  
**Active Feasibility and Environmental Studies in the DCHC MPO Area**

1

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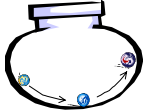
### What is Level-of-Service (LOS)?

Defined - it is a quantitative stratification of the quality of transportation service for a facility. It is a measure of user satisfaction for each particular mode of travel, although typically the single occupancy vehicle is the standard measure for level of service.

*In everyday terms, Level-of-Service is how well traffic is moving on a particular road.*


*Marbles free to move around in the bowl!!!*

Ease of Movement = Good Level-of-Service



*Full of marbles-can't move in bowl*

No Movement= Poor Level-of-Service



3

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**DISCLAIMER:**




- The following studies I am providing information on are not my studies.
- I am the messenger of study information and this presentation contains contact information for the study managers.
- However, I would be happy to take comments and get back to you with responses from the study managers.

2

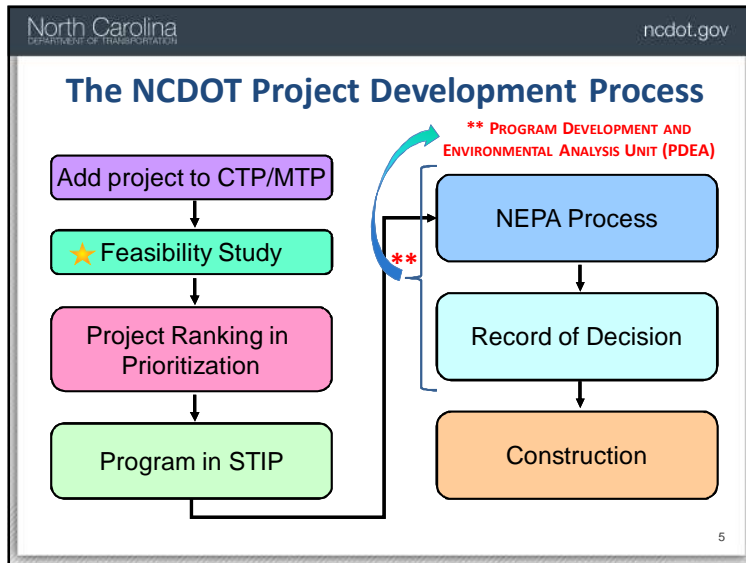
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### Level-of-Service (LOS): A to F

The Highway Capacity Manual conceived the LOS concept in the 60's and developed a labeling system to quantify the differing levels for us planner & engineer types. There are 6 letter grades, A-F, and they are associated with different levels of congestion & mobility.

<p><b>Level of Service A</b></p>  <p>Driver Comfort: High Maximum Density: 12 passenger cars per mile per lane</p>	<p><b>Level of Service B</b></p>  <p>Driver Comfort: High Maximum Density: 20 passenger cars per mile per lane</p>	<p><b>Level of Service C</b></p>  <p>Driver Comfort: Some Tension Maximum Density: 30 passenger cars per mile per lane</p>
<p><b>Level of Service D</b></p>  <p>Driver Comfort: Poor Maximum Density: 42 passenger cars per mile per lane</p>	<p><b>Level of Service E</b></p>  <p>Driver Comfort: Extremely Poor Maximum Density: 67 passenger cars per mile per lane</p>	<p><b>Level of Service F</b></p>  <p>Driver Comfort: The lowest Maximum Density: More than 67 passenger cars per mile per lane</p>

4



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### How does a project become a Feasibility Study?

Projects that score highly during the Prioritization Process that don't get programmed into the STIP or have insufficient information to be appropriately programmed may become Feasibility Studies. This allows the department to study projects that are most likely to be programmed in the next few prioritization cycles.

Other studies are on a case-by-case basis based on discussions between Programming, Division, and local officials.

### Next Steps

The Feasibility Study results update the data in the prioritization process database and help NCDOT, MPO/RPO and Local Government make informed decisions regarding the funding and implementation of the proposed improvements.

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### What is a Feasibility Study?

A Feasibility Study is a preliminary engineering and funding evaluation of a candidate State Transportation Improvement Program (STIP) Project. It is the initial step in the planning and design process and not the product of exhaustive environmental or design studies.

### What is the Purpose?

The purpose of the feasibility study is to describe the proposed scope of improvements, provide the associated costs and impacts, and identify potential concerns or problems within the project area.

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## Active Feasibility Studies in the DCHC MPO Area

8

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**P3.0 (ABBREVIATED) PROJECT SUMMARY**

<b>PROJECT CATEG.:</b>	Statewide Mobility						Div. Needs
<b>STATUS:</b>	Submitted						
<b>SPOT ID:</b>	H111143-A (Upgrade to Superstreet w/ multi-modal accomod.)	H111143 -B (Upgrade to Superstreet.)	H111143 -C (Improve intersection.)	H141884 (Improve interchange.)	H141545 (Improve interchange.)	H140638 (Construct roadway on New Location.)	
<b>SCORES (by Section):</b>	(Ephesus Church Rd.-NC 86 (Columbia St.))	(East Lakeview Dr.-Sage Rd.)	(Ephesus Church Rd.)	NC 54, NC 86 (Columbia St.)	NC 54 (Raleigh Rd.)	Elliot Rd. (US 15/501-Ephesus Ch. Rd.)	
<b>Statewide Mobil.:</b>	44.55	67.47	50.92	39.94	66.02	0	
<b>Regional Impact:</b>	32.62	63.72	42.81	35.03	54.8	0	
<b>Division Needs:</b>	26.34	45.84	34.39	27.19	42.45	12.27	

**U-5304 (US 15-501, Widening and Upgrade to Superstreets)**  
From NC 86 to I-40.

**Traffic Forecast – January 2015**  
**Completion – 2/2016**

DCHC MPO allocated Regional Points: 100

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**FS-1305A (I-540, Add Managed Lanes) Traffic Forecast: Projected Volumes**

