US 70 Improvement Project

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

Upgrade US 70 to a Controlled-Access Facility and
Convert the At-Grade Intersection of US 70 with
SR 1959 (South Miami Blvd)/SR 1811 (Sherron Road)
to an Interchange
Durham and Wake Counties, North Carolina – NCDOT Division 5

STIP Project No. U-5720
WBS No. 46308.1.1

Draft Purpose and Need Statement

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for the North Carolina Department of Transportation

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1. Introduction

This Purpose and Need Statement for the US 70 Improvement Project was prepared by the North Carolina Department of Transportation (NCDOT) during development of a State Environmental Assessment in compliance with North Carolina's State Environmental Policy Act (SEPA) of 1971 as amended (GS 113A-1 et seq.). This document explains why the proposed action is being undertaken (need) and what the project intends to achieve (purpose). The project's Purpose and Need Statement will provide a basis for the development and evaluation of alternatives.

1.1 Proposed Action

The NCDOT proposes to upgrade US 70 to a controlled-access facility from Lynn Road (SR 1921) in Durham to west of TW Alexander Drive (SR 3067) 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. 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).

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.

1.2 Need for Project

The following conditions demonstrate the need for the project. Detailed descriptions of the existing and projected conditions supporting the need for the project are presented in Sections 1.4 through 1.8.

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. (Section 1.5.1.2)
- 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. (Sections 1.5.1.2 and 1.5.1.3)

- 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. (Sections 1.5.1.1 and 1.7.3)
- 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. (Sections 1.5.1 and 1.7.3)

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. (Sections 1.5.1.2 and 1.5.1.3)

Congested Conditions Impede Mobility and are Indicated by Increasing Traffic Volumes, Poor Levels of Service[1], Queue Lengths, Travel Delays, and Rear End Crashes[2]

- 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. (Section 1.8.1)
- 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. (Section 1.8.2)
- 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. (Section 1.8.2.2)
- 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. (Section 1.8.2.2)
- 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

[1] Level of service (LOS) refers to the quality of service provided to the user of a transportation system and it is used to categorize traffic operations. LOS categories range from "A" representing the best operating conditions to "F" representing the worst conditions.

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

conditions. Limited sight distance, steep grades and substandard vertical alignment along US 70 also contribute to this type of crashes. (Section 1.8.3)

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. (Section 1.5.1.2)
- 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. (Section 1.5.1.4)

1.3 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).

The US 70 typical section varies from five-lanes, including a two-way center turn lane, to a four-lane, median-divided roadway.

1.4 Project Description

1.4.1 Project Setting and Study Area

STIP Project No. U-5720 is in Durham and Wake Counties, in the central Piedmont region of North Carolina, the topography of which is characterized by rolling hills. Durham and Wake Counties are home to the 7,000-acre Research Triangle Park (RTP) and its approximately 170 research, technology and bio-technology companies employing approximately 38,000 people (Research Triangle Region, 2016). Durham and Wake Counties are anchored by the county seats of Durham and Raleigh, respectively. In

addition to these cities, there are numerous other municipalities and unincorporated communities that are located throughout the two counties that also have cultural, historical, and economic significance to the region. According to the US Census Bureau, the 2014 estimated population of the Raleigh-Durham-Chapel Hill Combined Statistical Area was 2,075,126.

The City of Durham (July 2015 est. pop 290,874) is currently the fourth largest municipality in the state and is known as the 'City of Medicine' (City of Durham, 2016). Durham is home to Duke University, the associated Duke University Medical Center, and many research and healthcare-related industries that employ nearly 30 percent of workers in the county. Durham is also home to North Carolina Central University. Durham, particularly the downtown, has experienced a resurgence in recent years with the revitalization of older industrial properties, new commercial and residential construction and a subsequent increase in residents and start-up companies choosing to locate there.

The City of Raleigh is the second largest municipality in the state (behind only Charlotte). Raleigh is often found on 'best of' national rankings compiled by various sources. In 2016, the city was ranked by Forbes number two nationally for *Tech Job Hot Spots* and number five on a list of *America's Next Boom Towns* (City of Raleigh, 2016a). Raleigh, an early example of an American planned city, was established expressly to be the capital of North Carolina. As a result, the city is home to a large state government complex, which is the employment center for tens of thousands of state workers and elected officials. Raleigh also has numerous other large employers, corporate headquarters and medical centers. Furthermore, the city is home to institutions of higher learning such as: North Carolina State University, William Peace University, Meredith College, Shaw University, Saint Augustine's University and Campbell University's Law School. Additional information about the local economy is included in Section 1.6.2.

The US 70 study area is primarily within Durham's (city and county) planning and service area boundaries. The portion of the project in Wake County falls within Wake County, City of Raleigh, and City of Durham jurisdictions. (The City of Durham annexed properties in Wake County on the north side of US 70.) Overall, the US 70 corridor includes both older, established development and recent development. Land use along the corridor is varied and includes a mix of highway commercial, industrial, institutional (e.g., churches, day care, non-profit facility), single-family residential, multi-family residential, as well as undeveloped parcels. Single-family development includes recently-constructed subdivisions and older homes in established neighborhoods and on individual lots. There are commercial clusters with both convenience and destination type businesses in the vicinity of the intersections of US 70 with Pleasant Drive, South Miami Boulevard, and Page Road Extension. The area adjacent to the western terminus is largely undeveloped, but is slated for development (Section 1.6.3). Residential development is occurring primarily on the north side of US 70. The eastern terminus is adjacent to the burgeoning Brier Creek area with its varied and denser mixed-use development.

1.4.2 Project Background

The U-5720 project was first envisioned as a freeway as a result of the elimination of a project called Eno Drive, then Durham's 20-mile northern loop project. Because of grassroots opposition to Eno Drive, a series of projects emerged as a compromise to replace the controversial Eno Drive project. These projects, collectively referred to as the Durham Northern Loop, included:

- East End Connector
- US 70, from Lynn Road to the Northern Durham Parkway (#2 priority at the time)
- I-85 from US 70 to Red Mill Road
- Northern Durham Parkway, Section A, from I-85 to I-540
- Northern Durham Parkway, Section B, from Old Oxford Road to I-85

- Northern Durham Parkway, Section C, from Old Oxford Road to Roxboro Road
- Roxboro Road from Duke Street to Goodwin Road

In 2003, state legislation (S.L 2003-284) allocated funds from the Highway Trust Fund for specific urban loop projects, including the Durham Northern Loop. The legislation stated that "cross sections of these projects will be established by mutual agreement of the MPO and the NCDOT through the State and federal environmental review process." At that time, the US 70 freeway conversion project was added to the STIP (as U-4720), but was not funded. The project (U-4720) remained in the STIP as an unfunded project until the urban loop statute was repealed in 2011 (S.L. 2011-145 28.34(a)).

In 2005, the US 70 project, with a 6-lane freeway cross-section, was included in the Durham-Chapel Hill Carrboro MPO's 2030 Long Range Transportation Plan (LRTP) as the number two priority (number one was the East End Connector). Other segments specified in the urban loop legislation were priorities three through seven (listed above). The next version of the LRTP, adopted in 2009, also included the US 70 project.

In 2013, the joint Durham-Chapel Hill-Carrboro MPO (DCHC MPO) / Capital Area MPO (CAMPO) 2040 Metropolitan Transportation Plan identified projects supporting the vision for a US 70 freeway. The US 70 freeway conversion project was listed as one of the DCHC MPO's four major projects for the 2021-2030 time period. This plan also included the proposed US 70/South Miami Blvd interchange. (Additional information about the current MTP is included in Section 1.7.1.)

The US 70 project was submitted for scoring under the NCDOT's prioritization process established by law in 2013 with a new number (as U-5720). U-5720 was later added to the 2016-2025 STIP, with partial funding.

1.5 Existing Transportation System

1.5.1 Roadway Network

1.5.1.1 Regional Network

The Raleigh-Durham area is accessed by several interstates, I-40 and I-85, which converge west of Durham. Other freeway facilities in the Raleigh-Durham area include I-540/NC 540, NC 147, and the East End Connector (under construction). The relationship of the US 70 corridor to the existing roadway network is shown in Figure 1 and Figure 2. Freeway facilities and their role in the regional network are described below:

- **I-40** – I-40 is a major east-west interstate stretching from North Carolina to California. Regionally, I-40 traverses southern Durham County, connecting Raleigh (to the east) and Chapel Hill (to the west) to the RTP. This section of I-40 is a heavily traveled route for commuters. West of Durham and Chapel Hill, I-40 merges with I-85. I-40 near I-540 is one of the most congested corridors in the DCHC MPO region (DCHC MPO, 2015).
- **I-85** –Serving the southeast United States, I-85 stretches from I-65 in Alabama to I-95 in Virginia. It connects

East End Connector construction at the western project terminus

Durham to Virginia and western North Carolina. Although the interstate is a north-south route, it generally runs east-west to the west of Durham towards Greensboro.

- **I-540 / NC 540** – I-540 and NC 540 are part of Raleigh's partially completed outer loop. The I-540 freeway, as currently completed, is routed north of Raleigh and connects US 264/64 (east of Raleigh) to US 70 and I-40 (east of Raleigh). South of the I-40 interchange, the freeway continues as NC 540, a toll facility, terminating just east of its interchange with US 1. NC 540 also interchanges with US 64.
- **NC 147** – NC 147 (Durham Freeway) is a freeway facility extending from I-85 west of downtown Durham to I-540 in western Wake County. The roadway connects downtown Durham and Duke University with the RTP. South of I-40, the roadway was constructed as a toll facility, called the Triangle Expressway.
- **East End Connector** – This 3.9-mile freeway will provide a direct connection between the Durham Freeway and US 70. Upon completion, the roadway will create a link between I-85 in northwest Durham and I-40 in the RTP. The western terminus of the US 70 project ties into the East End Connector project.

1.5.1.2 US 70

US 70 is an east-west highway that stretches from Arizona to eastern North Carolina. In North Carolina, US 70 traverses the state from the Tennessee border (west of Asheville) to east of Morehead City (on the coast), connecting cities such as Asheville, Greensboro, Durham, Raleigh, Kinston, and New Bern along the way. In recent years, there have been various projects in different stages of the project development process, to upgrade US 70 east of Raleigh to a freeway and bypass communities on new location to improve mobility and facilitate goods movement for economic development.

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).

Within the project area, US 70 is currently classified by NCDOT as "Other Principal Arterial" with no access control. The roadway typical section varies within the study area. Between Lynn Road and

Limited sight distance along US 70

US 70 intersection with South Miami Boulevard / Sherron Road

Peyton Avenue, a distance of approximately 1.5 miles, US 70 is a five-lane roadway including a two-way center turn lane. From just southeast of the South Miami Boulevard/Sherron Road intersection to west of TW Alexander Drive, a distance of approximately 3.4 miles, US 70 is a four-lane, median-divided roadway. In addition, US 70 widens to include multiple turn lanes at the South Miami Boulevard/Sherron Road intersection for a distance of approximately 0.2 miles.

The current right-of-way width along this portion of US 70 varies from approximately 100 feet northwest of the South Miami Boulevard/Sherron Road intersection, to approximately 170 feet southeast of the same intersection and continuing to the eastern project terminus. Existing posted speed limits vary from 45 miles per hour (mph) along the five-lane section, to 55 mph along the four-lane section.

Due to the rolling topography of the area, there are 24 vertical curves (crests and sags) on US 70 within the project limits, 13 of which do not meet the existing posted speed limit. These deficiencies result in poor sight distance, which contributes to the high crash rate. (See Section 1.8.3.) Adequate sight distance allows a driver time to react to a hazard in the roadway over the top (crest) or bottom (sag) of a hill and bring the vehicle to a complete stop. At night, adequate sight distance allows a vehicle's headlight beam to shine a distance equal to the stopping sight distance for that vehicle. There are also areas which are deficient based on current standards for clear zone widths (offset distances to objects in the right of way), shoulder widths, and ditch widths.

1.5.1.3 Intersecting Roadways

The primary north-south route across the US 70 corridor follows South Miami Boulevard and Sherron Road. These roadways intersect US 70, with South Miami Boulevard as the southern leg of the intersection and Sherron Road as the northern leg of the intersection.[3] South Miami Boulevard is functionally classified as "Other Principal Arterial." Approximately 4 miles south of US 70, South Miami Boulevard interchanges with I-40. As a primary north-south route through the RTP, South Miami Boulevard is a heavily traveled commuter route. At the intersection with US 70, the roadway is a four-lane section with dual northbound left-turn lanes and an exclusive northbound right-turn lane. Beyond the intersection, South Miami Boulevard is typically a four-lane section with a center-turn lane.

Functionally classified as a "Minor Arterial," Sherron Road extends from US 70 to the south to NC 98 to the north, a distance of approximately 3.2 miles. (North of NC 98, the name of the roadway changes to Patterson Road.) At the US 70 intersection, the roadway is a four-lane section with dual southbound left-turn lanes and an exclusive southbound right-turn lane. Northeast of the intersection with Mineral Springs Road, the roadway narrows to two lanes with a center-turn lane. Beyond several recently-constructed residential developments, Sherron Road continues as a two-lane section. In addition to serving adjacent residential development, Sherron Road is a route for commuters. The posted speed limit along Sherron Road is 45 mph.

In addition to the US 70 intersection with South Miami Boulevard/Sherron Road, there are twelve intersections with US 70 within the project limits. Intersections are listed in Table 1 and shown on Figure 2. Because there is no access control, there are also approximately 100 driveways connecting to the roadway.

[3] West of the intersection, US 70 is signed as Miami Boulevard; however, this report does not refer to this section of US 70 as Miami Boulevard.

Table 1. Intersecting Roadways

Road Name	Functional Classification	Signalized/ Unsignalized
Lynn Road	Local	signalized
Pleasant Drive	Local	signalized
Laurel Drive	Local	unsignalized
Marly Drive	Local	unsignalized
Peyton Avenue	Local	unsignalized
South Miami Boulevard / Sherron Road	Other Principal Arterial / Minor Arterial	signalized
Copper Leaf Parkway	Local	unsignalized
Hinesley Drive	N/A	unsignalized
Sanders Avenue	N/A	unsignalized
Angier Avenue	Major Collector	unsignalized
Leesville Road	Local	signalized
Page Road Extension	Major Collector	signalized

1.5.1.4 Pedestrian and Bicycle Facilities

US 70 is a barrier to bicycle and pedestrian mobility in the area. Sidewalks along US 70 are limited to noncontiguous segments along recently developed parcels, most of which are located northwest of the US 70 intersection with South Miami Boulevard/Sherron Road. Sidewalks along South Miami Boulevard extend approximately one mile south of US 70. Along Sherron Road, sidewalks extend along both sides of the roadway approximately 0.25 miles north of US 70.

No bicycle facilities were identified within the US 70 corridor; however, there are local routes in the area. A local route follows South Miami Boulevard, crossing US 70 to Sherron Road. A route also follows Angier Avenue from northwest of South Miami Boulevard, then follows Pettigrew Street into downtown Durham. South of US 70 and into Wake County, local routes also follow segments of Lumley Road and TW Alexander Drive. According to the Durham County Bike and Hike Map, these routes (with the exception of a segment of Pettigrew Street) are typically used by "experienced cyclists on higher speed and/or volume roads" (City of Durham, 2012a).

1.5.2 Public Transit

Several transit systems operate in the area. Riders using GoDurham, GoTriangle, or GoRaleigh, can expand their travel area by transferring between transit systems.

GoDurham is the bus transit service provider for the City of Durham, operating 17 routes in the Durham area. There is one fixed route (2/2A) along US 70 between Page Road Extension and Pleasant Drive, with bus stops on US 70 near Pleasant Drive and South Miami Boulevard. This route travels US 70 in the eastbound direction and utilizes parallel routes, Page Road and Angier Avenue, in the westbound direction. An express route, which provides service from the Brier Creek area in Raleigh to downtown Durham, crosses US 70 along TW Alexander Drive. Another route travels Lynn Road north of US 70 to NC 98 (3C). The land uses and pedestrian access along the US 70 corridor are not generally conducive to public transit ridership.

GoTriangle provides regional fixed route bus service within Durham, Wake, and Orange counties. These routes provide access to Raleigh, RTP, Chapel Hill, Durham, and other locations in the surrounding area. In 2015, transit ridership was over 1.84 million people and the buses traveled over 2.6 million miles (GoTriangle, 2015). There are no routes along US 70 in the study area. Routes between Raleigh and Durham are generally focused along I-40 and the Durham Freeway.

GoRaleigh provides fixed route bus service throughout the city of Raleigh. Although there are no routes in the U-5720 study area, one route provides service to the Brier Creek area, just southeast of the study area.

1.5.3 Motor Freight

US 70 through the study area is an unrestricted truck route in the state's truck network and is designated for Surface Transportation Assistance Act (STAA)[4] dimensioned vehicles. Such vehicles include 53-foot semi-trailer trucks.

Motor freight terminals/facilities within the US 70 corridor include:

- Ward Transportation and Logistics Corporation terminal (1810 US Highway 70 East)
- Wilson Trucking Company terminal (3215 US Highway 70 East)
- National Fleet Management repair facility (3303 US Highway 70 East)
- McKesson Inc. warehouse/trucking terminal (3213 US Highway 70 East)
- RR Donnelley facility (1 Litho Way)
- Salem Nationalease Corporation terminal (3415 US Highway 70 East)

The DCHC MPO and CAMPO are partnering with the NCDOT to develop a Regional Freight Plan for the Triangle region. The plan will provide a framework for freight recommendations for the 2045 joint Metropolitan Transportation Plan (MTP) for the Triangle region (CAMPO, 2017).

1.5.4 Rail

There are no rail lines within the study area; however, the North Carolina Railroad (NCRR) corridor is to the south of the study area. Amtrak operates passenger trains and Norfolk Southern operates freight trains through this area. Amtrak operates daily service between New York City and Charlotte with a stop in downtown Durham. Norfolk Southern owns tracks within the NCRR corridor that run parallel to a segment of Angier Avenue. A switch yard (with seven tracks) is located south of Angier Avenue near the western project terminus.

1.5.5 Airports

The Raleigh-Durham International Airport (RDU), which serves the Triangle region and surrounding counties, is located approximately 1.5 miles southeast of the eastern project terminus, outside of the study area. RDU is home to nine airlines, serving 47 non-stop destinations on over 400 daily flights. In 2015, over 9.9 million passengers traveled through RDU (Raleigh-Durham International Airport, 2016). RDU's cargo facilities also support the business and economic needs of the region. I-40, US 70, and I-540 are the major routes providing access to the airport.

