



Research Triangle Logistics Park Traffic Impact Summary

Orange County Planning Board
August 19, 2020

The Stantec Team



Christa Greene, PE
BSCE NCSU 1990
MCE NCSU 1998

Project Manager



Matt Peach, PE, PTOE
BSCE Penn State 2007
MCE NCSU 2011

Project Engineer



Maggie Rogers
BSCE NCSU 2018

Transportation Designer

Main Points From Last Meeting

(8-5-2020)

TRAFFIC



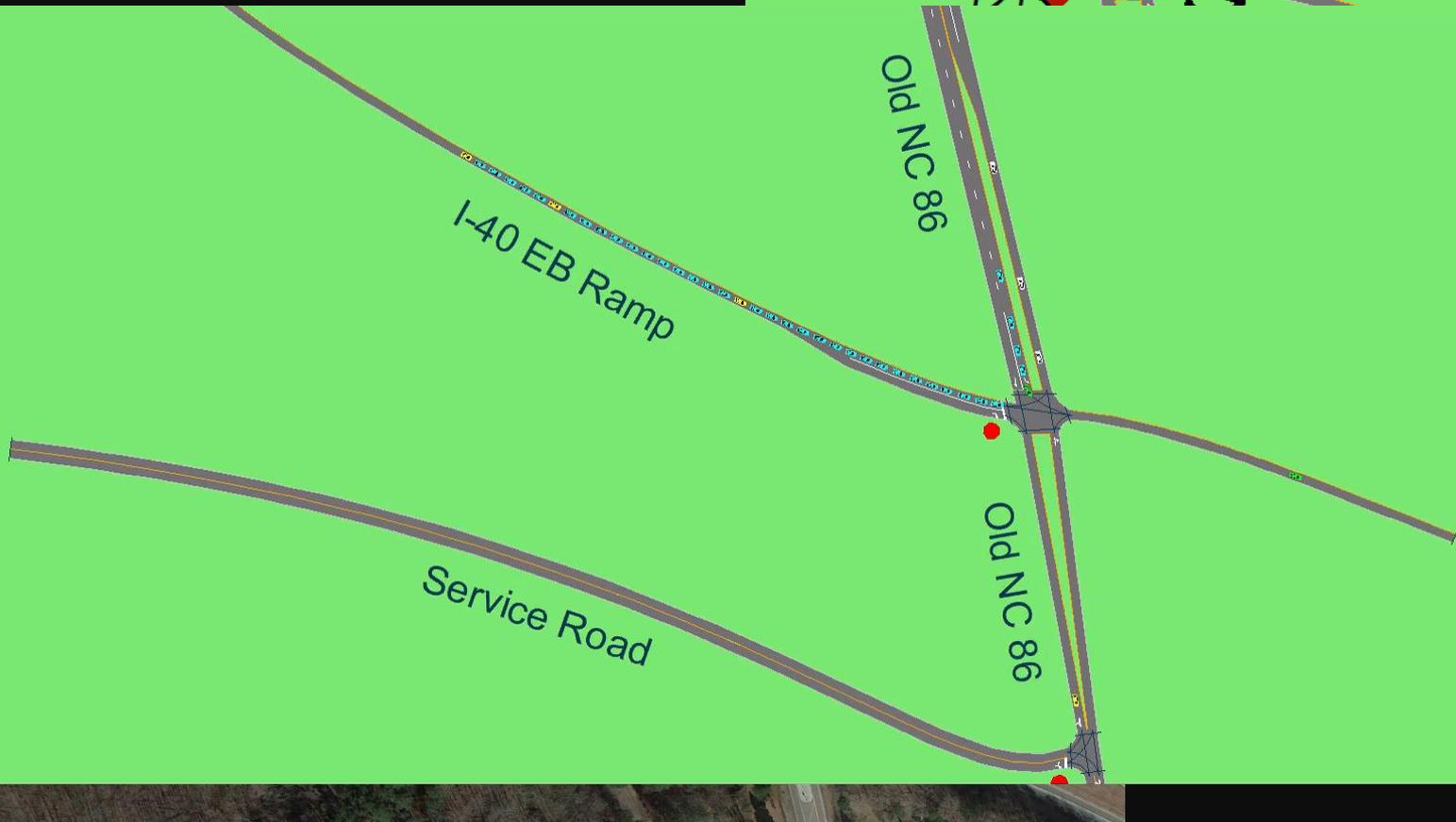
Current Issues on I-40 EB Ramp

Where will Truck Traffic Go?