ROUTE	KEY LOCATIONS	BY 2013 NO BUILD	FY 2040 NO BUILD	2040 FY BUILD		
				Alt. 1	Alt. 2	
NC 540	South of NC 54 (Chapel Hill Rd)	21,700	71,400	70,900	71,400	
	NC 54 (Chapel Hill Rd) to I-40	30,700	71,100	70,400	70,700	
	General Purpose (GP) Lanes, I-40 to Aviation Pkwy	75,400	123,600	121,200	116,800	
I-540	Managed Lanes (ML), I-40 to Aviation Pkwy	-	-	18,200	22,000	
	Total, I-40 to Aviation Pkwy	75,400	123,600	139,400	138,800	
I-540	GP Lanes, Lumley Rd to US 70 (Glenwood Ave)	84,800	146,700	139,100	150,700	
	ML, Lumley Rd to US 70 (Glenwood Ave)	-	-	7,300	11,400	
	Total, Lumley Rd to US 70 (Glenwood Ave)	84,800	146,700	146,400	162,100	
I-540	GP Lanes, US 70 (Glenwood Ave) to Leesville Rd	87,000	140,400	135,200	133,600*	
	[*ML Access between Glenwood and Leesville for FY Build]		-	-	15,000*	22,400*
	Total, US 70 (Glenwood Ave) to Leesville Rd	87,000	140,400	151,600	158,000	
I-40	GP Lanes, Page Rd to I-540	173,000	215,400	222,200	221,900	
	ML, Page Rd [**NC 147 for FY Build] to I-540	-	12,800	24,000**	24,900**	
	Total, Page Rd to I-540	173,000	228,200	246,200	246,800	
I-40	GP Lanes, I-540 to Airport Blvd	144,300	185,900	184,600	184,000	
	ML, I-540 to Airport Blvd	-	13,200	12,600	13,300	
	Total, I-540 to Airport Blvd	144,300	199,100	197,200	197,300	
NC 54	East of NC 540	24,100	33,800	34,800	35,000	
	(Chapel Hill Rd) West of NC 540	26,100	43,500	42,700	42,500	
US 70	East of I-540	38,900	94,100	92,900	93,100	
	(Glenwood Ave) West of I-540	51,500	113,600	113,700	114,000	

On I-540 from I-40 eastward to US 64/264 and on US 64/264 from I-540 westward to I-440:  
 • Alt. 1 Scenario adds one managed lane in each direction  
 • Alt. 2 Scenario adds two managed lane in each direction

Taken from FS-1305A Traffic Forecast (June 2014) Tables C8 and C9. 11

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**P3.0 (ABBREVIATED) PROJECT SUMMARY**

<b>PROJECT CATEGORY:</b>	Statewide Mobility	
<b>STATUS:</b>	Submitted	
<b>SPOT ID:</b>	H128071 (Construct express toll lanes.)	H111014 (Convert tolled facility and widen to 8 ins.)
<b>SCORES (by Section):</b>	(NC 54-US 1)	(I-40-US 64 Byp.)
<b>Statewide Mobility:</b>	37.1	63.49
<b>Regional Impact:</b>	27.59	49.77
<b>Division Needs:</b>	21.13	38.98

**FS-1305A (I-540, Add Managed Lanes)**  
From NC 54 to US 64 (Knightdale Bypass).

**Traffic Forecast – Complete June 2014**  
**Completion – 3/2016**

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**Feasibility Studies Unit – Contact Info**

**Shane York, PE (919-707-4660)**  
U-5304 and FS-1305A Project Manager - Feasibility Studies Engineer  
Feasibility Studies Unit

**Hatchmott McDonald**  
U-5304 Consultant Firm

**HNTB**  
FS-1305A Consultant Firm

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**P3.0 (ABBREVIATED) PROJECT SUMMARY**

<b>PROJECT CATEGORY:</b>	Regional Impact		
<b>STATUS:</b>	Submitted		
<b>SPOT ID:</b>	H090555-A	H090555-B	H111011
<b>SCORES (by Section):</b>	(US 64- O'Kelly Chapel Rd.)	(O'Kelly Chapel Rd.- Renaissance Pkwy- NC 54)	(Renaissance Pkwy- NC 54)
<b>Statewide Mobility:</b>	0	0	0
<b>Regional Impact:</b>	17.57	17.3	21.7
<b>Division Needs:</b>	12.89	14.63	18.49

**FS-1008B (NC 751, Widening)**  
 From US 64 in Chatham County to North of SR 1118 (Fayetteville Road) in Durham County. Widen to Multilanes with Bike Lanes.

Traffic Forecast – Complete  
Study Completion – 6/2015

13

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**P3.0 (ABBREVIATED) PROJECT SUMMARY**

<b>PROJECT CATEGORY:</b>	Statewide Mobility
<b>STATUS:</b>	Submitted
<b>SPOT ID:</b>	H110997 (Widen rdwy to 6 ins and rehab)
<b>SCORES:</b>	(I-40-East End Connector)
<b>Statewide Mobility:</b>	31.73
<b>Regional Impact:</b>	27.24
<b>Division Needs:</b>	21.52

**FS-1205C (NC 147, Add Managed Lanes)**  
 From I-40 to East End Connector. Add managed lanes and rehabilitate pavement.