1.6 Social and Economic Conditions

1.6.1 Population

Durham and Wake Counties comprise a portion of the multi-county Research Triangle region. As defined by the US Census Bureau, the Raleigh-Durham-Chapel Hill Combined Statistical Area (CSA) is an eleven-county region surrounding the RTP. Between 1990 and 2010, the Raleigh-Durham-Chapel Hill CSA experienced 78 percent growth in population. Durham County accounted for 10 percent and Wake County accounted for 57 percent of the total population growth within the CSA (US Decennial Census, 2016).

[4] The Surface Transportation Assistance Act of 1982 is the enabling federal legislation which allows twin trailers to travel on interstate highways and other approved routes.

From 2000 to 2010, Durham County's population increased 19.8 percent, or 1.8 percent annually, while Wake County' population increased 43.5 percent, or 3.7 percent annually. During the same period, the state's population increased 1.7 percent annually, a similar rate to Durham County. The US Census block groups along the US 70 corridor, which define a Demographic Study Area, also experienced substantial population growth of 5.9 percent annually from 2000 to 2010. (See Table 1.) However, nearly half (47.4 percent) of that growth can be attributed to the Brier Creek area of Raleigh, which was developed during this period. Recent population growth along the corridor can also be attributed to Brightleaf at the Park, a large residential development with a mix of single-family and multi-family homes. In recent years, the Raleigh-Durham area overall, has continued to experience substantial growth.

Table 2. Population Change - 2000 to 2010

Geography 2000	Geography 2010	2000	2010	Difference	Percent Change	Annualized Growth Rate
CT 18.05, BG 3	CT 18.08, BG 2	1,375	2,966	1,591	115.7%	8.0%
CT 18.05, BG 1	CT 18.09, BG 1	1,196	2,484	1,288	107.7%	7.6%
CT 19, BG 1	CT 19, BG 1	748	729	(19)	-2.5%	-0.3%
CT 18.02, BG 3	CT 18.02, BG 4	714	898	184	25.8%	2.3%
CT 18.04, BG 4	CT 18.07, BG 1	1,906	3,266	1,360	71.4%	5.5%
CT 18.02, BG 2	CT 18.02, BG 3	1,629	2,176	547	33.6%	2.9%
CT 18.05, BG 2	CT 18.09, BG 2	1,792	2,664	872	48.7%	4.0%
CT 537.03	CT 537.17 - 537.21	13,944	17,644	3,700	26.5%	2.4%
CT 536, BG 3	CT 536.10	35	8,620	8,585	24,528.6%	73.4%
Demographic Study Area		**23,339**	**41,447**	**18,108**	**77.6%**	**5.9%**
Durham County		**223,314**	**267,587**	**44,273**	**19.8%**	**1.8%**
Wake County		**627,846**	**900,993**	**273,147**	**43.5%**	**3.7%**
North Carolina		**8,049,313**	**9,535,483**	**1,486,170**	**18.5%**	**1.7%**

Source: US Census Bureau, Census 2010 and Census 2000, Summary File 1 100% Data, Table P1 and P001 "Total Population."

Note: Census boundaries changed substantially in the Wake County portion of the Demographic Study Area from 2000 to 2010. In order to accurately compare population change, the Demographic Study Area boundary was expanded to include comparable geographies.

Population forecasts indicate continued growth for the region. The North Carolina Office of State Budget and Management (OSBM) projects that the Research Triangle area will have one of the highest population growth rates in the state through 2036. According to county population projections provided by the OSBM, the populations of Durham and Wake Counties will increase 37.6 percent and 48.0 percent, respectively, from 2010 to 2030. Durham County population growth is expected to continue at a rate similar to recent growth trends. Although Wake County's population growth is expected to slow compared to recent years, growth is projected to continue at a slightly higher rate compared to Durham County.

1.6.2 Economics and Commuting

The Triangle region enjoys a diverse, growing economy and attractive quality of life. At the core of the region's economy are several major research universities and their associated medical centers, technology firms and companies in the Research Triangle Park, and state government. These employers have more than 5,000 employees in the region.

Durham and Wake Counties are among the ten least stressed counties in the state, as ranked by the North Carolina Department of Commerce. The Department annually ranks the state's 100 counties based on economic well-being (Tier 1: Most distressed to Tier 3: Least distressed). Both counties have been ranked in Tier 3 since 2007 when the development tiers were first designated. Unemployment rates remain low, as the North Carolina Department of Commerce reports that 2015 annual

unemployment rates for Durham County and Wake County were 4.2 percent and 4.0 percent, respectively.

According to the North Carolina Department of Commerce, and as of the 4th quarter of 2015, there were 20 employers in Durham County with more than 1,000 employees and at least 25 employers in Wake County with more than 1,000 employees. Primary employment centers in the region are the downtowns of Raleigh and Durham, the Research Triangle Park area, the university/medical center areas associated with Duke University and UNC-Chapel Hill, NC State University, and North Carolina Central University. Government jobs account for approximately 11 percent of Durham County's jobs and approximately 15 percent of Wake County's jobs. Employment for both counties, including the ten industrial sectors with the highest employment, is shown in Table 3.

Table 3. Employment Distribution by Industrial Sector

Sector	Durham County		Wake County	
Total All Industries	**197,046**	**100.0%**	**529,870**	**100.0%**
Government	**20,872**	**10.6%**	**79,413**	**15.0%**
Total Private Industry	**176,174**	**89.4%**	**450,457**	**85.0%**
Health Care and Social Assistance	42,705	21.7%	56,116	10.6%
Retail Trade	14,557	7.4%	60,881	11.5%
Professional and Technical Services	23,151	11.7%	49,763	9.4%
Accommodation and Food Services	15,985	8.1%	51,161	9.7%
Administrative and Waste Services	10,168	5.2%	46,034	8.7%
Manufacturing	23,573	12.0%	25,187	4.8%
Educational Services	14,877	7.6%	29,860	5.6%
Public Administration	3,593	1.8%	41,031	7.7%
Construction	4,617	2.3%	30,233	5.7%
Finance and Insurance	9,742	4.9%	19,228	3.6%

Source: North Carolina Department of Commerce. AccessNC. http://accessnc.commerce.state.nc.us/EDIS/ page1.html. 2016Q2.

The location and number of large employment centers in the region results in significant commuting. The most heavily traveled route for commuters is I-40 between Raleigh and Durham. Commute times are 30 minutes or longer for 26 percent of Durham workers (16 years and older) and 32.5 percent of Wake County workers (16 years and older). Of the workers commuting into Durham County, more workers are Wake County residents (59,589 jobs or 47.4 percent of inflow jobs). Conversely, most Durham County residents who work outside of the county commute to jobs in Wake County (26,064 jobs or 44.2 percent of outflow jobs) (North Carolina Department of Commerce, 2014).

1.6.3 Land Use Plans

1.6.3.1 Durham Comprehensive Plan

The *Durham Comprehensive Plan*, adopted in 2012, expresses the city and county's vision for future growth and development. The plan is used to guide public and private decision-making about physical development and infrastructure. The Future Land Use map (amended August 30, 2016) establishes locations of development tiers and identifies the appropriate land use category for all parcels in Durham. (See Appendix A.) US 70 (within the study area) is within a "suburban" development tier. Properties within this area are expected to develop at traditional suburban densities and patterns. The map indicates a mix of land uses along the US 70 corridor, with primarily commercial or industrial uses adjacent to US 70 and low- to medium-density residential uses beyond the roadway. A cluster of commercial properties is shown at the US 70 intersection with South Miami Boulevard. Because the City of Durham annexed properties on the north side of US 70 in Wake County, the Future Land Use map

extends into Wake County. Properties on the north side of US 70 are classified as low- to medium-density residential use with a cluster of commercial use at the US 70 intersection with TW Alexander Drive (north side of US 70). Future recreation/open space is shown along Little Brier Creek.

1.6.3.2 Raleigh 2030 Comprehensive Plan

The City of Raleigh describes its comprehensive plan as "the key policy document that helps make the city workable, livable, and prosperous." The 2030 Comprehensive Plan was adopted in October 2009 and became effective the following month. An update is underway.

The land use chapter provides a generalized guide for land use decisions and seeks to guide growth and development in a more compact and efficient pattern. As shown on the Future Land Use Map, the area surrounding the US 70 intersection with TW Alexander Drive is classified as "regional mixed use," which is used to "identify the major retail and service hubs that draw customers from across the city." The area may include high-density housing and higher intensity office and retail uses serving the region. Vacant properties on the south side of US 70 (near the county line) are designated for future office and residential mixed uses. Similar to Durham's future land use plan, an open space corridor is shown along Little Brier Creek.

Raleigh's policies for bicycles and pedestrians are also documented in the 2030 Raleigh Comprehensive Plan. The 2030 Raleigh Comprehensive Plan notes that bicycles and pedestrians are an important component of the city's transportation system and includes a number of general policies regarding bicycle and pedestrian circulation, networks and infrastructure.

1.7 Transportation Plans

There are several state and local transportation plans that reference the US 70 project and/or are applicable to the study area. This section includes a summary of relevant information from the following plans:

- 2040 Metropolitan Transportation Plan (MTP) (2013)
- Durham Comprehensive Transportation Plan (CTP) (2017 draft)
- NCDOT State Transportation Improvement Program (STIP) (2017 draft)
- Regional Transit Vision Plan: Recommendation's for North Carolina's Research Triangle Region (2008)
- Durham County Bus and Rail Investment Plan (2011)
- Wake County Transit Plan (2015)
- GoRaleigh Transit Plans (2012)
- Durham Trails and Greenways Master Plan (2011)
- DurhamWalks! Pedestrian Plan (2006)
- Durham City and County Comprehensive Bicycle Transportation Plan (2006)
- Raleigh Pedestrian Plan (2012)
- Raleigh Bicycle Transportation Plan (2009)

1.7.1 2040 Metropolitan Transportation Plan

The DCHC MPO and CAMPO adopted their most recent joint comprehensive transportation plan in 2013. The fiscally constrained 2040 MTP identifies the highway, transit and other transportation facilities to be implemented in the region over the next 30 years. The 2040 MTP Roadway Improvements map is provided in Appendix A.

The 2040 MTP identifies several components of U-5720, all supporting the vision of a controlled-access facility: US 70 freeway conversion from Lynn Road to the Durham County line (#116), US 70/Miami

Boulevard interchange (#116.1), and US 70 upgrade to freeway from Durham County line to Lumley/ Westgate Road (#A412). These projects have a 2030 horizon year.[5] The US 70 freeway conversion project is listed as one of the DCHC MPO's four major projects for the 2021-2030 time period. In addition, the 2014 MTP identifies the US 70/TW Alexander interchange project (#A645), with a horizon year of 2020. This project is listed as one of the CAMPO's six major projects for the 2011-2020 time period.

Several other widening or new location projects are identified in the US 70 corridor:

Horizon year 2020

- Widen Miami Boulevard from Methodist Drive to Angier Avenue (#59) [U-4011]

Horizon year 2030

- Aviation Parkway Extension from Brier Creek Parkway to US 70 (#F17) [U-4721A]
- TW Alexander Drive Extension from Brier Creek Parkway to Leesville Road (#A155c)

Horizon year 2040

- Leesville Road Extension from Northern Parkway to US 70/Page Road Extension (#53)
- Northern Durham Parkway from US 70 East to I-85 North (#83) [U-4721B&C]
- Widen TW Alexander Drive from Aviation Parkway to US 70 (#A155b)

Recommended transit investments in the 2040 MTP are based on a previously-adopted vision for transit across the region and incorporate county-level transit investment plans and transit corridor alternatives analyses. (See Section 1.8.4.) A complete transit network for the region will focus on a substantial expansion of bus service; rail transit connecting the region's principal activity centers (Chapel Hill, Durham, RTP, Cary and Raleigh); and circulators, which would provide high-frequency, short-distance services linking neighborhoods to major activity centers and high-capacity bus and rail corridors. The 2040 MTP Transit Map indicates potential corridors for light rail, commuter rail, and premium transit study, as well as regional bus routes. A "Triangle Region Bus Route" is shown along segments of US 70. In Wake County, the US 70 corridor is included in a transit study corridor; however, there are no other transit study corridors, light rail corridors, or commuter rail corridors in the project study area.

The DCHC MPO and CAMPO encourage "the creation of a pedestrian and bicycle system that provides an alternative means of transportation, allows greater access to public transit, and supports recreational opportunities." Toward this end, the 2040 MTP supports the integration of identified bicycle and pedestrian needs into the design and construction specification of new highways and other future transportation projects. Building on a number of citywide and county bicycle and pedestrian planning efforts for the region, the 2040 MTP recommends bicycle and pedestrian facilities to include on-road bicycle lanes and wide shared roadways in urban areas, as well as paved 4-foot shoulders on rural roads. Recommendations for off-road shared-use bicycle paths are also included. The following projects are within the U-5720 study area:

Sidewalks

- Lynn Road, from NC 98 to US 70, 1.43 miles (D-154)
- South Miami Boulevard, from Angier Road to Strirrup Creek, 1.99 miles (D-165)

[5] The horizon year indicates the 10-year period (2011-2020, 2021-2030, 2031-2040) a project will be completed and in service.

Bicycle Projects

- Lynn Road, 4-foot paved shoulder, 1.8 miles (ID 196)
- Pleasant Drive, 4-foot paved shoulder, 1.33 miles, (ID 255)
- South Miami Boulevard, 4-foot bicycle lane, 8.92 miles (ID 208)
- Sherron Road, 4-foot paved shoulder, 3.25 miles, (ID 293)
- Mineral Springs Road, 4-foot paved shoulder, 4.48 miles (ID 212)
- Angier Avenue, 4-foot bicycle lane, 4.71 miles (ID 10)
- Page Road, 4-foot bicycle lane, 4.94 miles, (ID 247)
- Northern Durham Parkway (proposed), 4-foot bicycle lane, 12.1 miles, (ID 235)
- US 70, 4-foot bicycle lane, 1.2 miles, (ID 330)

In addition, the 2040 MTP is included by reference in the Durham Comprehensive Plan (Section 1.6.3.1). The Transportation Element of the Durham Comprehensive Plan includes a policy that transportation projects and programs recommended by the City of Durham Transportation Department will be consistent with the most recent MTP.

Relevant local plans for transit, bicycle, and pedestrian facilities plans are discussed in Sections 1.7.4. and 1.7.5.

1.7.2 Comprehensive Transportation Plan

The DCHC MPO and NCDOT are in the process of developing a Comprehensive Transportation Plan (CTP). This multi-modal plan will identify the area's future transportation needs and make recommendations for covering a 25 to 30-year timeframe. Unlike the MTP, this plan is not fiscally constrained. Adoption of the CTP is expected in August 2017.

The CTP provides a problem statement for US 70 (Pleasant Drive to Wake County line), the proposed widening of US 70 to six lanes and conversion to a freeway with controlled access. According to the problem statement, with the construction of the East End Connector and growth in eastern Durham County and northern Wake County, traffic demand on US 70 is expected to grow. There are many signalized and unsignalized intersections and driveways on the route, which serves as an alternative for congestion on I-40 for travel between Raleigh and Durham. Improvements are recommended to increase capacity; improve safety for motorists, pedestrians, and bicyclists; and to provide better freeway connectivity through the Triangle region.

The Highway Map (Durham Inset) - Recommended (dated May 10, 2017) recommends interchanges at the proposed Glover Road/Lynn Road Extension, South Miami Boulevard, Angier Avenue/proposed Angier Avenue Extension, and proposed Northern Durham Parkway. Grade separations are recommended at Pleasant Drive and Page Road Extension/realigned Leesville Road. The draft Highway Map is provided in Appendix A.

The Public Transportation Map - Recommended (dated May 10, 2017) depict bus transit and rail recommendations. A bus route is proposed along US 70 from Lynn Road Extension to South Miami Boulevard and along Angier Avenue. No other transit or rail routes or facilities are recommended in the US 70 corridor. The CTP notes as eastern Durham County continues to develop, demand for bus service in the area will likely increase; however, bus service most likely to use the US 70 freeway will be express routes.

The CTP problem statement also notes that US 70, as a controlled access freeway, will not include on-road bicycle and pedestrian facilities, but a separate multi-use path is recommended along the US 70 corridor. However, "it is important to consider bicycle and pedestrian access across the facility and along interchanges. Separated facilities should be provided for crossing streets at busy interchange areas. On-street bicycle and pedestrian facilities should be provided at grade separations for crossing streets."

The Bicycle and Pedestrian Map - Recommended (dated May 10, 2017) shows the recommended multi-use path along the US 70 corridor from west of Pleasant Road to the proposed Northern Durham Parkway. This proposed path would connect with an on-road bicycle facility proposed along South Miami Boulevard/Sherron Road. Other on-road facilities crossing US 70 are recommended along Pleasant Drive, proposed Glover Road/Lynn Road Extension, Angier Avenue/proposed Angier Avenue Extension, and Page Road Extension/realigned Leesville Road. A recommended multi-use path on the south side of US 70 would cross US 70 via a grade separation in proximity to Leesville Road, connecting to a proposed on-road facility along Leesville Road. For recommended sidewalks and improvements, the CTP defers to existing local municipal plans and policies.

1.7.3 NCDOT Transportation Improvement Program

The proposed project is included in the draft 2017-2027 STIP as Project No. U-5720: 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 Boulevard) to an interchange. The project is listed in four segments:

- U-5720A: Lynn Road to SR 1959 (South Miami Boulevard) / SR 1811 (Sherron Road)
- U-5720B: SR 1959 (South Miami Boulevard) / SR 1811 (Sherron Road) intersection. Convert at-grade intersection to interchange.
- U-5720C: SR 1959 (South Miami Boulevard) / SR 1811 (Sherron Road) to SR 2095 (Page Road Ext)
- U-5720D: SR 2095 (Page Road Ext) in Durham County to west of TW Alexander Drive in Wake County

Right of way acquisition (ROW) and construction are scheduled to begin in fiscal year (FY) 2022. Segments C and D are unfunded.