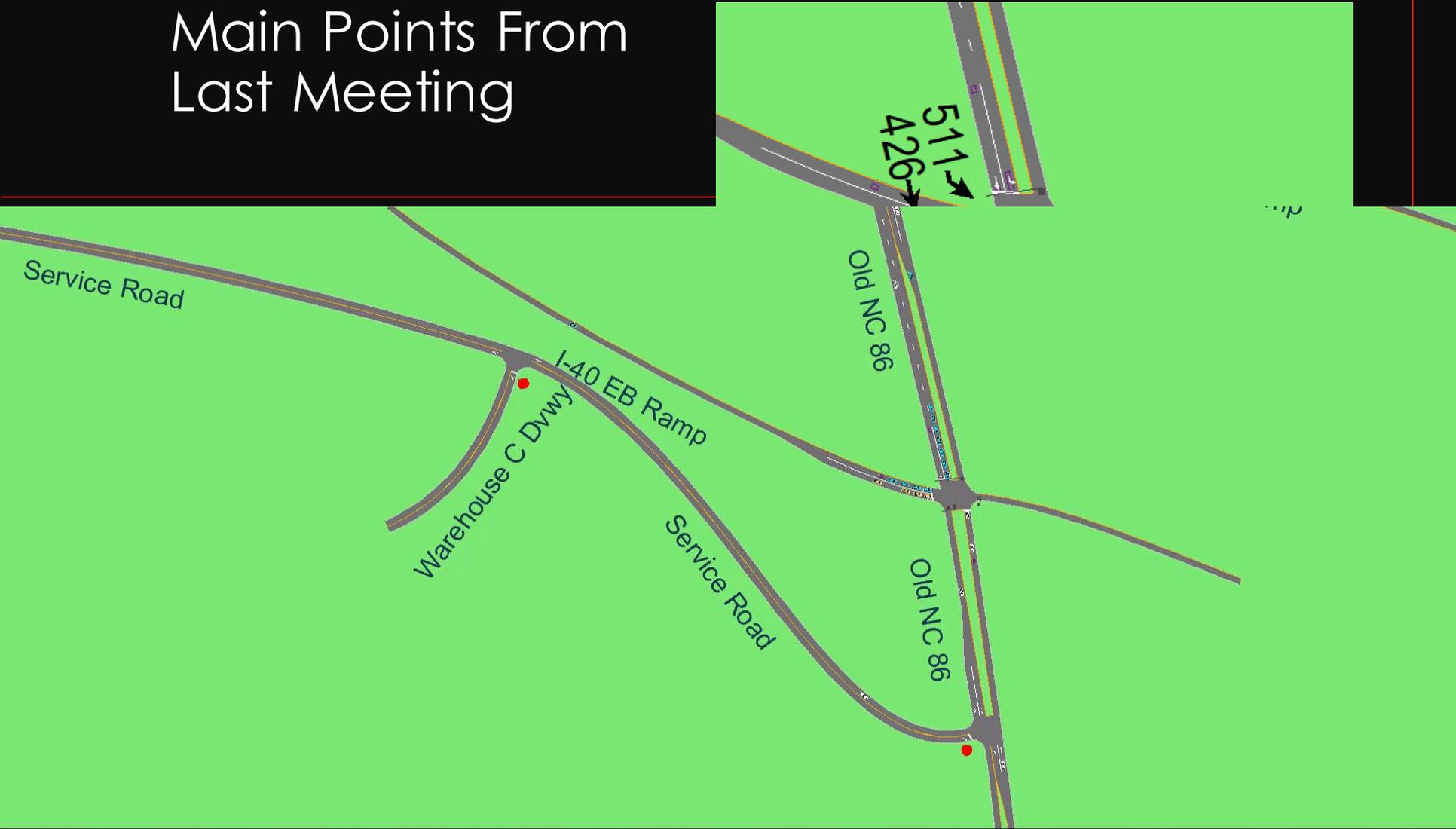
Traffic Generated By Site

Traffic on Davis Road

Main Points From Last Meeting



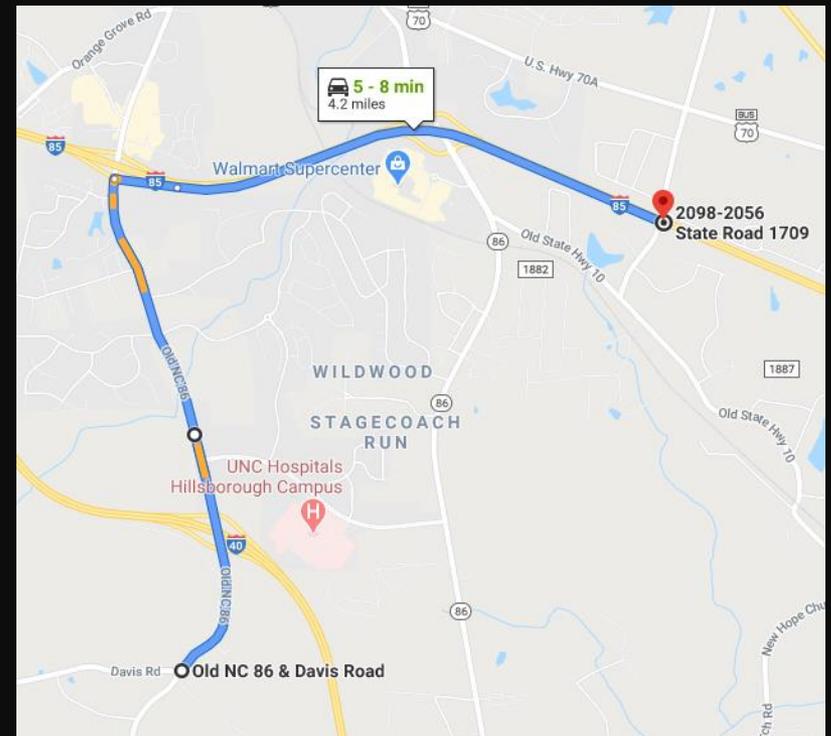
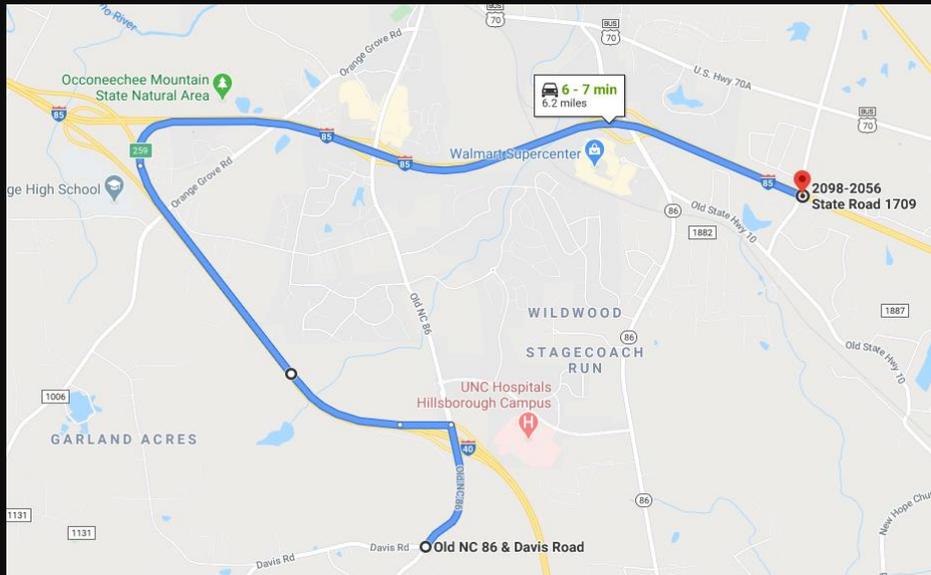
Main Points From Last Meeting



How will Trucks Access I-85 North?

