



**External Scoping and Section 404/NEPA Merger Project Team Meeting
Concurrence Point No. 1
July 19, 2017**

US 70 Upgrade to Controlled-Access Facility

from SR 1921 (Lynn Road) in Durham to west of SR 3067 (TW Alexander Drive) in Raleigh
Durham and Wake Counties, North Carolina – NCDOT Division 5
STIP Project No. U-5720
WBS No. 46308.1.1

Purpose of the meeting

The purpose of today's meeting is to discuss the purpose of and need for the proposed project. Concurrence will be requested.

Project Description

The NCDOT proposes to upgrade US 70 to a controlled-access facility from SR 1921 (Lynn Road) in Durham to west of SR 3067 (TW Alexander Drive) in Raleigh, and convert the at-grade intersection of US 70 with South Miami Boulevard/Sherron Road to an interchange. As currently envisioned in the joint Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO) and Capital Area Metropolitan Planning Organization (CAMPO) 2040 Metropolitan Transportation Plan (MTP), US 70 is planned to be converted to a freeway. The project calls for either a four-lane or a six-lane median-divided facility. The project vicinity is shown on Figure 1.

Project Setting and Study Area

US 70 is also a critical transportation facility for the Triangle region, as the roadway provides access to RTP employers for commuters and is a route for motorists traveling to and from Raleigh-Durham International Airport, Durham, Raleigh and surrounding areas. US 70 interchanges with I-85 in Durham (to the northwest) and I-540 in Raleigh (to the southeast). As one of the main arteries between Durham and Raleigh, US 70 also provides access to adjacent residential communities, institutional land uses and commercial/retail establishments and clusters, including Brier Creek's shopping and residential areas. US 70 on the east side of Durham is one of the most congested corridors in the DCHC MPO region (DCHC MPO, 2015).

The study area is generally centered along US 70 but is expanded at South Miami Boulevard/Sherron Road and other major intersections to encompass potential interchange locations (Figure 2).

Project Status and Schedule

The project is listed in the Draft 2017-2027 State Transportation Improvement Program (STIP) as Project No. U-5720:

- Section A (Lynn Road to South Miami Blvd/Sherron Rd) – design build project
- Section B (South Miami Blvd/Sherron Rd intersection – convert to interchange) – design build project
- Section C (South Miami Blvd/Sherron Rd to Page Road Ext) – unfunded
- Section D (Page Road Ext in Durham County to west of TW Alexander Drive in Wake County) - unfunded

The STIP has allocated \$50,500,000 for right-of-way acquisition, \$2,621,000 for utilities, and \$82,300,000 for construction. Right of way acquisition and construction (Sections A and B) are planned to begin in fiscal year (FY) 2022. The project is state-funded and a State Environmental Assessment is being prepared in compliance with North Carolina's State Environmental Policy Act (SEPA).

Need for Project

The following conditions demonstrate the need for the project.

Lack of East-West Freeway Connectivity

- US 70 provides a link between I-85 in northern Durham and I-540 in northwest Raleigh. As a major route connecting Durham and Raleigh, US 70 serves as an alternative to other congested roads, including I-40, NC 147 (Durham Freeway), and I-540.
- US 70 is an important link in the area's transportation network but it currently has no control of access through the majority of the proposed project's study area. It varies from a five-lane facility to a four-lane, median-divided facility, has a posted speed limit that changes from 45 miles per hour (mph) to 55 mph, and includes numerous intersections and driveway connections.
- At the western end of the proposed project, US 70 from NC 98 to west of Pleasant Drive is currently being improved to a controlled-access freeway as part of STIP Project No. U-0071 (East End Connector). North of NC 98, US 70 is already a controlled-access freeway; therefore, with the completion of the East End Connector, US 70 will be a controlled-access freeway from the western project terminus to I-85. In addition, the East End Connector will provide a direct freeway connection from NC 147 to US 70.
- Between the eastern project terminus and the US 70 interchange with I-540, there currently are two signalized intersections, TW Alexander Drive and Brier Creek Parkway. These at-grade intersections will be converted to interchanges under STIP Project No. U-5518, which is scheduled for construction in FY 2021.

Competing Functions (Serving Regional and Local Traffic) Contributes to Poor Traffic Flow along US 70

- US 70 serves local traffic in addition to regional traffic, including commuters. US 70 provides access to many businesses along the roadway, as well as adjacent residential communities and other uses. There are twelve intersections with US 70 in the project limits, five of which are signalized. With no access control, there are also approximately 100 driveways connecting to the roadway.

Congested Conditions Impede Mobility and are Indicated by Increasing Traffic Volumes, Poor Levels of Service, Queue Lengths, Travel Delays, and Rear End Crashes¹

- The current year (2015) annual average daily traffic (AADT) along US 70 ranges from 36,600 vehicles per day (vpd) to 46,800 vpd. In 2040, US 70 is expected to carry between 53,700 vpd and 65,200 vpd. Population and employment growth will increase travel demand along US 70, with most sections of the roadway forecasted to increase in traffic volume by approximately 40 percent in 2040. (Traffic volume diagrams are provided in the Purpose and Need report, Appendix B.)
- US 70 is currently congested during peak commuting hours and has poor levels of service with long lines of traffic waiting at signalized intersections. Existing travel speeds during the peak commuting hours are lower than posted speed limits. (Traffic analysis figures and tables are included in the Purpose and Need report, Appendix C.)

¹ A traffic operational analysis for the proposed project is described in a technical memorandum prepared by RK&K, dated March 2017.

- Queuing along US 70 is expected to worsen in 2040 with queue lengths exceeding 0.5 miles at multiple intersections during the AM and PM peak hours.
- The system-wide average delay is expected to more than double in 2040, with expected delays of approximately 6 to 10 minutes per vehicle during the AM and PM peak hours, respectively. Most vehicles will be unable to maintain free-flow speeds along US 70, especially between the more closely spaced intersections, with several sections of US 70 showing travel speeds less than 10 mph during both peak hours.
- The existing US 70 corridor currently experiences safety issues likely associated with intersection conflicts, high traffic volumes, and the existing geometry. The total, night and wet crash rates along US 70 exceeded the statewide and critical crash rates for the five-year period analyzed (May 2011 to April 2016). The majority of crashes along this section of the road, including at signalized intersections, were rear-end crashes, which are typically associated with congested conditions. Limited sight distance, steep grades and substandard vertical alignment along US 70 also contribute to this type of crashes.

Intersection crash data is provided in Table 1 and segment crash rate comparisons are provided in Table 2.