Traffic Forecast – Complete  
Completion – 4/2015

15

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**FS-1008B (NC 751, Widening)**  
Traffic Forecast: Projected Volumes

KEY LOCATIONS	BY 2011 NO BUILD	2035 FY NO BUILD	2035 FY BUILD
NC751 N of NC54	19,500	35,000	36,500
NC751 S of NC54	14,300	27,700	29,600
NC751 N of SR1192 - Massey Chapel Rd	11,500	31,100	37,100
NC751 N of SR1118 - Fayetteville Rd	9,700	26,500	32,800
NC751 S of SR1118 - Fayetteville Rd	11,900	28,900	37,500
NC751 S of SR1731 - O'Kelly Chapel Rd	8,300	19,400	27,000
NC751 S of SR1752 - Marthas Chapel Rd	8,900	20,800	29,000
NC751 N of US64	8,100	17,900	25,500

*Taken from FS-1008B Traffic Forecast (Jan. 2012) Table 3 (Model Validation) and 2035 Build Diagram.*

14

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**FS-1205C (NC 147, Add Managed Lanes)**  
Traffic Forecast: Projected Volumes

ROUTE	KEY LOCATIONS	BY 2013 NO BUILD	2040 FY NO BUILD	2040 FY BUILD		
				Option 1A	Option 2B	
Triangle Expressway	South of I-40	10,100	49,800	53,400	52,500	
	I-40 to Cornwallis Road [GP and ML] [Managed Lanes (ML)]	57,800	91,300	106,800	108,900	
NC 147 (Durham Freeway)	Cornwallis Road to TW Alexander Drive [GP and ML] [Managed Lanes (ML)]	60,900	94,800	112,900	110,000	
	TW Alexander Drive to Ellis Road [GP and ML] [Managed Lanes (ML) from TW Alexander to EEC*]	64,100	89,000	106,100	103,000	
	Ellis Road to East End Connector (EEC) [GP and ML] [Managed Lanes (ML) from TW Alexander to EEC*]	60,800	83,800	98,200	97,800	
	East End Connector to Briggs Avenue	60,800	86,200	98,200	97,000	
	Briggs Avenue to NC 55 (Alston Avenue)	67,200	86,900	99,200	98,600	
	North of NC 55 (Alston Avenue)	79,500	103,700	107,600	107,000	
	<i>Some of the studied Alternatives descriptions (shown above):</i>					
	<ul style="list-style-type: none"> <li>Build Alt. 1A widens NC 147 from four to six general purpose lanes from I-40 to NC 55 in downtown Durham.</li> <li>Build Alt. 2B adds two managed lanes in each direction on NC 147 from I-40 to the East End Connector (EEC) and on the EEC from NC 147 to US 70. Access to the managed lanes is provided at I-40/NC 147, NC 147/TW Alexander Drive, the NC 147/EEC, and the EEC/US 70. Widens NC 147 to six general purpose lanes north of the EEC.</li> </ul>					
	<i>Taken from FS-1205C Traffic Forecast (2014) Table C6, C8, C9, and C12.</i>					

16

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## Feasibility Studies Unit – Contact Info

**Sonya Tankersley (919-707-4664)**  
FS-1008B and FS-1205C Project Manager - Feasibility Studies Engineer  
Feasibility Studies Unit

**AECOM**  
FS-1205C Consultant Firm

17

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### FS-1205A (I-40, Construct Managed Lanes) Traffic Forecast: Projected Volumes

ROUTE	KEY LOCATIONS	BY 2013 NO BUILD	2040 FY NO BUILD	2040 FY BUILD			
				Alt. 2A	Alt. 2B	Alt. 5A (1 ML)	Alt. 6A (2 ML)
I-40 / I-85	I-85 Connector Rd. to I-85	89,400	117,000	120,400	120,400	119,200	119,200
I-40	I-85 to SR 1009 (Old NC 86)	56,200	73,500	81,100	81,200	78,700	77,200
	NC 86 (MLK Jr. Blvd.) to US 15-501 (Durham-Chapel Hill Blvd.)	69,700	101,600	117,100	117,100	108,400	109,900
	US 15-501 (Durham-Chapel Hill Blvd.) to NC 54	85,000	127,100	143,500	143,400	137,000	139,700
	SR 1945 (Alston Ave.) to NC 147	124,400	186,000	209,300	209,500	208,700	215,500
	NC 147 to SR 1999 (Davis Dr.)	150,700	225,300	243,300	243,600	248,300	256,200
	SR 1973 (Page Rd.) to I-540	170,800	255,300	268,700	269,000	278,900	286,200
	I-540 to SR 3015 (Airport Blvd.)	142,500	213,000	231,600	231,900	230,900	236,100
	SR 1652 (N. Harrison Ave.) to SR 1728 (Wade Ave.)	161,600	241,600	258,400	262,800	258,000	264,200
	SR 1728 (Wade Ave.) SR 1656 (Trinity Rd.)	99,000	156,100	174,400	177,600	175,200	180,800

Some of the studied Alternatives descriptions (shown above):

- Alt. 2A – GP Lane Widening (1 lane from I-85 to I-440, 2 Lanes from I-440 to NC 42), Add'l interchanges
- Alt. 2B – GP Lane Widening (1 lane from I-85 to I-440, 2 Lanes from I-440 to NC 42), No add'l interchanges
- Alt. 5A – 1 Managed Lane from I-85 to I-95, GP Lane Widening (1 lane from Wade Ave. to Lake Wheeler Rd. and I-440 to I-95), Add'l Interchanges
- Alt. 6A – 2 Managed Lanes from I-85 to I-95, GP Lane Widening (1 lane from Wade Ave. to Lake Wheeler Rd.), Add'l interchanges

Taken from FS-1205A Traffic Forecast (2014) Diagrams.

19

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**P3.0 (ABBREVIATED) PROJECT SUMMARY**

**PROJECT CATEGORY:** Statewide Mobility

**STATUS:** Submitted

**SPOT ID:** H111013 H111131

**SCORES (by Section):**

(Wade Ave.- NC 147)	(NC 147-US 15/501)
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**Statewide Mobility:** 61.11 48.76

**Regional Impact:** 40.44 35.24

**Division Needs:** 28.58 26.52

**FS-1205A (I-40, Construct Managed Lanes)**  
From US 15-501 in Durham to SR 1728 (Wade Avenue) in Wake County. Evaluate to I-85 in study.

Traffic Forecast – Late Summer 2014  
Completion – 4/2015

18

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### U-4721 (New Route – Northern Durham Parkway)

From I-540 to US 501 (N. Roxboro Road)

Traffic Forecast – Complete 2013  
Study Completed – January 2014

**P3.0 (ABBREVIATED) PROJECT SUMMARY**

**PROJECT CATEG.:** Division Needs

**STATUS:** Submitted

**SPOT ID:** H129640-A (Widen to Six Lanes, Part on New Location.) H129640-B (Construct Multi-Lanes on New Location.) H129640-C (Construct Multi-Lanes on New Location.) H129640-D (Construct Multi-Lanes on New Location.) H129640-E (Modernize Roadway.)