- Churton Street to I-85 North (PM Peak Hr)

- 5 Traffic Signals
- 2 – 3 Lane Road
- Numerous Sidestreets / Driveways
- Speed Limit 45 mph



- I-40 to I-85 North (PM Peak Hr)

- 0 Traffic Signals = 0 Stops
- 4 - Lane Divided Freeway
- 0 Sidestreets / Driveways
- Speed limit 65 mph

Trip Generation

- **ITE Trip Generation Manual, Version 10**

Land Use	Size (SF)	Daily Trips	AM Peak Hour Trips			PM Peak Hour Trips		
			Total	Enter	Exit	Total	Enter	Exit
Warehouse (LUC 150)	2,251,200	3,648	320	247	73	326	88	238

181.5 Acres

Equivalent Land Uses:



1.5 Fast Food Restaurants (8k sf fast food)

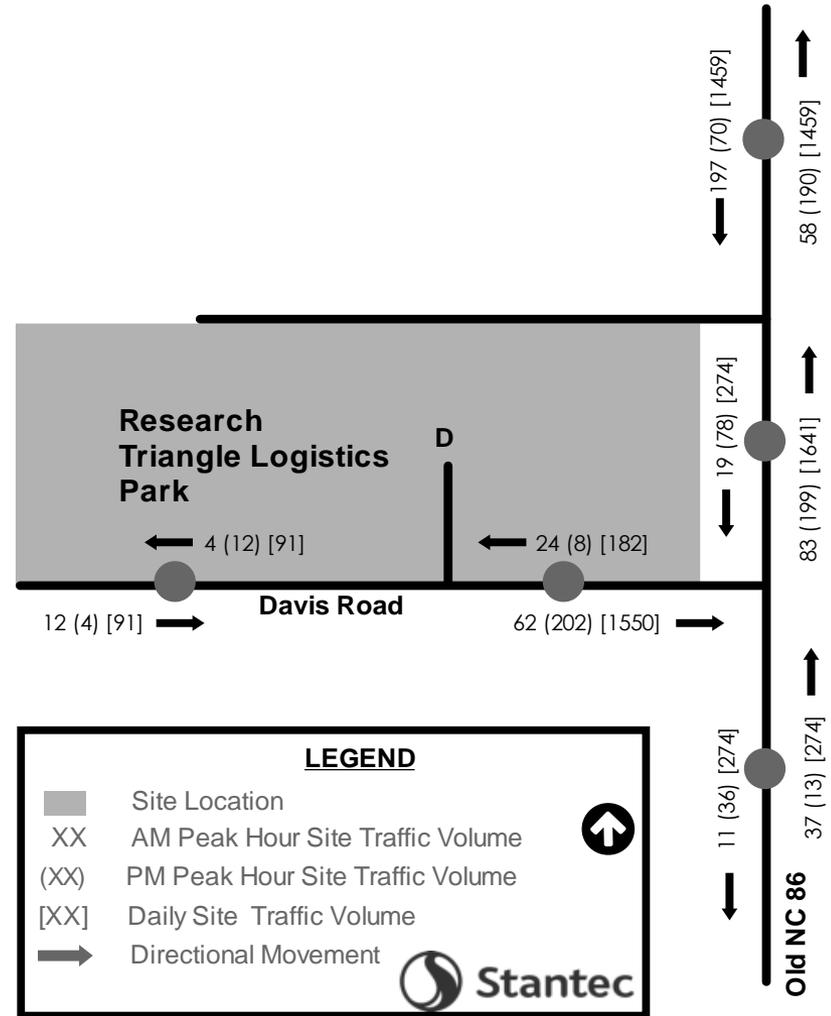
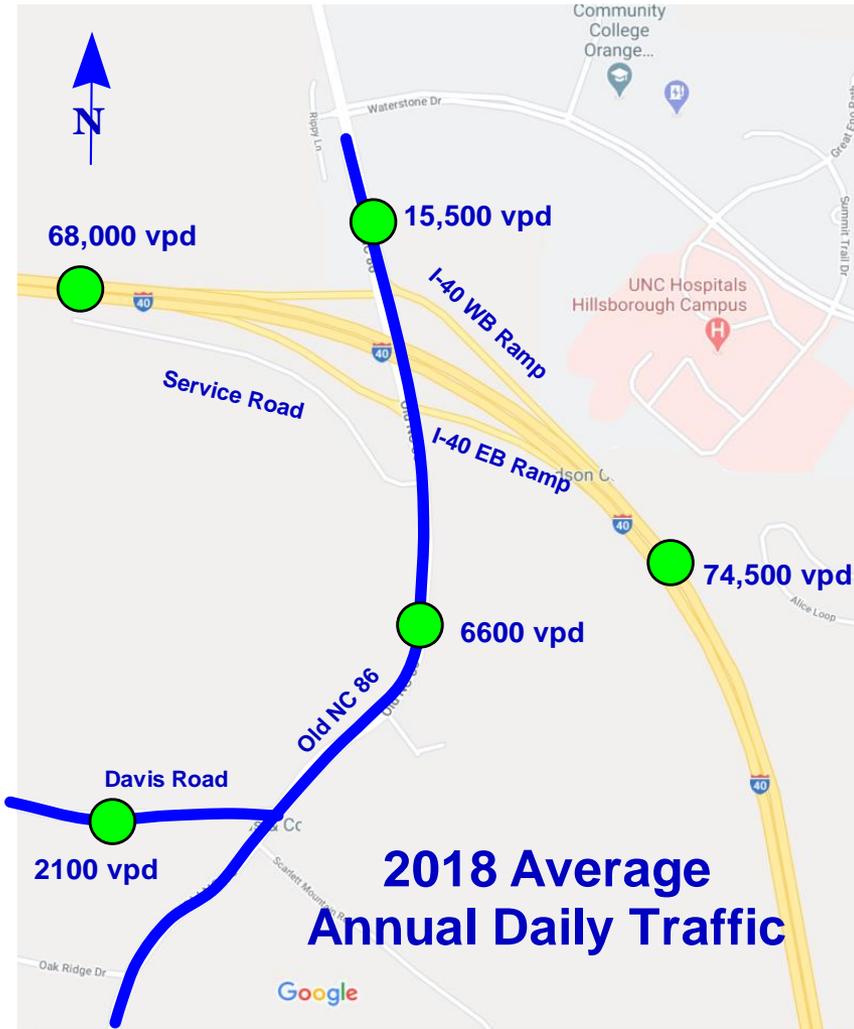


