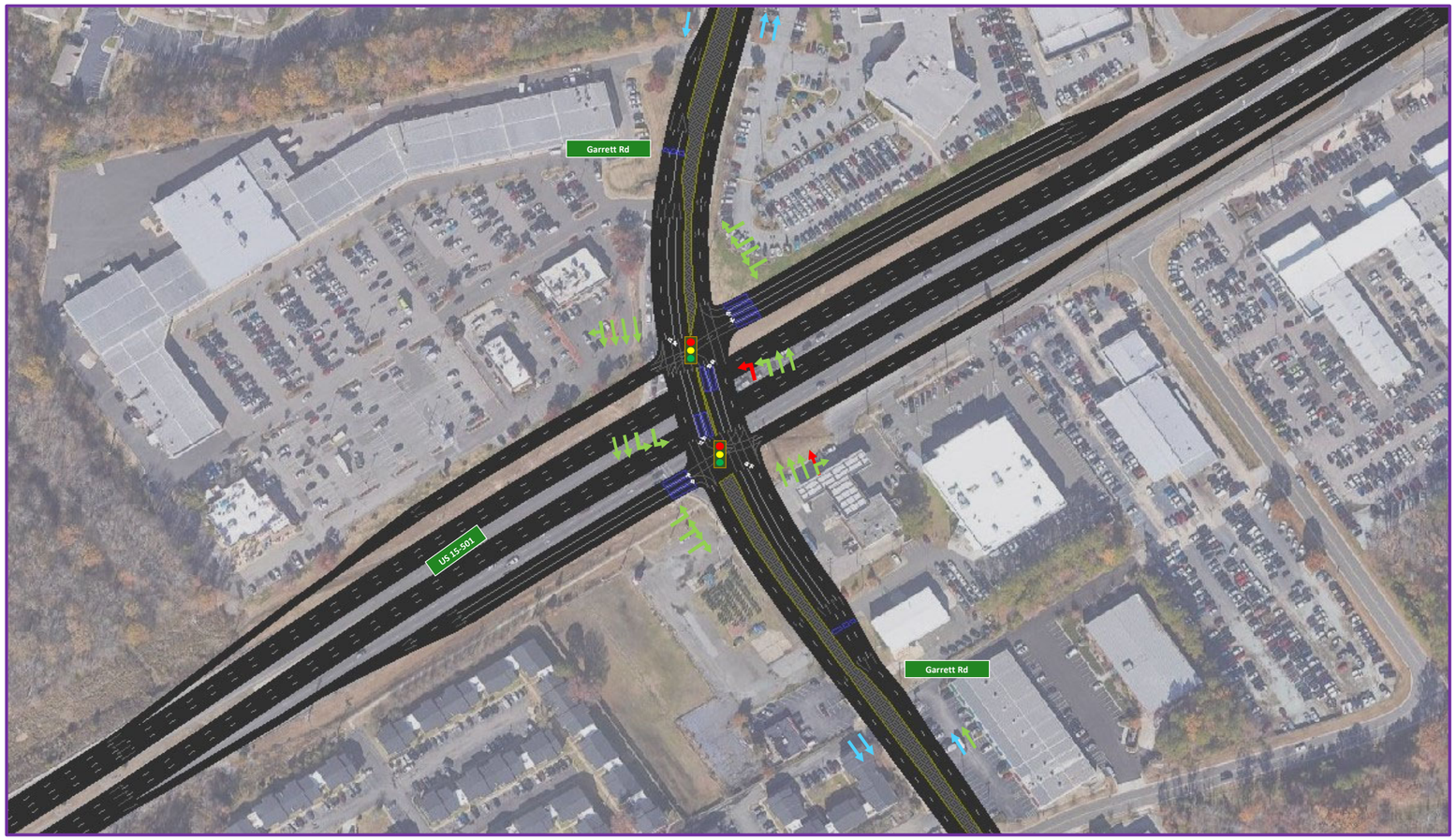

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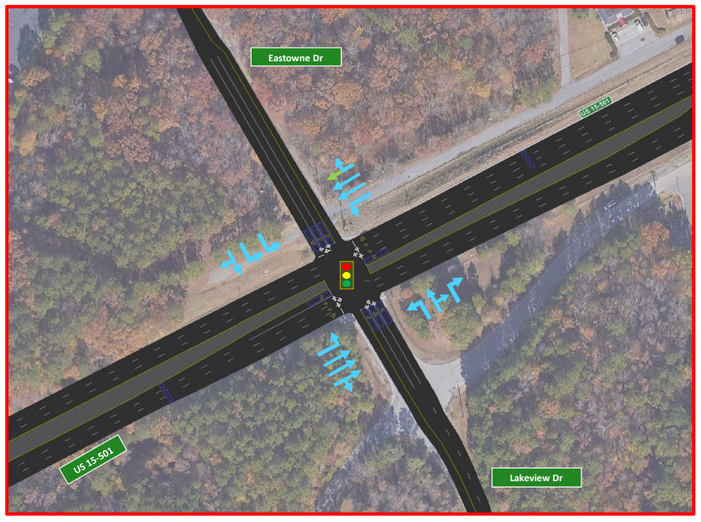

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Figure 2-2

2050 No-Build

SHEET 2 OF 2

LEGEND

- Existing Lanes
- Adjacent Project Lane Changes
- Proposed Lanes

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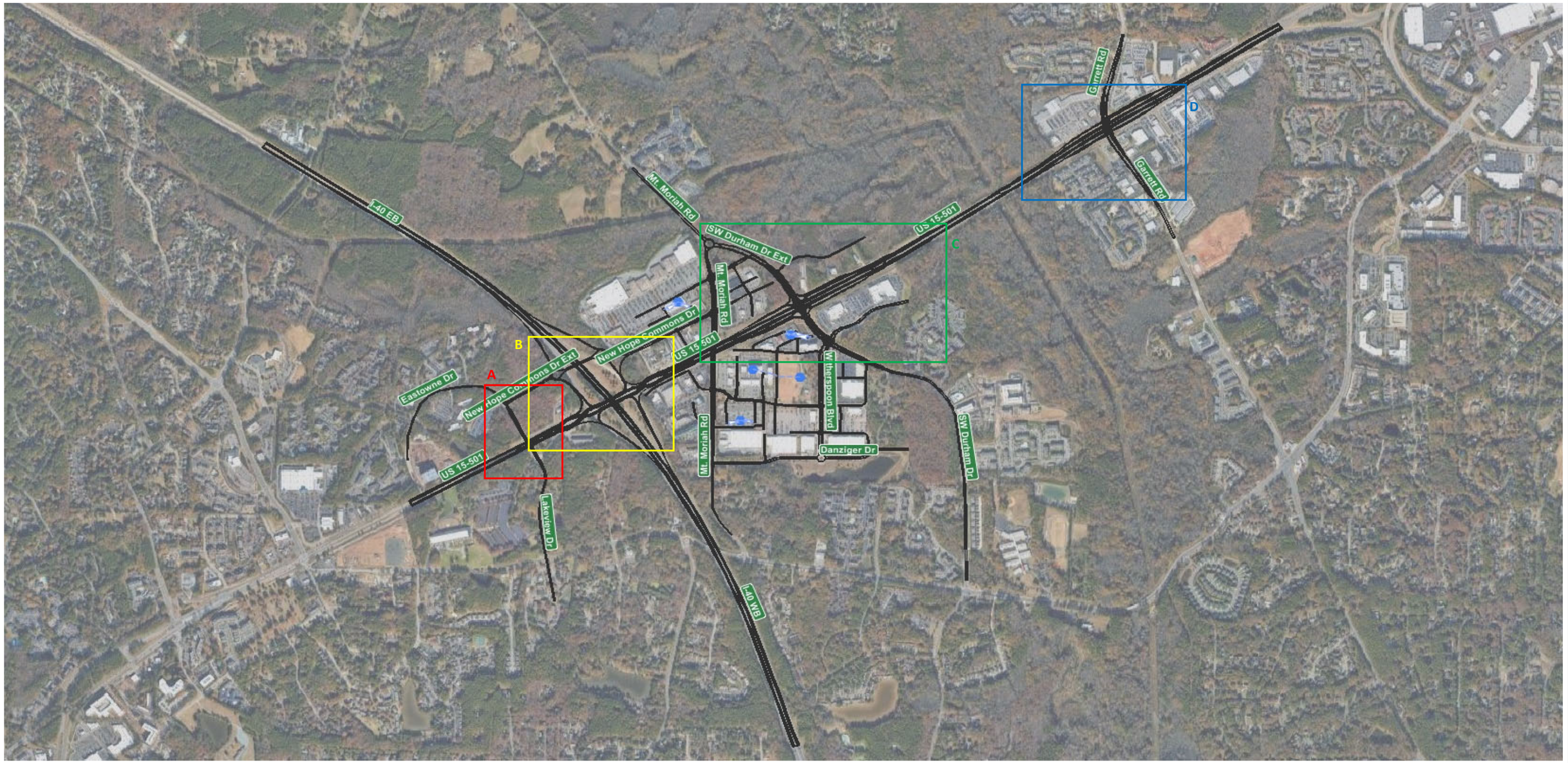

Figure 3-1	2050 Build	SHEET 1 OF 8
LEGEND	**TIP:** U-6067	**WBS:** 34263.1.1
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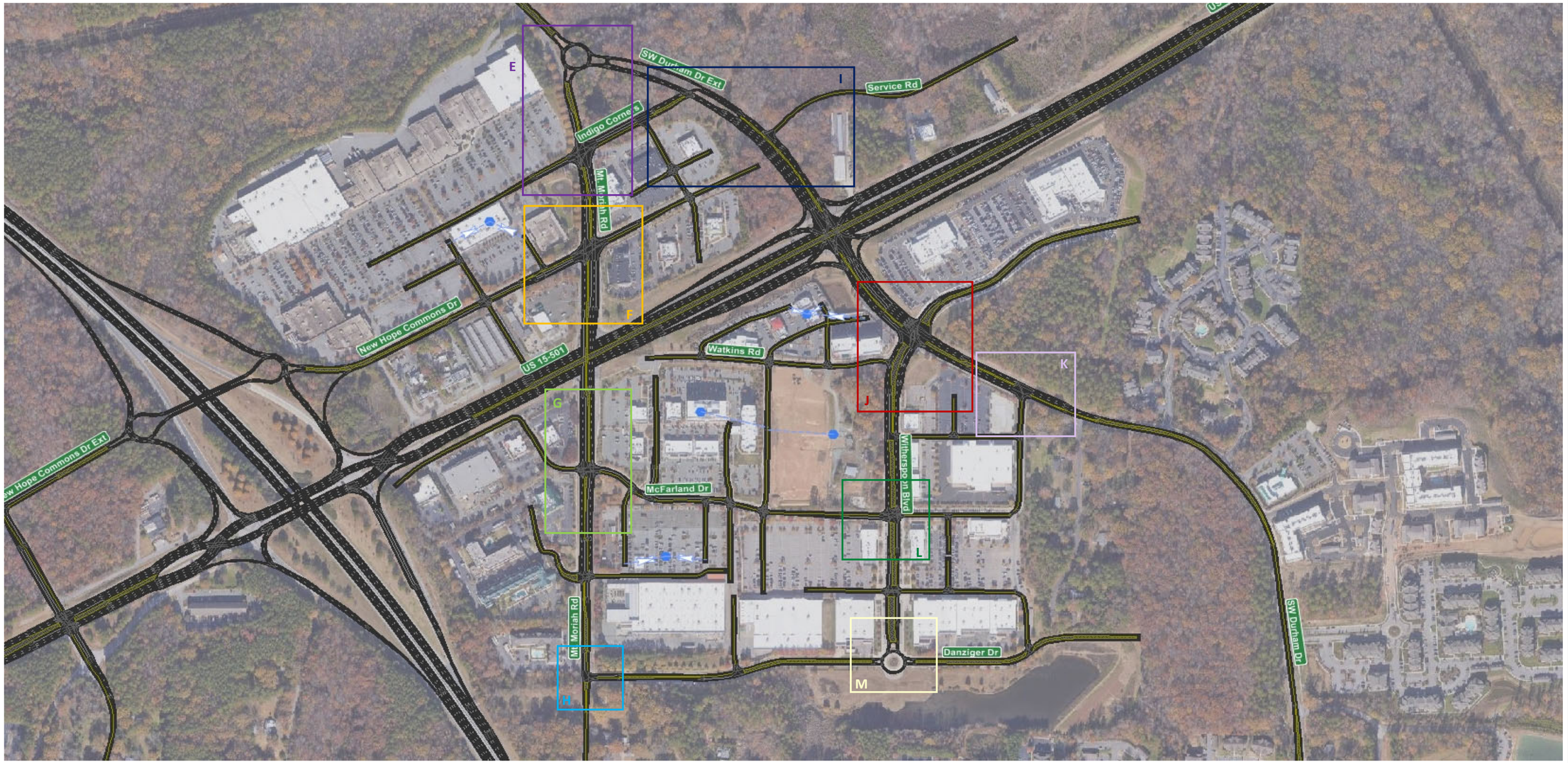