Adjacent STIP projects are:

- U-0071: New Route, East End Connector, NC 147 (Durham Freeway) to north of NC 98 in Durham. Divided freeway with auxiliary lanes, part on new location. (under construction)
- U-5518A: US 70, West of SR 3067 (TW Alexander Drive) to I-540, Corridor upgrade. (ROW 2019, Construction 2021)
- U-5518B: SR 3067 (TW Alexander Drive), Convert at-grade intersection to interchange. (ROW 2019, Construction 2021)
- U-5518C: SR 3100-SR 3109 (Brier Creek Parkway) in Raleigh, Convert at-grade intersection to interchange. (ROW 2019, Construction 2021)

1.7.4 Transit Plans

1.7.4.1 Regional Transit Vision Plan

The *Regional Transit Vision Plan: Recommendations for North Carolina's Research Triangle Region* is a report of the Special Transit Advisory Commission (STAC), a broad-based citizen group from across the Triangle region. The STAC was appointed by the area's two Metropolitan Planning Organizations, the DCHC MPO and CAMPO to develop a vision for transit across the region. The Regional Transit Vision Plan was completed in 2008 and has a planning horizon of 2035.

The plan established a framework for transit planning in the Triangle region. The plan "recommends a high-quality, regional transit system to serve North Carolina's Research Triangle Region by promoting closer connections between our land use and transportation patterns and providing more travel choices for our growing population" (STAC, 2008). More specifically, the plan recommends investments in an enhanced region-wide bus network, circulators (initially anticipated to be buses), and rail service. The Regional Transit Vision Plan Map indicates US 70 from Raleigh to Durham is part of a recommended "Enhanced Region-wide Bus Network." This network denotes expanded bus service through the region.

More specific recommendations on how to achieve the region's transit vision are developed through county-level investment plans.

1.7.4.2 Durham County Bus and Rail Investment Plan

Approved in 2011, the *Durham County Bus and Rail Investment Plan* is the county's transit plan. The plan is comprised of three major improvements in public transportation: bus investment, rail from Durham to RTP and Raleigh, and rail from downtown Durham to Chapel Hill. Several measures provide new revenue to fund transit improvements proposed by the plan. In November 2012, based on voter approval, a half-cent sales tax was implemented to support increased investment in transit. In addition, an increased vehicle registration fee was implemented in September 2013.

Regarding bus transit, the plan proposed increased frequency on existing high performance routes, improved weekend services, and new expanded service across the region and to the RDU Airport. However, no new routes or additional service was proposed along US 70. Enhanced bus service was proposed from downtown Durham to the Brier Creek area in Wake County via NC 147 (Durham Freeway) and TW Alexander Drive. While the Durham-Orange Light Rail Transit Project has advanced beyond the project development phase (engineering phase application in process), the Durham to Raleigh project was on hold pending approval of additional revenue sources in Wake County. (See Section 1.7.4.3.)

1.7.4.3 Wake County Transit Plan

The Wake County Transit Plan, completed in 2015, addresses four goals: connect the region; connect all Wake County municipalities; create frequent, reliable urban mobility; and enhance access to transit. The plan proposes to increase bus service, implement bus rapid transit, and implement commuter rail transit. Cross-county connections will be strengthened with a variety of bus and rail investments. The plan proposes to enhance the connections to Orange County, RDU, and other key destinations with more frequent express bus routes while providing strong connections to the planned light rail line linking Orange and Durham Counties. In November 2016, Wake County voters approved a half-cent sales tax for transit and in December 2016, Wake County Commissioners authorized additional key funding sources to implement the transit plan. The Wake County Transit Plan will fund the Wake County share of a new commuter rail in the NCRR corridor. This commuter rail line also could eventually extend to Johnston County to the east, with state, federal, and Johnston County support. As a step towards

implementation of the ten-year plan, the Wake Transit Draft Work Plan outlines improvements, such as expanding bus routes and increasing bus service, proposed in the first year of the Wake County Transit Plan.

1.7.4.4 GoRaleigh Transit Plans

GoRaleigh, formerly Capital Area Transit (CAT), provides bus service throughout Raleigh. GoRaleigh developed several plans that address bus system improvements: *Short Range Transit Plan* and *2040 Bus Development Plan*. The purpose of these plans is to identify ways to increase mobility in the Raleigh area in the short and long term. Both of these plans address how an improved bus transit system can accommodate and serve the anticipated growth in the area. The 2012 CAT Short Range Transit Plan is a three- to five-year plan that recommends bus transit changes that should occur prior to the introduction of commuter rail service in the region. The 2040 Bus Development Plan presents a framework for long-range transit service and capital improvements focused on improving mobility options of the region. No route changes or additional services are proposed within the U-5720 study area.

1.7.5 Bicycle and Pedestrian Plans

1.7.5.1 Durham Trails and Greenways Master Plan (2011)

The 2011 Durham Trails and Greenways Master Plan is an update of the master plan adopted in 2001 by the city and county. The master plan contains maps of existing and proposed trail facilities; goals, policies, and recommendations for developing the trails and greenways system; and standards for design, construction, and maintenance of trails. In the U-5720 vicinity, the Little Lick Creek and Lick Creek Greenways are systems of trails proposed primarily along Little Lick Creek, Lick Creek, tributaries, and connecting roadways. South Miami Boulevard and Sherron Road provide a connection between the Lick Creek Trail (north of US 70) and the Page Branch Creek Trail (south of US 70 and Angier Avenue).[6] A trail along Little Brier Creek (north of US 70) is also included in the Lick Creek Greenway. Noting the need for trails in this area of Durham County, the master plan ranks the Little Lick Creek and Lick Creek Greenways in the top trail development priorities, ranked 6 and 8, respectively.

1.7.5.2 DurhamWalks! Pedestrian Plan (2006)

The *DurhamWalks! Pedestrian Plan*, adopted by the Durham City Council in 2006 and revised in 2011, assesses pedestrian infrastructure and recommends safe and accessible pedestrian networks and new pedestrian-related programs and policies. The plan includes a priority ranking of street segments where new sidewalks are needed based on an objective set of criteria. Within the U-5720 study area, sidewalks are recommended along Lynn Road from NC 98 to US 70 and along South Miami Boulevard from Angier Avenue to Stirrup Creek.

1.7.5.3 Durham Comprehensive Bicycle Transportation Plan (2006)

In 2006, a comprehensive bicycle transportation plan was developed for the city and county to serve as an update to an earlier 1993 plan. The Durham Comprehensive Bicycle Transportation Plan identifies existing bicycle needs and deficiencies, presents a new route network to address those deficiencies, examines design and policy improvements, and identifies implementation strategies for the development of quality bicycle facilities and programs. According to the plan, "the public input process highlighted a need for more bicycle facilities, with an emphasis on safety and connectivity between bicycle routes and destinations. In addition to a lack of existing facilities, the public has also indicated that heavy motorized traffic, high speed motorized traffic and narrow roads are the most significant barriers preventing people from bicycling more often." The bicycle network recommend by the plan is

[6] The Page Branch Trail is a proposed 4.4-mile trail that is not part of a greenway.

comprised of a range of bicycle facilities, from on-street facilities to off-street greenway trails. Within the U-5720 study area, bicycle lanes are proposed along US 70 (from Lynn Road to South Miami Boulevard) and a sidepath is proposed along US 70 (from South Miami Boulevard to I-540). Bicycle lanes are not recommended along US 70 when the roadway is converted to a freeway. Bicycle lanes are also recommended along South Miami Boulevard, Angier Avenue, Page Road Extension, and TW Alexander Drive. Paved shoulders are proposed for Lynn Road, Pleasant Drive, Sherron Road, Mineral Springs Road, and Leesville Road. In addition, proposed greenways recommended by the plan would cross US 70 along South Miami Boulevard/Sherron Road and just southeast of Leesville Road.

1.7.5.4 Raleigh Pedestrian Plan

Raleigh's Comprehensive Pedestrian Plan, adopted in January 2012, "assesses the existing facilities, policies, plans, and programs that affect pedestrian mobility and provides recommendations for improvements." A prioritized list of proposed sidewalk projects throughout the city. There are no specific recommendations that apply to the U-5720 study area.

1.7.5.5 BikeRaleigh Plan (2016)

The *BikeRaleigh Plan, adopted in 2016,* is an update of the city's 2009 Bicycle Transportation Plan. The plan builds on accomplishments of the previous plan and presents a strategy for the next five to ten years to improve the health, safety, and transportation options in the city. The plan further identifies deficiencies, needs, and opportunities and incorporates bicycle facility design best practices. Although the 2009 Bicycle Priority List proposed a wide outside lane along Glenwood Avenue (US 70) from the Wake County line to Brier Creek Parkway, the 2016 BikeRaleigh Plan does propose bicycle accommodations along US 70 in the U-5720 study area. A bicycle lane is recommended along TW Alexander Drive, but is not included in the ten-year priority plan.

1.8 Performance of the Existing Roadway System

1.8.1 Existing and Future Traffic Volumes

Traffic forecasts prepared for the proposed project are described in a separate technical memorandum (Traffic Forecast for NCDOT STIP Project U-5720, RK&K, October 2016). The forecast assumes the construction of projects within the DCHC and CAMPO 2040 MTP. Projects scheduled in the MTP which directly affect the US 70 project are: East End Connector (U-0071), upgrade of US 70 from west of TW Alexander Drive to I-540 in Raleigh (U-5518), and new route (Aviation Parkway Extension/Northern Durham Parkway) from I-540 in Raleigh to US 501 (Roxboro Road) in Durham (U-4721). The Triangle Regional Travel Demand Model Version 5 was used to develop the traffic forecast for the US 70 project. Traffic volume diagrams are provided in Appendix B.

Along the US 70 corridor, existing (2015) traffic volumes range from 36,600 vehicles per day (vpd) between Page Road Extension and TW Alexander Drive to 46,800 vpd between Lynn Road and Pleasant Drive. In 2040, traffic volumes along US 70 are forecast to grow by approximately 40 percent, depending on the segment. Similar to the existing volumes, higher traffic volumes are expected west of the US 70 intersection with South Miami Boulevard/Sherron Road with slightly lower volumes along the roadway segments to the east of this intersection. Volumes are projected to range from 53,700 vpd between realigned Leesville Road/Page Road Extension and the proposed interchange with the Northern Durham Parkway/Aviation Parkway Extension to 65,200 vpd west of realigned Lynn Road/Pleasant Drive.

Traffic volumes on South Miami Boulevard are projected to increase from 33,200 vpd to 40,700 vpd, an increase of approximately 23 percent. North of US 70, traffic volumes on Sherron Road are projected to increase from 25,100 vpd to 30,200 vpd, an increase of approximately 20 percent.

1.8.2 Traffic Operational Analysis

A traffic operational analysis for the proposed project is described in a technical memorandum dated March 2017. Traffic analysis was performed utilizing macro and micro simulation using *Synchro/HCS* and *VISSIM,* respectively. The analysis results from microsimulation (VISSIM), which models individual vehicle movements on a subsecond basis and is calibrated by field observations, are expected to provide a reliable measure for assessing traffic operations within the study area. The measures of effectiveness used to evaluate the operational performance of the study corridor intersections include average intersection delay per vehicle, level of service (LOS), and maximum queue length. Density (the number of vehicles in a section of roadway), speed, throughput (the number of vehicles to pass through an intersection), and LOS were also used to evaluate the performance of the arterial segments along US 70. The scenarios analyzed as part of the study include Base Year (2015) No Build and Future Year (2040) No Build conditions. Traffic analysis figures and tables are included in Appendix C.

1.8.2.1 Base Year (2015) No Build Scenario

Intersection Analysis

The results of the Base Year No Build analysis show that several of the signalized intersections within the study area operate at LOS C or worse during at least one peak hour. The signalized intersections of US 70 and South Miami Boulevard, and South Miami Boulevard at Angier Avenue are the worst performing intersections, with a LOS of D or worse, during at least one peak hour. However, several movements at the US 70 intersections with Lynn Road, Pleasant Drive, and South Miami Boulevard/Sherron Road operate at LOS E or F in at least one peak hour. Several stop-controlled approaches at intersections along US 70 also operate poorly in the Base Year, with the high conflicting flow along US 70 being the main contributing factor. Queue lengths exceed the available turn lane storage, impacting through traffic (queue spillback) at one or more approaches at a majority of the intersections. Queues exceed 1,500 feet along US 70 between East End Avenue and South Miami Boulevard during the two peak hours. (See Table C1.)

System-wide average delay is approximately 140 and 160 seconds per vehicle during the AM and PM peak hours, respectively. (See Table C2.)

Segment Analysis

The segment analysis results from *VISSIM,* which considers the queueing and delay caused by the signalized intersections, indicates high segment density, low speeds, and low throughput in the Base Year No Build scenario. Several segments of US 70 are failing with a LOS F during both the peak hours. Most vehicles are unable to maintain free-flow speeds through the US 70 corridor. Between the more closely spaced intersections in the western part of the study area the average speed is less than 10 mph during peak hours. (See Table C3.)

1.8.2.2 Future Year (2040) No Build Scenario

Intersection Analysis

The Future Year No Build analysis results indicate that all the signalized intersections within the study area are expected to degrade with higher delays. All signalized intersections along US 70 would degrade to LOS F during one or both peak hours. Delays at the unsignalized intersections are also expected to increase leading to a LOS of D or worse during one or both peak hours. Queue lengths would exceed the available turn lane storage for several movements impacting through traffic during at least one peak hour for the following US 70 intersections: Pleasant Drive, South Miami Boulevard/Sherron Road, Angier Avenue, Page Road Extension/Realigned Leesville Road, and Aviation Parkway Extension/

Northern Durham Parkway. Queuing along US 70 is expected to worsen in the Future Year with queue lengths exceeding 0.5 mile at multiple intersections during the AM and PM peak hours. (See Table C4.)

The system-wide average delay would more than double from the Base Year No Build scenario, with expected delays of approximately 375 and 585 seconds per vehicle (6 to 10 minutes per vehicle) during the AM and PM peak hours, respectively. (See Table C5.)

Segment Analysis

The Future Year No Build analysis results show further degradation in traffic operations due to higher vehicle densities leading to lower speeds. All the eastbound segments of US 70 are expected to fail with LOS F during both peak hours, with travel speeds less than 10 mph for most segments. In the westbound direction, LOS F is indicated for most segments during the AM peak hour; however, LOS D or better is indicated for all segments in the PM peak hour. (See Table C6.)

1.8.3 Existing Crash Data

A crash rate is a measure of the relative safety of a roadway or intersection and can indicate capacity or safety deficiencies. Crashes also contribute to delays, congestion, and driver frustration. Thus, an examination of crash data can help identify potentially hazardous roadways and intersections. It also reveals the need to provide a more efficient and safer facility.

The NCDOT Traffic Safety Unit provided crash data for a five-year period (May 2011 to April 2016) for US 70 from SR 1921 (Lynn Road) to TW Alexander Drive and for Miami Boulevard/Sherron Road from Angier Avenue to Mineral Springs Road. Accident data was also obtained for eight intersections within the project limits. For roadway sections, accident rates are based on average daily traffic, the length of the roadway, and the number of recorded accidents that occurred there. For intersections, accident rates are based on the number of vehicles that entered the intersection and the number of recorded accidents that occurred. Accident rates are stated in the number of crashes per 100 million vehicle miles of travel for roadway sections, and in the number of crashes per 100 million vehicles entered for intersections. The critical crash rate is a statistically derived number that can be used to identify or screen for high accident locations.

Intersection Analysis

During the five-year period, the US 70 intersection with South Miami Boulevard/Sherron Road had the highest crash rate (127.29) of the signalized intersections in the study limits. The majority of crashes at all of the signalized intersections were rear end crashes. An intersection critical crash rate cannot be determined because a statewide average intersection crash rate is not available. Intersection crash data is provided in Table 4.

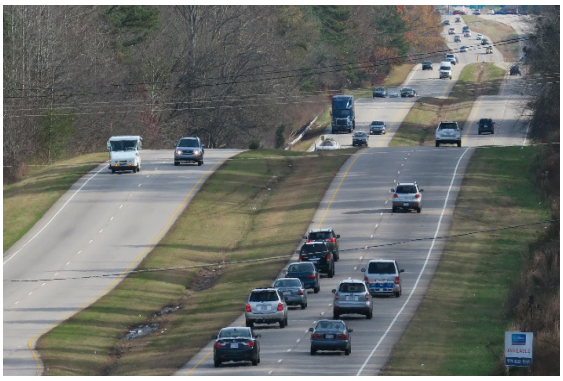
Table 4. Intersection Crash Data (2011 to 2016)

	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%

Source: NCDOT Traffic Safety Unit

Several US 70 intersections are on the 2016 North Carolina Highway Safety Improvement Program (HSIP) list of potentially hazardous intersections. The US 70 intersection with Page Road Extension met safety warrant I-2, which is defined as a minimum of 25 crashes over the past five years (2011 – 2015) with at least 35 percent occurring in the last year. The two unsignalized intersections of US 70 with Peyton Road[7] met safety warrant I-1, which includes locations with at least 25 crashes over the five-year period with 25 percent occurring the last two years and a minimum of 50 percent frontal impact crashes (or a minimum of 35 percent frontal impact crashes if the severity index for frontal impact crashes is at least 6.0). A front impact crash is considered to include angle, head-on, left turn, and right turn crashes.

In addition, the NCDOT reports High Frequency Crash locations by county. Based on data from 2007 to 2011 (the most recent period available), the highest number of crashes at study area intersections (27) were reported at the US 70 intersection with Pleasant Drive. At several additional US 70 intersections, at least 20 crashes were reported: Peyton Avenue (both intersections), South Miami Boulevard/ Sherron Road, Angier Avenue, and Leesville Road.



Crests and sags result in poor sight distance.

Segment Analysis

During the five-year analysis period, 1,172 mainline crashes were reported along this approximately 5-mile section of US 70. Approximately 24 percent of the crashes were injury crashes. The resulting total crash rate is higher than the critical crash rate for similar facilities. The majority of crashes along this section of the road were rear end crashes, accounting for approximately 57 percent of all crashes. Rear end crashes are typically associated with congested conditions. The poor sight distance, steep grades and substandard vertical alignment along the US 70 corridor may also contribute to these types of crashes.

During the five-year analysis period, 170 mainline crashes were reported along the approximately 0.45-mile section of South Miami Boulevard/Sherron Road. The crash rate (769.85) is substantially higher than the critical crash rate (475.83). Rear end crashes were the most common crash type, accounting for 38 percent of total crashes.

Table 5 shows the comparison of the crash rates for the analyzed sections of US 70 and South Miami Boulevard/Sherron Road versus the 2012-2014 statewide crash rates and the calculated critical rate for a comparable route type and configuration.

[7] Peyton Avenue extends on each side of US 70; however, the intersections are off set.

Table 5. 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

The NCDOT High Frequency Crash data (2007 – 2011) indicates a high number of crashes along most segments of US 70 in the project limits. More than 50 crashes were reported on US 70 in Wake County. In Durham County, the highest number of crashes occurred just east of the US 70 intersection with South Miami Boulevard/Sherron Road, with 37 crashes reported. A range of 30 to 35 crashes were reported for several segments of US 70 between Pleasant Drive and Peyton Road.