70% of one Lowe's Foods (35K sf grocery store)



25% of one Super Walmart (48k SF of retail)

Traffic Volumes

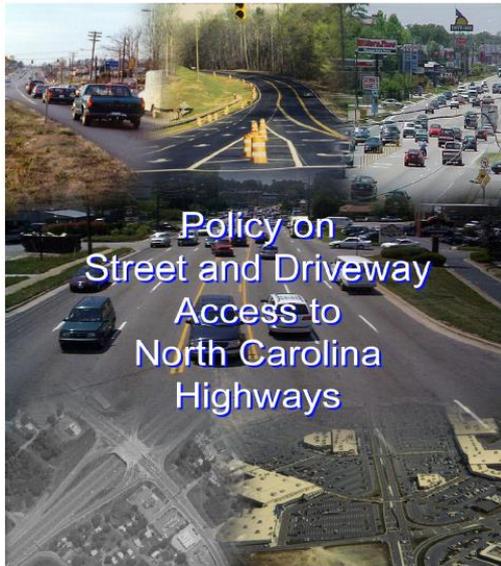


Traffic Impact Study

- Required by NCDOT and Orange County based on Trip Generation
- “A specialized study that evaluates the effects of a development’s traffic on the surrounding transportation infrastructure.”
- Prepared by a Professional Engineer that is Prequalified with NCDOT
- Conservative Guidelines: Development and Background Peak Hours Combined, No Right Turn on Red, Protected Only Left Turns
- Initial Conversations for RTLP Started in February 2020



North Carolina Department of Transportation
July 2003

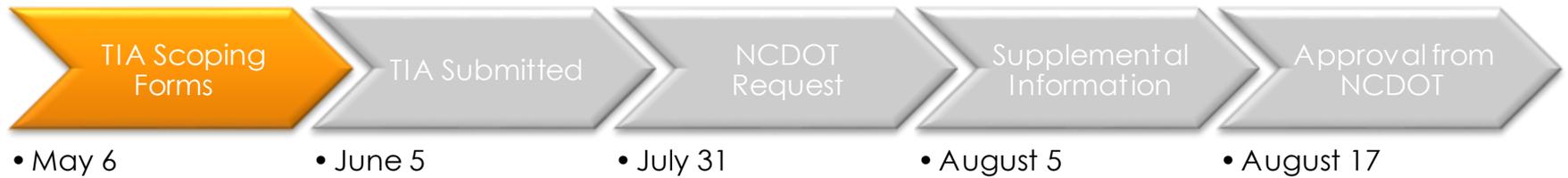


NCDOT Congestion Management Capacity Analysis Guidelines

TIA Timeline



TIA Timeline



The TIA Process

- **Scoping Forms**

- Study Area
- Trip Generation
- Trip Distribution
- Build Out Year
- Access
- Analysis Periods
- Approved Developments
- Background Growth

- **Congestion Management Guidelines**


NCDOT Traffic Impact Analysis Need Screening / Scoping Request


TIA Need Screening
TIA Scoping
TIA Submittal

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

Project Name: Hillsborough Industrial Site **Previous Name: # Applicable** Settler's Pointe TIA
Location: Hillsborough, NC **County:** Orange **Municipality:** Hillsborough
Project Description: A.K.A. Research Triangle Logistics Park
Greensfield development consisting of four warehouse buildings on one site

Project Contact:	Applicant	TIA Consultant
Company Name	<u>Barrister Commercial Group</u>	<u>Stattec</u>
Contact Person	<u>Frank Cuspo</u>	<u>Matt Peach, PE, PTOE</u>
Phone Number	<u>502-412-2800</u>	<u>919-865-7375</u>
Email	<u>FCuspo@barristercg.com</u>	<u>matt.peach@stattec.com</u>
Mailing Address	<u>3810 Springhurst Boulevard, Suite 120</u> <u>Louisville, Kentucky 40241</u>	<u>801 Jones Franklin Road, Suite 300</u> <u>Raleigh, NC 27606</u>

Site Plan Prepared By: Kimley-Horn & Associates **Site Plan Date:** 4/28/2020
See site plan/vicinity map requirements on page 2.
Parcel Size: 181.5 Acre(s) **Anticipated Build-Out Year:** 2023

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

ITE LUC	Proposed Land Use	Size	Unit	Daily Trips	Peak Hour Type	AM Peak Hour Trips			PM Peak Hour Trips			Data Source
						Enter	Exit	Total	Enter	Exit	Total	
150	Warehouse	2251200	sf	3648	Adj. Street	247	73	320	88	238	326	ITE Equation
Total		2251200	sf	3648		247	73	320	88	238	326	

Refer to the current [NCDOT Congestion Management Capacity Analysis Guidelines](#) for acceptable trip calculation methods and data sources.
 **Explain local or other data sources, if used:

The estimated site trips meet NCDOT's TIA trip threshold of 3,000 daily trips.
 The estimated site trips meet the municipal TIA trip threshold of 800 trips per day
 This project is located in a known STIP and/ or local CIP project # _____
 This project includes a rezoning request.

Effective Date: 10/01/2017 (Version 17-721) Page 1 of 2

Study Area

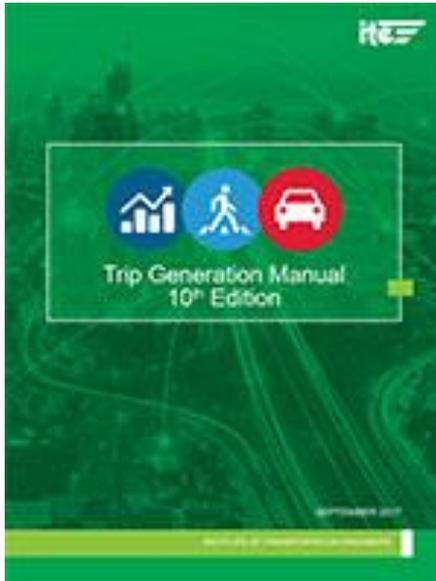


Trip Generation

• ITE Trip Generation Manual, Version 10

Land Use	Size (SF)	Daily Trips	AM Peak Hour Trips			PM Peak Hour Trips		
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Warehouse (LUC 150)	2,251,200	3,648	320	247	73	326	88	238