Figure 3-2

2050 Build

SHEET 2 OF 8

LEGEND

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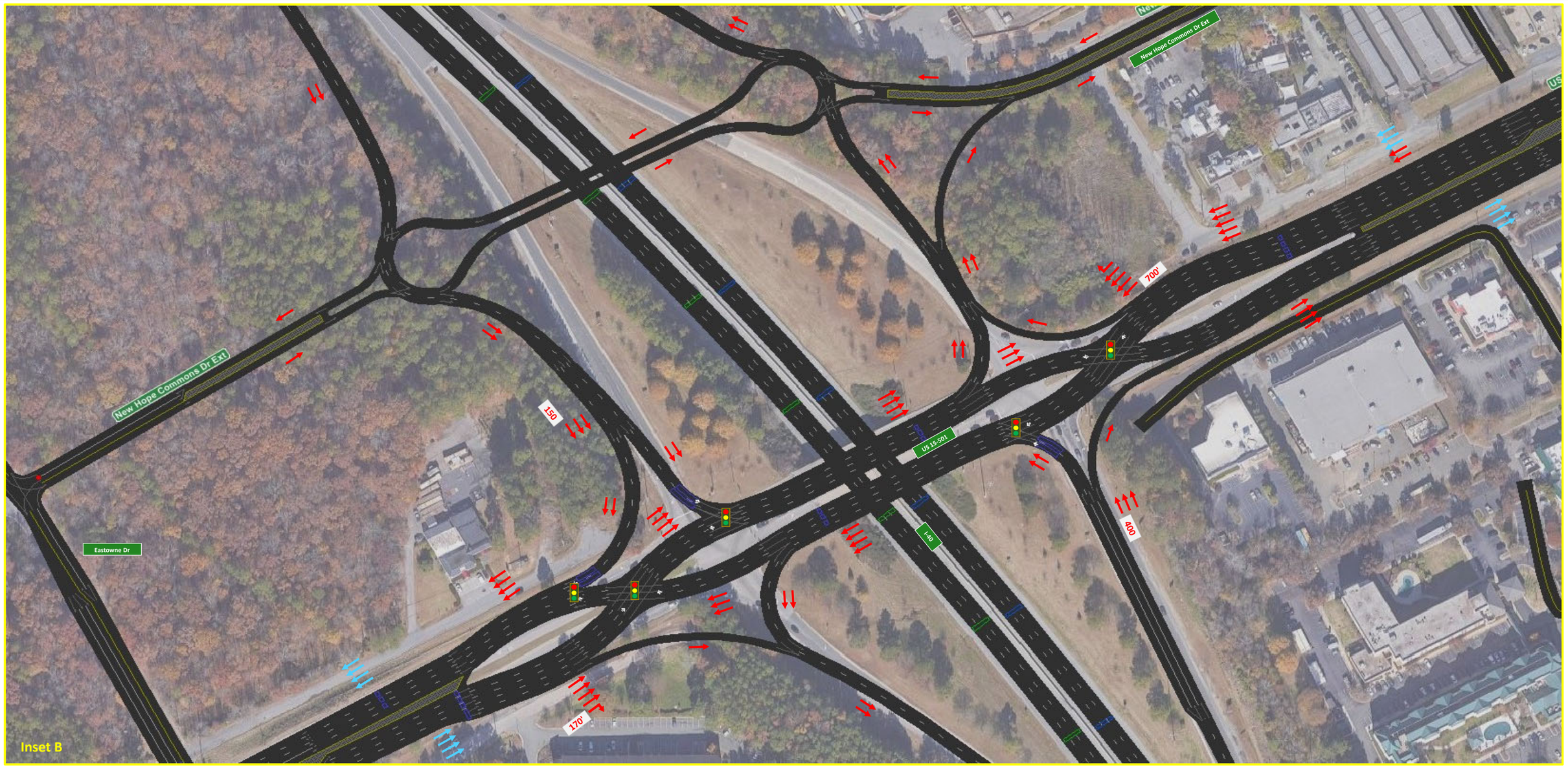

Figure 3-3

2050 Build

SHEET 3 OF 8

LEGEND

- Existing Lanes
- Proposed Lanes
- Lane Reduction/Movement Restriction
- XXX' Proposed Storage Length (app ft)

TIP:	U-6067	**WBS:**	34263.1.1
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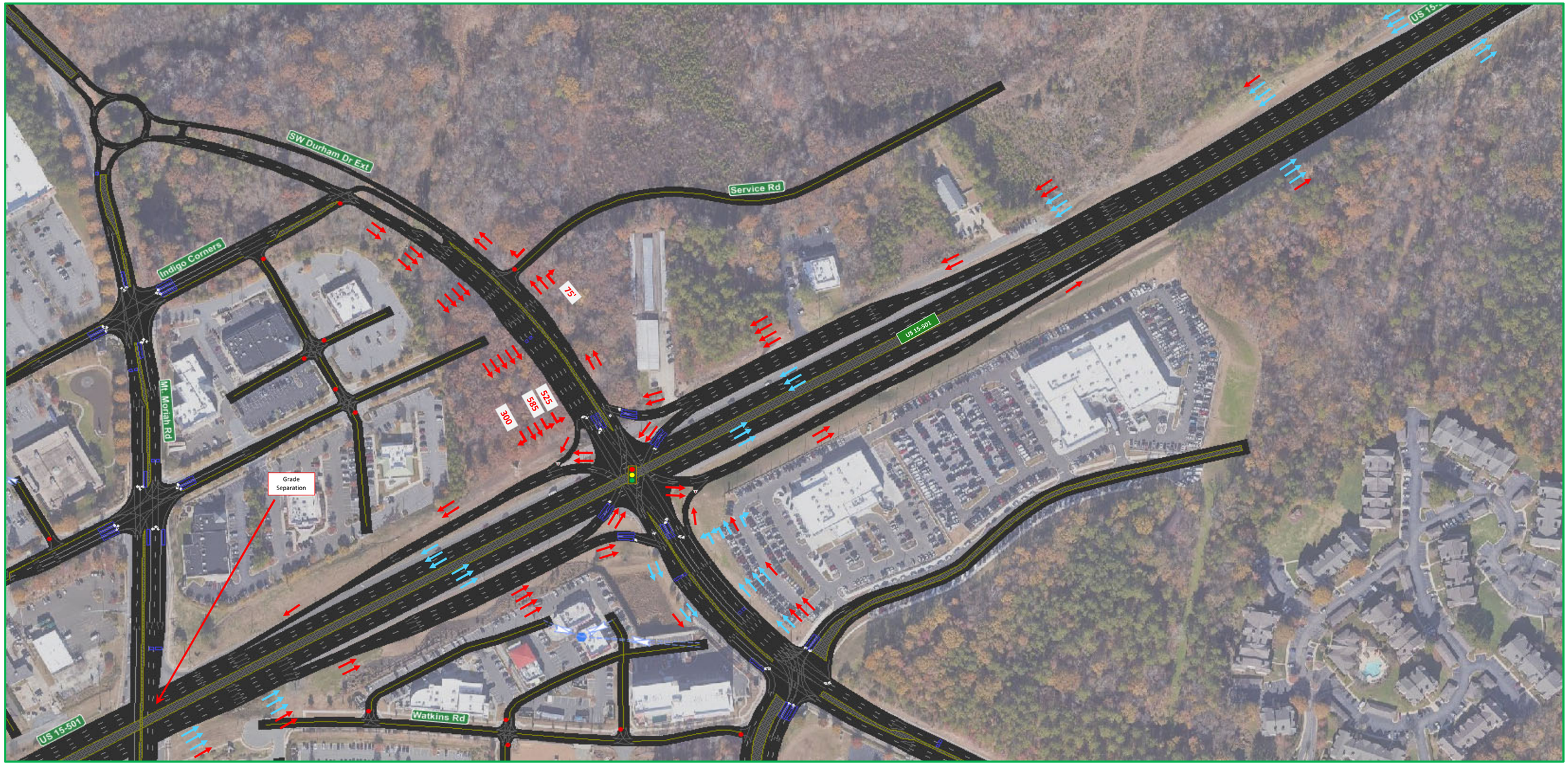

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Figure 3-4	2050 Build	SHEET 4 OF 8

LEGEND

- Existing Lanes
- Proposed Lanes
- Lane Reduction/Movement Restriction
- XXX' Proposed Storage Length (app ft)

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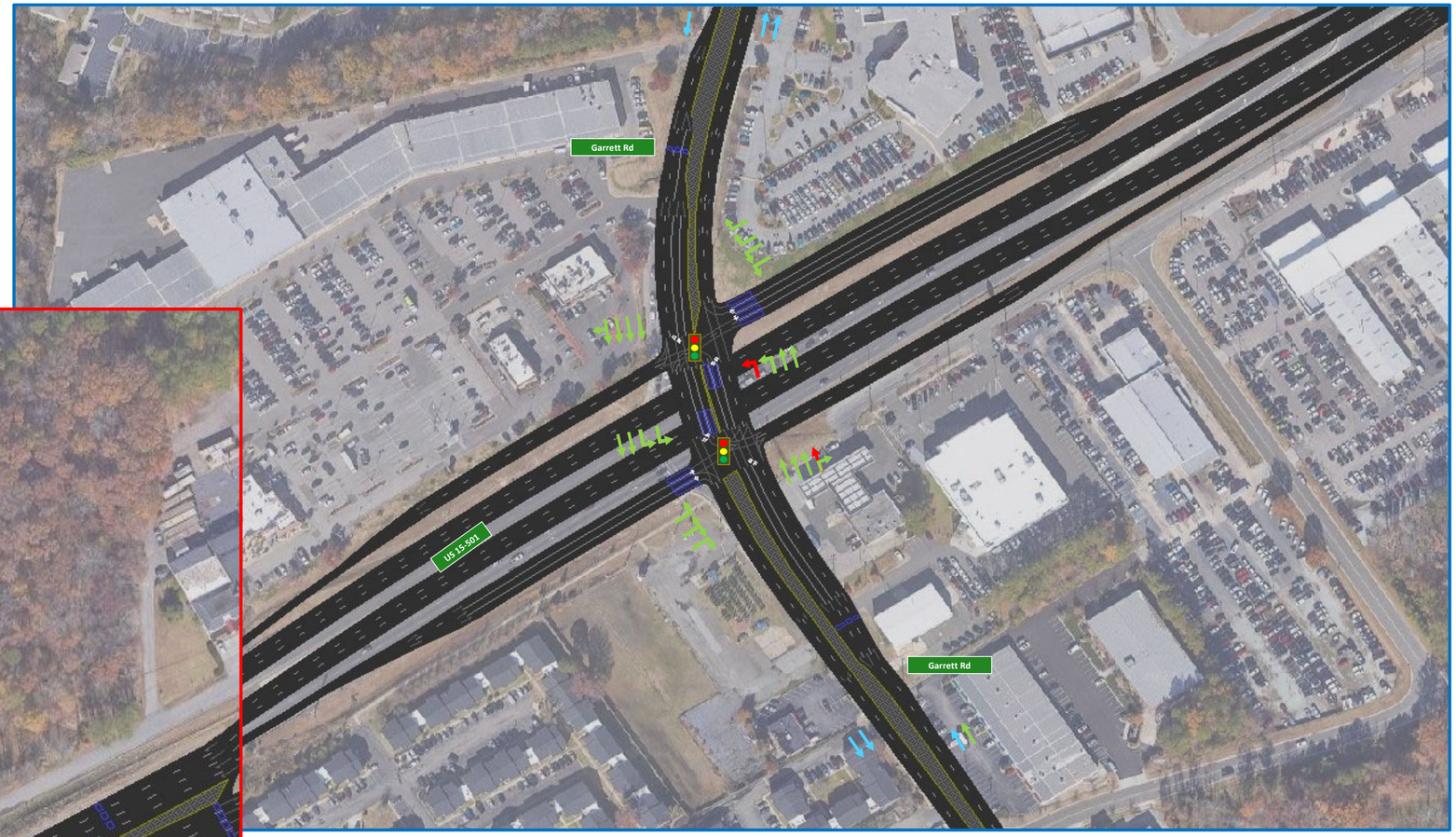

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Figure 3-5

2050 Build

SHEET 5 OF 8

LEGEND

- Existing Lanes
- Proposed Lanes
- Lane Reduction/Movement Restriction
- Adjacent Project Lane Changes
- XXX' Proposed Storage Length (app ft)

TIP:	U-6067	**WBS:**	34263.1.1
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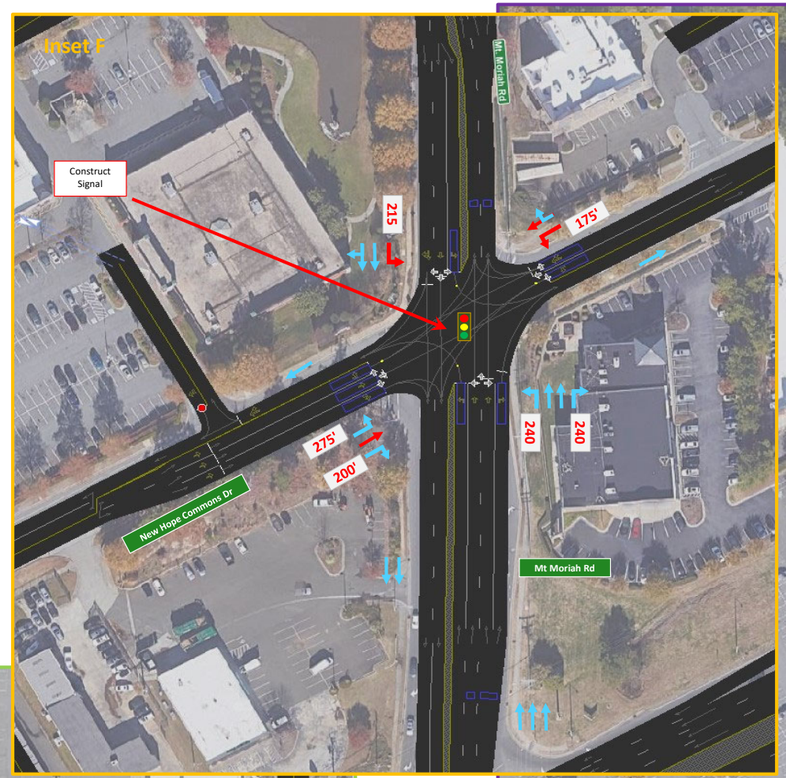

