STATEMENT OF PURPOSE AND NEED

MECKLENBURG AND UNION COUNTIES
MONROE CONNECTOR/BYPASS

S.T.I.P. PROJECT NUMBERS R-3329, R-2559

Prepared For:

NORTH CAROLINA Turnpike Authority

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

PREFACE

INTRODUCTION

Pursuant to Title 23, Code of Federal Regulations (CFR), Part 771, Environmental and Related Procedures, the United States Department of Transportation Federal Highway Administration (FHWA) published a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) for the proposed Monroe Bypass/Connector project. The NOI was published in Federal Register on January 19, 2007 (Vol. 72, No. 12).

The FHWA, North Carolina Turnpike Authority (NCTA) and North Carolina Department of Transportation (NCDOT) are preparing an EIS in accordance with the requirements of the National Environmental Policy Act (NEPA) of 1969, as amended, and the North Carolina Environmental Policy Act (NCEPA). The US Army Corps of Engineers (USACE) is a cooperating agency.

This is an informational document intended for use by both decision-makers and the public. As such, it represents a disclosure of relevant environmental information concerning the proposed action. The content of this document is in compliance with the requirements of the Council on Environmental Quality (CEQ) guidelines, which provide direction regarding implementation of the procedural provisions of NEPA, and the FHWA's *Guidance for Preparing and Processing Environmental and Section 4(f) Documents* (FHWA, 1987).

THE NORTH CAROLINA TURNPIKE AUTHORITY

In October 2002, legislation was passed authorizing the creation of the North Carolina Turnpike Authority (NCTA) with the purpose to study, design, plan, construct, promote, own, finance and operate a system of toll roads, bridges, and/or tunnels supplementing the traditional non-toll transportation system serving the citizens of North Carolina (NC General Statute [GS] §136-89.182).

In order for a project to be considered for development as a toll facility, the legislation requires that the project be included in a locally adopted comprehensive transportation plan and be shown in the current NCDOT *State Transportation Improvement Program* (STIP) (GS§ 136-89.183[a][2]). Any toll road developed in the state must have a free alternate route (GS §136-89.197). All revenues from tolls are to be used to cover the cost of financing, operating and maintaining the road. Current legislation requires that when the roads are paid for, tolls will be removed (GS §136-89.196)

In August 2005 and August 2006, legislation was passed authorizing the NCTA to study, plan, develop, and undertake preliminary design work on up to nine toll projects. At the conclusion of these activities, the NCTA is authorized to design, establish, purchase, construct, operate, and maintain several projects, one of which is the Monroe Connector / Bypass.

1.0 PURPOSE AND NEED

1.1 PROPOSED ACTION

The proposed action includes improvements to the approximate 20-mile segment of the US 74 corridor from I-485 in Mecklenburg County to the area just west of the Town of Marshville in Union County. The proposed action is included in the NCDOT State Transportation Improvement Program (STIP) as project numbers R-2559 (Monroe Bypass) and R-3329 (Monroe Connector).

1.2 SUMMARY OF NEED FOR PROPOSED ACTION

US 74 is the major east-west route connecting the Charlotte region, a major population center and freight distribution point, to the North Carolina coast and the State port at Wilmington (the State's largest port). **Figure 1-1** shows US 74 in relation to eastern North Carolina. In addition, US 74 is the primary transportation connection between Union County, the fastest growing county in North Carolina, and Mecklenburg County/City of Charlotte, the economic hub of the region. **Figure 1-2** shows the project location in relation to Union and Mecklenburg Counties. Union County is the only county surrounding Mecklenburg County that does not have a controlled-access facility connecting it to Mecklenburg County.

US 74 also serves as an important commercial corridor for Union County residents and businesses, with many retail, commercial, and employment centers having direct access to/from US 74. In Union County, most employment is concentrated in the City of Monroe or along existing US 74.

The needs for the proposed action are summarized below.

- **Capacity Deficiencies**

  Currently, US 74 in the study area is a four-to-six lane arterial roadway with 26 at-grade signalized intersections, many additional unsignalized intersections, and numerous commercial and residential driveway connections. Average travel speeds range from approximately 20 to 30 miles per hour during the peak hour, and are expected to decline to less than 20 miles per hour by 2030. Congestion is high, with one-third of the intersections operating at an unacceptable Level of Service (LOS E or F) during the peak hour today. Approximately two-thirds of the intersections are expected to operate at LOS E or F by 2030, with long queues at many intersections.

  In sum, the existing US 74 roadway does not allow for high-speed regional travel, and conditions are expected to worsen through 2030. Therefore, existing US 74 does not meet the requirements for a Strategic Highway Corridor and an Intrastate System route.