181.5 Acres



NCDOT Congestion Management Rate vs Equation Spreadsheet Per ITE Trip Generation Manual (10th Edition) - Effective July 1, 2018

Page 1 of 2

Port and Terminal Category

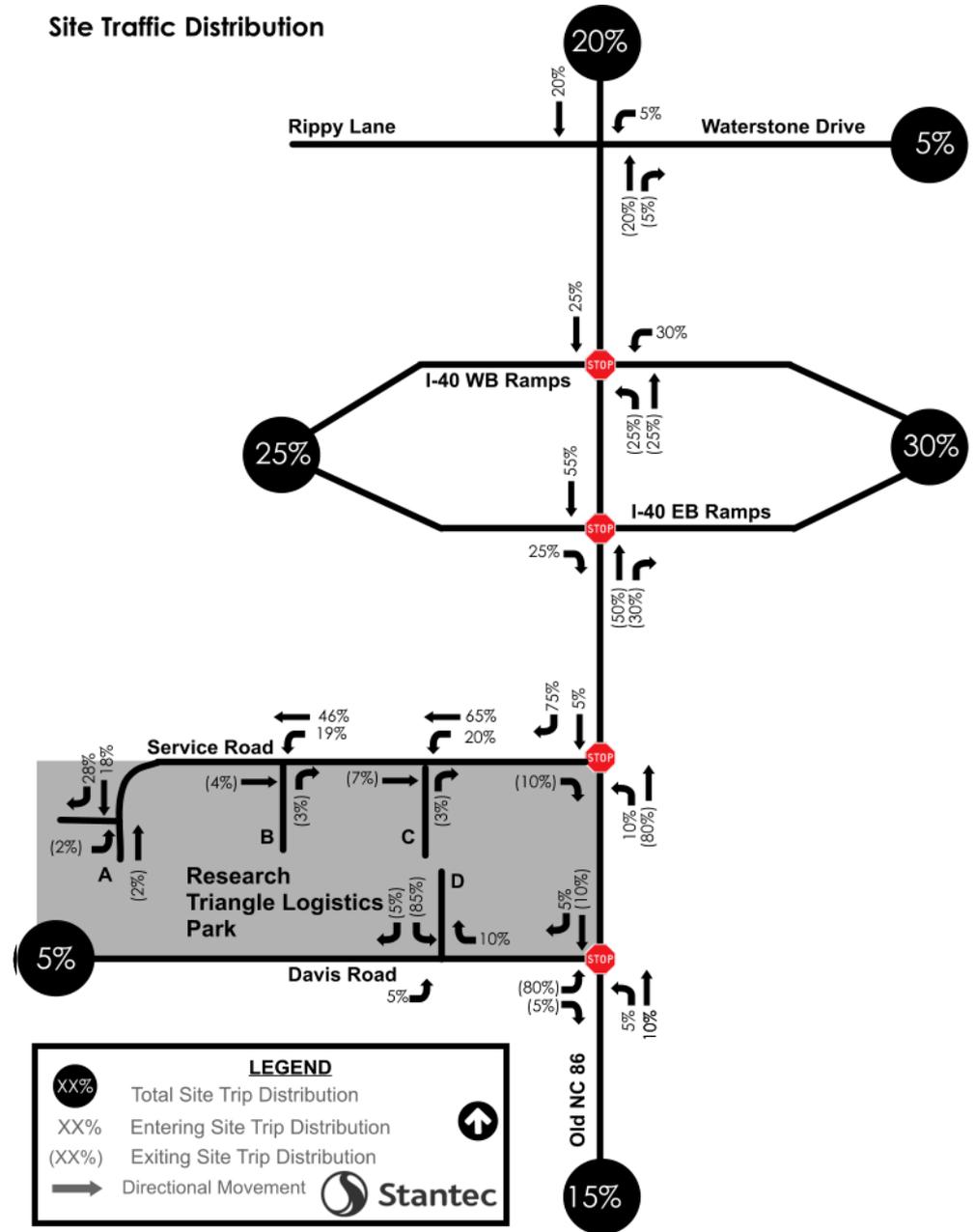
LUC	DESCRIPTION	IND VARIABLE	PK HR TYPE	SUGGESTED METHOD			% PASS-BY	
				RATE	EQN	LOCAL DATA	AM	PM
1 021	Commercial Airport	Employees	Adjacent			X	-	-
2 022	General Aviation Airport	Employees	Generator			X	-	-
3 030	Intermodal Truck Terminal	1000 GFA	Generator			X	-	-
4 090	Park-and-Ride Lot with Bus or Light Rail Service [Data Range: 0-2000]	Parking Spaces	Adjacent		X		-	-

Industrial Category

LUC	DESCRIPTION	IND VARIABLE	PK HR TYPE	SUGGESTED METHOD			% PASS-BY	
				RATE	EQN	LOCAL DATA	AM	PM
1 110	General Light Industrial [Data Range: 0-300]	1000 GFA	Adjacent		X		-	-
2 130	Industrial Park	1000 GFA	Adjacent			X	-	-
3 140	Manufacturing [Data Range: 0-500]	1000 GFA	Generator		X		-	-
4 150	Warehousing [Data Range: 0-2000]	1000 GFA	Adjacent		X		-	-
5 151	Mini-Warehouse	1000 GFA	Adjacent	X*			-	-
6 154	High-Cube Transload and Short-Term Storage Warehouse	1000 GFA	Adjacent	X*			-	-
7 155	High-Cube Fulfillment Center Warehouse	1000 GFA	Adjacent			X	-	-
8 156	High-Cube Parcel Hub Warehouse	1000 GFA	Adjacent			X	-	-
9 157	High-Cube Cold Storage Warehouse [Data Range: 250-1050]	1000 GFA	Adjacent		X~		-	-
10 160	Data Center	1000 GFA	Adjacent	X*			-	-
11 170	Utility	1000 GFA	Adjacent	X*			-	-
12 180	Specialty Trade Contractor	1000 GFA	Adjacent			X	-	-