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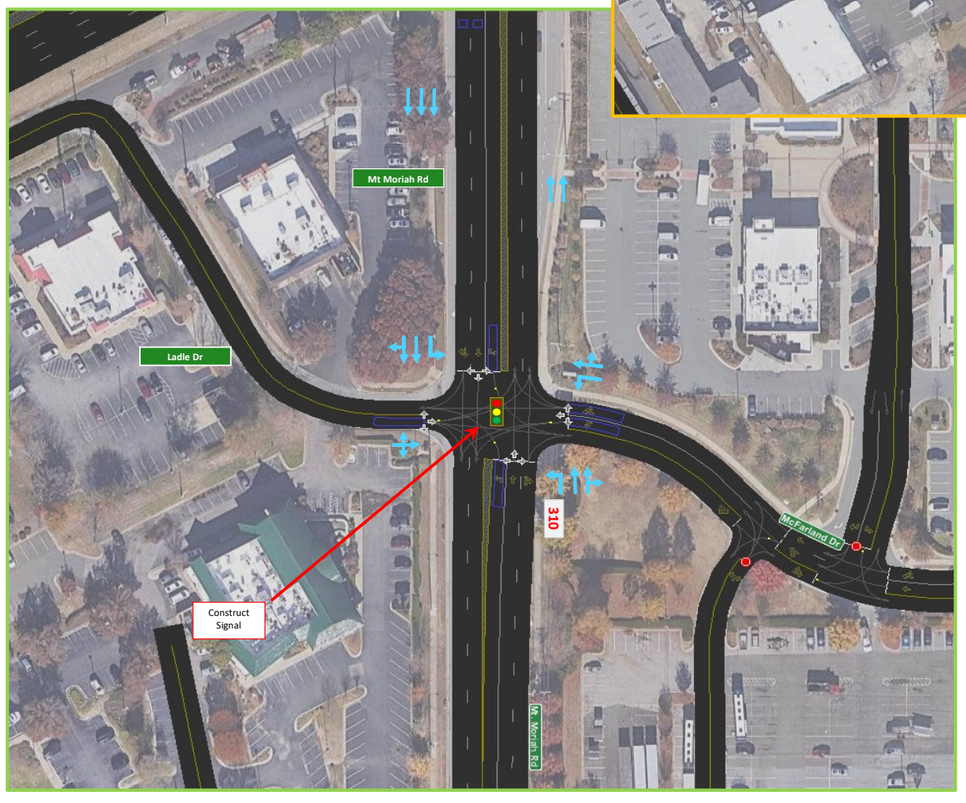

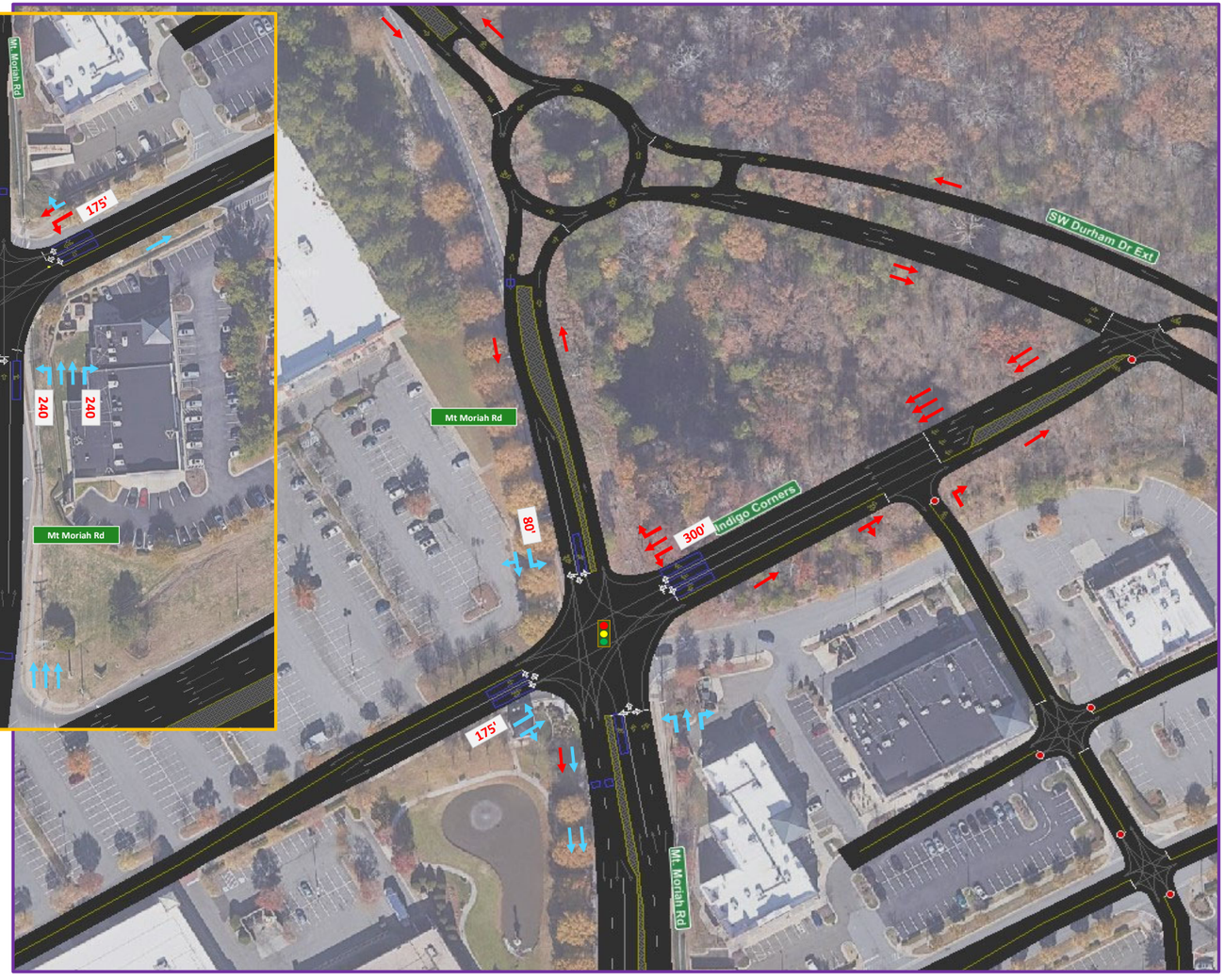

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Figure 3-6

2050 Build

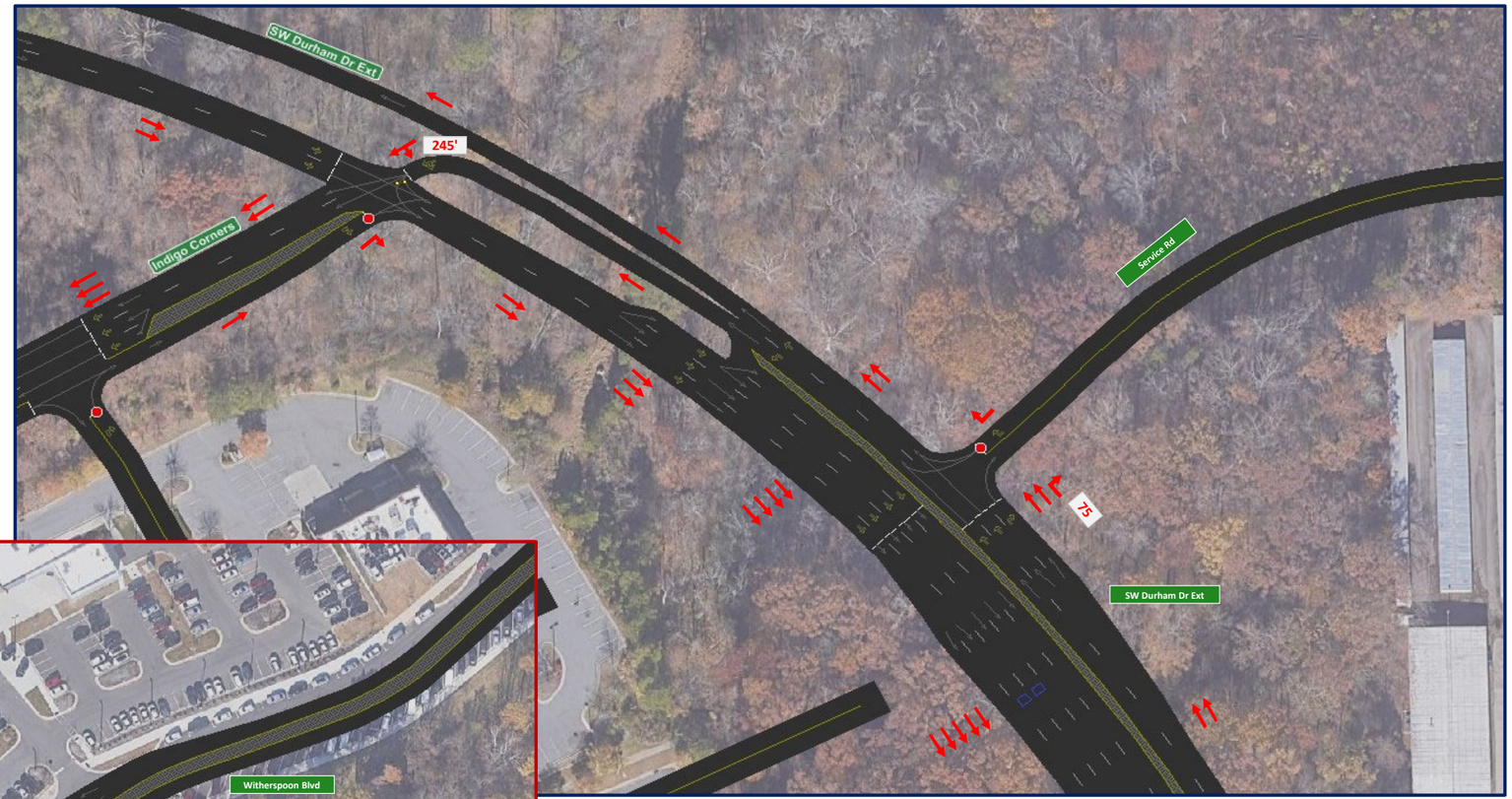
SHEET 6 OF 8

LEGEND

- Existing Lanes
- Proposed Lanes
- Lane Reduction/Movement Restriction
- XXX' Proposed Storage Length (app ft)

TIP:	U-6067	**WBS:**	34263.1.1
COUNTY:	Durham/Orange	**DIVISION:**	5/7
DATE:	March 17, 2023		
PREPARED BY:	Patriot Transportation Engineering, PLLC		
LOCATION:	US 15/US 501 Durham County from I-40 to US 15/US 501 BUS in Durham		
PROJECT:	Upgrade Corridor to Expressway		

Inset H



Inset I

Inset J

N

Figure 3-7

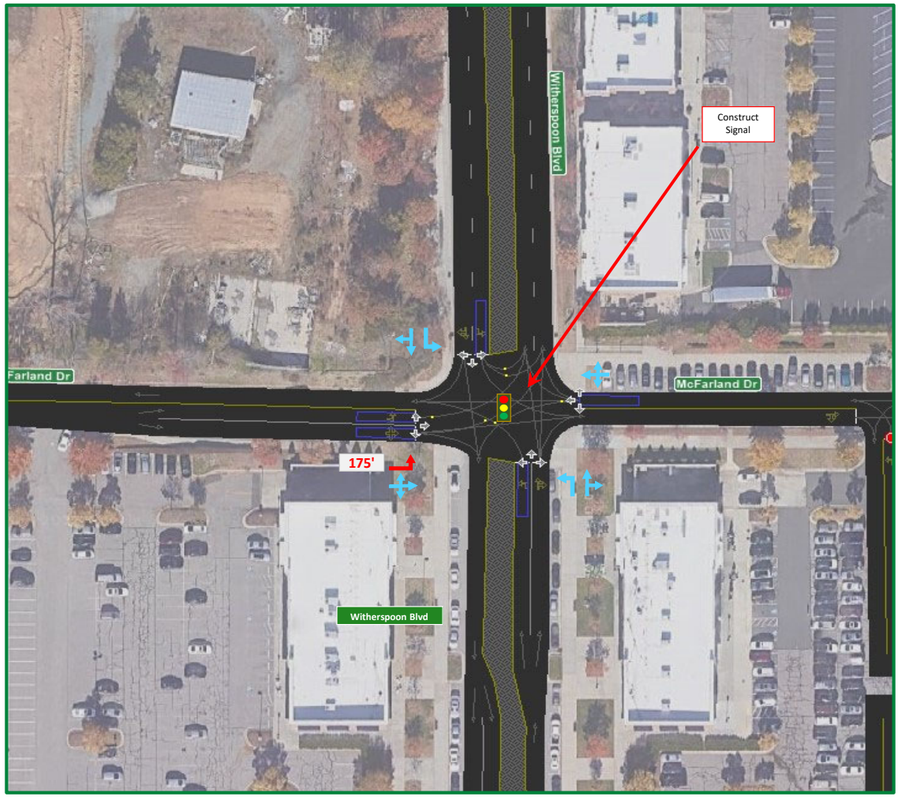
2050 Build

SHEET 7 OF 8

LEGEND

- Existing Lanes
- Proposed Lanes
- Lane Reduction/Movement Restriction
- XXX' Proposed Storage Length (app ft)