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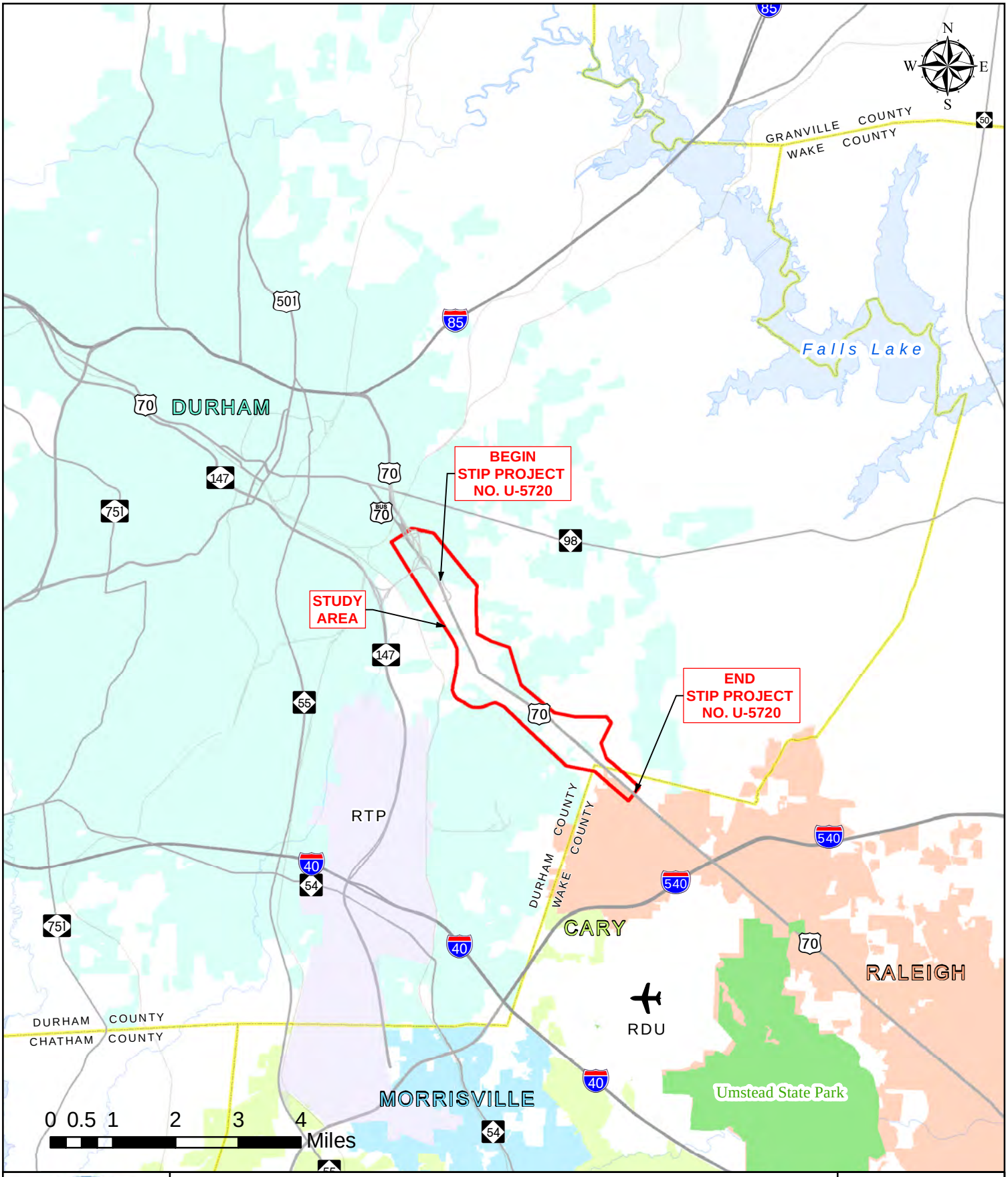
Figures



STIP Project No. U-5720

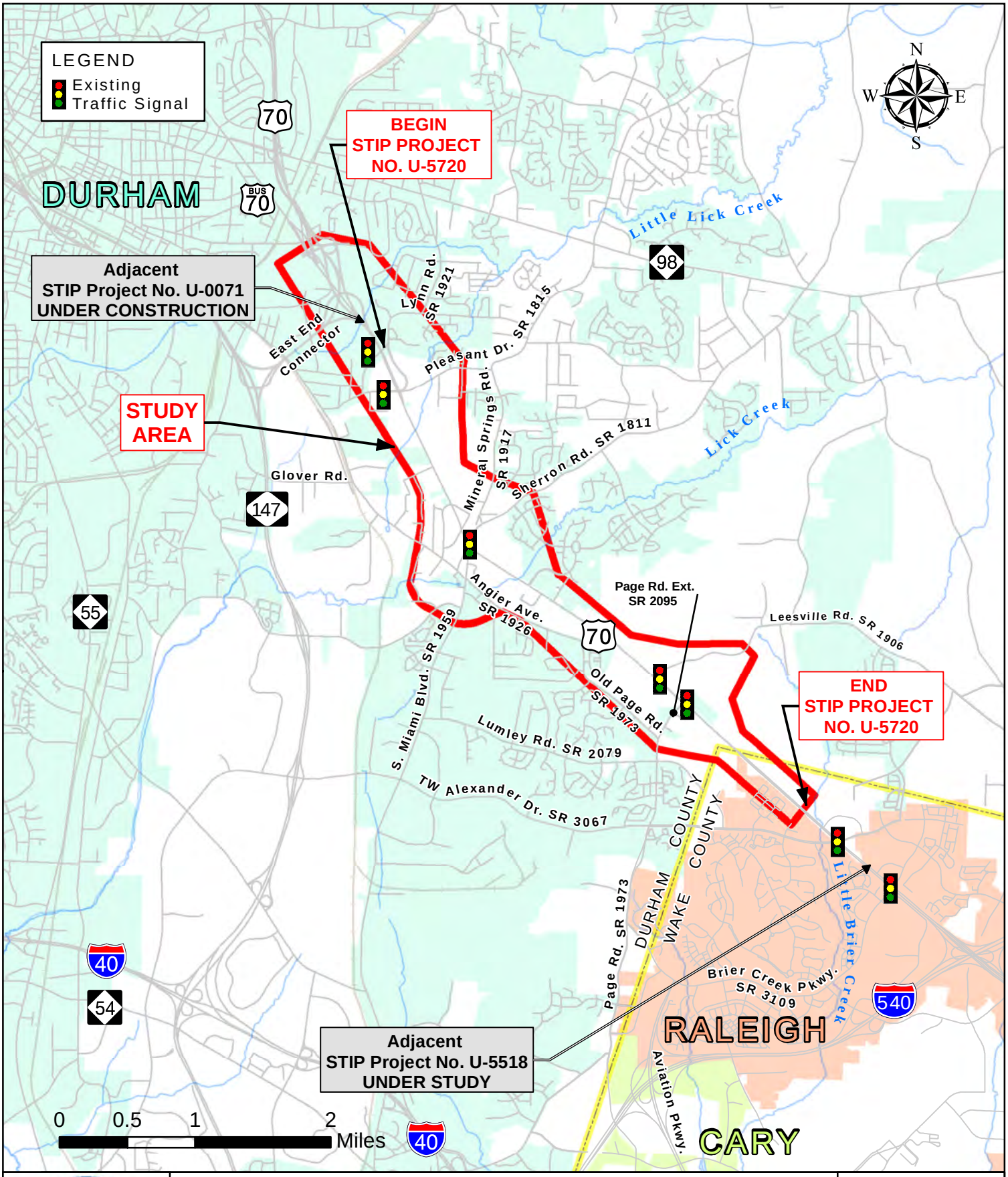
US 70 Improvements from Lynn Road (SR 1921) in
Durham to west of TW Alexander Drive (SR 3067) in Raleigh

Durham and Wake Counties

VICINITY MAP

FIGURE 1

March 2017



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

March 2017

Appendix A

Local Plans

Future Land Use

DURHAM 1869 CITY OF MEDICINE

DURHAM COUNTY

PA_Database_20160107
Rural Service Centers
Parcels
RuralVillage
Suburban Transit Support Area Nodes
Development Tiers
Suburban Transit Support Area

FLUSE

Rural Density Residential (0.5 DU/Acre or less)
Very Low Density Residential (2 DU/Acre or less)
Low Density Residential (4 DU/Acre or less)
Low-Medium Density Residential (4 - 8 DU/Acre)
Medium Density Residential (6 - 12 DU/Acre)
Medium-High Density Residential (8 - 20 DU/Acre)
High Density Residential (12 - 60 DU/Acre)
Very High Density Residential (12 - 150 DU/Acre)
Agricultural
Design District
Commercial
Industrial
Institutional
Office
Recreation / Open Space
Research / Research Applications
Not Reconciled*

Amended September 8, 2016

Feet
0 5,000 10,000 15,000

N

Durham City/County Planning Department
Durham, North Carolina

2040 Metropolitan Transportation Plan

February 25, 2013

Roadway Improvements

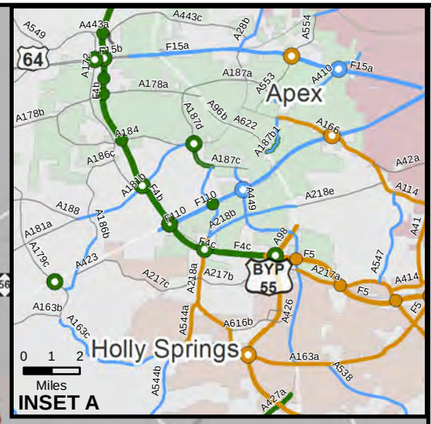
- Completed 2020 Projects
- 2020
- 2030
- 2040
- CTP

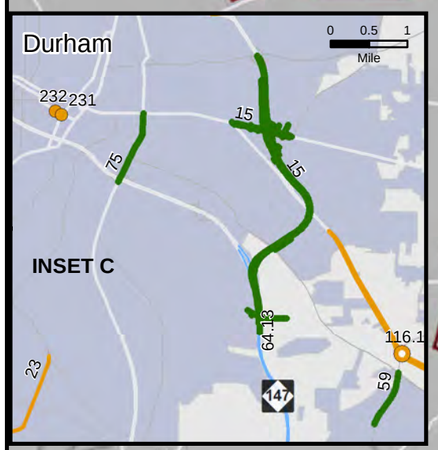
Interchanges

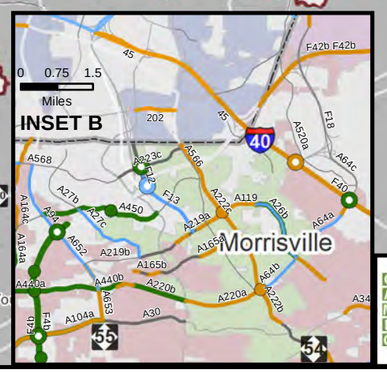
- 2020
- 2030
- 2040

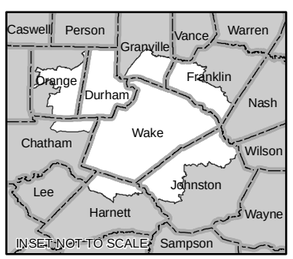
Grade Separations

- 2020
- 2030
- 2040









This map was compiled using the best available data, however, the Capital Area MPO is not responsible for errors, omissions, and/or misuse. Subject to change.

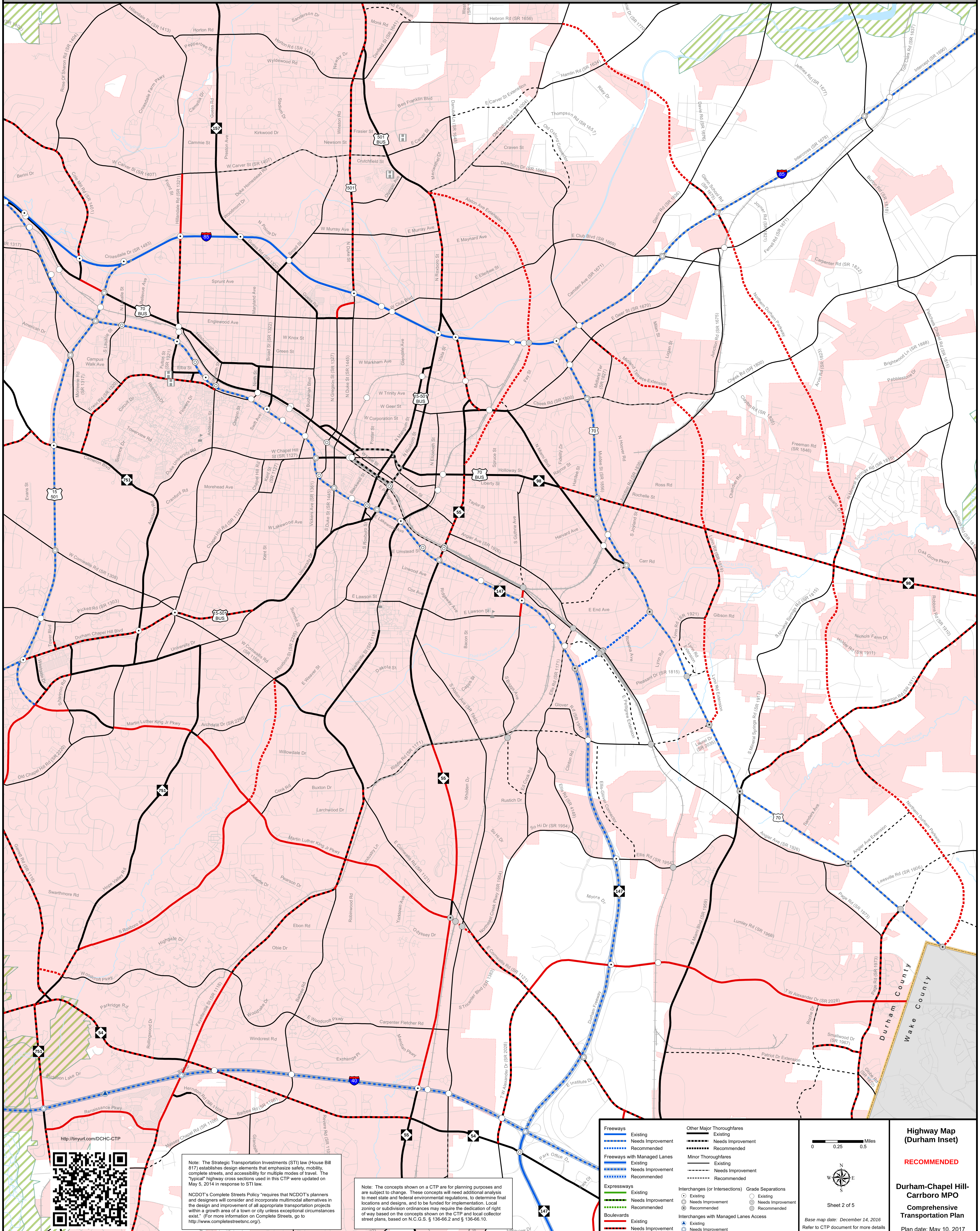
0 2.5 5 10
Miles

N

DCHC
DURHAM-CHAPEL HILL-CARRBORO METROPOLITAN PLANNING ORGANIZATION

North Carolina
Capital Area Metropolitan Planning Organization

DCHC MPO - CTP - HIGHWAY MAP (DURHAM INSET)



http://tinyurl.com/DCHC-CTP

Note: The Strategic Transportation Investments (STI) law (House Bill 817) establishes design elements that emphasize safety, mobility, complete streets, and accessibility for multiple modes of travel. The "typical" highway cross sections used in this CTP were updated on May 5, 2014 in response to STI law.

NCDOT's Complete Streets Policy "requires that NCDOT's planners and designers will consider and incorporate multimodal alternatives in the design and improvement of all appropriate transportation projects within a growth area of a town or city unless exceptional circumstances exist." (For more information on Complete Streets, go to http://www.completestreetsnc.org/).

Note: The concepts shown on a CTP are for planning purposes and are subject to change. These concepts will need additional analysis to meet state and federal environmental regulations, to determine final locations and designs, and to be funded for implementation. Local zoning or subdivision ordinances may require the dedication of right of way based on the concepts shown on the CTP and local collector street plans, based on N.C.G.S. § 136-66.2 and § 136-66.10.