- **Inability to serve high-speed regional travel consistent with the designations and goals of the following state and local transportation plans: the Mecklenburg-Union Metropolitan Planning Organization's (MUMPO's) Long Range Transportation Plan (LRTP), the North Carolina Strategic Highway Corridor Program, and the North Carolina Intrastate System. The existing corridor also has diminished ability to function as part of the Strategic Highway Network (STRAHNET).**

***Intrastate Highway System**: The purpose of the Intrastate Highway System is to provide high-speed safe travel service throughout the State. It connects major population centers both inside and outside the State and provides safe, convenient, through-travel for motorists. It is designed to support statewide growth and development objectives and to connect to major highways of adjoining states. All segments of the routes in the Intrastate System shall have at least four travel lanes and, when warranted, shall have vertical separation or interchanges at crossings, more than four travel lanes, or bypasses (GS 136-178).*

The MUMPO LRTP includes improvements to the US 74 corridor in the study area as a high priority. The LRTP proposes a new location controlled-access facility from US 74 at I-485 to US 74 west of Marshville.

Because of its statewide and regional importance, US 74 has been designated as a Strategic Highway Corridor (SHC) by the North Carolina Department of Transportation and has been designated in State law as part of the North Carolina Intrastate System (North Carolina General Statute § 136-178). Both designations call for this corridor to serve high-speed regional travel. The SHC designation specifically calls for a freeway. The Intrastate System designation calls for a multi-lane facility with access control and grade separations if warranted by traffic volumes.

The existing and projected traffic and land use conditions along US 74 diminish the segment's ability to function as part of the Intrastate System and as a Strategic Highway Corridor. The facility type is also inconsistent with the Strategic Highway Corridor Program vision of the corridor as a freeway.

***STRAHNET**: Title 23, Part 470, Section 107 (23CFR470.107) defines the federal-aid highway systems, which include the interstate system and the national highway system. A subset of the national highway system is the STRAHNET. As defined in 23CRF470.107(b)(3), the "STRAHNET includes highways which are important to the United States strategic defense policy and which provide defense access, continuity, and emergency capabilities for the movement of personnel, materials, and equipment in both peace time and war time."*

The US 74 corridor is designated as part of the Strategic Highway Network (STRAHNET). Existing and projected poor LOS and lack of access control along the US 74 corridor diminish the roadway's ability to function as part of the STRAHNET.

1.3 PURPOSE OF PROPOSED ACTION

The purposes of the project are to:

- Construct a facility that allows for safe, reliable, high-speed regional travel in the US 74 Corridor between I-485 in Mecklenburg County and the Town of Marshville in Union County, in a manner consistent with the North Carolina Strategic Highway Corridors Vision Plan for US 74 and the designation of US 74 on the North Carolina Intrastate System.
- Improve mobility in the US 74 corridor within the project study area, while maintaining access to properties along existing US 74.

1.4 PROJECT DESCRIPTION

1.4.1 Project Setting

The project is located southeast of Charlotte in the southern part of the Piedmont region of North Carolina. As shown in **Figure 1-3**, the study area boundaries generally are the Goose Creek watershed (which contains known populations of the endangered Carolina heelsplitter mussel) and Lake Twitty to the north, Old Monroe Road to the south, the Town of Marshville to the east, and I-485 to the west.

The majority of the study area is within Union County; with the portion adjacent to, and northwest of, I-485 within Mecklenburg County. Portions of the study area are within the jurisdictions of the towns of Mint Hill, Stallings, Hemby Bridge, Indian Trail, Wingate, and Marshville, the Village of Lake Park, and the cities of Matthews and Monroe.

Land uses along US 74 within the study area include various commercial uses and light industrial businesses. Central Piedmont Community College and Wingate University also are in the project study area near existing US 74. The portion of the project study area generally west of US 601 is where much of the County's growth has occurred and is occurring. There are numerous subdivisions and commercial uses in this area. The study area generally east of US 601 is more rural, with scattered residential, commercial, and agricultural uses, and undeveloped areas.

The terrain is gently rolling. Elevations range between approximately 550 feet above mean sea level (AMSL) to about 780 feet AMSL. Natural features within the project study area include numerous streams and their associated floodplains and tributaries. Major named streams include Goose Creek, Stewart's Creek, South Fork Crooked Creek, North Fork Crooked Creek, Richardson Creek, Four Mile Creek, Meadow Branch, and Salem Branch.

1.4.2 Existing Road Network

US 74 is the primary route between Charlotte and Monroe, and it accommodates a large portion of the southeast-northwest traffic demand in the area. Existing US 74 is a four-to-six lane divided highway with 26 at-grade signalized intersections, additional unsignalized intersections, and numerous commercial and residential driveway connections.