Table 1. Intersection Crash Data (2011 to 2016)

	Crashes	Crashes per 100MVM	Rear End Crash Percentage
US 70/Lynn Road	96	103.44	68%
US 70/Pleasant Drive	65	76.68	69%
US 70/S. Miami Blvd/Sherron Road	150	127.29	58%
US 70/Leesville Road	46	68.23	59%
US 70/Page Road Extension	53	74.96	70%
US 70/TW Alexander Drive	204	11.17	73%
S. Miami Blvd/Angier Avenue	61	86.72	54%
Sherron Road/Mineral Springs Road	22	57.89	68%

Table 2. Segment Crash Rate Comparison (2011 to 2016)

	Crashes	Crashes per 100MVM	Statewide Rate*	Critical Rate**
US 70 Mainline				
Total	1,172	349.85	283.91	299.20
Fatal	4	1.19	0.92	1.93
Non-Fatal Injury	280	83.58	85.62	94.09
Night	243	72.54	63.28	54.06
Wet	194	57.91	48.33	54.73
Miami Boulevard/Sherron Road				
Total	170	769.85	403.26	475.83
Fatal	0	0.00	1.14	7.14
Non-Fatal Injury	36	163.03	125.92	167.47
Night	39	176.61	82.19	116.19
Wet	25	113.21	68.71	99.99

*2011-2014 statewide crash rate for statewide urban 4 or more lanes, divided with control of access United States routes (US 70) and 2011-2014 statewide crash rate for 4 or more lanes, continuous left turn, Secondary Routes (Miami Boulevard/Sherron Road)

** Based on the statewide crash rate (95% level of confidence).

Source: NCDOT Traffic Safety Unit

Other Deficiencies

- Although US 70 connects other freeway facilities, the roadway does not currently meet freeway design standards. In addition to the vertical alignment noted previously, the existing roadway also lacks a consistent median, has inadequate offset distances to objects in the right of way (clear zone) and has inadequate shoulder and ditch widths.
- US 70 is a barrier to bicycle and pedestrian mobility in the area. Bicyclists and pedestrians do not currently have an adequate way to cross US 70.

Project Purpose

The primary purpose of the proposed project is to improve traffic operations along US 70 between SR 1921 (Lynn Road) and SR 3067 (TW Alexander Drive) by reducing congestion and improving mobility on a vital link in the area's transportation system.

- The project dates to 2003 in local plans and it continues to be supported by the area's 2040 MTP (2013) and draft CTP (May 2017), which envision US 70 as a freeway.
- The measures of effectiveness when comparing alternatives within the US 70 corridor could include average travel time and travel speed during peak hours and level of service.
- Another desirable outcome of the project is a reduced potential for rear end crashes due to the reduction in traffic congestion, reduction or elimination of conflicting vehicular movements, and the use of design standards that will improve the vertical alignment (providing extended sight distance via flatter hills/crests and valleys/sags).