**SCORES (by Section):**

(I-540 in Wake Co.- US 70)	(US 70-NC 98)	(NC 98-I-85)	(I-85-Old Oxford Rd.)	(Old Oxford Rd.-US 501)
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**Statewide Mobil.:** 0 0 0 0 0

**Regional Impact:** 0 0 0 0 0

**Division Needs:** 21.09 21.04 21.04 22.4 7.12

20

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**U-4721 North Durham Parkway (NDP):  
Traffic Forecast Projected Volumes on US 70 and NDP**

ROUTE	KEY LOCATIONS	BY 2012 BUILD		2040 FY NO BUILD	2040 FY BUILD	
		Blvd	Fwy		Blvd	Fwy
NDP	(B) North of I-85	8,300	12,000	12,900	26,100	30,000
	(AC) South of I-85	10,000	32,600	14,600	17,000	43,500
	(AC) North of NC 98	18,100	32,700	9,500	21,700	41,200
	(AB) South of NC 98	17,700	35,400	12,100	18,700	41,300
	(AB) North of US 70 (new location)	17,300	30,900	--	24,800	40,900
US 70	(AA) South of US 70 (new location)	9,800	16,500	--	18,900	28,300
	South of I-85 and North of Cheek Rd	48,900	38,800	106,000	102,300	88,900
	South of Cheek Rd and North of NC 98	35,400	25,100	90,400	89,700	74,600
	South of NC 98	31,000	23,700	109,400	107,000	93,700
	North of Miami Blvd	37,600	29,500	100,300	98,800	90,300
	North of Leesville Rd	31,900	30,500	87,700	83,800	77,800
	North of I-540	59,800	63,700	121,300	123,500	123,500

Taken from U-4721 Traffic Forecast (Oct. 2013) Tables 8 (2012 & 2040) and 9.

21

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**U-4721 North Durham Parkway:  
Recommended Cross-Sections (Cont.)**

**Cross-section:  
4-lane divided curb and gutter section, with 12-foot lanes, a raised grass median, 5-foot bike lanes, and 5-foot sidewalks.**

**SECTION AB & AC BOULEVARD  
130' ROW**

**Cross-section:  
4-lane divided freeway section, with 12-foot lanes and grass median.**

**SECTION AB & AC FREEWAY  
250' ROW**

Section	Capacity	Min 2040 Volume	Max 2040 Volume	Min V/C	Max V/C
Section AB Boulevard	38100	18700	27900	0.49	0.73
Section AB Freeway	61700	40900	41300	0.66	0.67
Section AC Boulevard	38100	14500	21700	0.38	0.57
Section AC Freeway	61700	41200	43500	0.67	0.71

(US 70 to NC 98)  
(NC 98 to I-85)

23

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**U-4721 North Durham Parkway: Feasibility Study  
Recommended Cross-Sections**

**Cross-section:  
4-lane divided freeway section, with 12-foot lanes and grass median.**

**SECTION AA - FREEWAY  
300' ROW**

Section	Capacity	Min 2040 Volume	Max 2040 Volume	Min V/C	Max V/C
Section AA Freeway	61700	28300	40400	0.46	0.65

(I-540 to US 70)

22

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**U-4721 North Durham Parkway:  
Recommended Cross-Sections (cont.)**

**Cross-section:  
4-lane divided curb and gutter section, with 12-foot lanes, a raised grass median, 5-foot bike lanes, and 5-foot sidewalks.**

**SECTION B - BOULEVARD  
130' ROW**

Section	Capacity	Min 2040 Volume	Max 2040 Volume	Min V/C	Max V/C
Section B Boulevard	38100	17000	27600	0.45	0.72

(I-85 to Old Oxford Hwy)

24

U-4721 North Durham Parkway:  
Recommended Cross-Sections (cont.)

**Cross-section:**  
3-lane undivided curb and gutter section, with 12-foot lanes, 5-foot bike lanes, and 5-foot sidewalks.

**Cross-section:**  
4-lane divided curb and gutter section, with 12-foot lanes, a raised grass median, 5-foot bike lanes, and 5-foot sidewalks.

	Capacity	Min 2040 Volume	Max 2040 Volume	Min V/C	Max V/C
Section C	3 Lane	14500	12800	0.88	1.50
Section C	Boulevard	38100	12800	0.34	0.57

(Old Oxford Hwy to US 501)

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U-4721 North Durham Parkway:  
Recommendations (Cont.)

**Table 2:**  
Total Project Cost with Sections AA, AB, and AC as a Freeway and Sections B and C as a Boulevard

Section	Right of way Cost	Utility Relocation Cost	Construction Cost	Total Cost	Residences Relocated	Businesses Relocated
Section AA	\$45,500,000	\$3,200,000	\$59,500,000	\$108,200,000	0	0
Section AB Option 2	\$23,700,000	\$2,000,000	\$54,300,000	\$80,000,000	34	3
Section AC Option 2	\$32,000,000	\$2,000,000	\$71,200,000	\$105,200,000	38	30
Section B	\$2,500,000	\$500,000	\$26,700,000	\$29,700,000	1	0
Section C Option 2	\$7,400,000	\$1,700,000	\$24,800,000	\$33,900,000	1	0
ITS Deployment				\$4,700,000		
<b>Total Cost</b>	<b>\$111,100,000</b>	<b>\$9,400,000</b>	<b>\$236,500,000</b>	<b>\$361,700,000</b>	<b>74</b>	<b>33</b>

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U-4721 North Durham Parkway: Feasibility Study Recommendations

**SECTIONS AA, AB (OPTIONS 1 & 2), AC (OPTIONS 1 & 2), B, C-OPTION 2:**  
It was found that the four-lane divided sections would be able to accommodate the projected 2040 design year traffic volumes and operate at an acceptable level of service. The total combined estimated cost for the project is shown in Tables 1 and 2.