Freeways
- Existing
- Needs Improvement
- Recommended

Freeways with Managed Lanes
- Existing
- Needs Improvement
- Recommended

Expressways
- Existing
- Needs Improvement
- Recommended

Boulevards
- Existing
- Needs Improvement
- Recommended

Other Major Thoroughfares
- Existing
- Needs Improvement
- Recommended

Minor Thoroughfares
- Existing
- Needs Improvement
- Recommended

Interchanges (or Intersections)
- Existing
- Needs Improvement
- Recommended

Grade Separations
- Existing
- Needs Improvement
- Recommended

Interchanges with Managed Lanes Access
- Existing
- Needs Improvement
- Recommended

0 0.25 0.5 Miles

N S E W

Sheet 2 of 5

Base map date: December 14, 2016

Refer to CTP document for more details

Highway Map (Durham Inset)

RECOMMENDED

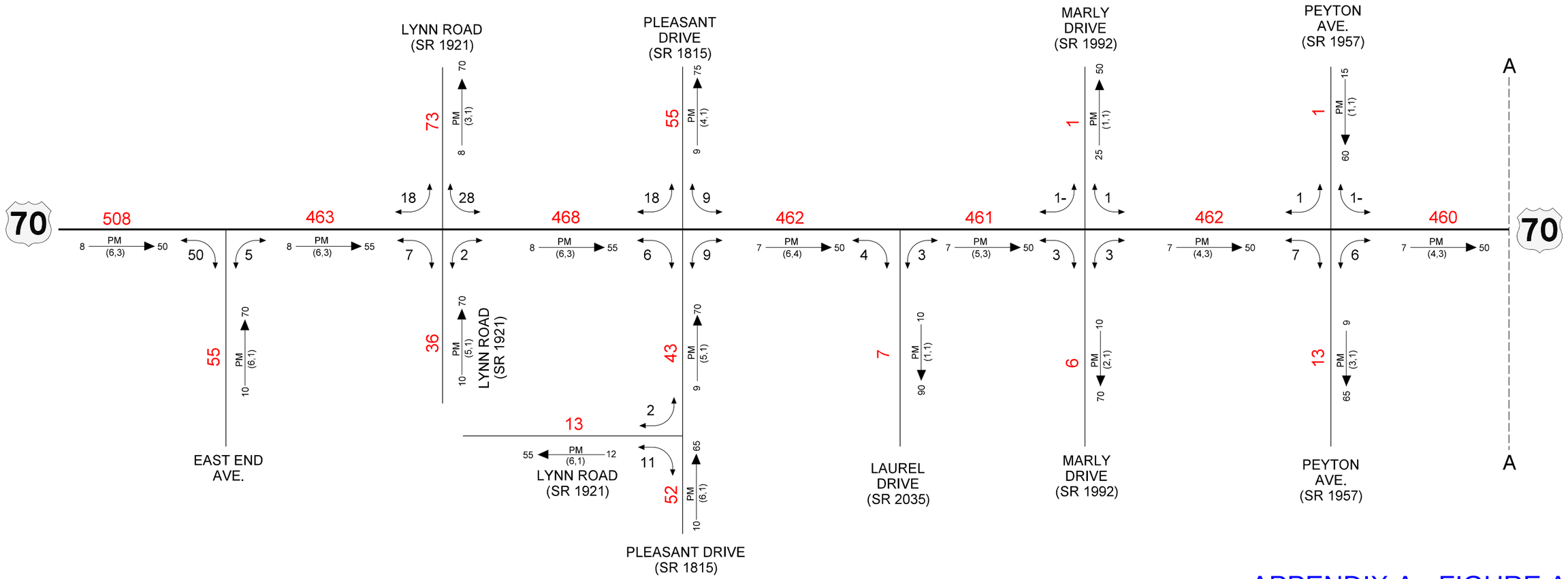
Durham-Chapel Hill-Carrboro MPO

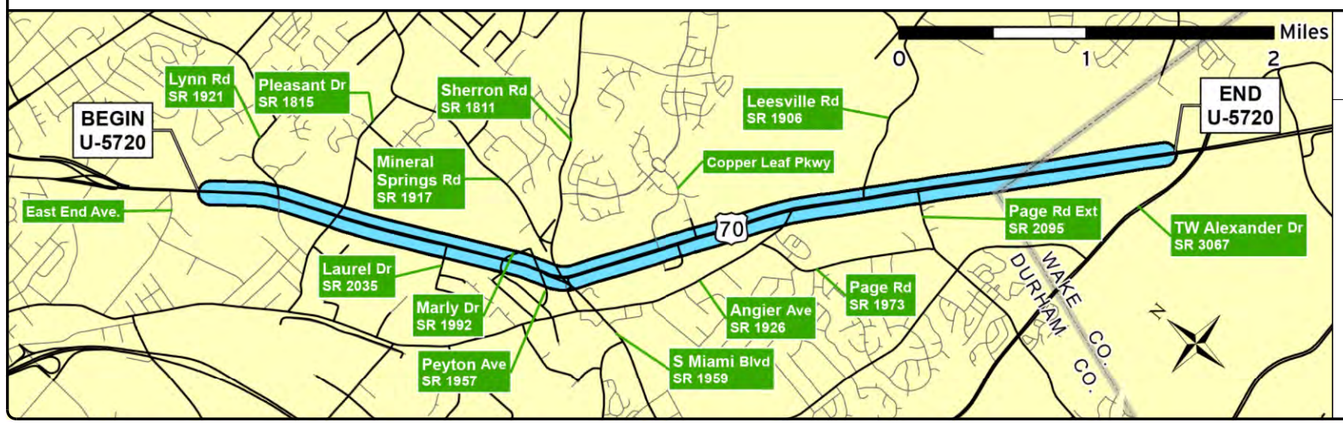
Comprehensive Transportation Plan

Plan date: May 10, 2017

Appendix B

Traffic Volume Diagrams





APPENDIX A - FIGURE A1

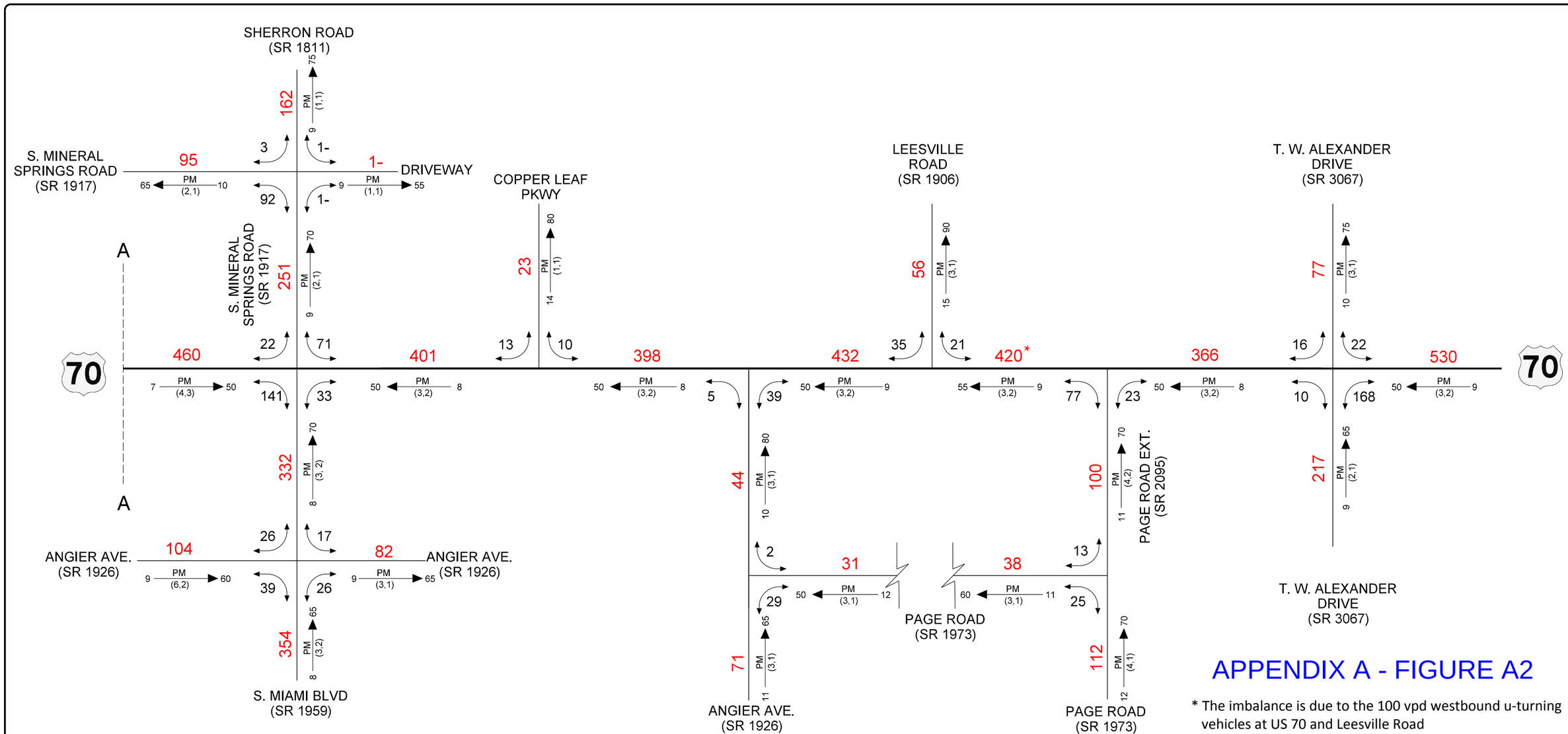
2015 AVERAGE ANNUAL DAILY TRAFFIC — No Build — SHEET NO. 1 OF 2

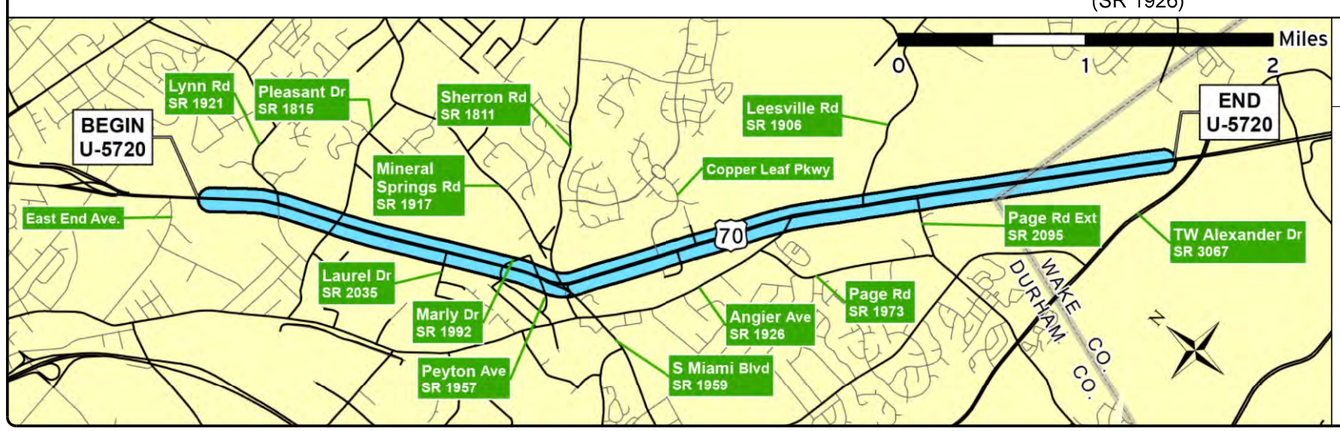
LEGEND

K PM (d, t) D

###	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

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	





APPENDIX A - FIGURE A2

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

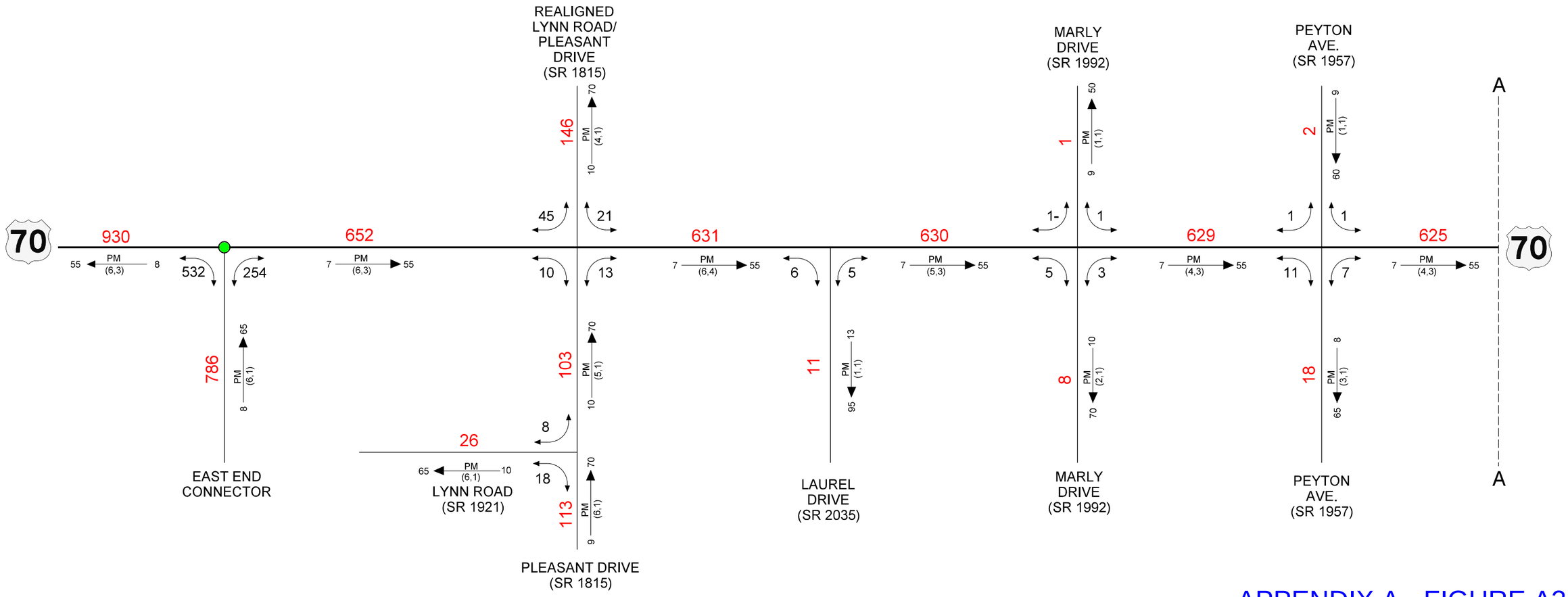
2015 AVERAGE ANNUAL DAILY TRAFFIC — No Build — SHEET NO. 2 OF 2

LEGEND

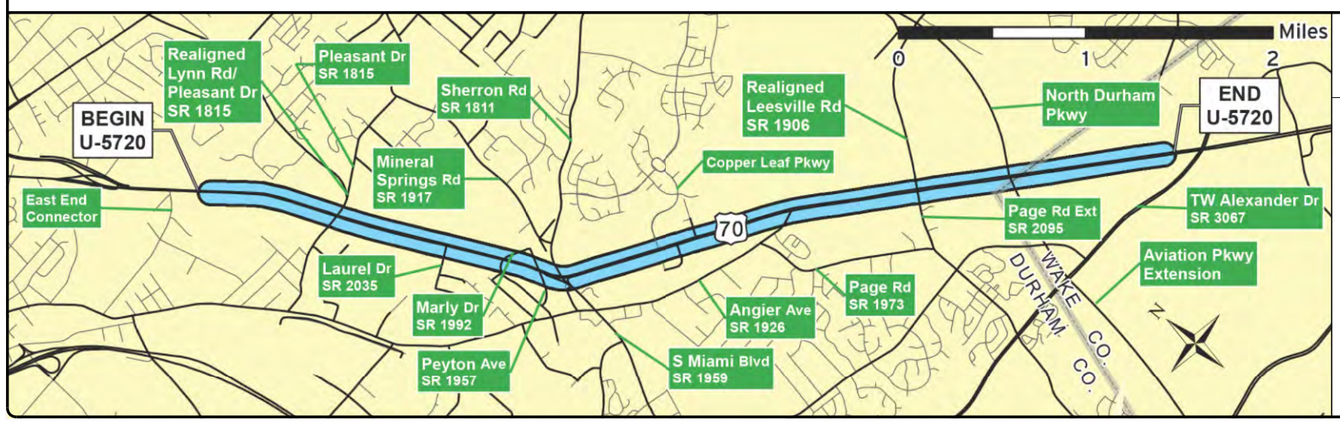
K PM (d, t) D

###	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

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	



APPENDIX A - FIGURE A3



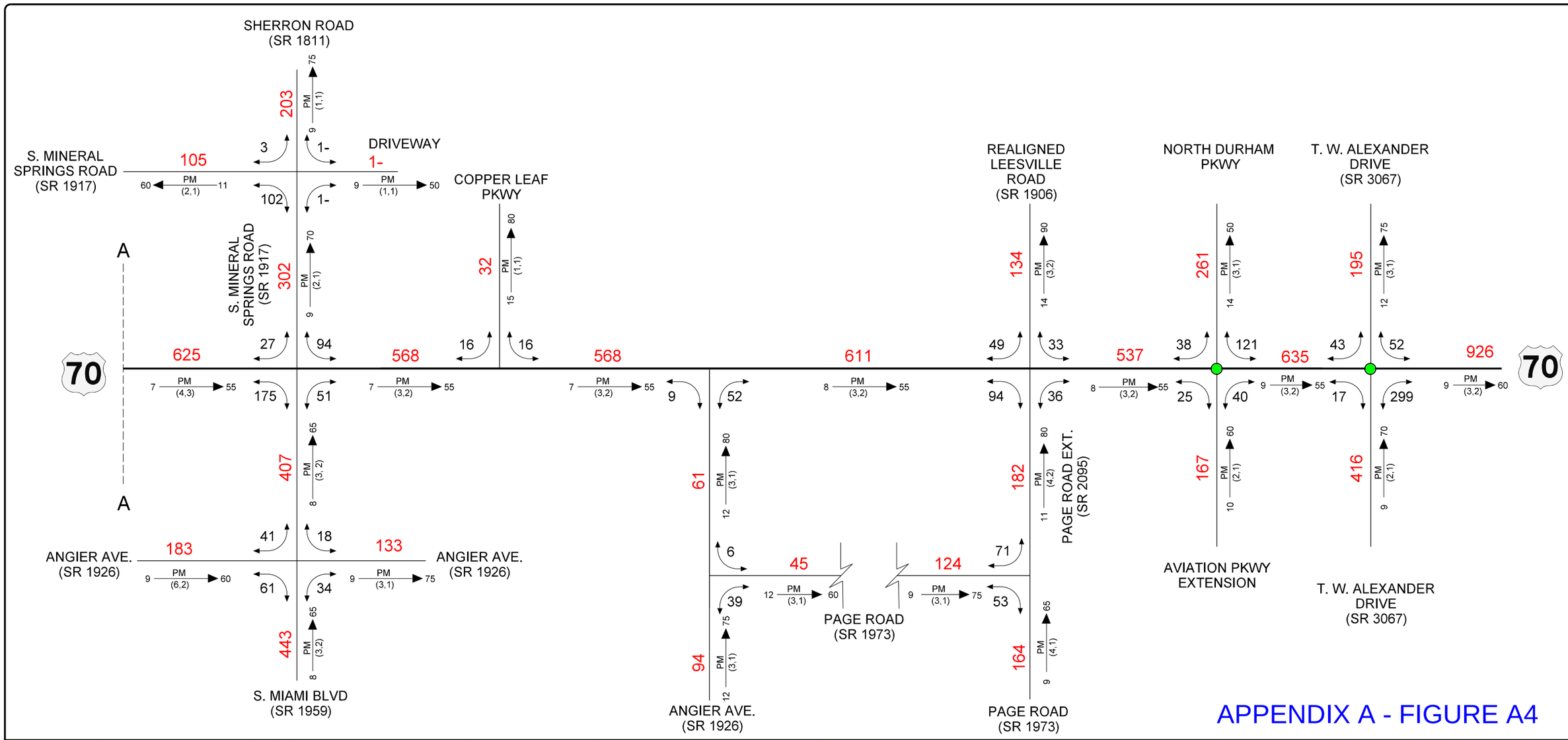
2040 AVERAGE ANNUAL DAILY TRAFFIC — No Build