Figures

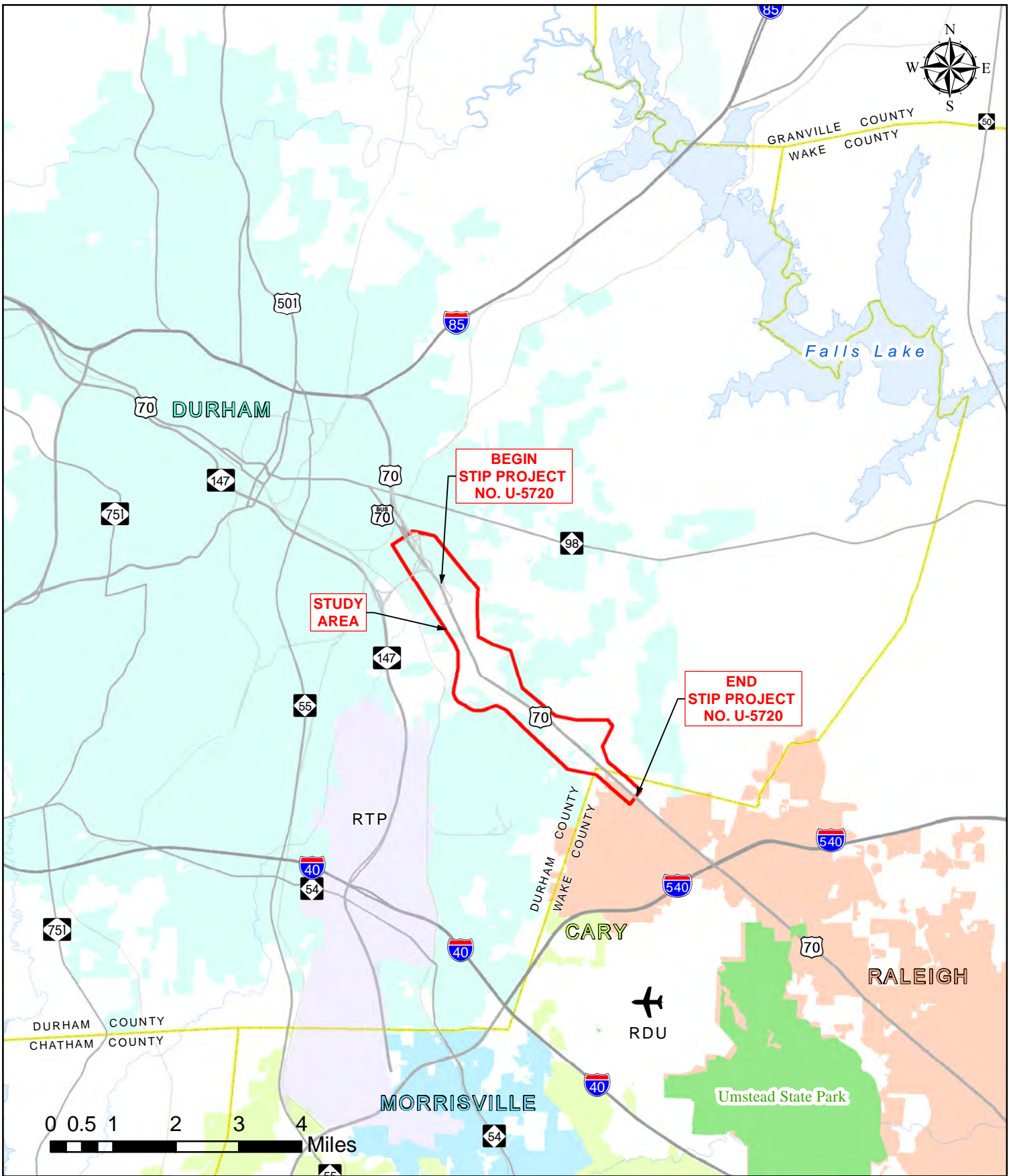
- 1 Vicinity Map
- 2 Study Area Map

Attachments

Project Data Sheets

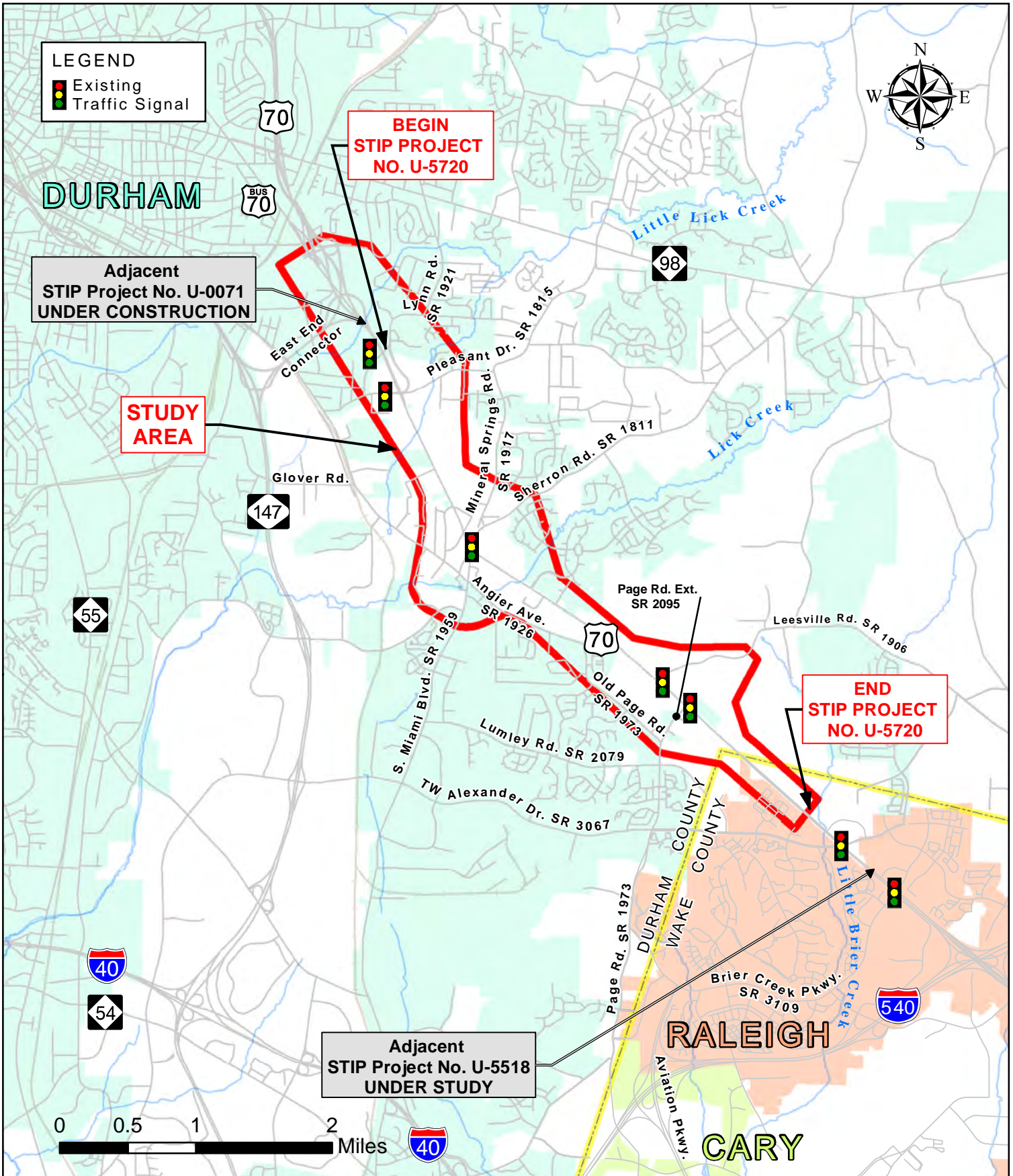
USGS Quad Map

Traffic Volume Diagrams



STIP Project No. U-5720
 US 70 Improvements from Lynn Road (SR 1921) in
 Durham to west of TW Alexander Drive (SR 3067) in Raleigh
 Durham and Wake Counties
VICINITY MAP

FIGURE 1



STIP Project No. U-5720

US 70 Improvements from Lynn Road (SR 1921) in Durham to west of TW Alexander Drive (SR 3067) in Raleigh

Durham and Wake Counties

STUDY AREA MAP

FIGURE 2



Project Data Sheets

STIP No.: U-5720 Sent Date: 6/28/2017

WBS No.: 46308.1.1 Revision Date:

Federal Aid No.: N/A External Scoping Meeting Date: 7/19/2017

Division: 5

Counties: Durham & Wake

Project Description: Upgrade US 70 to a controlled-access facility from SR 1921 (Lynn Road) in Durham to west of SR 3067 (TW Alexander Drive) in Raleigh, and convert the at-grade intersection of US 70 with SR 1811 (Sherron Road)/SR 1959 (South Miami Blvd) to an interchange.

General Project Need:
Preliminary Issues: Congestion and Mobility
 - consistency with the CTP, upgrading US 70 to a freeway
 - inadequate connection between two freeway facilities, the *East End Connector (currently under construction, STIP No. U-0071) and I-540
 - numerous driveways and intersections along US 70
 - travel speed and the amount of delay along US 70
 - level of service along US 70
 - queue lengths along US 70

**The East End Connector provides a link between I-85 and I-40.*

Metropolitan Planning Organizations:
 - Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC-MPO)
 - Capital Area Metropolitan Planning Organization (CAMPO)

NEPA/404 Merger Candidate?: Yes No To Be Determined

Feasibility Study Completed?: Yes No Date of Study: N/A

Project Schedule:

Type of Document:

Dates:

Environmental Document(s):

SEA
SFONSI

Spring 2019
Fall 2020
Spring 2022
Spring 2022

Right of Way Authorization Date:

Let Date:

Cost Estimate:

TIP Estimate: (2017-2027 Draft)

Current Estimate:

Construction:	R/W & Utilities:	Total Cost*:
\$82,300,000	\$53,121,000	\$137,421,000
TBD	TBD	TBD

* Includes \$2,000,000 in prior years cost. The sections of the project east of the Sheron Rd./S. Miami Blvd intersection are unfunded.

Design Criteria:

Length of Project:

Approx. 5 miles

Right of Way:

Existing:

Approx. 100' feet on US 70 northwest of S. Miami Blvd intersection, and 170' southeast of S. Miami Blvd intersection.