The TIA Process

- Trip Distribution

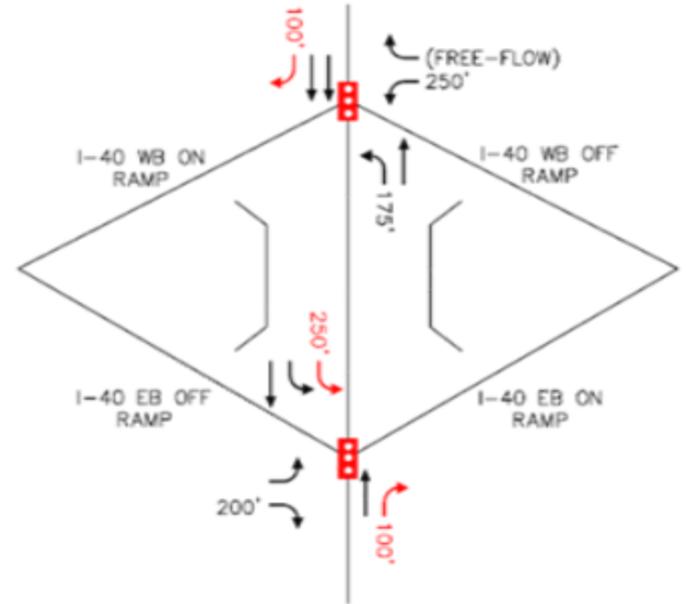


NCDOT Projects



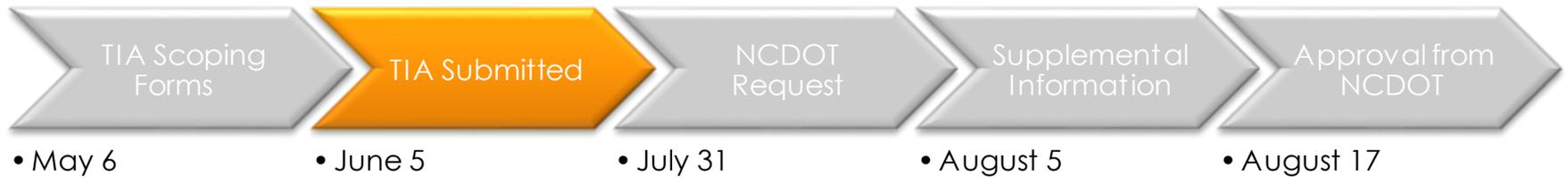
I-3306 A - Interstate 40 Widening

U-5845 – Churton Street Widening



<p>U-5845 (S. CHURTON STREET WIDENING)</p>	<p>BUILD WITHOUT ORANGE GROVE ROAD EXTENSION RECOMMENDED ROADWAY LANEAGE</p>	<p>FIGURE ES-1</p>
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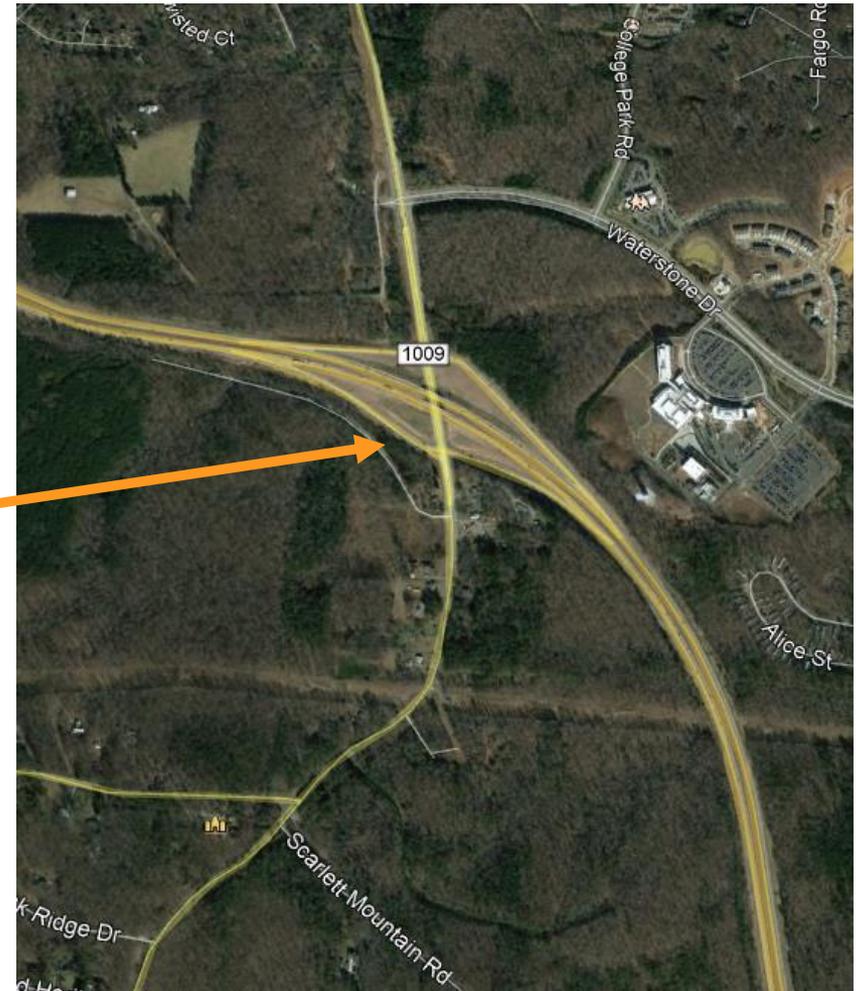
TIA Timeline