I-485 is a partially completed limited-access loop around the outer limits of Charlotte. I-485 runs northeast-southwest at the western end of the study area. There is a system interchange connecting I-485 to US 74.

US 601 runs north-south and connects with US 74 at a service interchange in Monroe in the middle of the study area. US 601 is the only other US route in Union County. Several state routes provide access to US 74 from various areas of Union County, including Stallings Road (SR 1365), Indian Trail-Fairview Road (SR 1520), Unionville-Indian Trail Road (SR 1367), Wesley Chapel-Stouts Road/Sardis Church Road (SR 1377), Rocky River Road (SR 1007/SR 1514), Secrest Shortcut Road (SR 1501), Morgan Mill Road (NC 200) Walkup Avenue (SR 1751), Witmore Road (SR 1758), and Forest Hills School Road (SR 1754).

West of US 601, two smaller arterial roadways roughly parallel US 74 to the north and south – Old Monroe Road/Old Charlotte Highway (SR 1009) to the south and Secrest Shortcut Road (SR 1501) to the north.

1.4.3 History of Project

NCDOT previously studied two projects in this area – the Monroe Bypass (STIP R-2559) and Monroe Connector (STIP R-3329). They are now being advanced by NCTA as a single project.

1.4.3.1 Previous Studies of Monroe Bypass

The Monroe Bypass project was the first of the two projects. The eastern terminus of this project was US 74 near Rocky River Road. From there, the project extended around the north side of Monroe, and connected to US 74 just west of Marshville.

The NCDOT completed the original planning and environmental process for the Monroe Bypass in 1997. The process included an Environmental Assessment (EA) issued on March 14, 1996, and a Finding of No Significant Impact (FONSI) issued on June 20, 1997, in accordance with NEPA. The process resulted in selection of a Preferred Alternative. **Figure 1-4** shows the previous Monroe Bypass project study area and the Preferred Alternative that was approved in the 1997 FONSI.

For right of way and construction purposes, the Preferred Alternative was divided into three sections (**Figure 1-4**). Section A extends from US 74 near Rocky River Road (SR 1514) east to US 601. Section B extends from US 601 to just east of Walkup Avenue (SR 1751). Section C completes the alignment, connecting with US 74 west of Marshville.

In May 1997, a Public Hearing was held to present final designs for Sections B and C. Section A was put on hold at that time while the Monroe Connector was being studied. In 2000 and 2001, right of way was purchased for Sections B and C. However, during the permitting process, prior to construction, issues arose regarding the endangered Carolina heelsplitter mussel, and construction was postponed.

Activities related to the Monroe Bypass after 2001 are described in **Section 1.4.2.3**.

1.4.3.2 Previous Studies of Monroe Connector

The NCDOT began the planning process for the Monroe Connector in 1999. As the name suggests, the Monroe Connector would 'connect' the Monroe Bypass to I-485. **Figure 1-5** shows the project study area for the NCDOT's Monroe Connector study. This project would connect to the Monroe Bypass at US 601, which is the dividing line between Section A and Section B of the Bypass.

A Draft EIS for the Monroe Connector was completed in October 2003 and released in November 2003. Several Detailed Study Corridors, also shown in **Figure 1-5,** were evaluated. Resource agencies and the public provided input as part of the project development process. A public hearing was not held following completion of the Draft EIS.

This 2003 Draft EIS was rescinded on January 30, 2006 by notice in the Federal Register (Vol. 71, No 19, page 4958). The notice stated: "Based on the comments received from various Federal and state agencies and the public, and a recent decision to change the eastern terminus of the project from US 601 to the proposed Monroe Bypass, the FHWA and NCDOT have agreed not to prepare a Final EIS for the proposed US 74 improvements from I-485 to US 601. FHWA, NCDOT, and the North Carolina Turnpike Authority (NCTA), plan to prepare a new Draft EIS for the proposed project. A notice of intent to prepare the EIS will be issued subsequent to this rescinding notice. The new Draft EIS will include a toll alternative among the full range of alternatives that will be analyzed as well as a change in the location of the eastern terminus." (Federal Register, Vol. 71, No. 19, page 4958).

1.4.3.3 Monroe Bypass and Monroe Connector Combined

In February 2005, at the request of the Mecklenburg-Union Metropolitan Planning Organization (MUMPO), the NCTA adopted the Monroe Connector as a candidate toll facility. At that time, the NCDOT was moving forward with the Monroe Bypass as a separate project, since the STIP current at the time included funding for construction of Sections B and C of the Bypass. However, due to the age of the original EA/FONSI for the Monroe Bypass (about 10 years), a reevaluation of the document was required by the FHWA prior to the start of any construction. All sections of the Bypass (A, B, and C) needed to be considered in the reevaluation because they provide the logical endpoints for the project, enabling it to function as a stand-alone bypass.