Proposed:

TBD

Type of Access Control:

Existing:

None

Proposed:

Full control of access

Roadway Typical Section:

Existing:

- 5-lane with center turn-lane (from Lynn Rd to Peyton Ave, approx. 1.5 miles)
- 4-lane, grass median (from east of S. Miami Blvd/Mineral Springs Rd to west of T.W. Alexander, approx. 3.4 miles)
[At the US 70/S. Miami Blvd/Mineral Springs Rd intersection, US 70 expands to 7 lanes over a distance of approx. 0.2 mile.]

Proposed:

4-lane to 6-lane, divided

Speed:

Existing Posted Speed:

45 mph and 55 mph

Proposed Design Speed:

65 mph (posted 60 mph)

Bridge/Culvert Inventory:

There are no existing bridges or large culverts in the study area except those associated with the U-0071 construction.

Functional Classification:

Existing: other principal arterial

Proposed: freeway

Strategic Transportation Corridor Information:

N/A – This section of US 70 is not identified as one of the 25 Strategic Transportation Corridors.

CTP/Thoroughfare Plan Designation (Facility Type):

Freeway conversion (2040 MTP, CAMPO and DCHCMPO, 2013)

Air Quality Status:

Non-attainment Maintenance* Attainment

Horizon Completion Year (MTP):

2030

Typical Section in Compliance with Conformity Determination?

Yes No

Traffic (AADT):

	Year	Range of Traffic (vehicles per day)		%
Current Year:	2015	36,600 to 46,800		2-4%
Design Year (No Build):	2040	53,700 to 65,200	Dual:	3-6%
Design Year (Build):	2040	TBD**	DHV:	7-9%

**The Traffic Forecast will be requested after the external scoping meeting and additional coordination meetings with the MPOs.

Design Standards Applicable:

AASHTO 3R

Railroad Involvement:

No existing rail lines are in the study area.

Utility Involvement:

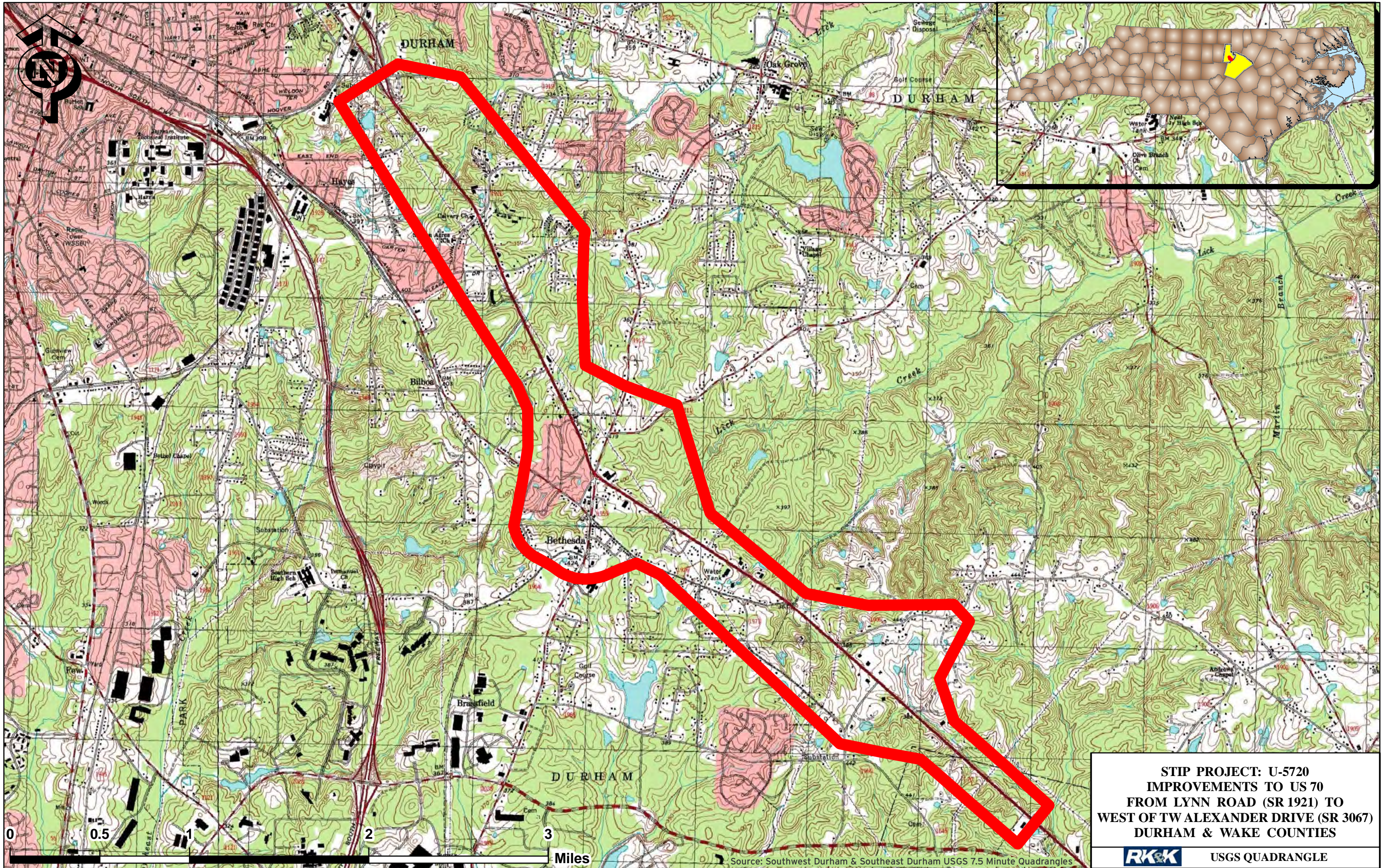
Duke Energy, others TBD

Preliminary Study Area Resources Inventory Table
Subject to Change

Resource / Affected Environment	Applicability / Resources in Study Area
General Project Information	
Intersections	Study area intersections included in the Traffic Estimate: *Lynn Road (in Durham) / US 70 *Pleasant Drive / US 70 Laurel Road / US 70 Marley Ave / US 70 Peyton Ave / US 70 *Mineral Springs Road / Sherron Road *Sherron Road / US 70 / S. Miami Blvd Angier Ave / S. Miami Blvd Copper Leaf Parkway / US 70 Hinesley Dr / US 70 Angier Ave / US 70 *Leesville Road / US 70 Page Road / Angier Ave Page Road / Page Road Ext *Page Road Ext / US 70 *Signalized 100 - Driveways (approximately)
Cultural Resources	
NRHP sites, districts, other properties	No historic architectural sites are listed or eligible for listing in the National Register. Archaeology investigations are underway.
Human Environment	
Community Resources	6 - Churches; 5 – Cemeteries; 1 - Fire Station; 5 – Schools/daycares The importance of pedestrian and bicycle connectivity across US 70 has been noted by the DCHC-MPO and the NCDOT Division of Bicycle and Pedestrian Transportation.
Public Parks, Greenways, Game Lands, Wildlife Refuges, and Land and Water Conservation Fund Properties	No sites are currently identified in the study area. South Miami Boulevard and Sherron Road provide a connection between the proposed Lick Creek Trail (north of US 70) and the Page Branch Creek Trail (south of US 70 and Angier Avenue)
Residential Properties	Many
Business Properties	Many
High % Special Populations (Low-Income, Minority)	Yes. Low-income, minority, and limited English proficiency (LEP) populations are present.
Natural Environment	
Streams Note: Lick Creek and Little Lick Creek are 303(d) listed streams	69 streams were identified in the study area: Lick Creek and UTs to Lick Creek Little Lick Creek and UTs to Little Lick Creek UTs to Little Brier Creek UTs to Stirrup Iron Creek Northeast Creek
Wetlands (est. acres)	Approximately 17.5 acres (95 jurisdictional wetlands)
Critical Water Supply Watersheds	None
Riparian Buffer Rules apply?	Yes, Neuse River Basin Buffer Rules and Jordan Lake Rules
Identified Critical Habitat / ESA	None
Physical Environment	
Hazardous Materials	20 - Underground Storage Tanks (USTs) Note: Geo-environmental investigations have not been completed.
Utilities	- Aerial and underground utilities are located along US 70 and throughout the study area.

Resource / Affected Environment	Applicability / Resources in Study Area
General Project Information	
	<ul style="list-style-type: none"> - Major transmission lines cross US 70 three times within the project limits. - Water tower is located along S. Miami Blvd.
Active agricultural operations and Voluntary Agricultural Districts	<ul style="list-style-type: none"> - North of US 70 (south of Leesville Rd.) is Brier Creek Family Farm - South of US 70 (NE of SR 1645) appears to be cultivated timber - No VADs or EVADs are located in the study area.
Noise	<ul style="list-style-type: none"> Impacts TBD. Noise sensitive receptors are located throughout the study area.

NOTE: This table contains draft information based on initial GIS, desktop review, and site visits. It is intended to be used in conjunction with the Environmental Features Map and the USGS Map. The current Environmental Features Map is located at the Project Store at: \\DOT\Dfsroot01\ProjStore\Proj\TIPProjects-U\U5720\PDEA\Project_Development\External_Scoping_Meeting

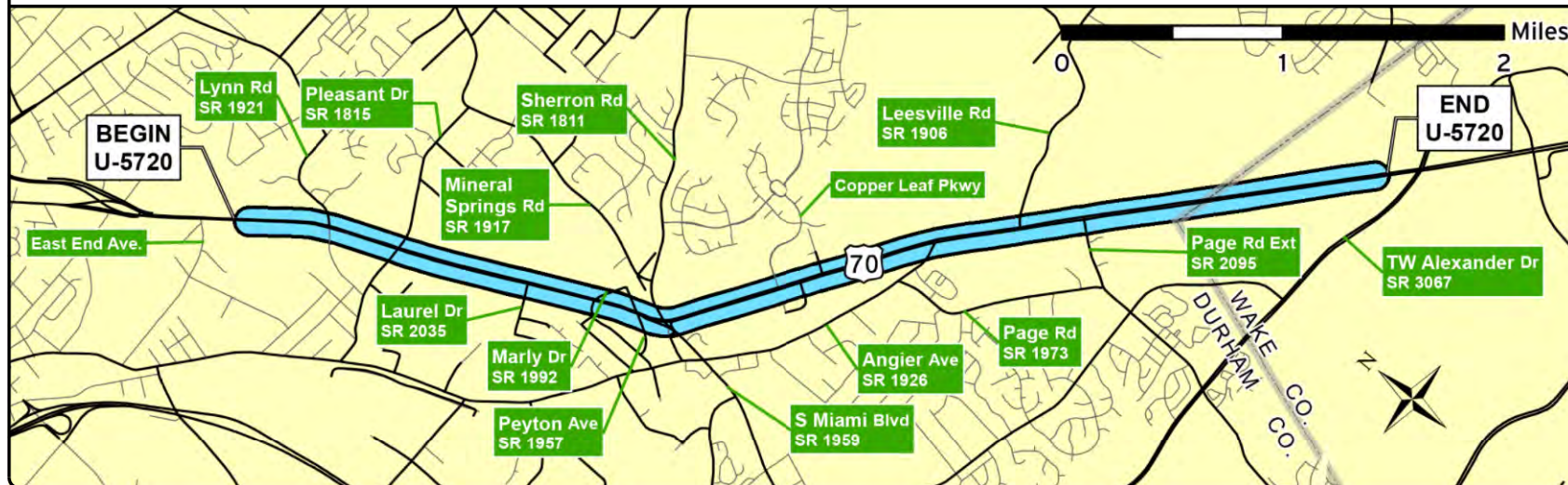
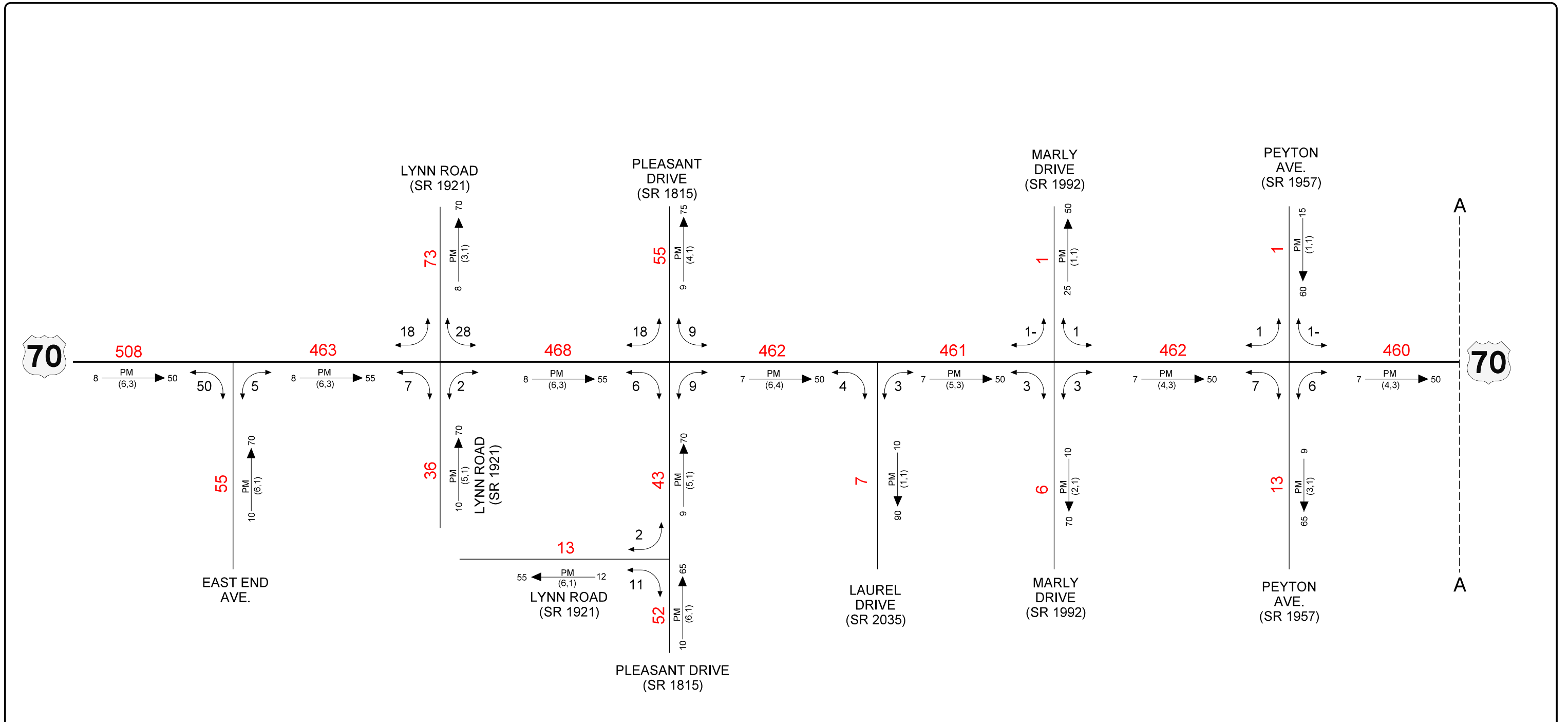