TIP:	U-6067	**WBS:**	34263.1.1
COUNTY:	Durham/Orange	**DIVISION:**	5/7
DATE:	March 17, 2023		
PREPARED BY:	Patriot Transportation Engineering, PLLC		
LOCATION:	US 15/US 501 Durham County from I-40 to US 15/US 501 BUS in Durham		
PROJECT:	Upgrade Corridor to Expressway		



Inset L

N

Figure 3-8

2050 Build

SHEET 8 OF 8

LEGEND

- Existing Lanes
- Proposed Lanes
- Lane Reduction/Movement Restriction
- XXX' Proposed Storage Length (app ft)

TIP:	U-6067	**WBS:**	34263.1.1
COUNTY:	Durham/Orange	**DIVISION:**	5/7
DATE:	March 17, 2023		
PREPARED BY:	Patriot Transportation Engineering, PLLC		
LOCATION:	US 15/US 501 Durham County from I-40 to US 15/US 501 BUS in Durham		
PROJECT:	Upgrade Corridor to Expressway		

2019 No-Build Freeway MOEs

Order	Street Name	Analysis Type	Location	DENSITY 8:00-9:00	DENSITY 17:00-18:00	LOS 8:00-9:00	LOS 17:00-18:00
1	I-40 EB	Basic	Northwest of US 15-501	22.7	40.5	C	E
2	I-40 EB	Basic	Northwest of US 15-501	15.7	23.0	B	C
3	I-40 EB	Diverge	To US 15-501	18.9	30.1	B	D
4	I-40 EB	Basic	Within US 15-501 Interchange	11.7	18.8	B	C
5	I-40 EB	Merge	From US 15-501	13.4	22.3	B	C
6	I-40 EB	Basic	Southeast of US 15-501	16.1	26.6	B	D
7	I-40 WB	Basic	Southeast of US 15-501	80.3	73.4	F	F
8	I-40 WB	Diverge	To US 15-501	57.3	75.1	F	F
9	I-40 WB	Basic	Within US 15-501 Interchange	18.1	14.2	C	B
10	I-40 WB	Merge	From US 15-501	21.9	16.5	C	B
11	I-40 WB	Basic	Northwest of US 15-501	26.1	19.2	D	C
12	I-40 WB	Basic	Northwest of US 15-501	35.2	25.4	E	C

2019 No-Build Intersection MOEs

Signalized Intersections

Intersection No.	Intersection	Approach	Lane Group	Delay[1] (s) AM	Delay[1] (s) PM	Level of Service[2] AM	Level of Service[2] PM	95th Queue (ft)/Spillback Rate AM		95th Queue (ft)/Spillback Rate PM		Maximum Queue Length (ft) AM	Maximum Queue Length (ft) PM
1	US 15-501 & Eastowne Dr / Lakeview Dr		***Overall***	***11.2***	***24.1***	***B***	***C***						
		US 15-501 SWB	L	79.7	80.8	E	F	22.5	0%	21.5	0%	218.6	453.8
			T	3.7	8.3	A	A	16.1	0%	9.9	0%		
			R	4.3	6.5	A	A	7.6	0%	2.3	0%		
		Lakeview Dr NWB	L	83.1	74.3	F	E	10.8	0%	5.6	0%	112.9	129.9
			TR	77.8	84.6	E	F	23.6	0%	22.1	0%		
			R	73.4	108.8	E	F	22.6	0%	46.0	0%		
		US 15-501 NEB	L	107.3	156.3	F	F	6.1	0%	3.6	0%	349.8	549.0
			T	12.0	25.5	B	C	39.7	0%	51.2	0%		
			TR	18.2	25.1	B	C	30.4	0%	51.5	0%		
		Eastowne Dr SEB	L	86.2	117.7	F	F	18.1	0%	87.4	0%	78.1	218.6
			TR	111.4	86.1	F	F	4.2	0%	7.8	0%		
2	US 15-501 & I-40 EB Ramps		***Overall***	***29.3***	***63.4***	***C***	***E***						
		US 15-501 SWB	L	119.7	116.7	F	F	183.1	0%	288.5	49%	406.3	1934.2
			T	7.4	11.8	A	B	35.3	0%	40.3	0%		
		US 15-501 NEB	T	19.9	56.0	B	E	68.0	0%	261.8	0%	508.4	897.3
			TR	23.8	69.2	C	E	67.2	0%	262.1	2%		
		I-40 EB Off Ramp SEB	L	72.8	174.9	E	F	79.9	0%	251.8	1%	337.9	1012.6
			R	66.3	129.5	E	F	110.6	0%	69.6	0%		
3	US 15-501 & I-40 WB Ramps		***Overall***	***34.9***	***64.8***	***C***	***E***						
		US 15-501 SWB	T	31.6	88.3	C	F	85.7	0%	470.5	3%	671.1	1877.8
			TR	46.1	33.3	D	C	120.9	0%	93.5	0%		
		I-40 WB Off Ramp NWB	L	34.3	74.8	C	E	64.7	0%	85.1	0%	563.2	2318.6
			R	43.0	156.5	D	F	130.7	0%	405.4	4%		
		US 15-501 NEB	L	117.0	145.5	F	F	37.4	0%	61.0	0%	663.8	875.9
			T	27.3	28.8	C	C	107.7	1%	111.6	3%		
4	US 15-501 & Mt. Moriah Rd		***Overall***	***45.2***	***89.4***	***D***	***F***						
		Mt. Moriah Rd SB	L	175.2	91.8	F	F	163.2	0%	94.2	0%	366.8	286.4
			T	60.7	84.9	E	F	7.1	0%	37.9	0%		
			R	55.9	48.5	E	D	88.9	0%	64.9	0%		
		US 15-501 SWB	L	113.7	145.9	F	F	53.5	0%	64.3	0%	483.3	1579.4
			T	33.2	95.3	C	F	97.7	0%	293.1	1%		
			R	11.6	30.5	B	C	26.0	0%	24.5	0%		
		Mt. Moriah Rd NB	L	86.8	98.8	F	F	72.7	0%	81.2	0%	375.7	573.6
			T	62.4	71.7	E	E	20.9	0%	70.5	0%		
			R	56.3	57.3	E	E	110.9	0%	70.2	0%		
		US 15-501 NEB	L	107.6	330.3	F	F	134.9	0%	440.9	1%	754.2	1793.4
			T	36.2	89.4	D	F	135.1	0%	262.5	1%		
			R	16.7	135.4	B	F	14.0	0%	267.4	1%		
5	US 15-501 & Service Rd / SW Durham Dr		***Overall***	***22.6***	***85.7***	***C***	***F***						
		US 15-501 SWB	L	93.2	171.1	F	F	200.3	0%	350.3	0%	479.3	1597.1
			T	7.6	86.8	A	F	25.8	0%	147.9	0%		
			R	11.5	64.7	B	E	0.6	0%	0.6	0%		
		SW Durham Dr NWB	L	78.4	76.1	E	E	21.0	0%	29.0	0%	278.1	332.5
			T	145.1	119.9	F	F	0.8	0%	0.9	0%		
			R	48.8	33.4	D	C	62.4	0%	58.5	0%		
		US 15-501 NEB	L	91.7	138.8	F	F	4.1	0%	2.8	0%	437.7	1095.5
			T	21.1	83.2	C	F	87.9	0%	327.8	0%		
			R	7.5	45.7	A	D	2.8	0%	18.3	0%		
		Service Rd SEB	L	154.1	115.1	F	F	2.2	0%	5.8	0%	20.8	49.2
			T	0.0	0.0	A	A	0.0	0%	0.0	0%		
			R	167.4	103.4	F	F	1.5	0%	5.1	0%		
6	US 15-501 & Garrett Rd		***Overall***	***47.7***	***68.6***	***D***	***E***						
		Garrett Rd SB	L	76.9	81.3	E	F	69.4	0%	73.9	0%	309.4	410.6
			T	57.2	61.0	E	E	53.8	0%	80.4	0%		
			R	45.2	49.9	D	D	79.3	0%	134.1	0%		
		US 15-501 SWB	L	218.5	270.6	F	F	131.8	0%	242.9	0%	721.5	938.9
			T	42.9	61.8	D	E	152.9	0%	232.0	0%		
			R	25.7	41.7	C	D	18.0	0%	14.8	0%		
		Garrett Rd NWB	L	242.2	391.7	F	F	366.5	0%	735.9	5%	660.8	1483.1
			T	94.8	198.9	F	F	60.3	0%	54.2	0%		
			R	84.1	195.2	F	F	87.4	0%	51.1	0%		
		US 15-501 NEB	L	108.7	129.1	F	F	139.5	0%	133.3	0%	347.6	335.6
			T	14.5	19.9	B	B	28.2	0%	52.8	0%		
			R	7.5	11.5	A	B	3.1	0%	6.5	0%		
7	Mt. Moriah Rd & New Hope Commons / Indigo Corners		***Overall***	***39.3***	***37.7***	***D***	***D***						
		Mt. Moriah Rd SB	L	19.0	21.6	B	C	0.8	0%	0.5	0%	130.8	103.3
			TR	20.8	21.2	C	C	17.0	0%	18.1	0%		
		Indigo Corners WB	L	89.2	93.2	F	F	36.0	0%	37.9	0%	133.0	139.5
			TR	100.0	101.0	F	F	9.1	0%	7.4	0%		
		Mt. Moriah Rd NB	L	9.9	10.4	A	B	9.5	0%	9.0	0%	132.2	171.0
			T	15.2	13.6	B	B	6.9	0%	22.2	0%		
			R	20.5	4.8	C	A	0.5	0%	0.1	0%		
		New Hope Commons EB	L	75.9	75.6	E	E	23.5	0%	44.1	0%	265.4	339.7
			TR	77.3	82.6	E	F	71.5	0%	75.1	0%		
11	SW Durham Dr & Witherspoon Blvd		***Overall***	***12.3***	***8.1***	***B***	***A***						
		Witherspoon Blvd SWB	L	143.5	137.7	F	F	1.7	0%	1.7	0%	56.6	89.1
			TR	97.0	91.9	F	F	9.9	0%	18.9	0%		
		SW Durham Dr NWB	L	12.5	18.1	B	B	1.5	0%	5.4	0%	52.6	100.0
			T	3.8	2.1	A	A	1.2	0%	0.4	0%		
			TR	3.0	4.0	A	A	2.8	0%	1.8	0%		
		Witherspoon Blvd NEB	L	93.0	127.7	F	F	31.6	0%	2.9	0%	119.8	45.7
			TR	0.0	100.0	A	F	0.0	0%	4.1	0%		
		SW Durham Dr SEB	L	5.7	7.7	A	A	0.3	0%	0.5	0%	230.3	248.4
			T	2.2	3.0	A	A	1.3	0%	2.0	0%		
			TR	7.5	8.5	A	A	19.5	0%	16.8	0%		

Unsignalized Intersections[3]