**SECTION C – OPTION 1:** It was found that the three-lane undivided curb and gutter section would not be able to accommodate the projected 2040 design year traffic volumes.

**Table 1:**  
Total Project Cost with Section AA as a Freeway and Sections AB, AC, B, and C as a Boulevard

Section	Right of way Cost	Utility Relocation Cost	Construction Cost	Total Cost	Residences Relocated	Businesses Relocated
Section AA	\$45,500,000	\$3,200,000	\$59,500,000	\$108,200,000	0	0
Section AB	\$6,300,000	\$1,600,000	\$29,200,000	\$37,100,000	11	1
Section AC	\$4,900,000	\$700,000	\$35,500,000	\$41,100,000	9	1
Section B	\$2,500,000	\$500,000	\$26,700,000	\$29,700,000	1	0
Section C – Option 2	\$7,400,000	\$1,700,000	\$24,800,000	\$33,900,000	1	0
ITS Deployment				\$4,700,000		
<b>Total Cost</b>	<b>\$66,600,000</b>	<b>\$7,700,000</b>	<b>\$175,700,000</b>	<b>\$254,700,000</b>	<b>22</b>	<b>2</b>

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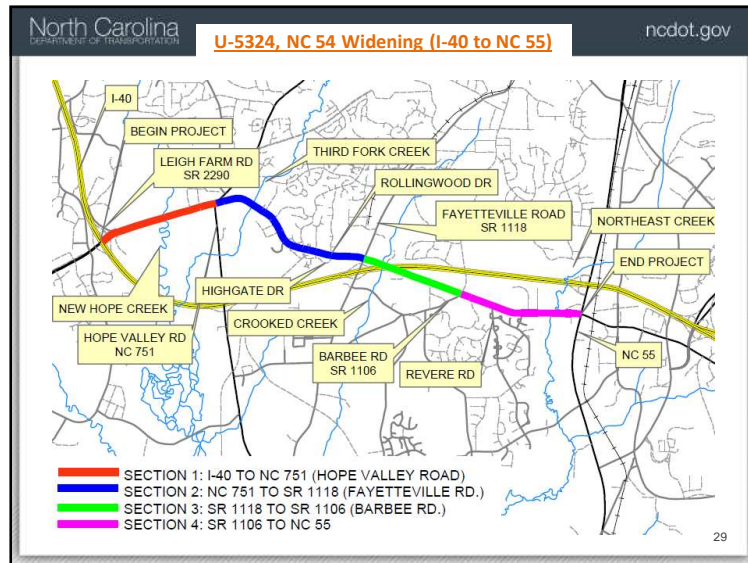
**U-5324 (FS-1005C) (NC 45 Widening)**  
From I-40 to NC 55 in Durham. Widen to multi-lanes with Transit accommodations, bike lanes and sidewalks.

Traffic Forecast – Complete 2011  
Study Completed – July 2012

**P3.0 (ABBREVIATED) PROJECT SUMMARY**

<b>PROJECT CATEG.:</b>	Regional Impact				
<b>STATUS:</b>	Submitted				
<b>SPOT ID:</b>	H090531-A (Adjacent Multiuse Path)	H090531-B	H090531-C	H090531-D	H090531-E
<b>SCORES (by Section):</b>	(Barbee Chapel Rd.- I-40)	(I-40- NC 751)	(NC 751- Fayetteville Rd.)	(Fayetteville Rd.- Barbee Rd.)	(Barbee Rd.- NC 55)
<b>Statewide Mobil.:</b>	0	0	0	0	0
<b>Regional Impact:</b>	42.63	25.70	30.46	24.63	26.52
<b>Division Needs:</b>	34.23	21.18	25.34	20.61	22.35

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**U-5324, NC 54 Widening (I-40 to NC 55): Feasibility Study**

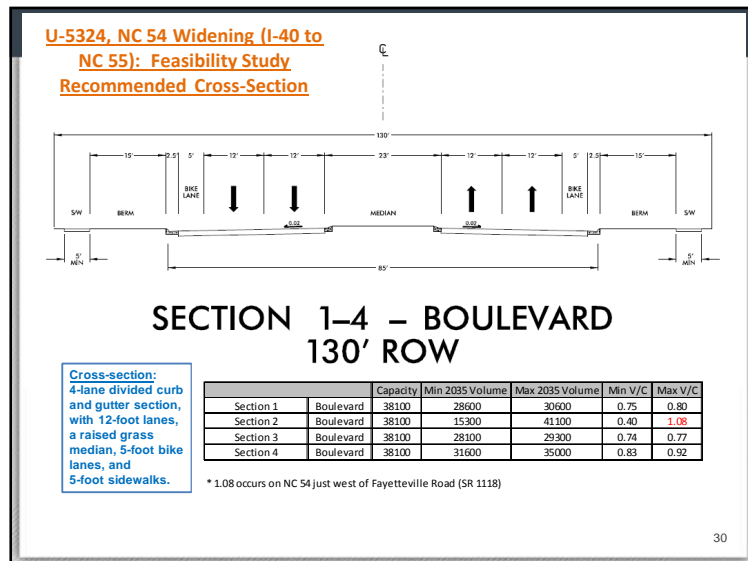
The current year Average Daily Traffic (ADT) along NC 54 is estimated to range from 9,400 vehicles per day (vpd) to 25,700 vpd. For the design year 2035, the traffic volume along NC 54 is estimated to range between 15,300 vpd to 41,100 vpd. Truck traffic is estimated to be up to 3 percent of the daily traffic.

The existing segment of NC 54 operates at a level of service (LOS) F under current traffic volumes. With the proposed improvements, all intersections along NC 54 except for SR 1118 (Fayetteville Road) and NC 55 are projected to operate at a LOS D or better. In order to achieve a LOS D at these intersections, significant improvements well beyond the scope of this project are needed. The improvements to these intersections include, but may not be limited to additional through capacity on SR 1118 and NC 55.