STIP PROJECT: U-5720
IMPROVEMENTS TO US 70
FROM LYNN ROAD (SR 1921) TO
WEST OF TW ALEXANDER DRIVE (SR 3067)
DURHAM & WAKE COUNTIES



USGS QUADRANGLE

Source: Southwest Durham & Southeast Durham USGS 7.5 Minute Quadrangles



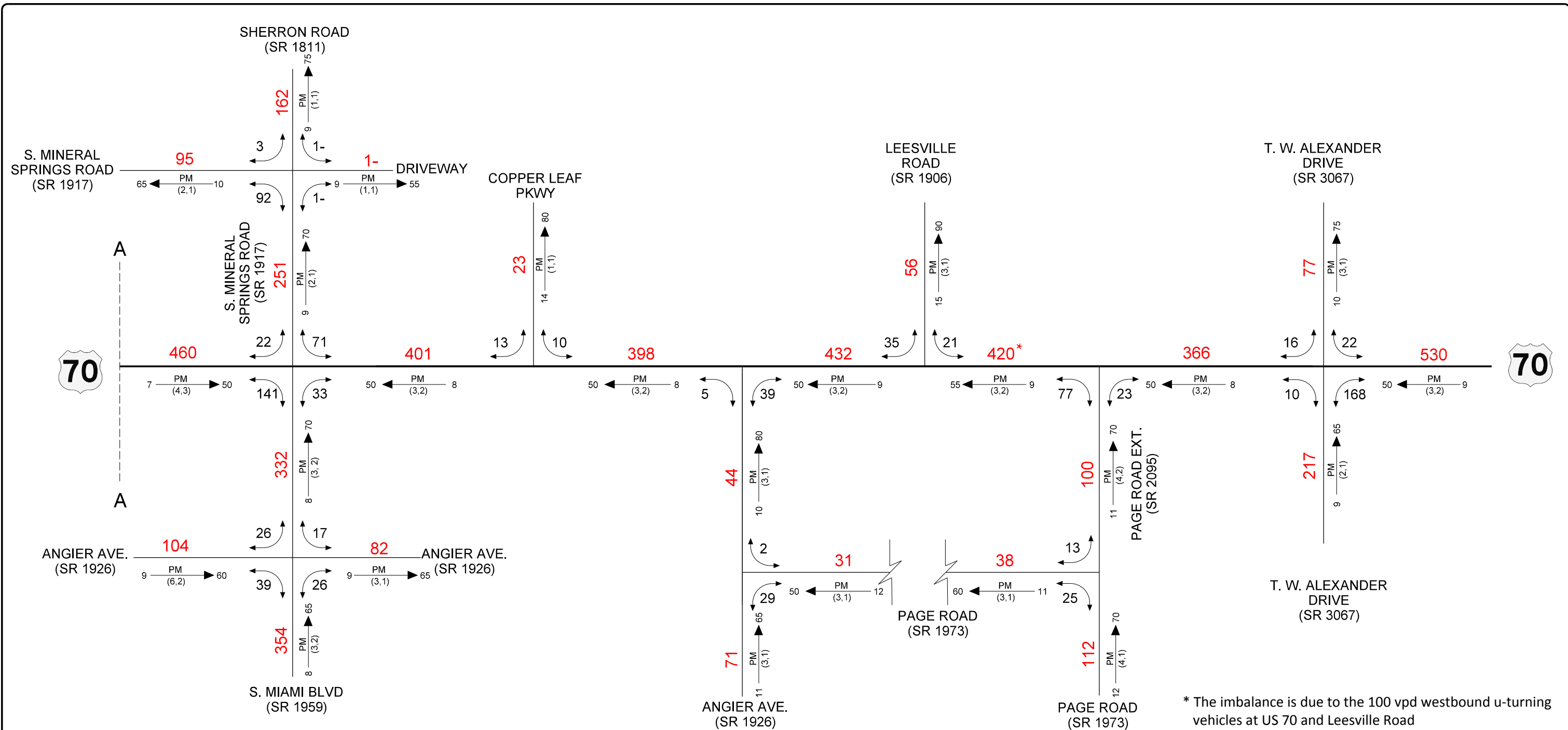
2015 AVERAGE ANNUAL DAILY TRAFFIC No Build SHEET NO. 1 OF 2

TIP: U-5720 WBS: 46308.1.1
 COUNTIES: DURHAM & WAKE CO. DIVISION: 5
 DATE: OCTOBER 2016
 LOCATION: DURHAM, NC
 PROJECT: US 70 IMPROVEMENTS (LYNN ROAD TO WEST OF T.W. ALEXANDER DRIVE)
 PREPARED BY: **RK&K**