Intersection No.	Intersection	Approach	Lane Group	Delay[1] (s) AM	Delay[1] (s) PM	Level of Service[2] AM	Level of Service[2] PM	95th Queue (ft)/Spillback Rate AM		95th Queue (ft)/Spillback Rate PM		Maximum Queue Length (ft) AM	Maximum Queue Length (ft) PM
8	Mt. Moriah Rd & New Hope Commons Dr	Mt. Moriah Rd SB	T	3.2	16.6	A	C	0.5	0%	0.0	0%	12.5	2.6
			TR	0.8	4.2	A	A	0.3	0%	0.3	0%		
		New Hope Commons Blvd WB	R	7.9	12.4	A	B	0.2	0%	0.6	0%	2.0	13.6
		Mt. Moriah Rd NB	L	9.7	7.3	A	A	18.8	0%	13.3	0%	229.5	184.4
		New Hope Commons Dr NEB	L	0.0	116.6	A	F	0.0	0%	1.6	0%	123.7	361.0
			R	10.7	24.6	B	C	21.3	1%	58.7	5%		
9	Mt. Moriah Rd & Ladle Dr / McFarland Dr	Mt. Moriah Rd SB	L	6.7	112.6	A	F	7.8	0%	220.5	6%	132.4	1197.4
		McFarland Dr WB	L	25.8	576.3	D	F	3.5	0%	56.7	3%	453.9	754.5
			TR	49.9	191.4	E	F	112.1	38%	149.6	85%		
		Mt. Moriah Rd NB	L	2.8	4.4	A	A	0.1	0%	0.2	0%	7.5	49.0
			T	0.5	0.7	A	A	0.0	0%	0.5	0%		
			TR	0.5	1.2	A	A	0.3	0%	2.3	0%		
		Ladle Dr EB	LTR	30.7	1364.4	D	F	11.6	0%	818.4	43%	79.3	1221.5
10	Mt. Moriah Rd & Danziger Dr	Mt. Moriah Rd SB	L	2.7	9.5	A	A	0.0	0%	0.8	0%	0.0	17.9
		Danziger Dr WB	L	7.9	17.7	A	C	0.9	0%	4.0	0%	14.2	125.5
			R	1.8	11.6	A	B	0.0	0%	12.0	0%		
		Mt. Moriah Rd NB	TR	0.0	0.0	A	A	0.0	0%	0.0	0%	0.0	0.0
12	Witherspoon Blvd & Watkins Rd	Witherspoon Blvd SB	T	0.0	0.0	A	A	0.0	0%	0.0	0%	0.0	38.4
		Witherspoon Blvd NB	T	8.0	0.5	A	A	1.5	0%	0.0	0%	41.7	0.0
		Watkins Rd EB	R	7.8	9.6	A	A	0.4	0%	7.6	0%	8.9	78.5
13	Witherspoon Blvd & McFarland Dr	Witherspoon Blvd SB	L	6.9	9.0	A	A	0.0	0%	2.7	0%	84.5	87.7
			TR	5.4	10.6	A	B	2.9	0%	9.0	0%		
		McFarland Dr WB	LTR	1.1	4.5	A	A	1.2	0%	0.9	0%	30.0	19.2
		Witherspoon Blvd NB	L	7.6	9.5	A	A	0.1	0%	0.6	0%	26.2	27.0
			TR	3.3	6.6	A	A	1.1	0%	2.0	0%		
		McFarland Dr EB	LTR	4.0	26.4	A	D	1.6	0%	32.2	0%	24.4	316.0
15	SW Durham Dr & Shopping Center	SW Durham Dr NWB	L	3.3	9.3	A	A	0.1	0%	0.1	0%	1.5	5.7
			T	7.2	0.4	A	A	0.0	0%	0.0	0%		
		McFarland Dr NB	LR	6.3	28.9	A	D	1.1	0%	53.9	9%	28.1	269.9
		SW Durham Dr SEB	L	0.0	1.9	A	A	0.0	0%	0.0	0%	0.0	0.5
			T	0.0	0.0	A	A	0.0	0%	0.0	0%		
			R	0.0	0.0	A	A	0.0	0%	0.0	0%		

Roundabouts

Intersection No.	Intersection	Approach	Lane Group	Delay[1] (s) AM	Delay[1] (s) PM	Level of Service[2] AM	Level of Service[2] PM	95th Queue (ft)/Spillback Rate AM		95th Queue (ft)/Spillback Rate PM		Maximum Queue Length (ft) AM	Maximum Queue Length (ft) PM
14	Danziger Dr & Witherspoon Blvd	Witherspoon Blvd SB	T	1.9	1.8	A	A	0.0	0%	0.0	0%	0.0	1.9
		Danziger Dr WB	R	0.7	0.7	A	A	0.0	0%	0.0	0%	0.0	0.0
		Danziger Dr EB	R	2.4	2.2	A	A	0.0	0%	0.0	0%	0.0	0.0

Notes:

1 Delay shown is the 95th percentile worst case control delay for the full 60-minute simulation period as derived from the 10 random seed simulations

2 Level of Service shown is Simulation based and calculated in a manner that is consistent with the HCM Methodologies

3 Results for unsignalized intersections include only the movements that have conflicting flow and thus have the potential to incur control delay

2050 No-Build Freeway MOEs

Order	Street Name	Analysis Type	Location	DENSITY 8:00-9:00	DENSITY 17:00-18:00	LOS 8:00-9:00	LOS 17:00-18:00
1	I-40 EB	Basic	Northwest of US 15-501	114.1	159.2	F	F
2	I-40 EB	Diverge	To US 15-501	110.8	160.2	F	F
3	I-40 EB	Basic	Within US 15-501 Interchange	13.1	10.4	B	A
4	I-40 EB	Merge	From US 15-501	12.3	13.0	B	B
5	I-40 EB	Basic	Southeast of US 15-501	16.5	16.4	B	B
6	I-40 WB	Basic	Southeast of US 15-501	92.7	132.3	F	F
7	I-40 WB	Diverge	To US 15-501	59.6	120.1	F	F
8	I-40 WB	Basic	Within US 15-501 Interchange	19.7	17.3	C	B
9	I-40 WB	Merge	From US 15-501	16.6	13.7	B	B
10	I-40 WB	Basic	Northwest of US 15-501	22.4	19.8	C	C

2050 No-Build Intersection MOEs

Signalized Intersections

Intersection No.	Intersection	Approach	Lane Group	Delay[1] (s) AM	Delay[1] (s) PM	Level of Service[2] AM	Level of Service[2] PM	95th Queue (ft)/Spillback Rate AM		95th Queue (ft)/Spillback Rate PM		Maximum Queue Length (ft) AM	Maximum Queue Length (ft) PM
1	US 15-501 & Eastowne Dr / Lakeview Dr		***Overall***	***152.9***	***314.0***	***F***	***F***						
		US 15-501 SWB	L	78.6	107.1	E	F	85.5	0%	83.1	0%	376.8	291.9
			T	5.7	21.1	A	C	16.7	0%	57.4	0%		
			TR	11.3	27.0	B	C	26.0	0%	67.8	0%		
		Lakeview Dr NWB	L	723.9	406.9	F	F	79.8	0%	47.8	0%	2446.5	1305.7
			TR	865.9	355.7	F	F	1152.8	26%	265.9	1%		
			R	719.7	475.5	F	F	815.7	14%	603.9	2%		
		US 15-501 NEB	L	397.7	562.8	F	F	253.6	1%	571.3	17%	1853.9	1950.4
			T	252.3	506.4	F	F	822.4	14%	1279.3	32%		
			TR	211.5	649.4	F	F	322.5	3%	1083.6	31%		
		Eastowne Dr SEB	L	153.2	860.5	F	F	46.5	0%	1068.0	2%	162.9	2329.7
			TR	91.8	508.0	F	F	6.6	0%	13.3	0%		
2	US 15-501 & I-40 EB Ramps		***Overall***	***102.1***	***157.0***	***F***	***F***						
		US 15-501 SWB	L	108.6	113.6	F	F	181.2	2%	279.0	39%	519.1	1868.3
			T	13.3	10.4	B	B	52.0	0%	24.0	0%		
		US 15-501 NEB	T	156.7	174.2	F	F	569.0	14%	527.4	6%	3362.1	3062.9
			TR	135.5	315.0	F	F	412.2	23%	593.2	31%		
		I-40 EB Off Ramp SEB	L	340.5	1480.5	F	F	467.4	19%	779.0	35%	5836.1	6563.7
			R	188.8	826.4	F	F	109.5	1%	33.9	0%		
3	US 15-501 & I-40 WB Ramps		***Overall***	***83.1***	***123.4***	***F***	***F***						
		US 15-501 SWB	T	94.8	148.6	F	F	369.6	0%	545.7	5%	2268.9	1782.9
			TR	129.7	67.2	F	E	341.8	1%	235.3	0%		
		I-40 WB Off Ramp NWB	L	34.4	95.4	C	F	49.0	0%	70.1	0%	873.5	2043.4
			R	66.8	229.7	E	F	210.0	0%	671.3	9%		
		US 15-501 NEB	L	176.1	149.4	F	F	76.5	0%	79.4	0%	4732.5	6882.8
			T	85.5	138.1	F	F	242.1	29%	369.1	38%		
4	US 15-501 & Mt. Moriah Rd		***Overall***	***122.1***	***146.7***	***F***	***F***						
		Mt. Moriah Rd SB	L	220.9	335.9	F	F	232.0	0%	346.2	0%	618.8	763.8
			T	89.1	1433.2	F	F	24.7	0%	215.2	0%		
			R	56.8	254.3	E	F	107.0	0%	243.6	0%		
		US 15-501 SWB	L	199.6	577.9	F	F	69.5	0%	479.3	6%	2656.0	3074.7
			T	123.4	110.7	F	F	298.8	2%	323.5	1%		
			R	53.2	56.6	D	E	16.0	0%	126.3	0%		
		Mt. Moriah Rd NB	L	423.9	149.6	F	F	328.8	0%	85.2	0%	1739.7	494.0
			T	184.2	187.7	F	F	55.4	0%	85.7	0%		
			R	163.8	125.8	F	F	202.9	0%	62.2	0%		
		US 15-501 NEB	L	104.0	382.1	F	F	100.9	0%	502.6	1%	2734.7	4316.1
			T	107.4	176.4	F	F	293.8	1%	494.5	7%		
			R	142.6	1280.8	F	F	233.9	2%	1108.3	41%		
5	US 15-501 & Service Rd / SW Durham Dr		***Overall***	***148.1***	***200.9***	***F***	***F***						
		US 15-501 SWB	L	374.2	658.9	F	F	972.5	3%	1771.4	15%	7083.2	8186.5
			T	190.9	229.5	F	F	260.5	0%	413.3	1%		
			R	156.3	180.3	F	F	4.5	0%	6.1	0%		
		SW Durham Dr NWB	L	118.8	166.3	F	F	58.8	0%	216.7	3%	1585.7	1409.6
			T	139.1	88.5	F	F	23.7	0%	15.5	0%		
			R	102.9	65.1	F	E	276.8	41%	232.9	22%		
		US 15-501 NEB	L	129.3	97.6	F	F	31.7	0%	10.8	0%	2073.9	1179.4
			T	104.0	117.4	F	F	435.0	2%	416.7	0%		
			R	99.7	114.1	F	F	74.7	0%	359.0	3%		
		Service Rd SEB	L	86.5	946.2	F	F	32.1	0%	888.8	62%	109.8	1289.2
			T	0.0	777.1	A	F	0.0	0%	163.7	8%		
			R	72.4	802.3	E	F	11.0	0%	74.8	2%		
6	Garrett Rd & US 15-501 EB Ramps		***Overall***	***21.8***	***34.7***	***C***	***C***						
		Garrett Rd SB	T	20.2	39.9	C	D	18.8	0%	32.5	0%	273.5	527.6
			TR	21.5	48.9	C	D	51.5	0%	211.9	1%		
		US 15-501 WB Off-ramp SWB	L	38.1	51.3	D	D	49.3	0%	69.1	0%	136.1	296.6
			R	25.3	26.7	C	C	16.6	0%	13.7	0%		
		0 NB	L	54.4	51.2	D	D	60.4	47%	65.2	52%	431.6	472.8
			T	0.3	0.6	A	A	0.5	0%	2.0	0%		
7	Garrett Rd & US 15-501 EB Ramps		***Overall***	***34.0***	***37.2***	***C***	***D***						
		0 SB	L	19.0	22.5	B	C	24.2	13%	20.8	11%	304.8	395.6
			T	5.0	7.3	A	A	10.5	2%	16.8	8%		
		Garrett Rd NB	T	73.9	73.7	E	E	119.3	0%	126.5	0%	354.8	540.8
			TR	34.9	56.0	C	E	92.3	0%	161.1	0%		
		US 15-501 EB Off-ramp NEB	L	38.1	42.8	D	D	34.0	0%	41.9	0%	225.7	216.2
			R	33.4	37.0	C	D	20.3	0%	31.3	0%		
			LR	38.9	43.6	D	D	38.2	0%	49.4	0%		
8	Mt. Moriah Rd & New Hope Commons / Indigo Corners		***Overall***	***46.2***	***169.7***	***D***	***F***						
		Mt. Moriah Rd SB	L	117.4	113.4	F	F	11.0	0%	8.1	0%	312.9	1028.7
			TR	25.7	775.3	C	F	68.9	0%	943.9	6%		
		Indigo Corners WB	L	84.3	122.8	F	F	33.6	0%	428.4	3%	149.9	556.7
			TR	90.8	95.1	F	F	10.1	0%	11.0	0%		
		Mt. Moriah Rd NB	L	74.8	72.0	E	E	66.7	0%	59.1	0%	268.2	401.5
			T	25.1	23.2	C	C	31.3	0%	82.0	0%		
			R	13.7	29.0	B	C	0.2	0%	0.2	0%		
		New Hope Commons EB	L	73.4	491.1	E	F	85.4	0%	127.9	0%	333.4	810.3
			TR	77.4	673.4	E	F	47.2	0%	498.1	8%		
12	SW Durham Dr & Witherspoon Blvd		***Overall***	***91.2***	***132.6***	***F***	***F***						
		Witherspoon Blvd SWB	L	67.6	342.6	E	F	1.6	0%	5.6	0%	76.2	138.0
			TR	95.4	149.6	F	F	14.0	0%	42.8	0%		
		SW Durham Dr NWB	L	97.4	202.7	F	F	40.6	0%	307.3	16%	1447.8	1217.6
			T	48.8	73.7	D	E	53.8	0%	102.9	3%		
			TR	133.5	75.0	F	E	296.3	40%	202.1	16%		
		Witherspoon Blvd NEB	L	433.7	348.7	F	F	272.9	6%	406.1	9%	884.5	1036.0
			TR	258.2	334.5	F	F	135.7	0%	344.3	3%		
		SW Durham Dr SEB	L	152.1	293.4	F	F	16.8	0%	7.0	0%	1279.4	3221.2
			T	42.0	151.7	D	F	107.6	2%	208.0	12%		
			TR	51.6	125.8	D	F	193.0	7%	280.5	13%		

Unsignalized Intersections[3]