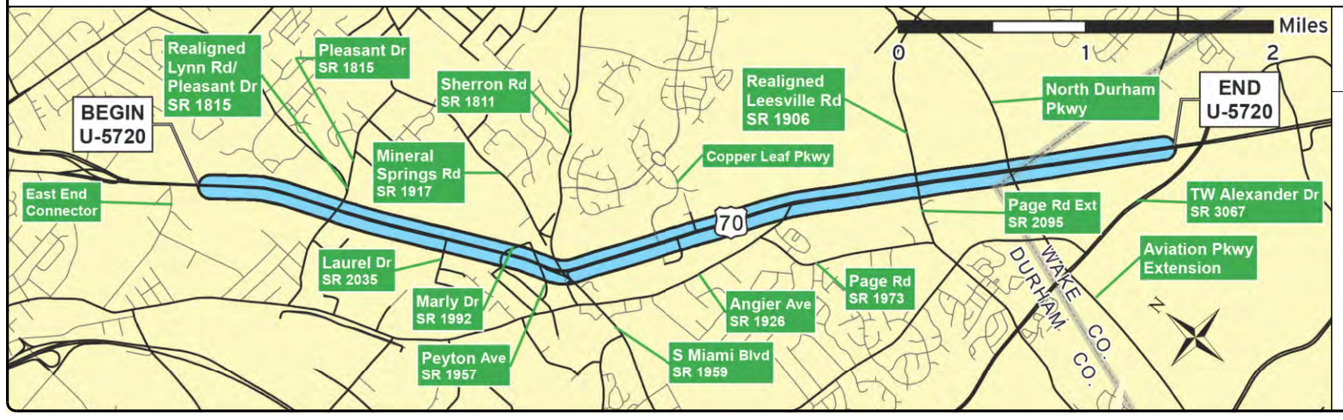
LEGEND

K PM (d, t) D

###	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

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

K PM (d, t) D

###	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

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	

APPENDIX A - FIGURE A4

Appendix C

Traffic Operations Figures and Tables

LEGEND

##(##) - AM(PM) Delay

- Lane Geometry

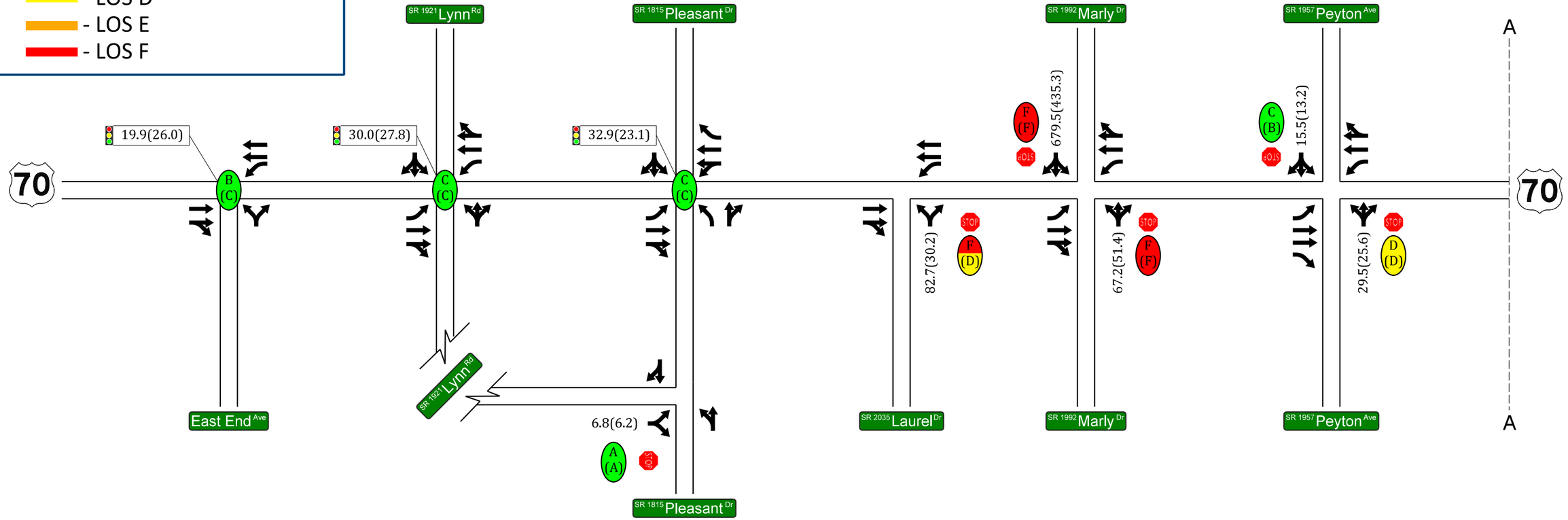
- Signal STOP - Stop Sign

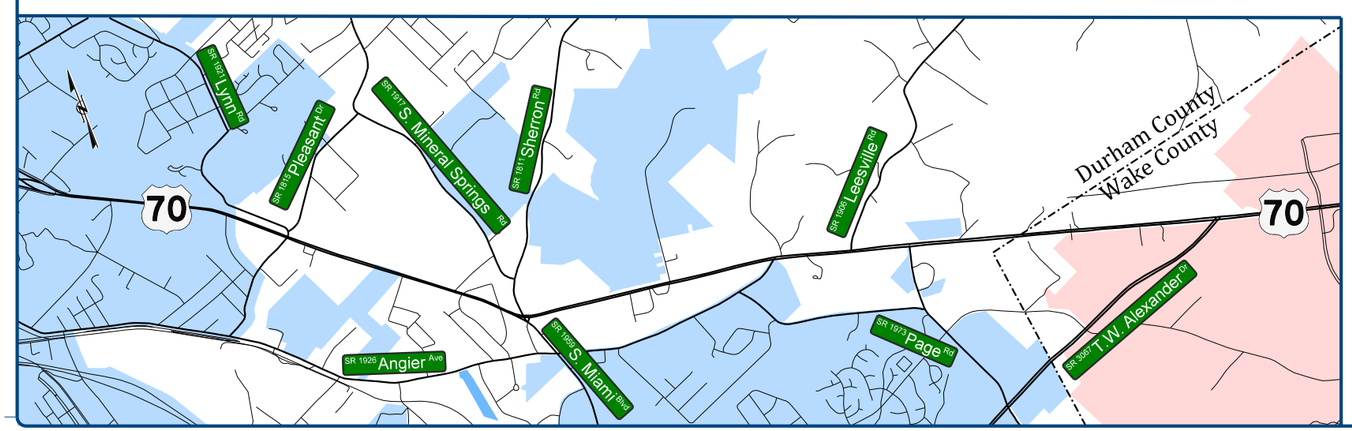
- LOS A,B,C

- LOS D

- LOS E

- LOS F





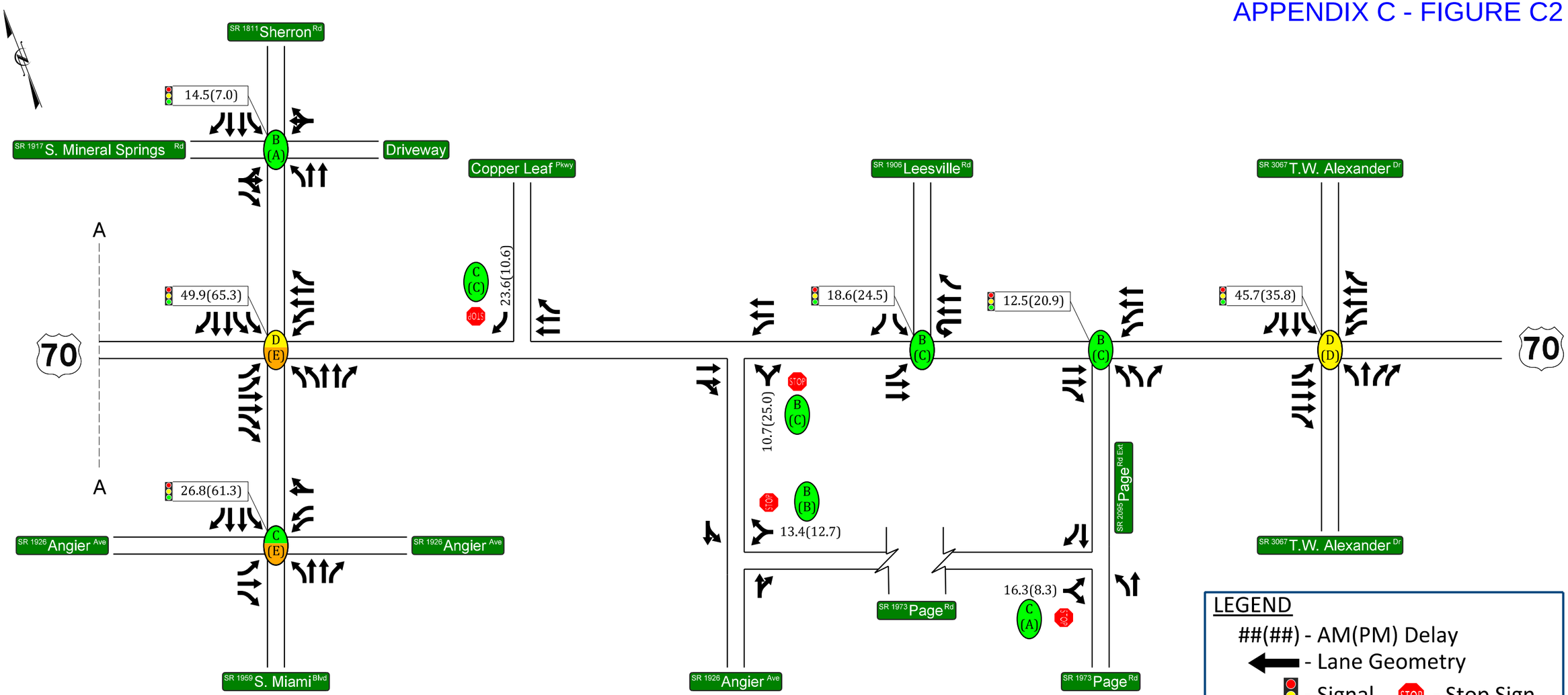
APPENDIX C - FIGURE C1

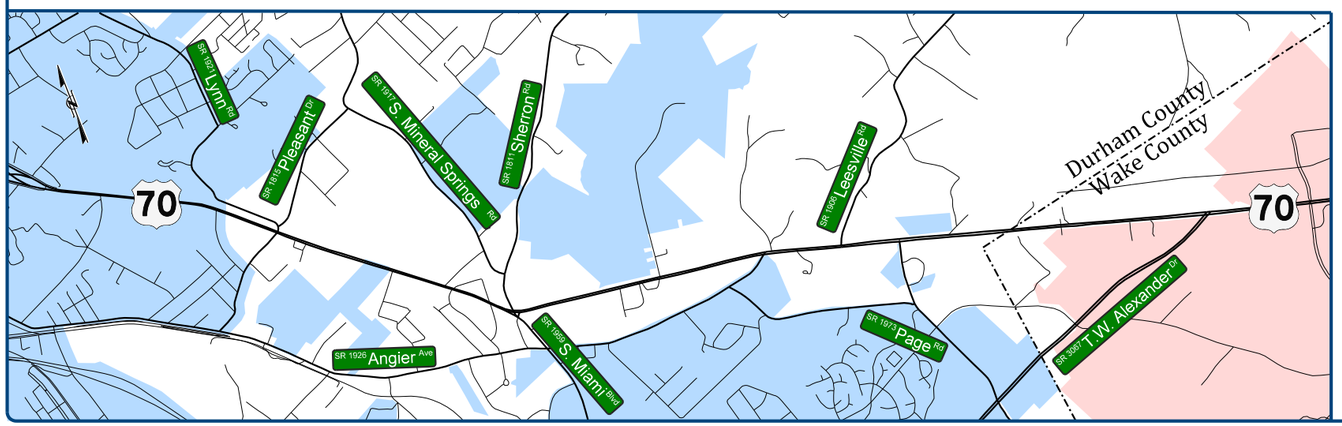
U-5720: Upgrade US 70 to Freeway

2015 No Build
MOEs & Lane Configurations

RK&K | NC | Date: Feb. 2017 | Figure No. 4A

APPENDIX C - FIGURE C2





LEGEND

##(##) - AM(PM) Delay

- Lane Geometry
- Signal
- Stop Sign
- LOS A,B,C
- LOS D
- LOS E
- LOS F

U-5720: Upgrade US 70 to Freeway

2015 No Build MOEs & Lane Configurations

RK&K | NC | Date: Feb. 2017 | Figure No. 4B

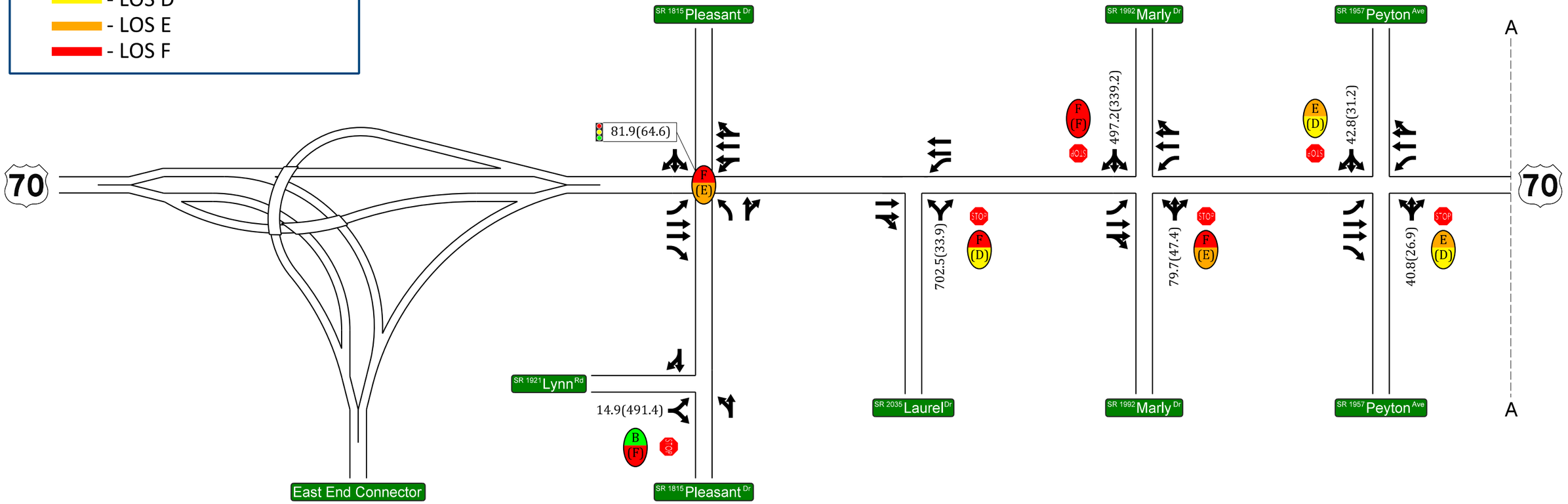
LEGEND

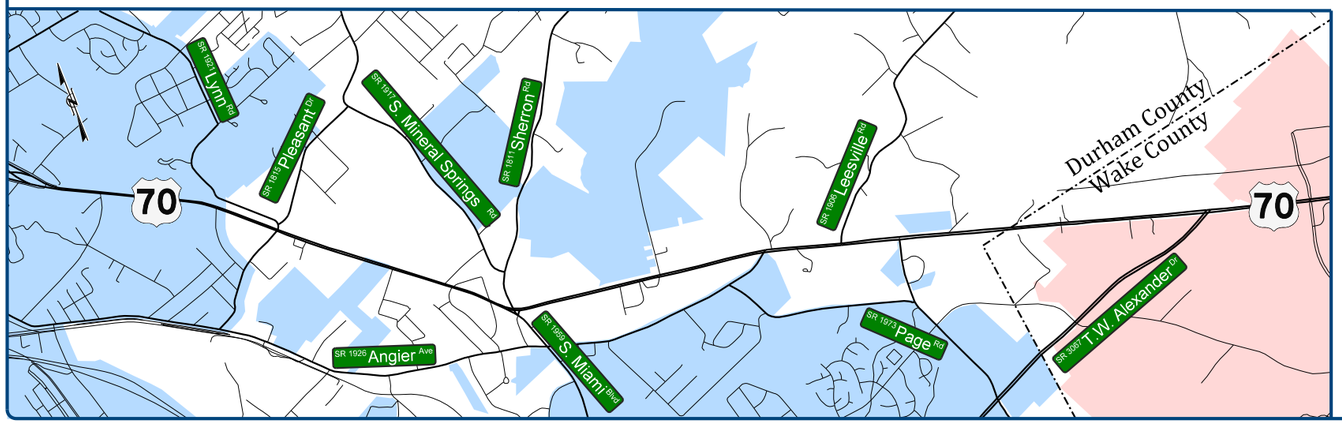
##(##) - AM(PM) Delay

- Lane Geometry

- Signal STOP - Stop Sign

- LOS A,B,C
- LOS D
- LOS E
- LOS F





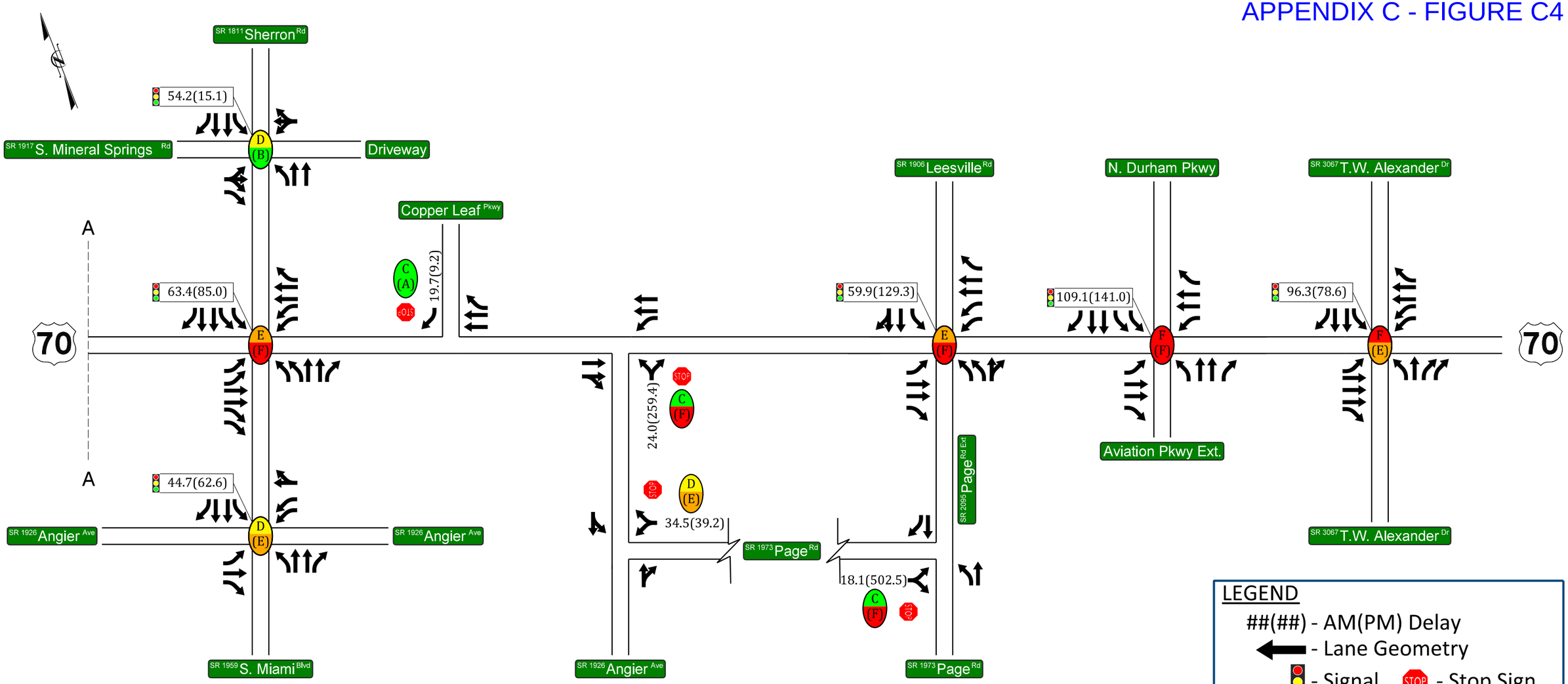
APPENDIX C - FIGURE C3

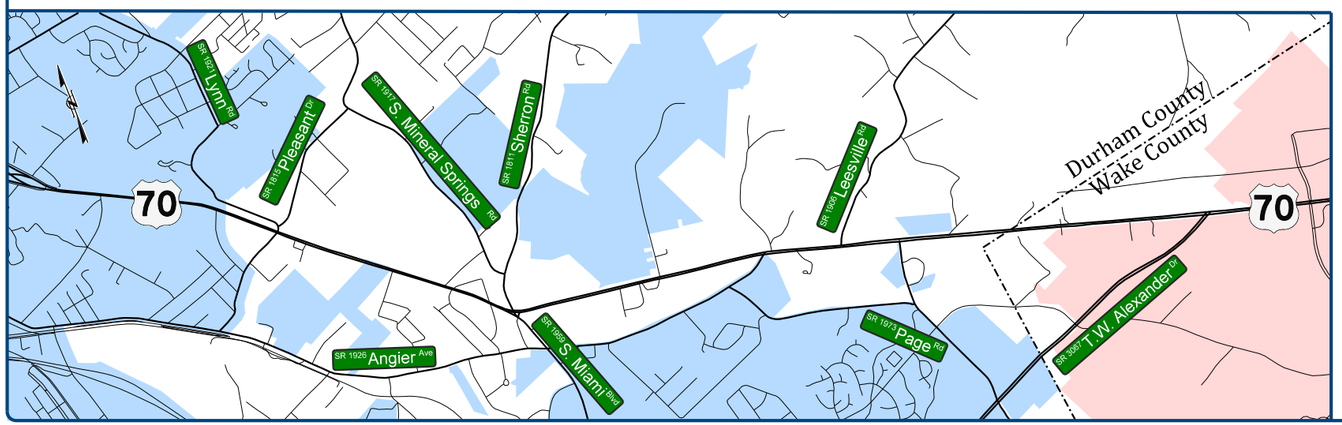
U-5720: Upgrade US 70 to Freeway

2040 No Build
MOEs & Lane Configurations

RK&K | NC | Date: Feb. 2017 | Figure No. 5A

APPENDIX C - FIGURE C4





LEGEND

##(##) - AM(PM) Delay

- Lane Geometry
- Signal
- Stop Sign
- LOS A,B,C
- LOS D
- LOS E
- LOS F

U-5720: Upgrade US 70 to Freeway

2040 No Build MOEs & Lane Configurations

RK&K | NC | Date: Feb. 2017 | Figure No. 5B

Table C1. Base Year No Build VISSIM Intersection Analysis Results

Intersection No.	Intersection	Movement	Delay (s/veh)		Approximate LOS		Approach Delay (s/veh)		Approach Approx. LOS		Maximum Queue (ft.)	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	US 70 at East End Avenue (Signalized)	NBL	59.1	108.1	E	F	59.3	108.2	E	F	300	890
		NBR	60.6	109.0	E	F					300	890
		EBT	23.3	15.0	C	B	23.2	14.9	C	B	2,965	855
		EBR	22.5	13.8	C	B					2,965	855
		WBL	41.2	39.0	D	D	13.1	21.3	B	C	645	870
		WBT	12.2	21.0	B	C					650	870
		Overall	**19.9**	**26.0**	**B**	**C**	-	-	-	-	-	-
2	US 70 at Lynn Road (Signalized)	NBL	53.4	59.6	D	E	46.2	58.8	D	E	210	390
		NBT	45.1	58.5	D	E					210	390
		NBR	40.5	59.7	D	E					210	390
		SBL	93.1	152.7	F	F	92.1	154.4	F	F	905	475
		SBT	92.4	154.8	F	F					905	475
		SBR	91.1	155.1	F	F					905	475
		EBL	68.7	75.1	E	E	15.4	13.8	B	B	680	1,690
		EBT	14.1	11.2	B	B					680	1,690
		EBR	15.4	10.4	B	B					680	1,690
		WBL	77.3	57.3	E	E	28.6	26.4	C	C	1,045	925
		WBT	28.4	26.2	C	C					1,045	930
		WBR	27.3	26.0	C	C					1,045	930
		Overall	**30.0**	**27.8**	**C**	**C**	-	-	-	-	-	-
3	US 70 at Pleasant Drive (Signalized)	NBL	86.1	59.4	F	E	65.6	57.2	E	E	140	270
		NBT	38.2	56.0	D	E					140	270
		NBR	40.0	53.4	D	D					140	270
		SBL	52.7	58.3	D	E	48.8	34.4	D	C	570	180
		SBT	54.5	50.8	D	D					570	180
		SBR	45.3	27.4	D	C					570	180
		EBL	84.7	73.4	F	E	21.4	20.5	C	C	795	1,490
		EBT	18.5	12.8	B	B					790	1,570
		EBR	17.1	12.2	B	B					790	1,570
		WBL	85.3	64.7	F	E	38.7	19.4	D	B	1,250	890
		WBT	38.3	19.0	D	B					1,250	885
		WBR	38.9	18.4	D	B					1,250	885
		Overall	**32.9**	**23.1**	**C**	**C**	-	-	-	-	-	-
4	US 70 at Laurel Drive (Unsignalized)	NBL	79.0	28.7	F	D	82.7	30.2	F	D	160	60
		NBR	87.4	32.5	F	D					160	65
		EBT	28.9	34.3	D	D	28.9	34.2	D	D	2,380	2,880
		EBR	26.5	31.1	D	D					2,380	2,880
		WBL	18.8	30.6	C	D	0.2	0.6	A	A	25	110
		WBT	0.1	0.1	A	A					0	45
		Overall	**15.4**	**17.2**	**C**	**C**	-	-	-	-	-	-

Table C1. Base Year No Build VISSIM Intersection Analysis Results (continued)

Intersection No.	Intersection	Movement	Delay (s/veh)		Approximate LOS		Approach Delay (s/veh)		Approach Approx. LOS		Maximum Queue (ft.)	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
5	US 70 at Marly Drive (Unsignalized)	NBL	63.0	42.8	F	E	67.2	51.4	F	F	115	75
		NBT	0.0	0.0	A	A					120	80
		NBR	70.3	59.9	F	F					130	90
		SBL	679.5	435.3	F	F	679.5	435.3	F	F	165	120
		SBT	0.0	0.0	A	A					165	120
		SBR	0.0	0.0	A	A					165	120
		EBL	0.0	0.0	A	A	46.0	52.2	E	F	1,735	1,745
		EBT	46.0	52.2	E	F					1,695	1,705
		EBR	41.6	47.7	E	E					1,695	1,705
		WBL	21.3	21.0	C	C	0.7	0.9	A	A	115	170
		WBT	0.6	0.7	A	A					95	150
		WBR	0.8	0.9	A	A					95	145
		Overall	**25.1**	**27.4**	**D**	**D**	-	-	-	-	-	-
6	US 70 at Peyton Avenue (Unsignalized)	NBL	54.3	46.9	F	E	29.5	25.6	D	D	100	80
		NBT	0.0	0.0	A	A					100	80
		NBR	5.9	5.4	A	A					75	60
		SBL	0.0	0.0	A	A	15.5	13.2	C	B	0	0
		SBT	0.0	0.0	A	A					0	0
		SBR	15.5	13.2	C	B					45	45
		EBL	47.6	59.9	E	F	62.3	68.7	F	F	1,100	1,105
		EBT	62.6	69.3	F	F					1,015	1,015
		EBR	47.3	45.7	E	E					1,015	1,015
		WBL	32.8	26.7	D	D	1.3	1.0	A	A	65	45
		WBT	0.8	0.5	A	A					0	0
		WBR	0.0	0.0	A	A					0	0