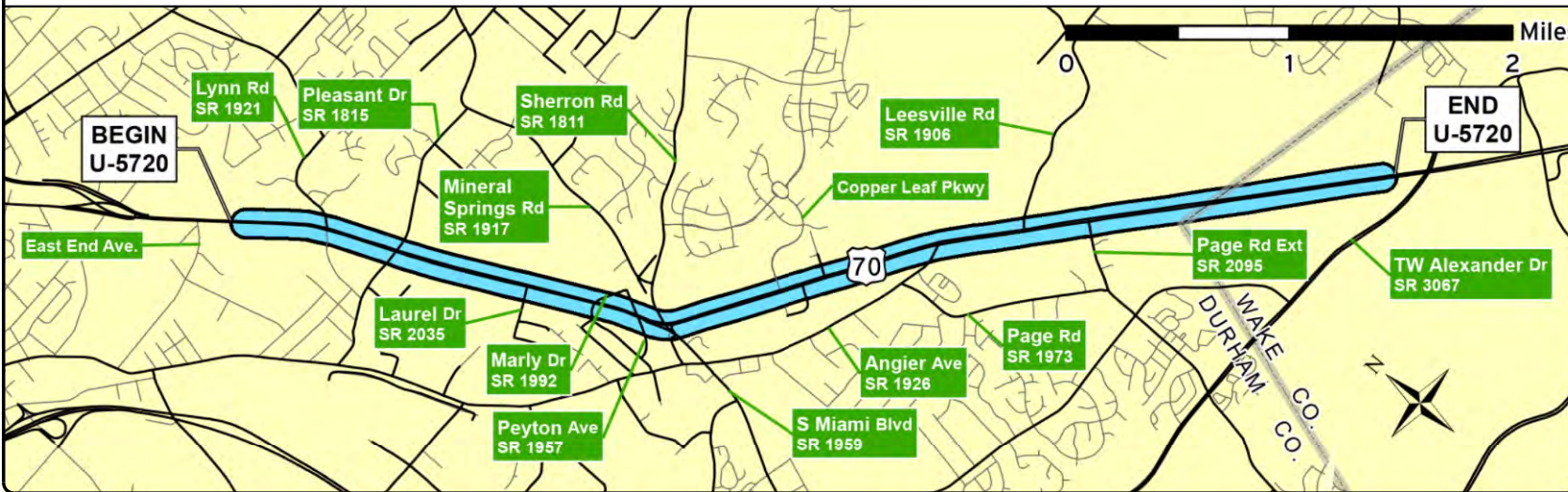
LEGEND

###	No. of Vehicles Per Day (VPD) in 100s	K	Design Hour Factor (%)
1-	Less than 50 VPD	PM	PM Peak Period
X	Movement Prohibited	D	Peak Hour Directional Split
---	Proposed Roadway	→	Indicates Direction
●	Future Interchange Locations	(d,t)	Duals, TT-STs (%)
●	Proposed Interchange Locations	○	Proposed Grade Separation Locations

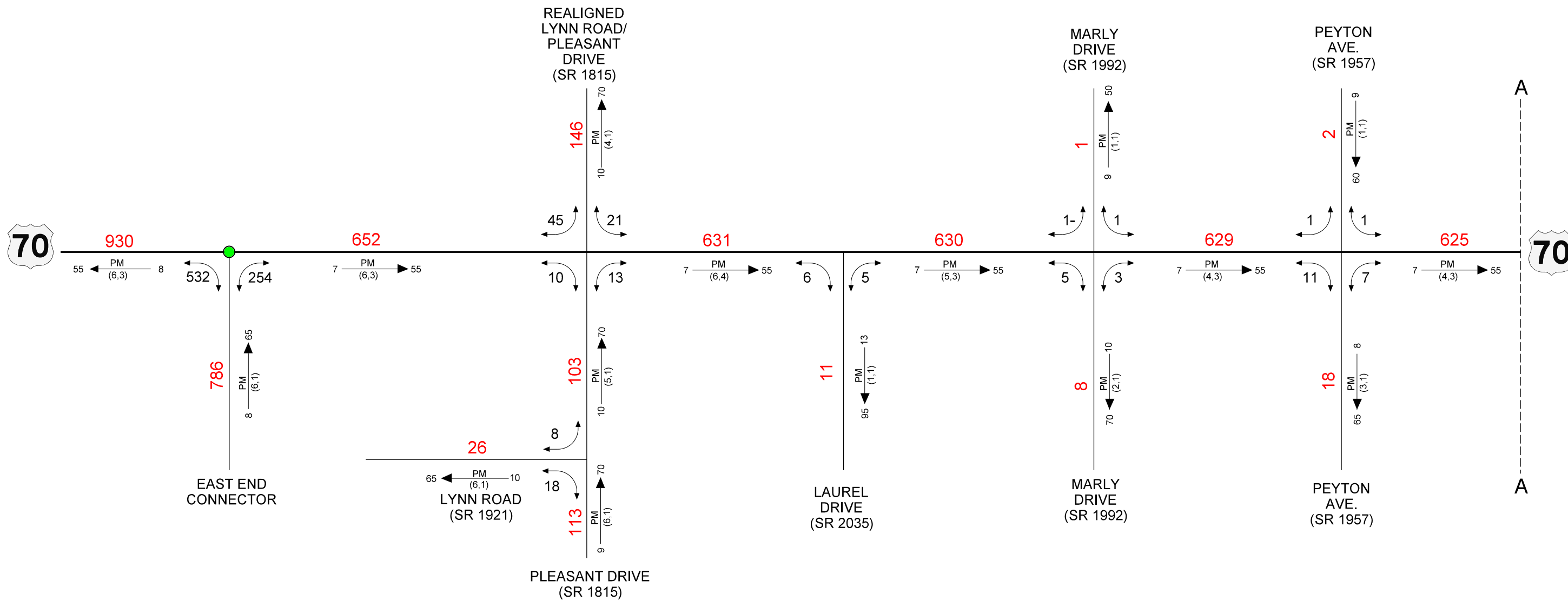
K — PM (d, t) —> D
 (d,t) Duals, TT-STs (%)



* The imbalance is due to the 100 vpd westbound u-turning vehicles at US 70 and Leesville Road