Intersection No.	Intersection	Approach	Lane Group	Delay[1] (s) AM	Delay[1] (s) PM	Level of Service[2] AM	Level of Service[2] PM	95th Queue (ft)/Spillback Rate AM		95th Queue (ft)/Spillback Rate PM		Maximum Queue Length (ft) AM	Maximum Queue Length (ft) PM
9	Mt. Moriah Rd & New Hope Commons Dr	Mt. Moriah Rd SB	T	17.8	986.5	C	F	23.3	0%	235.8	9%	222.9	1431.3
			TR	9.9	91.4	A	F	2.1	0%	72.3	1%		
		New Hope Commons Blvd WB	R	8.5	42.0	A	E	0.4	0%	4.3	0%	11.0	36.3
		Mt. Moriah Rd NB	L	14.4	14.9	B	B	23.1	0%	20.9	0%	209.0	196.5
		New Hope Commons Dr NEB	L	0.0	830.9	A	F	0.0	0%	2.2	0%	316.0	317.3
			R	146.9	543.6	F	F	100.6	0%	152.3	0%		
10	Mt. Moriah Rd & Ladle Dr / McFarland Dr	Mt. Moriah Rd SB	L	126.3	1362.0	F	F	217.9	6%	360.3	34%	931.7	2015.2
		McFarland Dr WB	L	385.6	706.1	F	F	5.5	0%	88.8	0%	684.9	870.9
			TR	777.1	838.6	F	F	192.6	0%	173.8	0%		
		Mt. Moriah Rd NB	L	76.7	3.0	F	A	0.2	0%	0.2	0%	702.8	305.8
			T	148.6	9.9	F	A	284.1	18%	4.3	0%		
			TR	34.8	103.3	D	F	81.0	3%	238.9	8%		
		Ladle Dr EB	LTR	2068.3	2769.1	F	F	925.9	60%	1072.8	88%	1162.3	1123.8
11	Mt. Moriah Rd & Danziger Dr	Mt. Moriah Rd SB	L	4.9	21.3	A	C	1.7	0%	8.2	0%	33.7	85.5
		Danziger Dr WB	L	68.2	677.4	F	F	5.0	0%	18.7	0%	534.4	526.7
			R	85.4	937.9	F	F	167.3	0%	381.1	0%		
		Mt. Moriah Rd NB	TR	10.8	129.3	B	F	18.6	0%	427.9	5%	147.1	474.7
13	SW Durham Dr & Shopping Center	SW Durham Dr NWB	L	118.5	92.6	F	F	1.5	0%	1.7	0%	1297.6	2037.3
			T	130.0	112.3	F	F	298.7	0%	1677.6	6%		
		McFarland Dr NB	LR	208.8	824.1	F	F	62.7	0%	172.6	0%	178.8	429.9
		SW Durham Dr SEB	L	614.7	239.2	F	F	134.1	8%	315.9	28%	898.4	1427.5
			T	17.6	98.2	C	F	0.8	0%	0.0	0%		
			R	0.2	0.9	A	A	0.0	0%	0.0	0%		
14	Witherspoon Blvd & Watkins Rd	Witherspoon Blvd SB	T	107.7	82.1	F	F	23.8	6%	18.3	6%	147.5	431.5
		Witherspoon Blvd NB	T	276.5	247.5	F	F	319.7	4%	340.4	7%	827.5	1000.8
		Watkins Rd EB	R	78.0	442.7	F	F	146.5	0%	273.4	0%	411.8	1019.8
15	Witherspoon Blvd & McFarland Dr	Witherspoon Blvd SB	L	110.0	91.2	F	F	2.6	0%	9.9	0%	209.3	417.8
			TR	21.2	436.3	C	F	25.6	0%	190.6	0%		
		McFarland Dr WB	LTR	9.9	183.1	A	F	9.6	0%	133.5	0%	103.0	386.9
		Witherspoon Blvd NB	L	11.2	74.3	B	F	0.2	0%	10.5	0%	64.6	285.1
			TR	13.7	113.7	B	F	10.2	0%	120.3	5%		
		McFarland Dr EB	LTR	75.8	479.5	F	F	122.9	4%	422.7	29%	583.6	1350.3

Roundabouts

Intersection No.	Intersection	Approach	Lane Group	Delay[1] (s) AM	Delay[1] (s) PM	Level of Service[2] AM	Level of Service[2] PM	95th Queue (ft)/Spillback Rate AM		95th Queue (ft)/Spillback Rate PM		Maximum Queue Length (ft) AM	Maximum Queue Length (ft) PM
16	Danziger Dr & Witherspoon Blvd	Witherspoon Blvd SB	T	2.0	108.2	A	F	0.4	0%	149.0	0%	11.4	153.1
		Danziger Dr WB	R	0.3	75.2	A	F	0.1	0%	20.3	8%	2.6	123.6
		Danziger Dr EB	R	2.2	67.4	A	F	0.1	0%	57.1	0%	0.0	84.5

Notes:

1 Delay shown is the 95th percentile worst case control delay for the full 60-minute simulation period as derived from the 10 random seed simulations

2 Level of Service shown is Simulation based and calculated in a manner that is consistent with the HCM Methodologies

3 Results for unsignalized intersections include only the movements that have conflicting flow and thus have the potential to incur control delay

2050 Build Freeway MOEs

Order	Street Name	Analysis Type	Location	DENSITY 8:00-9:00	DENSITY 17:00-18:00	LOS 8:00-9:00	LOS 17:00-18:00
1	I-40 EB	Basic	Northwest of US 15-501	22.5	28.8	C	D
2	I-40 EB	Diverge	To US 15-501	23.9	30.0	C	D
3	I-40 EB	Basic	Within US 15-501 Interchange	16.7	22.2	B	C
4	I-40 EB	Merge	From US 15-501	18.0	32.6	B	D
5	I-40 EB	Basic	Southeast of US 15-501	23.1	33.4	C	D
6	I-40 WB	Basic	Southeast of US 15-501	91.8	83.8	F	F
7	I-40 WB	Diverge	To US 15-501	57.7	57.0	F	F
8	I-40 WB	Basic	Within US 15-501 Interchange	18.3	18.6	C	C
9	I-40 WB	Merge	From US 15-501	17.8	17.2	B	B
10	I-40 WB	Basic	Northwest of US 15-501	22.6	22.3	C	C

2050 Build Intersection MOEs

Signalized Intersections

Intersection No.	Intersection	Approach	Lane Group	Delay[1] (s) AM	Delay[1] (s) PM	Level of Service[2] AM	Level of Service[2] PM	95th Queue (ft)/Spillback Rate AM		95th Queue (ft)/Spillback Rate PM		Maximum Queue Length (ft) AM	Maximum Queue Length (ft) PM
1	US 15-501 & Eastowne Dr / Lakeview Dr		***Overall***	***33.3***	***50.4***	***C***	***D***						
		US 15-501 SWB	L	91.7	95.8	F	F	95.5	0%	61.5	0%	314.0	508.1
			T	6.5	31.5	A	C	16.2	0%	117.2	0%		
			TR	8.6	30.1	A	C	20.0	0%	80.7	0%		
		Lakeview Dr NWB	L	195.8	195.3	F	F	102.4	0%	59.1	0%	768.4	817.6
			TR	143.6	147.4	F	F	229.3	0%	224.8	0%		
			R	99.0	111.5	F	F	172.7	0%	210.8	0%		
		US 15-501 NEB	L	129.1	170.2	F	F	6.8	0%	3.6	0%	507.3	845.9
			T	29.2	44.7	C	D	84.3	0%	145.0	0%		
			TR	31.0	53.0	C	D	101.9	0%	163.5	0%		
		Eastowne Dr SEB	L	98.9	81.6	F	F	51.3	0%	92.8	0%	166.5	374.7
			TR	68.5	68.5	E	E	41.4	0%	79.4	0%		
2	US 15-501 & Connector Rd SB (R)		***Overall***	***8.2***	***3.3***	***A***	***A***						
		Connector Rd SB SWB	T	35.8	14.1	D	B	60.8	2%	14.2	0%	360.4	167.3
		US 15-501 WB	T	0.6	0.5	A	A	1.2	1%	2.2	3%	232.7	70.6
3	US 15-501 & Connector Rd SB/I-40 EB On-ramp		***Overall***	***56.6***	***46.2***	***E***	***D***						
		US 15-501 WB	T	73.0	63.7	E	E	266.0	17%	289.0	0%	1103.4	601.4
		US 15-501 NEB	T	40.9	37.6	D	D	125.9	1%	101.2	0%	899.0	919.4
4	US 15-501 & Connector Rd SB (L)		***Overall***	***12.6***	***12.9***	***B***	***B***						
		US 15-501 NEB	T	2.6	5.6	A	A	4.1	1%	9.3	1%	326.8	462.7
		Connector Rd SB SEB	L	39.2	33.7	D	C	93.3	0%	78.6	0%	533.2	336.4
5	US 15-501 & I-40 WB Off-ramp (L)		***Overall***	***24.5***	***5.9***	***C***	***A***						
		US 15-501 SWB	T	7.0	2.1	A	A	22.8	6%	2.4	0%	527.5	421.8
		I-40 WB Off-ramp NWB	L	99.8	24.0	F	C	164.7	0%	42.5	0%	557.8	161.3
6	US 15-501 & Connector Rd NB/I-40 WB Off-ramp		***Overall***	***61.1***	***63.2***	***E***	***E***						
		US 15-501 SWB	T	105.3	97.2	F	F	291.7	0%	268.4	0%	803.9	863.3
		US 15-501 EB	T	25.2	36.2	C	D	107.1	1%	176.0	0%	779.4	593.3
8	US 15-501 & S Durham Dr		***Overall***	***58.1***	***92.2***	***E***	***F***						
		US 15-501 Off-ramp SWB	T	66.8	98.0	E	F	209.9	0%	334.1	4%	781.5	1709.6
			R	85.5	202.6	F	F	228.4	0%	479.2	0%		
		SW Durham Dr NWB	L	32.7	40.9	C	D	21.7	64%	22.9	67%	238.1	252.9
			T	72.8	52.4	E	D	11.6	45%	24.7	77%		
		US 15-501 EB Off-ramp NEB	T	78.8	79.0	E	E	112.1	0%	132.3	0%	475.8	1109.6
			R	75.7	181.4	E	F	197.2	0%	579.5	11%		
		SW Durham Dr Ext SEB	L	11.5	11.4	B	B	14.1	71%	15.3	77%	308.2	943.8
			T	25.0	66.3	C	E	1.7	21%	23.7	77%		
10	Garrett Rd & US 15-501 WB Ramps		***Overall***	***21.1***	***41.9***	***C***	***D***						
		Garrett Rd SB	T	18.6	23.2	B	C	13.9	0%	30.0	0%	266.2	366.8
			TR	20.2	27.4	C	C	37.6	0%	87.1	0%		
		US 15-501 WB Off-ramp SWB	L	39.1	130.1	D	F	48.2	0%	250.5	0%	137.7	588.1
			R	25.7	25.6	C	C	15.7	0%	22.3	0%		
		Garrett Rd NB	L	53.3	55.2	D	E	42.4	37%	66.9	56%	414.7	521.3
			T	0.4	0.7	A	A	0.9	0%	1.9	0%		
11	Garrett Rd & US 15-501 EB Ramps		***Overall***	***32.0***	***42.6***	***C***	***D***						
		Garrett Rd SB	L	19.0	17.4	B	B	5.9	3%	17.0	9%	270.5	621.9
			T	6.0	10.8	A	B	12.6	3%	31.8	24%		
		Garrett Rd NB	T	65.1	76.1	E	E	78.9	0%	131.8	0%	335.6	583.2
			TR	34.3	74.4	C	E	74.0	0%	200.7	0%		
		US 15-501 EB Off-ramp NEB	L	37.3	48.5	D	D	48.9	0%	75.3	0%	215.7	289.6
			R	31.8	50.0	C	D	32.8	0%	72.5	0%		
			LR	38.6	56.1	D	E	58.8	0%	89.0	0%		
13	Mt. Moriah Rd & New Hope Commons / Indigo Corners		***Overall***	***39.4***	***26.1***	***D***	***C***						
		Mt. Moriah Rd SB	L	102.8	80.8	F	F	46.2	1%	24.6	0%	250.4	271.3
			TR	13.9	13.8	B	B	28.4	0%	36.6	0%		
		Indigo Corners SWB	L	87.1	0.0	F	A	29.1	0%	0.0	0%	165.0	26.7
			T	74.4	122.0	E	F	3.3	0%	2.1	0%		
			R	106.2	0.0	F	A	1.1	0%	0.0	0%		
		Mt. Moriah Rd NB	L	50.1	59.6	D	E	6.4	0%	28.6	0%	654.1	255.4
			T	21.4	13.4	C	B	10.7	0%	43.3	0%		
			R	64.6	45.2	E	D	97.5	5%	1.0	0%		
		New Hope Commons NEB	L	50.5	57.1	D	E	68.2	0%	87.6	0%	166.3	274.7
			TR	78.2	56.2	E	E	45.5	0%	42.2	0%		
14	Mt. Moriah Rd & New Hope Commons Dr		***Overall***	***41.5***	***33.7***	***D***	***C***						
		Mt. Moriah Rd SB	L	44.6	131.6	D	F	0.8	0%	2.5	0%	145.6	215.5
			T	17.7	29.6	B	C	4.0	0%	8.9	0%		
			TR	27.0	31.5	C	C	24.0	0%	32.6	0%		
		New Hope Commons Blvd SWB	L	110.9	141.2	F	F	0.8	0%	2.5	0%	62.1	112.3
			TR	65.2	57.7	E	E	13.4	0%	17.3	0%		
		Mt. Moriah Rd NB	L	56.7	73.5	E	E	81.6	0%	136.7	0%	466.6	411.7
			T	45.2	10.7	D	B	55.4	0%	28.3	0%		
			R	24.3	18.9	C	B	0.2	0%	1.1	0%		
		New Hope Commons Dr NEB	L	57.1	68.3	E	E	12.7	0%	66.1	0%	157.2	429.1
			T	35.9	42.9	D	D	19.3	0%	38.3	0%		
			R	45.8	26.3	D	C	34.6	0%	53.5	0%		
15	Mt. Moriah Rd & Ladle Dr / McFarland Dr		***Overall***	***42.7***	***96.9***	***D***	***F***						
		Mt. Moriah Rd SB	L	62.5	205.6	E	F	48.5	0%	284.9	0%	172.9	588.6
			T	17.0	36.7	B	D	9.5	0%	52.4	0%		
			TR	16.7	40.0	B	D	3.1	0%	24.9	0%		
		McFarland Dr WB	L	54.4	69.3	D	E	8.4	0%	20.2	0%	586.5	868.6
			TR	55.2	102.3	E	F	115.7	0%	129.9	0%		
		Mt. Moriah Rd NB	L	94.8	97.1	F	F	3.1	0%	5.3	0%	150.7	561.8
			T	31.3	71.4	C	E	28.0	0%	151.3	0%		
			TR	31.5	290.3	C	F	29.6	0%	276.3	0%		
		Ladle Dr EB	LTR	65.1	119.8	E	F	48.6	0%	150.5	0%	196.7	402.3
19	SW Durham Dr & Witherspoon Blvd		***Overall***	***17.6***	***40.7***	***B***	***D***						
		Witherspoon Blvd SWB	L	114.6	139.0	F	F	3.3	0%	3.2	0%	57.0	91.8
			R	100.9	109.7	F	F	13.2	0%	23.7	0%		
		SW Durham Dr NWB	T	13.2	26.0	B	C	11.2	0%	30.5	0%	248.9	404.6
			TR	13.1	26.9	B	C	33.1	0%	73.8	0%		
		Witherspoon Blvd NEB	L	72.2	161.3	E	F	156.6	0%	302.5	0%	488.3	732.4
			R	98.5	219.7	F	F	1.6	0%	3.2	0%		
		SW Durham Dr SEB	T	10.0	20.2	A	C	23.3	0%	69.4	1%	188.6	351.4
			TR	9.0	15.5	A	B	25.0	0%	39.6	0%		
			R	2.2	9.3	A	A	4.2	0%	30.6	1%		
22	Witherspoon Blvd & McFarland Dr		***Overall***	***33.3***	***51.5***	***C***	***D***						
		Witherspoon Blvd SB	L	80.2	83.9	F	F	13.9	0%	71.0	0%	266.5	339.2
			TR	8.6	18.9	A	B	26.2	0%	50.5	0%		
		McFarland Dr WB	LTR	73.7	117.4	E	F	72.3	0%	121.3	0%	247.3	363.8
		Witherspoon Blvd NB	L	81.3	130.9	F	F	1.3	0%	26.4	0%	139.2	233.1
			TR	15.1	33.2	B	C	15.3	0%	54.3	0%		
		McFarland Dr EB	L	76.0	82.2	E	F	57.5	0%	50.5	0%	335.8	249.0
			LTR	80.7	88.5	F	F	65.4	0%	70.8	0%		