		Overall	**30.8**	**32.9**	**D**	**D**	-	-	-	-	-	-
7	US 70 at S. Miami Boulevard (Signalized)	NBL	55.9	89.3	E	F	42.4	100.4	D	F	300	1,355
		NBT	44.3	112.8	D	F					330	1,355
		NBR	6.2	63.5	A	E					275	1,340
		SBL	73.9	119.1	E	F	58.2	83.4	E	F	860	465
		SBT	55.3	69.7	E	E					910	290
		SBR	14.8	6.6	B	A					135	35
		EBL	74.3	69.8	E	E	52.4	48.1	D	D	760	765
		EBT	65.6	56.8	E	E					760	765
		EBR	23.9	11.7	C	B					895	605
		WBL	63.9	74.2	E	E	43.1	36.3	D	D	315	155
		WBT	46.9	38.5	D	D					2,175	915
		WBR	9.0	20.7	A	C					200	660
		Overall	**49.9**	**65.3**	**D**	**E**	-	-	-	-	-	-
8	US 70 at Copper Leaf Parkway (Unsignalized)	SBR	23.6	10.6	C	B	23.6	10.6	C	C	205	75
		EBT	0.0	0.0	A	A	0	0.0	A	A	0	0
		WBT	2.1	1.2	A	A	2.0	1.1	A	A	175	145
		WBR	0.4	0.8	A	A					175	145
		Overall	**2.5**	**0.9**	**A**	**A**	-	-	-	-	-	-

Table C1. Base Year No Build VISSIM Intersection Analysis Results (continued)

Intersection No.	Intersection	Movement	Delay (s/veh)		Approximate LOS		Approach Delay (s/veh)		Approach Approx. LOS		Maximum Queue (ft.)	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
9	US 70 at Angier Avenue (Unsignalized)	NBL	26.9	27.9	D	D	10.7	25.0	B	C	100	295
		NBR	10.0	24.9	A	C					100	295
		EBT	0.2	0.5	A	A	0.2	0.5	A	A	5	0
		EBR	0.6	0.2	A	A					5	0
		WBL	28.8	14.8	D	B	7.0	1.5	A	A	420	140
		WBT	1.6	0.7	A	A					0	0
		Overall	**4.1**	**3.3**	**A**	**A**	-	-	-	-	-	-
10	US 70 at Leesville Road (Signalized)	SBL	32.1	50.4	C	D	23.9	28.3	C	C	395	95
		SBR	17.4	11.1	B	B					395	95
		EBL	49.6	52.8	D	D	17.4	17.5	B	B	105	835
		EBT	16.5	8.3	B	A					755	740
		WBL	9.0	28.3	A	C	17.5	30.5	B	C	715	1,490
		WBT	17.7	30.8	B	C					685	1,465
		WBR	0.0	42.6	A	D					685	1,465
		Overall	**18.6**	**24.5**	**B**	**C**	-	-	-	-	-	-
11	US 70 at Page Road Extension (Signalized)	EBR	4.7	2.0	A	A	37.4	40.5	D	D	195	75
		WBT	5.4	16.9	A	B					330	730
		NBL	41.1	43.9	D	D	11.5	14.2	B	B	170	310
		NBR	10.3	14.8	B	B					170	310
		EBT	14.7	16.6	B	B	8.4	18.0	A	B	805	525
		WBL	50.4	56.0	D	E					115	75
		Overall	**12.5**	**20.9**	**B**	**C**	-	-	-	-	-	-
12	US 70 at TW Alexander Drive (Signalized)	NBL	114.1	91.9	F	F	38.8	62.3	D	E	55	90
		NBT	101.3	92.9	F	F					140	520
		NBR	31.8	54.3	C	D					280	770
		SBL	247.3	160.8	F	F	150.5	106.4	F	F	660	225
		SBT	87.9	63.9	F	E					340	85
		SBR	6.6	7.2	A	A					125	100
		EBL	133.7	92.1	F	F	64.4	42.0	E	D	110	160
		EBT	63.6	40.0	E	D					990	1,120
		EBR	21.7	5.5	C	A					940	1,065
		WBL	25.6	38.9	C	D	12.7	12.5	B	B	545	455
		WBT	4.2	2.7	A	A					200	170
		WBR	1.0	2.2	A	A					0	0
		Overall	**45.7**	**35.8**	**D**	**D**	-	-	-	-	-	-
13	Pleasant Drive at Lynn Road (Unsignalized)	NBT	0.5	0.5	A	A	1.0	0.7	A	A	10	5
		NBR	2.0	1.2	A	A					35	25
		SBT	0.1	0.1	A	A	0.1	0.1	A	A	0	0
		SBR	0.4	0.4	A	A					0	0
		EBL	9.2	8.0	A	A	6.8	6.2	A	A	80	75
		EBR	6.6	6.0	A	A					85	85
		Overall	**1.5**	**1.3**	**A**	**A**	-	-	-	-	-	-

Table C1. Base Year No Build VISSIM Intersection Analysis Results (continued)

Intersection No.	Intersection	Movement	Delay (s/veh)		Approximate LOS		Approach Delay (s/veh)		Approach Approx. LOS		Maximum Queue (ft.)	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
14	S. Mineral Springs Road at Sherron Road (Signalized)	NBL	14.7	7.9	B	A	11.8	6.1	B	A	230	290
		NBT	9.4	5.1	A	A					215	270
		NBR	0.0	0.0	A	A					215	270
		SBL	0.0	0.0	A	A	11.1	7.1	B	A	320	120
		SBT	11.4	7.5	B	A					295	100
		SBR	1.1	0.8	A	A					295	100
		EBL	58.5	34.5	E	C	23.3	11.0	C	B	175	80
		EBT	0.0	0.0	A	A					175	80
		EBR	22.1	8.7	C	A					175	80
		WBL	0.0	0.0	A	A	0.0	0.0	A	A	0	0
		WBT	0.0	0.0	A	A					0	0
		WBR	0.0	0.0	A	A					0	0
		Overall	**14.5**	**7.0**	**B**	**A**	-	-	-	-	-	-
15	S. Miami Boulevard at Angier Avenue (Signalized)	NBL	33.4	46.7	C	D	17.0	56.3	B	E	240	3,640
		NBT	14.6	60.1	B	E					250	3,635
		NBR	2.1	27.4	A	C					270	3,690
		SBL	16.8	48.9	B	D	17.8	13.5	B	B	525	315
		SBT	18.8	11.3	B	B					520	315
		SBR	7.4	2.4	A	A					510	305
		EBL	72.1	193.2	E	F	39.0	140.4	D	F	225	1,145
		EBT	64.5	152.9	E	F					225	1,145
		EBR	10.4	82.5	B	F					225	1,145
		WBL	84.6	79.1	F	E	72.8	72.3	E	E	565	385
		WBT	67.7	67.5	E	E					565	385
		WBR	65.9	73.5	E	E					565	385
		Overall	**26.8**	**61.3**	**C**	**E**	-	-	-	-	-	-
16	Angier Avenue at Page Road (Unsignalized)	EBT	1.1	1.4	A	A	1.0	1.3	A	A	0	0
		EBR	1.0	1.1	A	A					0	0
		WBL	2.2	0.0	A	A	0.7	0.1	A	A	30	0
		WBT	0.6	0.1	A	A					5	0
		NBL	13.5	12.8	B	B	13.4	12.7	B	B	135	125
		NBR	11.2	10.9	B	B					135	125
		Overall	**3.6**	**3.8**	**A**	**A**	-	-	-	-	-	-
17	Page Road at Page Road Extension (Unsignalized)	NBL	5.8	4.3	A	A	2.3	3.0	A	A	70	55
		NBT	0.9	2.5	A	A					45	30
		SBT	0.6	0.3	A	A	0.6	0.3	A	A	15	10
		SBR	0.6	0.6	A	A					15	10
		EBL	17.7	9.5	C	A	16.3	8.3	C	A	165	90
		EBR	16.0	7.9	C	A					170	95
		Overall	**4.0**	**3.0**	**A**	**A**	-	-	-	-	-	-

Table C2. Base Year No Build VISSIM Network Performance Results

Network Performance Category	AM Peak	PM Peak
System-Wide Average Delay (s/veh)	142.4	161.8
Latent Demand (vehicles)	10	48
Vehicle Miles Traveled (VMT)	41,718	42,263