The TIA Process

- **Existing and No Build Results:**

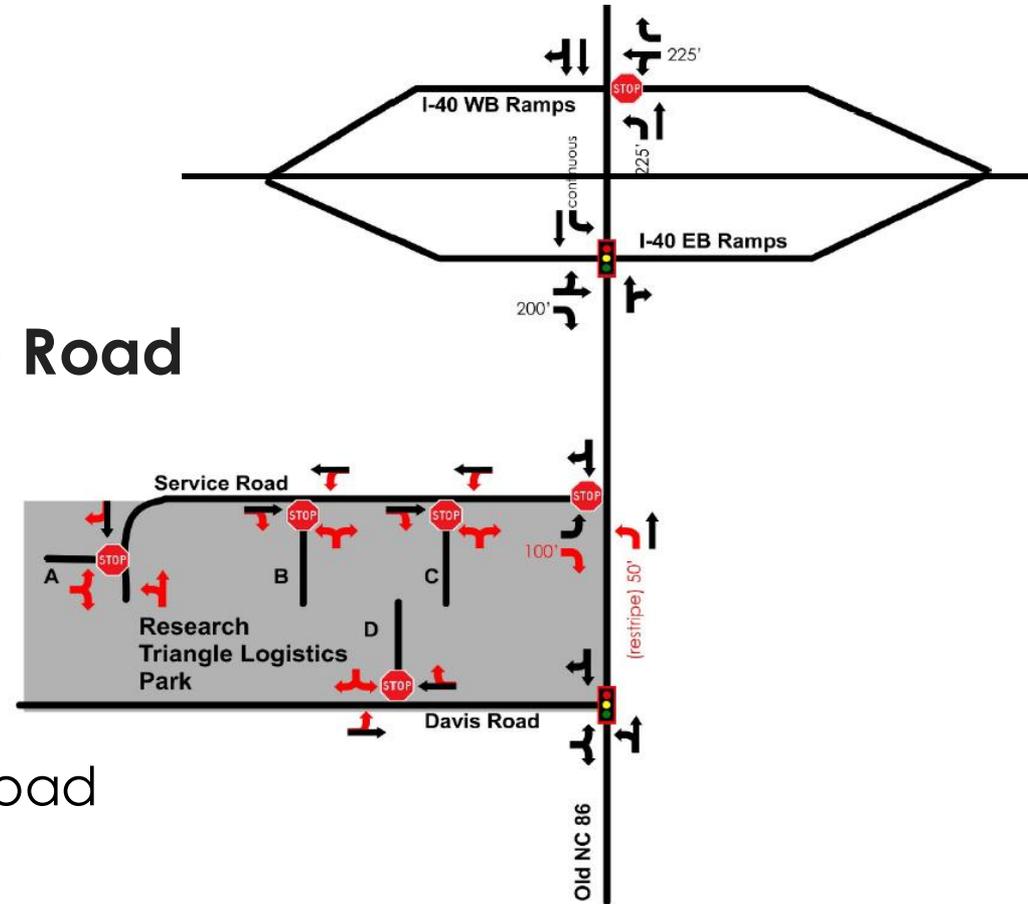
- Delays and Queues noted on I-40 eastbound off ramp
- All other intersections operate at an acceptable level of service.



The TIA Process

- **Original Submittal –
Full access at Service Road**

- Noted issues with queues / delays between I 40 EB Ramp and Service Road
- Long Delays exiting Service Road
- Minimal Traffic Utilizing Davis Road



TIA Timeline



The TIA Process

- **TIA Reviewed By:**

- NCDOT District Engineer
- NCDOT Division Traffic Engineer
- NCDOT Regional Traffic Engineer
- NCDOT Congestion Management Section
- Orange County

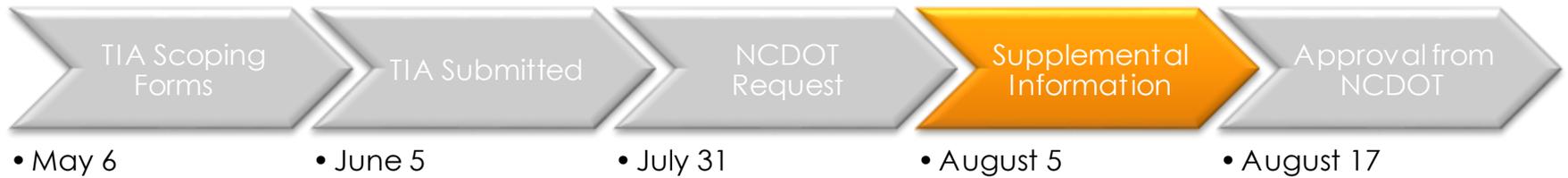
Old NC 86 and I-40 Eastbound Ramps Intersection:

The TIA recommends installation of a traffic signal at this location. The applicant should provide additional traffic signal warrant assessment supporting this recommendation. In the event that a signal is verified to be warranted and needed, it is noted that the analysis indicates that a substantial queue for the southbound left turn movement that may exceed existing storage may result. Additionally, the analysis indicates that the queue for the northbound through/right movement is expected to spill beyond the existing Old NC 86 and Service Road intersection which would be expected to result in significant operational and safety issues at that location. The applicant will need to provide additional analysis and recommendations to mitigate the queue spillback or consider restrictions of left turn movements at the service road.

Old NC 86 and Service Road Intersection:

As noted above, queue spill back from the adjacent eastbound ramps will need to be mitigated or restrictions of left turns at this intersection will need to be considered with appropriate internal circulation patterns provided to route traffic to the proposed Davis Road as an alternate access route. In the event that a full movement intersection is approved at this location, then the following improvements are required.