Unsignalized Intersections[3]

Intersection No.	Intersection	Approach	Lane Group	Delay[1] (s) AM	Delay[1] (s) PM	Level of Service[2] AM	Level of Service[2] PM	95th Queue (ft)/Spillback Rate AM		95th Queue (ft)/Spillback Rate PM		Maximum Queue Length (ft) AM	Maximum Queue Length (ft) PM
16	Mt. Moriah Rd & Danziger Dr	Mt. Moriah Rd SB	L	5.8	19.2	A	C	0.3	0%	5.9	0%	9.0	78.7
		Danziger Dr WB	L	9.9	42.5	A	E	5.3	0%	19.0	0%	71.9	106.6
			R	6.0	12.3	A	B	1.0	0%	3.4	0%		
17	SW Durham Dr Ext & Indigo Corners	Indigo Corners Leftover SWB	LT	1.1	26.7	A	D	0.2	0%	75.4	11%	4.3	784.5
		Indigo Corners NEB	R	65.2	78.9	F	F	85.6	0%	62.8	0%	307.3	213.0
		SW Durham Dr Ext SEB	T	0.1	24.9	A	C	0.1	0%	53.4	2%	0.0	386.8
18	SW Durham Dr Ext & Service Rd	Service Rd SWB	R	9.7	284.2	A	F	4.0	0%	617.8	7%	47.4	1359.0
		SW Durham Dr Ext NWB	T	0.0	4.8	A	A	0.0	0%	24.9	1%	0.0	169.1
			R	0.1	0.7	A	A	0.0	0%	0.0	0%		
20	SW Durham Dr & Shopping Center	SW Durham Dr NWB	L	11.7	17.9	B	C	4.3	0%	3.5	0%	65.8	60.9
		McFarland Dr NB	LR	60.1	98.3	F	F	37.6	0%	52.3	0%	152.4	214.7
		SW Durham Dr SEB	L	4.4	5.0	A	A	0.3	0%	0.4	0%	1.6	3.5
21	Witherspoon Blvd & Watkins Rd	Witherspoon Blvd SWB	TR	0.0	2.0	A	A	0.0	0%	11.5	4%	0.0	305.9
		Watkins Rd EB	R	16.5	180.9	C	F	9.4	0%	164.2	0%	83.5	533.5
25	Eastowne Dr & New Hope Commons Dr Ext	New Hope Commons Dr Ext SWB	L	10.3	16.0	B	C	5.0	0%	12.9	0%	102.5	112.5
			R	7.8	6.1	A	A	8.9	0%	2.5	0%		
		Eastowne Dr NWB	R	0.0	0.0	A	A	0.0	0%	0.0	0%	0.0	0.0
		Eastowne Dr SEB	L	4.3	2.4	A	A	0.9	0%	0.7	0%	5.3	46.7

Roundabouts

Intersection No.	Intersection	Approach	Lane Group	Delay[1] (s) AM	Delay[1] (s) PM	Level of Service[2] AM	Level of Service[2] PM	95th Queue (ft)/Spillback Rate AM		95th Queue (ft)/Spillback Rate PM		Maximum Queue Length (ft) AM	Maximum Queue Length (ft) PM
12	Mt. Moriah Rd & SW Durham Dr Ext	SW Durham Dr Ext NWB	T	3.4	5.6	A	A	12.0	0%	43.1	0%	99.3	328.9
		Mt. Moriah Rd NEB	T	8.5	9.9	A	A	9.3	0%	8.3	0%	115.6	191.3
		Mt. Moriah Rd SEB	T	10.7	4.3	B	A	17.2	0%	3.2	0%	134.4	75.6
23	Danziger Dr & Witherspoon Blvd	Witherspoon Blvd SB	T	1.9	2.0	A	A	0.3	0%	0.2	0%	5.3	0.0
		Danziger Dr WB	R	0.9	0.9	A	A	0.1	0%	0.4	0%	7.1	5.0
		Danziger Dr EB	R	2.5	2.4	A	A	0.8	0%	0.1	0%	5.1	0.0
24	New Hope Commons Dr Ext & I-40 Ramps/Connector Rds	I-40 EB Off-ramp SB	T	25.0	13.5	C	B	62.7	0%	34.7	0%	505.3	367.6
		New Hope Commons Dr NWB	T	6.8	6.7	A	A	8.9	0%	7.6	0%	128.4	126.1
		Connector Rd NB NB	T	5.2	9.6	A	A	6.2	0%	15.0	0%	125.2	170.7
		New Hope Commons Dr Ext EB	T	10.7	17.5	B	C	3.3	0%	16.9	0%	54.2	121.1

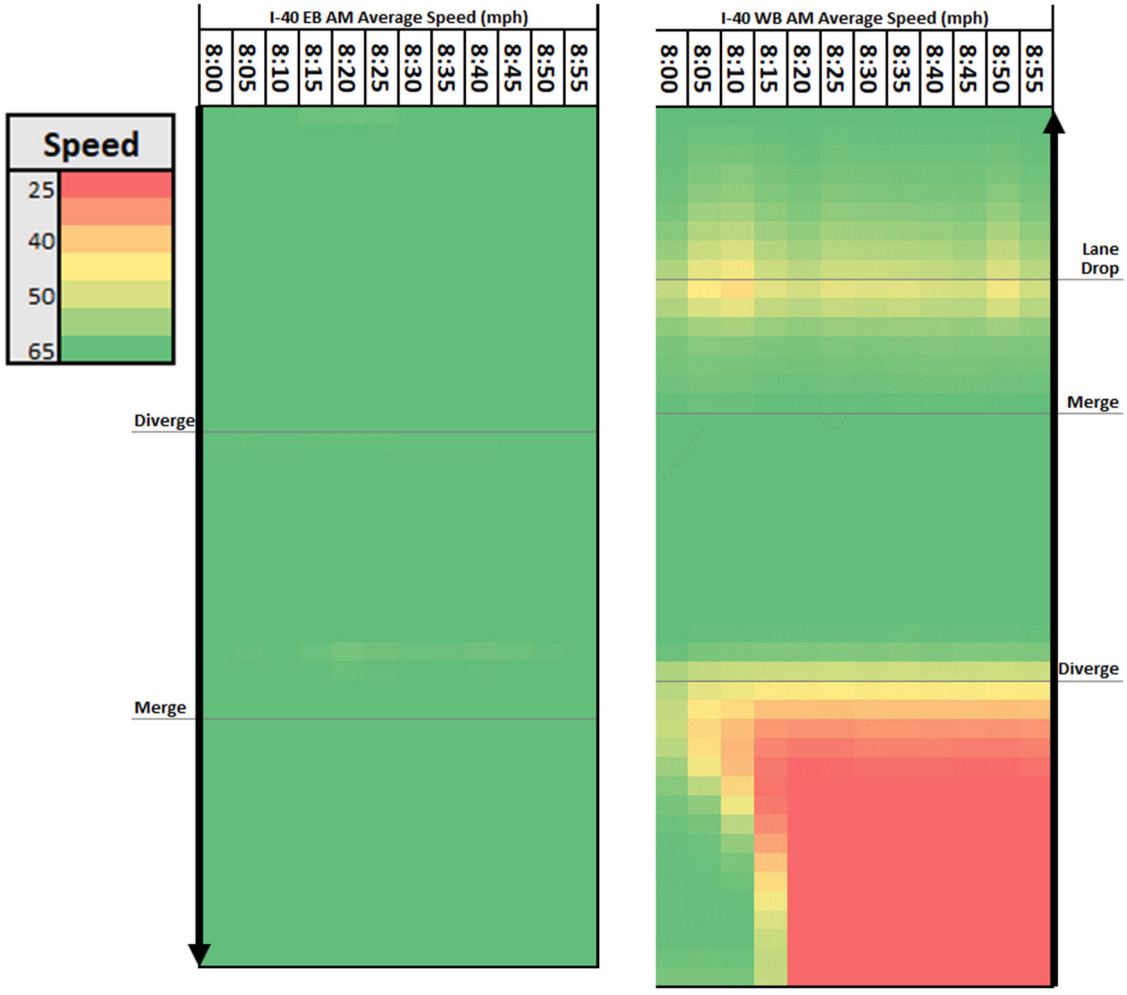
Notes:

1 Delay shown is the 95th percentile worst case control delay for the full 60-minute simulation period as derived from the 10 random seed simulations