Table C3. Base Year No Build VISSIM Segment Analysis Results

Direction	Location Description	AM Peak				PM Peak			
		Density	Speed (mph)	Throughput (veh)	Approx. LOS	Density	Speed (mph)	Throughput (veh)	Approx. LOS
Eastbound US 70	West of East End Avenue	91.2	24.71	2,031	F	49.5	42.4	2,093	F
	Between East End Avenue and Lynn Road	34.4	50.24	1,722	D	66.5	33.5	2,005	F
	Between Lynn Road and Pleasant Drive	54.3	36.94	1,774	F	63.9	33.5	1,938	F
	Between Pleasant Drive and Laurel Drive	90.6	24.57	1,574	F	95.4	19.0	1,588	F
	Between Laurel Drive and Marly Drive	174.0	9.08	1,502	F	191.9	7.7	1,464	F
	Between Marly Drive and Peyton Avenue	207.9	7.44	1,542	F	214.2	6.9	1,470	F
	Between Peyton Avenue and S. Miami Boulevard/Sherron Road	221.0	4.76	1,052	F	200.4	5.6	1,126	F
	Between S. Miami Boulevard/Sherron Road and Angier Avenue	30.4	53.34	1,621	D	27.6	53.0	1,462	D
	Between Angier Avenue and Leesville Road	38.2	44.67	1,705	E	43.2	42.5	1,817	F
	Between Leesville Road and Page Road Extension	56.5	34.85	1,965	F	31.9	46.5	1,477	D
	Between Page Road Extension and TW Alexander Drive	25.7	53.29	1,371	C	26.6	49.2	1,307	D
	East of TW Alexander Drive	48.9	45.45	2,221	F	63.1	36.7	2,316	F
Westbound US 70	West of East End Avenue	38.1	54.01	2,056	E	36.1	54.4	1,961	E
	Between East End Avenue and Lynn Road	36.8	54.17	1,995	E	32.6	50.4	1,640	D
	Between Lynn Road and Pleasant Drive	64.3	32.65	1,961	F	41.2	42.2	1,696	F
	Between Pleasant Drive and Laurel Drive	48.2	37.62	1,666	F	29.2	52.8	1,542	D
	Between Laurel Drive and Marly Drive	35.2	46.54	1,640	E	33.8	46.3	1,564	D
	Between Marly Drive and Peyton Avenue	36.6	45.25	1,656	E	35.5	45.0	1,597	E
	Between Peyton Avenue and S. Miami Boulevard/Sherron Road	38.6	41.70	1,610	E	38.4	41.3	1,587	E
	Between S. Miami Boulevard/ Sherron Road and Copper Leaf Parkway	63.8	28.85	1,712	F	36.5	43.5	1,584	E
	Between Copper Leaf Parkway and Angier Avenue	27.7	56.40	1,563	D	30.9	55.5	1,715	D
	Between Angier Avenue and Leesville Road	47.3	41.36	1,950	F	34.9	51.7	1,804	D
	Between Leesville Road and Page Road Extension	36.9	43.32	1,596	E	129.2	16.5	2,070	F
	Between Page Road Extension and TW Alexander Drive	24.5	56.65	1,387	C	27.0	54.2	1,462	D
	East of TW Alexander Drive	52.4	45.91	2,401	F	52.7	44.2	2,324	F

Table C4. Future Year No Build VISSIM Intersection Analysis Results

Intersection No.	Intersection	Movement	Delay (s/veh)		Approximate LOS		Approach Delay		Approach Approx. LOS		Maximum Queue (ft.)	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	US 70 at Pleasant Drive (Signalized)	NBL	180.7	130.0	F	F	75.5	133.0	E	F	440	1,395
		NBT	60.2	133.8	E	F					450	1,405
		NBR	79.0	128.1	E	F					480	1,435
		SBL	140.7	67.1	F	E	152.8	38.3	F	D	1,915	475
		SBT	155.7	44.2	F	D					1,915	475
		SBR	152.8	13.4	F	B					1,935	495
		EBL	76.7	68.1	E	E	114.6	76.3	F	E	1,755	1,755
		EBT	116.8	77.4	F	E					1,755	1,755
		EBR	136.0	59.0	F	E					1,780	1,780
		WBL	89.8	67.5	F	E	28.9	24.0	C	C	900	555
		WBT	27.1	23.6	C	C					895	555
		WBR	22.3	17.6	C	B					915	575
		Overall	**81.9**	**64.6**	**F**	**E**	-	-	-	-	-	-
2	US 70 at Laurel Drive (Unsignalized)	NBL	695.8	33.6	F	D	702.5	33.9	F	D	1,260	60
		NBR	713.0	34.3	F	D					1,260	65
		EBT	52.5	31.7	F	D	52.4	31.6	F	D	3,275	3,165
		EBR	48.4	29.5	E	D					3,275	3,165
		WBL	0.1	0.1	A	A	0.3	0.4	A	A	35	20
		WBT	29.9	16.4	D	C					70	70
		Overall	**41.3**	**17.3**	**E**	**C**	-	-	-	-	-	-
3	US 70 at Marly Drive (Unsignalized)	NBL	77.2	41.8	F	E	79.7	47.4	F	E	125	80
		NBT	0.0	0.0	A	A					130	85
		NBR	83.2	53.8	F	F					140	95
		SBL	497.2	339.2	F	F	497.2	339.2	F	F	55	50
		SBT	0.0	0.0	A	A					50	50
		SBR	0.0	0.0	A	A					50	50
		EBL	0.0	0.0	A	A	45.1	55.8	E	F	1,750	1,735
		EBT	45.2	55.8	E	F					1,710	1,695
		EBR	41.8	56.0	E	F					1,710	1,695
		WBL	15.0	20.8	B	C	0.5	0.3	A	A	90	30
		WBT	0.5	0.1	A	A					75	10
		WBR	1.3	0.4	A	A					70	0
		Overall	**22.9**	**29.7**	**C**	**D**	-	-	-	-	-	-

Table C4. Future Year No Build VISSIM Intersection Analysis Results (continued)

Intersection No.	Intersection	Movement	Delay (s/veh)		Approximate LOS		Approach Delay		Approach Approx. LOS		Maximum Queue (ft.)	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
4	US 70 at Peyton Avenue (Unsignalized)	NBL	69.5	39.8	F	E	40.8	26.9	E	D	130	95
		NBT	0.0	0.0	A	A					130	95
		NBR	8.0	5.7	A	A					105	65
		SBL	75.0	74.7	F	F	42.8	31.2	E	D	40	40
		SBT	0.0	0.0	A	A					40	45
		SBR	17.1	11.4	C	B					45	45
		EBL	51.6	48.6	F	E	57.2	79.7	F	F	1,100	1,100
		EBT	57.5	80.2	F	F					1,015	1,015
		EBR	40.7	59.1	E	F					1,015	1,015
		WBL	29.0	14.5	D	B	1.9	0.8	A	A	50	35
		WBT	1.6	0.7	A	A					0	0
		WBR	1.4	0.6	A	A					0	0
		Overall	**28.4**	**42.1**	**D**	**E**	-	-	-	-	-	-
5	US 70 at S. Miami Boulevard (Signalized)	NBL	99.1	92.7	F	F	61.1	103.1	E	F	610	1,350
		NBT	30.3	108.5	C	F					355	1,350
		NBR	4.4	106.1	A	F					170	1,335
		SBL	102.5	305.7	F	F	84.9	144.5	F	F	1,020	955
		SBT	82.7	76.6	F	E					1,025	880
		SBR	51.9	11.0	D	B					1,005	55
		EBL	78.7	87.8	E	F	54.0	63.3	D	E	760	765
		EBT	64.3	77.0	E	E					760	765
		EBR	32.7	16.2	C	B					905	885
		WBL	80.4	70.5	F	E	48.7	30.5	D	C	190	90
		WBT	51.7	34.2	D	C					1,530	450
		WBR	9.0	12.0	A	B					155	240
		Overall	**63.4**	**85.0**	**E**	**F**	-	-	-	-	-	-
6	US 70 at Copper Leaf Parkway (Unsignalized)	SBR	19.7	9.2	C	A	19.7	9.2	C	A	215	75
		EBT	0.6	59.8	A	F	0.6	59.8	A	F	110	2,955
		WBT	0.9	0.7	A	A	0.9	0.5	A	A	30	75
		WBR	-0.2	0.4	A	A					30	75
		Overall	**2.8**	**32.4**	**A**	**D**	-	-	-	-	-	-
7	US 70 at Angier Avenue (Unsignalized)	NBL	40.5	263.1	E	F	24.0	259.4	C	F	190	1,365
		NBR	23.7	259.2	C	F					190	1,365
		EBT	23.7	121.5	C	F	23.7	121.7	C	F	2,925	3,985
		EBR	26.8	233.4	D	F					2,925	3,985
		WBL	47.9	15.0	E	C	12.9	1.2	B	A	935	110
		WBT	2.5	0.1	A	A					0	0
		Overall	**18.4**	**86.2**	**C**	**F**	-	-	-	-	-	-

Table C4. Future Year No Build VISSIM Intersection Analysis Results (continued)

Intersection No.	Intersection	Movement	Delay (s/veh)		Approximate LOS		Approach Delay		Approach Approx. LOS		Maximum Queue (ft.)	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
8	US 70 at Page Road Extension/ Realigned Leesville Road (Signalized)	NBL	89.6	251.3	F	F	68.1	581.9	E	F	305	1,740
		NBT	54.3	720.0	D	F					305	1,740
		NBR	39.5	747.0	D	F					325	1,765
		SBL	109.4	86.5	F	F	84.0	55.6	F	E	4,835	120
		SBT	82.1	70.7	F	E					4,835	120
		SBR	70.3	15.4	E	B					4,865	150
		EBL	82.0	92.0	F	F	66.8	128.4	E	F	1,610	1,605
		EBT	79.7	149.6	E	F					1,610	1,605
		EBR	19.0	20.1	B	C					650	75
		WBL	58.0	79.2	E	E	31.2	35.9	C	D	140	110
		WBT	28.2	35.1	C	D					660	665
		WBR	14.4	22.7	B	C					680	685
		Overall	**59.9**	**129.3**	**E**	**F**	-	-	-	-	-	-
9	US 70 at Aviation Parkway Extension/ Northern Durham Parkway (Signalized)	NBL	152.4	205.5	F	F	117.9	169.2	F	F	600	1,825
		NBT	122.2	165.6	F	F					600	1,825
		NBR	70.3	166.5	E	F					610	1,835
		SBL	297.9	337.9	F	F	233.3	284.5	F	F	5,265	5,260
		SBT	222.3	289.1	F	F					5,265	5,260
		SBR	79.1	87.0	E	F					5,280	5,275
		EBL	154.1	185.7	F	F	103.6	126.4	F	F	3,110	3,130
		EBT	98.5	120.4	F	F					3,110	3,130
		EBR	56.9	78.6	E	E					3,120	3,140
		WBL	116.0	121.7	F	F	42.7	35.0	D	C	1,290	780
		WBT	47.4	40.1	D	D					1,290	780
		WBR	19.8	15.5	B	B					1,305	790
		Overall	**109.1**	**141.0**	**F**	**F**	-	-	-	-	-	-
10	US 70 at TW Alexander Drive (Signalized)	NBL	84.9	125.1	F	F	130.0	83.8	F	F	165	7,405
		NBT	103.6	90.2	F	F					385	7,430
		NBR	140.1	78.5	F	E					1,370	7,440
		SBL	436.4	708.1	F	F	173.6	278.0	F	F	3,855	3,475
		SBT	125.7	82.9	F	F					3,860	3,260
		SBR	30.3	32.4	C	C					2,190	425
		EBL	174.3	113.7	F	F	129.6	82.2	F	F	5,055	5,055
		EBT	129.5	79.3	F	E					5,045	5,040
		EBR	53.1	28.6	D	C					4,995	4,995
		WBL	62.5	45.4	E	D	35.6	20.5	D	C	840	310
		WBT	21.3	15.2	C	B					865	275
		WBR	2.2	1.7	A	A					0	0
		Overall	**96.3**	**78.6**	**F**	**E**	-	-	-	-	-	-

Table C4. Future Year No Build VISSIM Intersection Analysis Results (continued)

Intersection No.	Intersection	Movement	Delay (s/veh)		Approximate LOS		Approach Delay		Approach Approx. LOS		Maximum Queue (ft.)	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
11	Lynn Road at Pleasant Drive (Unsignalized)	NBT	1.7	35.2	A	E	2.6	34.8	A	D	140	1,390
		NBR	8.8	32.3	A	D					155	1,405
		SBT	1.5	1.6	A	A	1.5	1.5	A	A	0	30
		SBR	1.2	1.3	A	A					0	30
		EBL	16.8	493.0	C	F	14.9	491.4	B	F	155	725
		EBR	13.8	488.7	B	F					160	735
		Overall	**4.0**	**45.7**	**A**	**E**	-	-	-	-	-	-
12	S. Mineral Springs Road at Sherron Road (Signalized)	NBL	28.2	13.4	C	B	17.5	9.7	B	A	265	335
		NBT	8.2	8.0	A	A					245	315
		NBR	0.0	0.0	A	A					245	315
		SBL	0.0	0.0	A	A	80.3	18.3	F	B	1,580	195
		SBT	83.8	20.0	F	C					1,555	175
		SBR	27.6	0.9	C	A					1,555	175
		EBL	40.4	47.2	D	D	42.0	25.4	D	C	300	280
		EBT	66.9	0.0	E	A					300	280
		EBR	0.0	20.9	A	C					300	280
		WBL	0.0	0.0	A	A	0.0	0.0	A	A	0	0
		WBT	0.0	0.0	A	A					0	0
		WBR	0.0	0.0	A	A					0	0
		Overall	**54.2**	**15.1**	**D**	**B**	-	-	-	-	-	-
13	Angier Avenue at S. Miami Boulevard (Signalized)	NBL	76.8	68.0	E	E	30.3	60.2	C	E	375	3,340
		NBT	20.5	62.2	C	E					370	3,335
		NBR	3.1	33.3	A	C					425	3,390
		SBL	25.9	84.1	C	F	18.6	12.8	B	B	1,005	395
		SBT	19.5	7.4	B	A					1,000	390
		SBR	9.5	2.7	A	A					990	380
		EBL	93.8	127.4	F	F	61.7	134.1	E	F	785	1,150
		EBT	90.5	157.0	F	F					785	1,150
		EBR	29.6	87.3	C	F					785	1,150
		WBL	101.4	67.6	F	E	127.3	83.8	F	F	1,235	545
		WBT	136.2	83.5	F	F					1,235	545
		WBR	137.5	102.6	F	F					1,235	545
		Overall	**44.7**	**62.6**	**D**	**E**	-	-	-	-	-	-
14	Page Road at Angier Avenue (Unsignalized)	NBT	34.5	36.3	D	E	34.5	39.2	D	E	390	325
		NBR	34.6	47.9	D	E					390	330
		SBL	1.1	197.9	A	F	1.0	192.0	A	F	0	1,325
		SBT	0.9	182.1	A	F					0	1,325
		WBL	2.7	2.5	A	A	1.0	0.5	A	A	50	15
		WBR	0.8	0.2	A	A					25	0
		Overall	**12.1**	**120.0**	**B**	**F**	-	-	-	-	-	-

Table C4. Future Year No Build VISSIM Intersection Analysis Results (continued)

Intersection No.	Intersection	Movement	Delay (s/veh)		Approximate LOS		Approach Delay		Approach Approx. LOS		Maximum Queue (ft.)	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
15	Page Road at Page Road Extension (Unsignalized)	NBL	14.1	393.0	B	F	8.2	490.4	A	F	215	2,260
		NBT	3.9	505.8	A	F					195	2,235
		SBT	2.4	7.7	A	A	2.9	5.6	A	A	105	125
		SBR	3.5	1.4	A	A					105	125
		EBL	19.5	513.4	C	F	18.1	502.5	C	F	205	1,220
		EBR	16.8	469.1	C	F					215	1,225
		Overall	**6.9**	**300.4**	**A**	**F**	-	-	-	-	-	-

Table C5. Future Year No Build VISSIM Network Performance Results

Network Performance Category	AM Peak	PM Peak
System-Wide Average Delay (s/veh)	375.2	583.8
Latent Demand (veh)	10,291	13,079
Vehicle Miles Traveled (VMT)	61,483	50,194

Table C6. Future Year No Build VISSIM Segment Analysis Results

Direction	Location Description	AM Peak				PM Peak			
		Density	Speed (mph)	Throughput (veh)	Approx. LOS	Density	Speed (mph)	Throughput (veh)	Approx. LOS
Eastbound US 70	West of East End Connector	78.2	55.0	4,297	F	322.3	8.0	2,567	F
	Between East End Connector and Lynn Road/Pleasant Drive	344.1	5.1	1,711	F	394.6	4.2	1,653	F
	Between Pleasant Drive and Laurel Drive	199.7	8.0	1,600	F	93.0	18.1	1,516	F
	Between Laurel Drive and Marly Drive	192.4	8.3	1,590	F	185.0	7.7	1,336	F
	Between Marly Drive and Peyton Avenue	205.6	7.9	1,620	F	219.0	6.3	1,330	F
	Between Peyton Avenue and S. Miami Boulevard/Sherron Road	219.9	7.3	1,613	F	241.4	5.4	1,304	F
	Between S. Miami Boulevard/ Sherron Road and Angier Avenue	48.3	33.3	1,547	F	196.2	5.7	1,098	F
	Between Angier Avenue and Leesville Road/Page Road Extension	169.1	9.2	1,546	F	277.1	4.1	1,128	F
	Between Leesville Road/Page Road Extension and Northern Durham Parkway/Aviation Parkway Extension	158.6	8.9	1,384	F	222.2	4.1	906	F
	Between Northern Durham Parkway/Aviation Parkway Extension and TW Alexander Drive	244.8	6.0	1,465	F	143.0	9.8	1396.7	F
	East of TW Alexander Drive	379.5	5.8	2,210	F	120.3	30.4	2,415	F
Westbound US 70	West of East End Connector	49.3	57.3	2,827	F	57.1	57.1	3,261	F
	Between East End Connector and Lynn Road/Pleasant Drive	40.8	48.0	1,953	F	24.6	52.9	1,300	C
	Between Pleasant Drive and Laurel Drive	38.5	48.9	1,883	E	22.1	55.3	1,224	C
	Between Laurel Drive and Marly Drive	39.7	46.4	1,842	E	26.2	46.7	1,221	D
	Between Marly Drive and Peyton Avenue	40.3	45.2	1,821	F	26.1	46.2	1,204	D
	Between Peyton Avenue and S. Miami Boulevard/Sherron Road	44.7	39.4	1,759	F	28.6	40.3	1,154	D
	Between S. Miami Boulevard/Sherron Road and Copper Leaf Parkway	49.9	33.1	1,461	F	18.0	47.8	862	C
	Between Copper Leaf Parkway and Angier Avenue	21.0	56.9	1,195	C	15.4	56.8	872	B
	Between Angier Avenue and Leesville Road/Page Road Extension	41.7	42.7	1,552	F	16.2	56.8	920	B
	Between Leesville Road/Page Road Extension and Northern Durham Parkway/Aviation Parkway Extension	24.8	49.5	1,227	C	19.4	50.2	975	C
	Between Northern Durham Parkway/Aviation Parkway Extension and TW Alexander Drive	39.9	44.3	1,754	E	23.3	52.1	1,212	C
	East of TW Alexander Drive	65.2	39.7	2,536	F	34.3	47.0	1,610	D