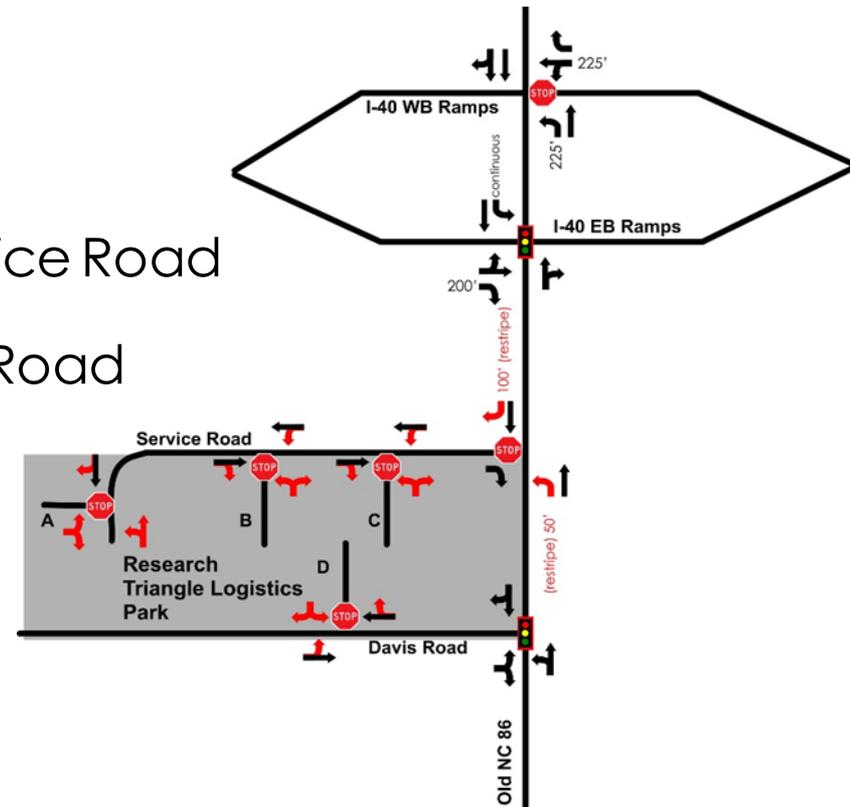
TIA Timeline



The TIA Process

- **Revised Analysis:**

- No Left Exit at Service Road
- Entering Traffic Primarily Utilizes Service Road
- Exiting Traffic Primarily Utilizes Davis Road
- New Signal at I-40 EB Ramps
- New Signal at Davis Road
- Additional Turn Lanes



Level of Service

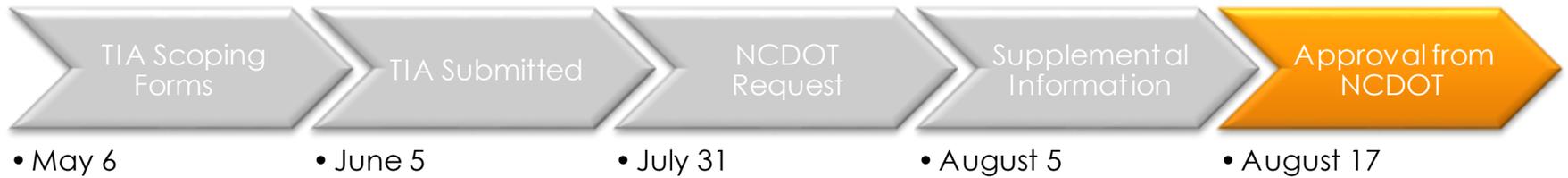


XX' Storage Length (feet)

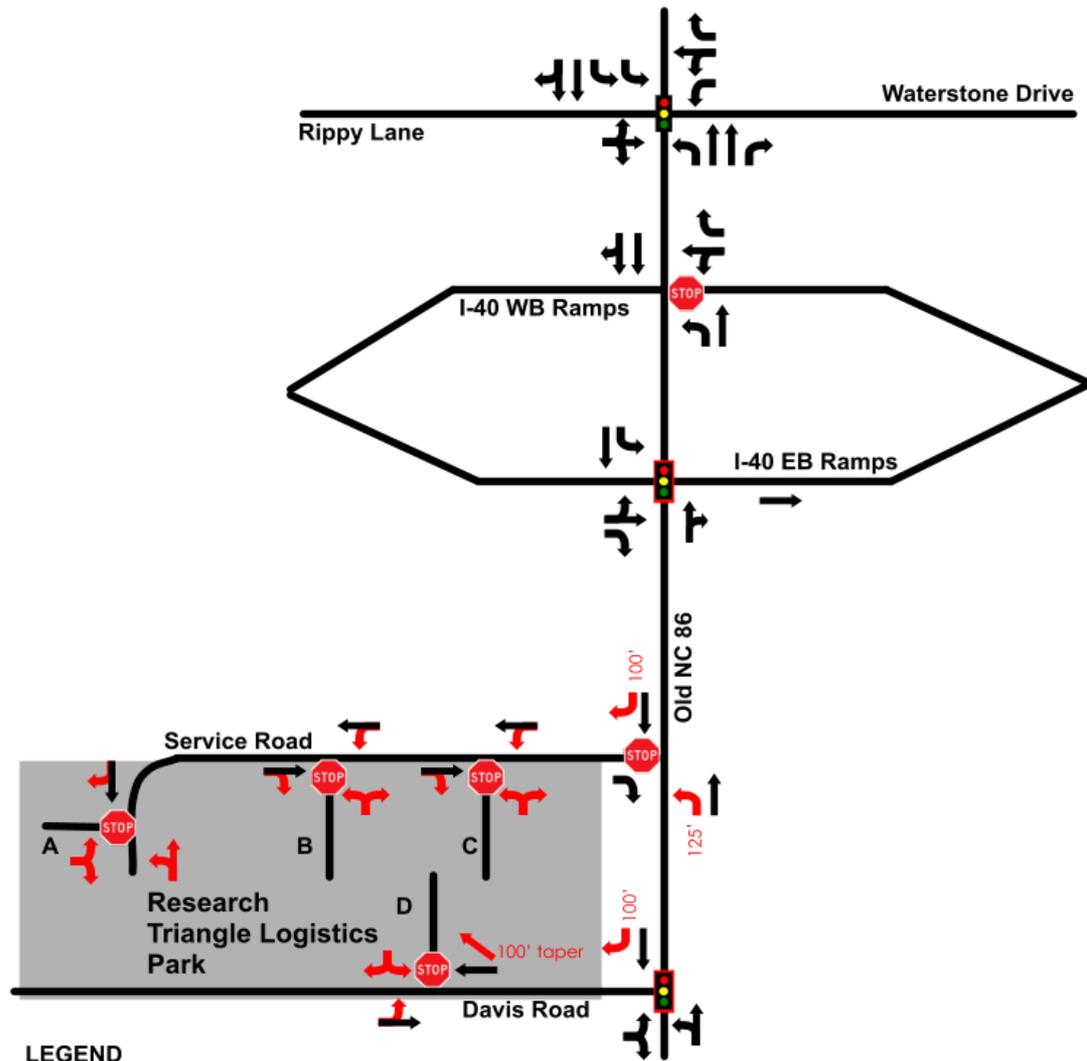


Figure is Not To Scale

TIA Timeline



NCDOT Requirements



LEGEND

	Existing Travel Lane
	Recommended Improvement by Developer
	Stop Controlled
	Existing Signal Controlled
	Recommended Signal by Developer
XX'	Storage Length (feet)