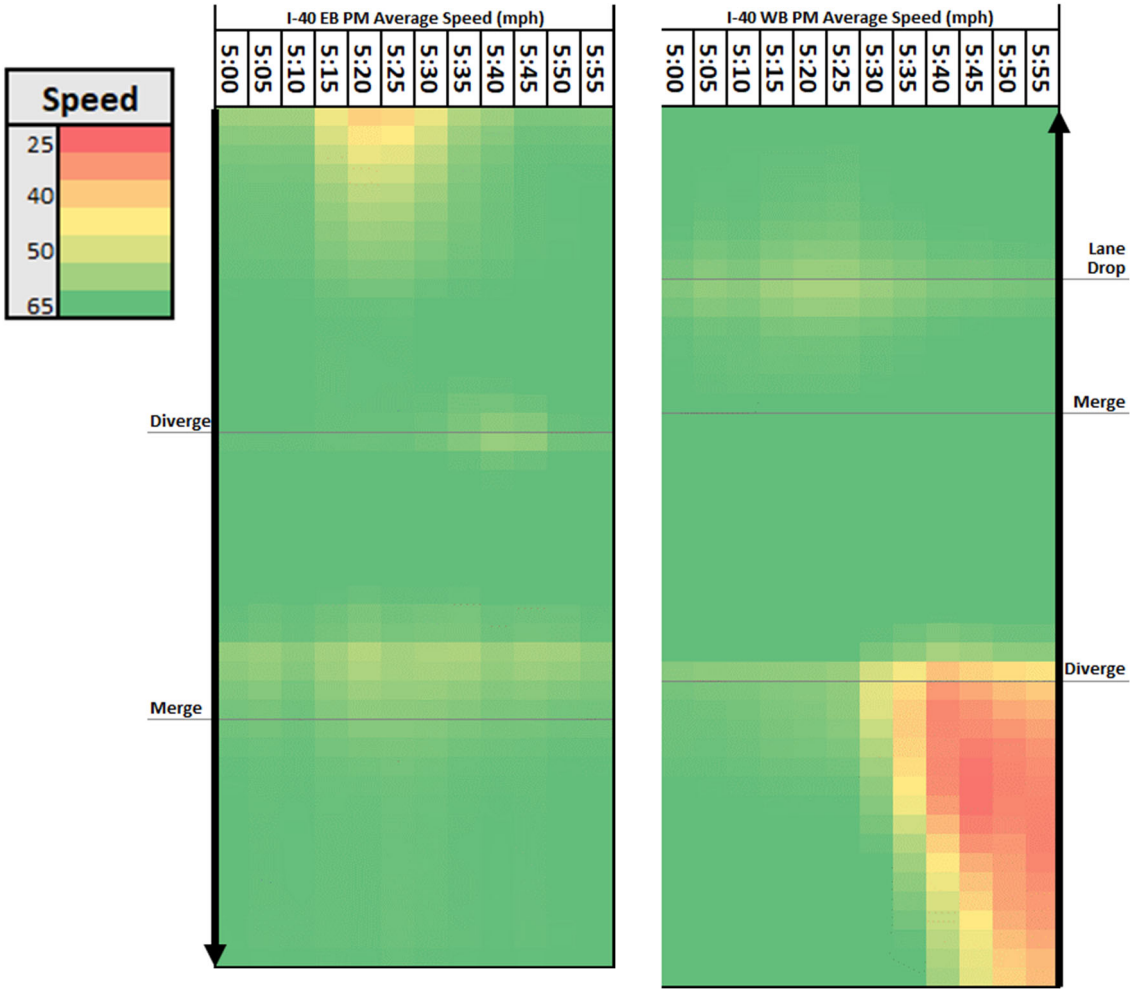
2 Level of Service shown is Simulation based and calculated in a manner that is consistent with the HCM Methodologies

3 Results for unsignalized intersections include only the movements that have conflicting flow and thus have the potential to incur control delay

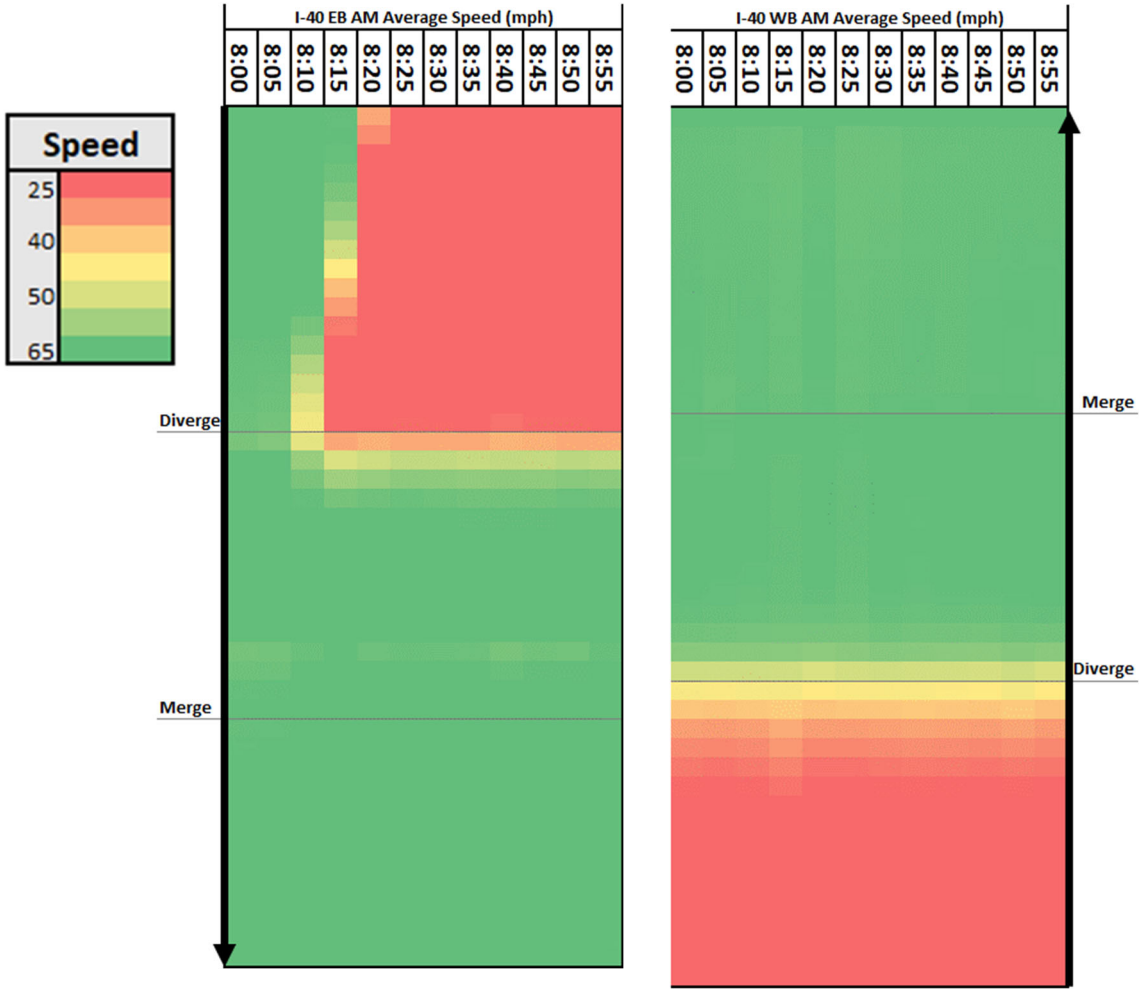
2019 No-Build I-40 AM Freeway Speeds



2019 No-Build I-40 PM Freeway Speeds



2050 No-Build I-40 AM Freeway Speeds



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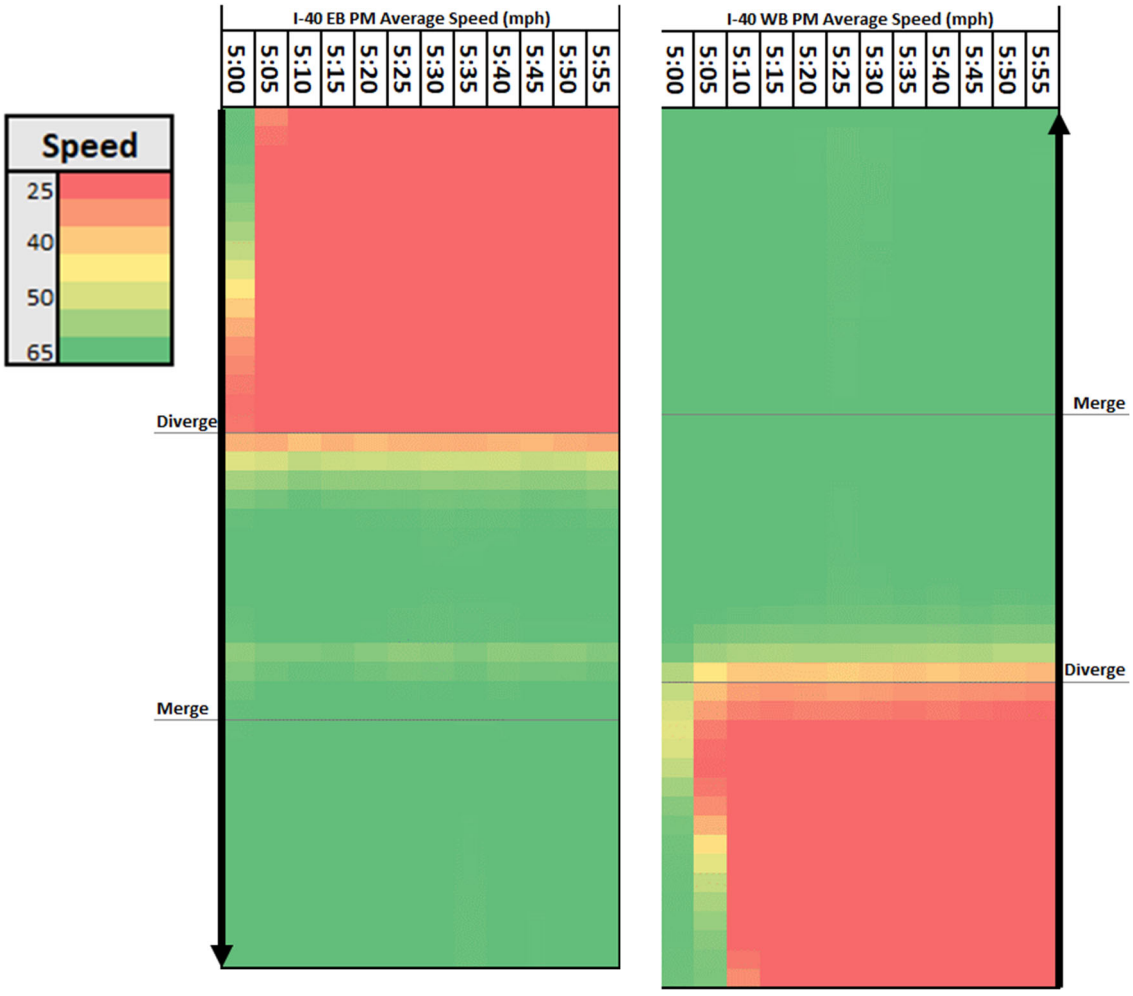
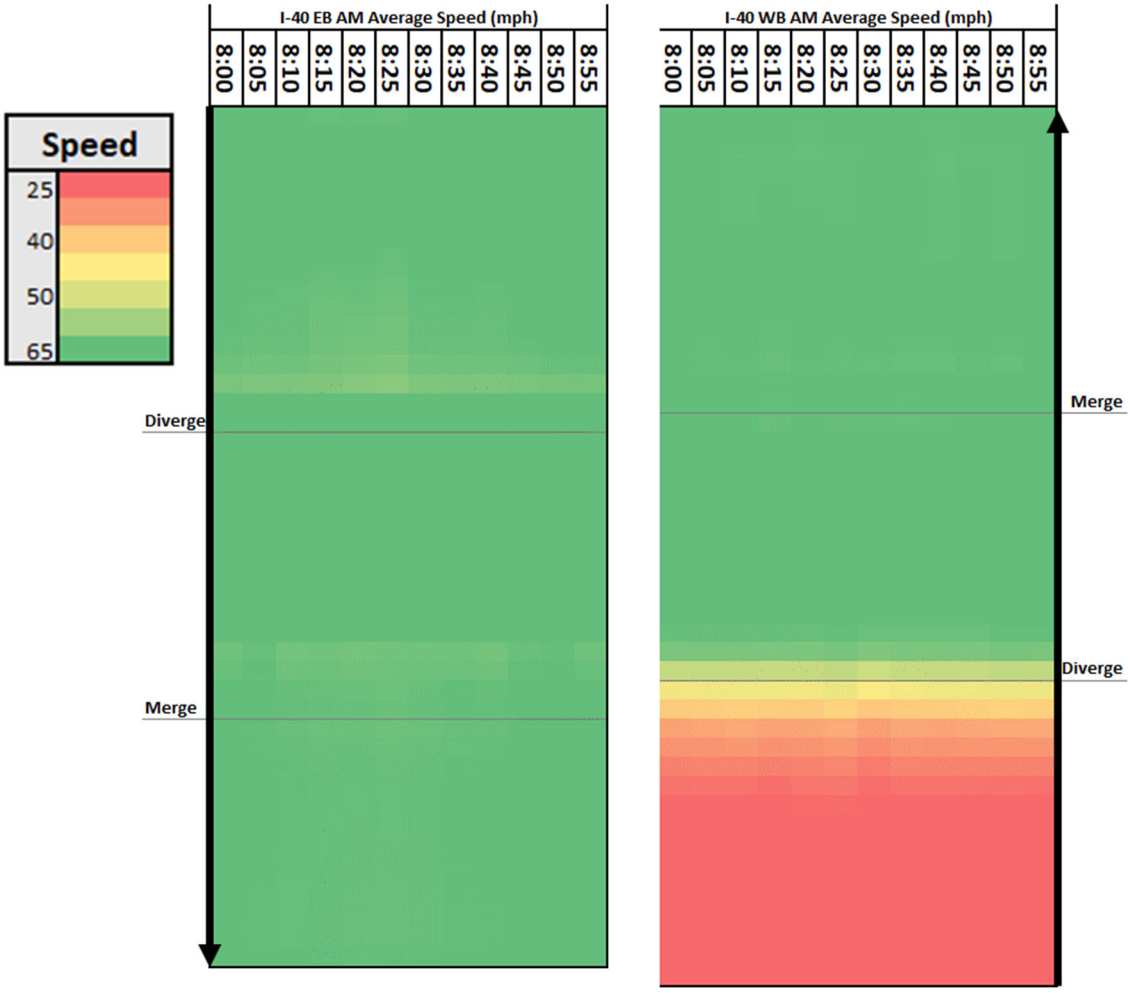


2050 Build I-40 AM Freeway Speeds



2050 Build I-40 PM Freeway Speeds