**Table 1. Level of Service Summary**

Section	2012 Existing Conditions	2035 Existing Conditions	2035 Proposed Improvements
Section 1	E	F	C
Section 2	E	E	B
Section 3	E	E	B
Section 4	E	F	C

31



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**U-5324, NC 54 Widening (I-40 to NC 55): Feasibility Study**

**Table 2. Level of Service Summary**

Intersection	2012 Existing Conditions	2035 Existing Conditions	2035 Proposed Improvements
SR 2290 (Leigh Farm Rd.)/ Quadrangle Dr.	F	F	C
NC 751	E	F	D
Highgate Dr.	C	D	B
Highgate Dr./Rollingwood Dr.	C	D	B
SR 1118 (Fayetteville Rd.)	E	F	F
SR 1106 (Barbee Rd.)	E	F	D
SR 1101 (Revere Rd.)	D	E	B
NC 55	F	F	F

32



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**U-5324, NC 54 Widening (I-40 to NC 55): Feasibility Study Recommendations**

**Section 1:** It was found that the four-lane divided curb and gutter section would be able to accommodate the projected 2035 design year traffic volumes at an acceptable level of service.

**Section 2:** It was found that the four-lane divided curb and gutter section would be able to accommodate the projected 2035 design year traffic volumes. All of the intersections except for the intersection with SR 1118 (Fayetteville Road) will operate at an acceptable level of service. Additional intersection improvements beyond the scope of this project would be required at SR 1118 to achieve a LOS D or better. These improvements include additional through lanes on SR 1118.

**Section 3:** It was found that the four-lane divided curb and gutter section would be able to accommodate the projected 2035 design year traffic volumes at acceptable level of service.

**Section 4:** It was found that the four-lane divided curb and gutter section would be able to accommodate the projected 2035 design year traffic volumes. All of the intersections except for the intersection with NC 55 will operate at an acceptable level of service. Additional intersection improvements beyond the scope of this project would be required at NC 55 to achieve a LOS D. These improvements include additional through lanes on NC 55.

33

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## Feasibility Studies Unit – Contact Info

**Lynnise Hawes, PE (919-707-4662)**  
FS-1205A, U-4721 and U-5324 Project Manager -  
Feasibility Studies Engineer  
Feasibility Studies Unit

**Atkins**  
FS-1205A Consultant Firm

**Derrick Lewis, PE (919-707-4663)**  
Feasibility Studies Unit Head



35

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**U-5324, NC 54 Widening (I-40 to NC 55): Feasibility Study Recommendations**

The total combined estimated cost for Section 1, Section 2, Section 3, Section 4, the extension of Culvert Number 13 at New Hope Creek, the replacement of Bridge Number 41 over New Hope Creek, the replacement of Culvert Number 46 at Third Fork Creek, the replacement of Bridge Numbers 307 and 308 over NC 54, the extension of Culvert Number 51 at Northeast Creek, and the recommended additional right of way for transit pullouts is \$117,800,000. It is anticipated that a total of three (3) residences and three (3) businesses will be relocated along NC 54. Please see Table 3 for a comprehensive breakdown of these sections and costs.

Table 3. Project Cost

Section	Right of way Cost	Utility Relocation Cost	Construction Cost	Total Cost	Residences Relocated	Businesses Relocated
Section 1	\$1,800,000	\$800,000	\$29,400,000	\$32,000,000	0	0
Section 2	\$5,900,000	\$2,500,000	\$13,200,000	\$21,600,000	0	1
Section 3	\$2,500,000	\$10,700,000	\$20,400,000	\$33,600,000	3	1
Section 4	\$3,200,000	\$12,600,000	\$14,800,000	\$30,600,000	0	1
<b>Total project cost</b>	<b>\$13,400,000</b>	<b>\$26,600,000</b>	<b>\$77,800,000</b>	<b>\$117,800,000</b>	<b>3</b>	<b>3</b>

34

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## Active Corridor Study in the DCHC MPO Area

36

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### US 15-501 Corridor Study

**By: Stantec & NCDOT Division 8**

**Study Area:** 13 mile corridor between Chapel Hill (Orange County) and Pittsboro (Chatham County). Primary North-South Corridor in the area.

**Access Management along Corridor:**

- Divided Facility,
- Left Overs / U-turns Along Corridor, and
- Full Movement Locations Generally Half A Mile or More Apart.

**Volumes:** Current Traffic Volumes range from 15,000 to 30,000 vehicles per day.

**Development:** Development Occurring Along Corridor.

37

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### US 15-501 Corridor Study: Current Conclusions

- Orange County: may need some widening.
- Chatham County: 4 lanes will work well into future (Sidestreet queuing will be expected with traditional intersections).
- Will need to signalize locations with growth.
- Continue good access management practices.

### Timeline

- Receive comments on draft report by September 19, 2014.
- Final report to be completed in October 2014.

39

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### Level-of-Service (LOS) at Key Intersections with US 15-501

KEY LOCATIONS	Level of Service, Overall LOS (AM/PM)			
	2013	2040		
		Exist ing	Scenario 1A: Improved Traditional Inter sections	Scenario 1C: Improved Traditional Intersections, Widen North Section of US 15 501 & Upgrade NC 54/US 15 501 Interchange
Culbreth / Mt. Carmel Church Road	D / F	F / E	D / D	D / D
Market Street	D / C	E / D	D / D	B / C
Smith Level Road	C / C	D / D	D / D	C / D
Mann's Chapel Rd / Plaza Dr	C / C	E / E	D / D	B / D D / B
Polks Landing Rd / South Driveway	D (EB) / F (EB) *	B / B	--	A / B A / B
Russet Run / Northwood High School Rd	B / A	D / D	--	B / B B / B

\* Polks Landing Rd is unsignalized.