<h1>2015</h1> <h2>LEGEND</h2> <p>### No. of Vehicles Per Day (VPD) in 100s</p> <p>1- Less than 50 VPD</p> <p>X Movement Prohibited</p> <p>--- Proposed Roadway</p> <p>● Future Interchange Locations</p> <p>● Proposed Interchange Locations</p>	<p>AVERAGE ANNUAL DAILY TRAFFIC</p> <p>No Build</p>	<p>SHEET NO. 2 OF 2</p> <p>TIP: U-5720</p> <p>COUNTIES: DURHAM & WAKE CO.</p> <p>DATE: OCTOBER 2016</p> <p>LOCATION: DURHAM, NC</p> <p>PROJECT: US 70 IMPROVEMENTS (LYNN ROAD TO WEST OF T.W. ALEXANDER DRIVE)</p> <p>PREPARED BY: RK&K</p>								
	<p>WBS: 46308.1.1</p> <p>DIVISION: 5</p>	<p> <table border="0"> <tr> <td>K</td> <td>→</td> <td>D</td> </tr> <tr> <td></td> <td>PM</td> <td></td> </tr> <tr> <td></td> <td>(d, t)</td> <td></td> </tr> </table> <p>K Design Hour Factor (%)</p> <p>PM PM Peak Period</p> <p>D Peak Hour Directional Split</p> <p>→ Indicates Direction</p> <p>(d,t) Duals, TT-STs (%)</p> <p>● Proposed Grade Separation Locations</p> </p>	K	→	D		PM			(d, t)
K	→	D								
	PM									
	(d, t)									



2040

AVERAGE ANNUAL DAILY TRAFFIC

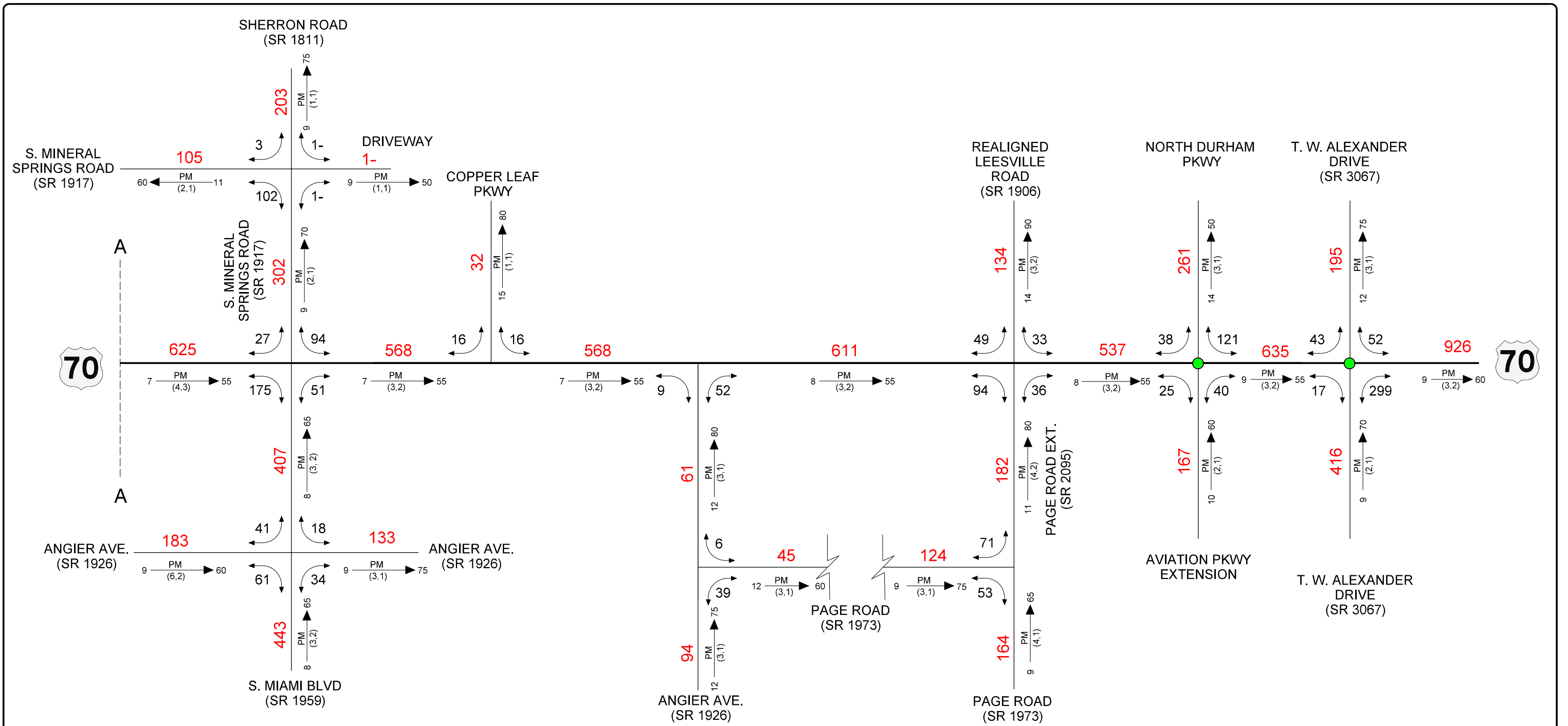
No Build

SHEET NO. 1 OF 2

LEGEND

- ### No. of Vehicles Per Day (VPD) in 100s
- 1- Less than 50 VPD
- X Movement Prohibited
- Proposed Roadway
- Future Interchange Locations
- Proposed Interchange Locations
- K → D (d, t) Design Hour Factor (%)
- PM PM Peak Period
- D Peak Hour Directional Split
- Indicates Direction
- (d,t) Duals, TT-STs (%)
- Proposed Grade Separation Locations

TIP: U-5720	WBS: 46308.1.1
COUNTIES: DURHAM & WAKE CO.	DIVISION: 5
DATE: OCTOBER 2016	
LOCATION: DURHAM, NC	
PROJECT: US 70 IMPROVEMENTS (LYNN ROAD TO WEST OF T.W. ALEXANDER DRIVE)	
PREPARED BY: RK&K	



2040 AVERAGE ANNUAL DAILY TRAFFIC No Build SHEET NO. 2 OF 2

LEGEND

###	No. of Vehicles Per Day (VPD) in 100s	K	Design Hour Factor (%)
1-	Less than 50 VPD	PM	PM Peak Period
X	Movement Prohibited	D	Peak Hour Directional Split
---	Proposed Roadway	→	Indicates Direction
●	Future Interchange Locations	(d,t)	Duals, TT-STs (%)
●	Proposed Interchange Locations	○	Proposed Grade Separation Locations

K — PM (d, t) —> D

TIP: U-5720	WBS: 46308.1.1
COUNTIES: DURHAM & WAKE CO.	DIVISION: 5
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