Taken from the Draft US 15-501 Corridor Study LOS Summary Tables: Existing Conditions Level-of-Service Summary, 2040 Standard Intersection Conditions Level-of-Service Summary, and 2040 Superstreet Conditions Level-of-Service Summary.

38

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### NCDOT Division 8 – Contact Info

**Darius D. Sturdivant (919-944-2344)**  
 US 15-501 Corridor Study Project Manager – Division Planning Engineer  
 NCDOT Division 8

**Stantec**  
 Consultant Firm

**Robert Stone, PE (919-944-2344)**  
 NCDOT Division 8 – Division Engineer

40

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### PDEA's Role

PDEA collaborates to define the specific project and obtain **AUTHORIZATION** for funding and permits.

State or Federal Environmental **DECISION** Document

41

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### Federal Documents (larger studies)

- Environmental Impact Statement
- Environmental Assessment
- Categorical Exclusion

### Env. Documents “tell the story”

Describe the Project  
Justify Purpose and Need  
Existing Environment – ALL Aspects  
Describe Alternatives Evolution  
Analyze Impacts  
Input from Citizens, Agencies, Gov’t, others  
Announce Decision... and why selected  
List Coordination

43

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### Federal Funding

**Must comply with:**

- National Environmental Policy Act (NEPA)
- Presidential Executive Orders
- Federal Laws
- State Laws

42

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### Active Environmental Studies in the DCHC MPO Area

44

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**I-3306A (I-40, Add Additional Lanes)**  
 From I-85 in Orange County to the Durham County line.

Traffic Forecast – Complete  
 Current Activities – CP 1 & 2 meetings upcoming  
 Document Date – CE: 8/2017  
 R/W & Let Date – R/W: 11/2017; LET: 7/2019

P3.0 (ABBREVIATED) PROJECT SUMMARY	
PROJECT CATEGORY:	Statewide Mobility
STATUS:	Submitted
SPOT ID:	H090010-A
SCORES:	
Statewide Mobility:	41.89
Regional Impact:	30.18
Division Needs:	23.59

*\*The Let date is the actual date that contracts are awarded to the winning bidder.*

DCHC MPO allocated Regional Points: 100

FIGURE 1  
MAY 2014

45

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P3.0 (ABBREVIATED) PROJECT SUMMARY	
PROJECT CATEGORY:	Regional Impact
STATUS:	Submitted
SPOT ID:	H129645
SCORES:	
Statewide Mobility:	0
Regional Impact:	27.91
Division Needs:	22.37

**U-4722 (US 501, Widen to 6 Lanes with Median)**  
 From US 501 Bypass (Duke Street) to SR 1640 (Goodwin Road) in Durham.

Traffic Forecast – Not complete  
 Current Activities – Start of studies  
 Document Date – EA: 10/2017; FONSI: 5/2019  
 R/W & Let Date – R/W: 11/2019; LET: 7/2023

47

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**I-3306A (I-40, Add Additional Lanes)**  
**Traffic Forecast (Update): Projected Volumes**

KEY LOCATIONS	BY 2013 BUILD	2040 FY NO BUILD	2040 FY BUILD
I-40/I-85 W of SR1239 (I-85 Connector)	87,500	114,300	114,400
I-40/I-85 W of I-40/I-85 Interchange	83,700	112,300	112,700
I-40 E of I-40/I-85 Interchange	49,100	51,100	54,800
I-40 E of SR1009 (Old NC86)	58,400	64,000	69,800
I-40 E of SR1723 (New Hope Church Rd)	62,400	69,200	76,000
I-40 E of NC86	69,400	80,300	88,400
I-40 E of US15-501	84,800	101,100	105,000
I-40 E of NC54	117,200	153,200	155,800

*Taken from I-3306A Traffic Forecast (Oct. 2013) Table A9: Previous and Updated Forecast Comparison*

46

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**PDEA Unit – Contact Info**

**Gene Tarascio (919-707-6046)**  
 I-3306A and U-4722 Project Manager - Project Development Engineer  
 Project Development and Environmental Analysis (PDEA) - Central Region

48

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**U-5518 (US 70, Upgrade Roadway and Add Interchanges at Briar Creek Pkwy and T.W. Alexander Dr. in Wake Co.)**  
 US 70 (Glenwood Ave.) from West of SR 3067 (T.W. Alexander Dr.) to I-540 in Raleigh.

Traffic Forecast – Complete  
 Current Activities – Consultant preparing functional design; Document being developed. CP 1 and public meeting upcoming  
 Document Date – EA: 7/2017  
 R/W & Let Date – R/W: 7/2019; LET: 7/2020 (for the Briar Creek Interchange only, other Post Year)

**P3.0 (ABBREVIATED) PROJECT SUMMARY**

<b>PROJECT CATEG.:</b>	Statewide Mobility		
<b>STATUS:</b>	Submitted		
<b>SPOT ID:</b>	H128081-A (Upgrade Arterial to Freeway.)	H128081-B (Upgrade exist. at-grade intersection to interchange.)	H128081-C (Upgrade exist. at-grade intersection to interchange.)
<b>SCORES (by Section):</b>	(West of T.W. Alexander Dr.-I-540)	(T.W. Alexander Dr.)	(Briar Creek Pkwy)
<b>Statewide Mobil.:</b>	62.85	41.79	74.73
<b>Regional Impact:</b>	57.27	42.27	64.11
<b>Division Needs:</b>	39.47	27.15	44.29

49

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**U-5516 (US 501 / Latta Road / Infinity Road Intersection Improvement)**  
 Add lanes through Intersection.

Traffic Forecast – Complete  
 Current Activities – Functional design underway for Document; development to begin in Nov.  
 Document Date – PCE: 8/2015  
 R/W & Let Date – R/W: 8/2016; LET: 8/2017

**P3.0 (ABBREVIATED) PROJECT SUMMARY**

<b>PROJECT CATEGORY:</b>	Regional Impact
<b>STATUS:</b>	Submitted
<b>SPOT ID:</b>	H129685
<b>SCORES:</b>	
<b>Statewide Mobility:</b>	0
<b>Regional Impact:</b>	50.21
<b>Division Needs:</b>	39.66

51

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**U-5518 (US 70, Upgrade Roadway and Add Interchanges)**  
**Traffic Forecast (Supplement): Projected Volumes**

KEY LOCATIONS	BY 2013 BUILD	2040 FY NO BUILD	2040 FY BUILD
US 70 north of SR 3067 T W Alexander Dr	37,600	75,600	86,000
US 70 south of SR 3067 T W Alexander Dr	58,800	76,100	102,700
US 70 north of I-540	66,000	114,900	123,500
US 70 south of I-540	46,400	93,300	102,100
US 70 south of SR 1645 Lumley Rd/SR 1837 Westgate Dr	44,500	75,800	75,800
SR 2028 T W Alexander Dr west of SR 1973 Page Rd	26,400	37,000	37,000
SR 3067 T W Alexander Dr btw SR 1973 Page Rd & Future Northern Durham Pkwy	22,600	38,600	38,600
SR 3067 T W Alexander Dr west of US 70	24,200	40,100	45,300
SR 3109 Briar Creek Pkwy west of SR 1645 Lumley Rd	20,200	37,100	37,100
SR 3109 Briar Creek Pkwy northeast of SR 1645 Lumley Rd	17,300	22,800	22,800
SR 3109 Briar Creek Pkwy southwest of Macaw St/Inverness St	19,800	28,100	28,100
SR 3109 Briar Creek Pkwy southwest of Little Briar Creek Ln	21,600	30,700	30,700
SR 3109/SR 3100 Briar Creek Pkwy southwest of US 70 Glenwood Ave	30,400	43,100	43,100
SR 3109/SR 3100 Briar Creek Pkwy northeast of US 70 Glenwood Ave	28,800	61,900	68,700

Taken from U-5518 Traffic Forecast (May 2014) Tables 13, 15, 16, 17, 19, and 21.

50

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US 501 (Roxboro Rd)

Latta Rd

Infinity Rd

**U-5516 (US 501 / Latta Road / Infinity Road Intersection Improvement):**  
 Latest preliminary functional design. Add extra turn lanes and medians.

52

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## PDEA Unit – Contact Info

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53

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## PDEA Unit – Contact Info

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55

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**I-5707 (I-40 Auxiliary Lane)**  
 Widening between NC-147 and NC-55 for a west bound auxiliary lane.

Traffic Forecast – Not complete  
Current Activities – Preparing to scope with Consultant  
Document Date – 2016  
R/W & Let Date – R/W: 2020; LET: 2021

P3.0 (ABBREVIATED) PROJECT SUMMARY	
<b>PROJECT CATEGORY:</b>	Statewide Mobility
<b>STATUS:</b>	Submitted
<b>SPOT ID:</b>	H140722
<b>SCORES:</b>	
<b>Statewide Mobility:</b>	49.78
<b>Regional Impact:</b>	40.33
<b>Division Needs:</b>	30.24

54

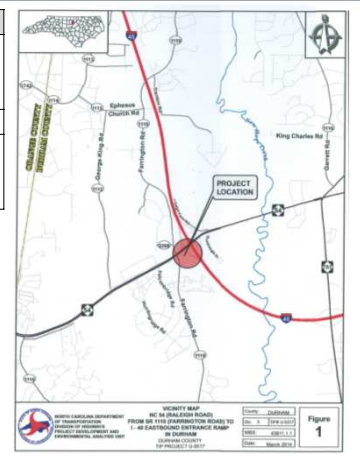
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P3.0 (ABBREVIATED) PROJECT SUMMARY	
<b>PROJECT CATEGORY:</b>	
<b>STATUS:</b>	NOT SUBMITTED/
<b>SPOT ID:</b>	NOT SCORED
<b>SCORES:</b>	
<b>Statewide Mobility:</b>	
<b>Regional Impact:</b>	
<b>Division Needs:</b>	

**U-5517 (NC 54 - Construct Slip Ramp)**  
 From SR 1110 (Farrington Rd) to I-40 eastbound entrance ramp in Durham.

Traffic Forecast – Complete  
Current Activities – Study was underway.  
 Decided to drop because traffic analysis did not show benefit of proposed improvements.  
Document Date – PCE: 12/2014  
R/W & Let Date – R/W: 9/2015; LET: 9/2016



56

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**U-5517 (NC 54 , Construct Slip Ramp)**  
**Traffic Operations Analysis Report: Conclusions – Main Points**

**For the 2020 No Build and Build Conditions:**

- The I-40 mainline and ramps would continue to function similarly.
- The Slip Ramp from Farrington Rd to the I-40 EB On Ramp would provide some benefit to the NC 54 corridor;
- However, additional improvements would be required to achieve a LOS E at the intersection of NC 54 at Farrington Rd.
- Additional EB and WB through lanes would be required in order to provide intersection LOS C or better in 2020.

**For the 2040 No Build and Build Conditions:**

- The intersections in the study area, both with and without the grade separation, would function at LOS D or worse.
- Due to the high traffic demand along NC 54, even with the additional improvements considered at the intersections of NC 54 at Farrington Rd and Falconbridge Rd, additional EB and WB through lanes would be required in order to provide an LOS C or better.
- Furthermore, the I-40 mainline and ramps would be over capacity and experience LOS D or worse in the vicinity of NC 54.

57

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## Projects in Right-of-Way/Let Stage in the DCHC MPO Area


**U-0071 (East End Connector)**  
From NC 147 (Durham Freeway) to North of NC 98 in Durham.  
Multi-lane divided, part on new location.

Let Date – 10/2014

**U-3308 (NC 55 / Alston Avenue Widening)**  
From NC 147 (Durham Freeway) to US 70 Business-NC 98 (Holloway Street) in Durham. Widen to four lane divided facility and replace Norfolk Southern Railroad bridges.

Let Date – 4/2015

*\*The Let date is the actual date that contracts are awarded to the winning bidder.*



59

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## PDEA Unit – Contact Info

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58

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60