During the course of the reevaluation, it was discovered that the MUMPO's Long-Range Transportation Plan (LRTP) did not include Section A of the Bypass; it included the Monroe Connector instead. A project must be in the LRTP in order for it to receive FHWA approval and funding. As originally envisioned, the Monroe Connector was meant to function as a replacement or extension of Section A of the Monroe Bypass. Without the Monroe Bypass Sections B and C, the Monroe Connector did not have a logical eastern terminus. Likewise, without Section A (or the Connector serving as a replacement or

extension of Section A), Sections B and C of the Monroe Bypass did not have a logical western terminus and could not serve as a stand-alone bypass.

During the reevaluation, it was also discovered that within the study area of Monroe Bypass Section A, several new neighborhoods had been developed since the original EA/FONSI was completed. Three alignment options for Section A were developed by NCDOT in light of the new conditions. These options were shown at public workshops in Union County on April 27, 2006 at Monroe Country Club and May 3, 2006 at South Piedmont Community College.

On September 20, 2006, MUMPO recommended that the Monroe Bypass and Monroe Connector be combined into a single environmental study under the administration of the NCTA, and the NCDOT's reevaluation process for the Monroe Bypass was discontinued. On January 19, 2007, FHWA issued a Notice of Intent in the Federal Register announcing its intention to prepare this EIS for the combined Monroe Connector/Monroe Bypass project.

Scoping meetings were held with state and federal resource agencies, local officials and the public to discuss and receive input on the purpose and need for the project, the project study area, preliminary alternatives, and the scope of the EIS. An agency scoping meeting was held on January 25, 2007 at the NCTA office in Raleigh, NC. Minutes from this meeting can be found in **Appendix A**. Representatives from the following federal and state agencies were present at this meeting:

- Federal Highway Administration (FHWA)
- United States Environmental Protection Agency (USEPA)
- United States Army Corps of Engineers (USAC)
- United States Fish and Wildlife Service (USFWS)
- North Carolina Department of Transportation (NCDOT)
- North Carolina Department of Environment and Natural Resources – Wildlife Resources Commission (NCDENR-WRC)
- North Carolina Department of Environment and Natural Resources – Division of Water Quality (NCDENR-DWQ)
- North Carolina Department of Cultural Resources – State Historic Preservation Office (NCDCR-SHPO)
- MUMPO
- Town of Stallings

A scoping meeting with local public officials was held February 9, 2007 at the Charlotte-Mecklenburg Government Center in Charlotte, NC. Minutes from this meeting can be found in **Appendix A**. Representatives from the following municipalities and organizations were present:

- Centrolina Council of Government
- Union County, City of Monroe
- Town of Matthews
- Town of Indian Trail
- Town of Stallings
- Town of Mint Hill
- Wesley Chapel, Rocky River Rural Planning Organization

- MUMPO
- NCDOT

Citizens Informational Workshops were held on June 25 and 26, 2007 from 4:00 pm to 8:00 pm. The June 25 workshop was held at the South Piedmont Community College in Monroe and the June 26 workshop was held at the NC Cooperative Extension – Union County Center in Monroe. Approximately 400 people total attended the two workshops. Comments received primarily expressed concerned with potential impacts to residents and traffic congestion in the area. A large majority of the respondents did not express opposition to making the entire facility a toll road A complete summary of comments received is included in **Appendix B**.

1.5 TRANSPORTATION SYSTEMS

1.5.1 North Carolina Strategic Highway Corridor System

The North Carolina Board of Transportation has established a vision for the US 74 corridor that includes developing a freeway in this corridor to accommodate high-speed regional travel. The North Carolina Board of Transportation adopted a Vision Plan for this section of US 74 pursuant to North Carolina's Strategic Highway Corridor (SHC) initiative. The Vision Plan for US 74 identifies a freeway as the minimum preferred type of roadway for the corridor. As a freeway, the roadway to be developed in this corridor is to have a minimum of four travel lanes and full control of access. In addition, the North Carolina General Assembly has designated US 74 between Charlotte and Monroe as part of the Intrastate System. By statute, highways on the Intrastate System generally must have four travel lanes and, when warranted, must have access control.

Existing US 74 in the project area is an arterial roadway with numerous at-grade access points (driveways, parking lots, etc.) and 26 traffic signals within approximately 20 miles of roadway. As such, US 74 currently is not a freeway, nor does it allow for safe, high-speed regional travel. Therefore, existing US 74 is inconsistent with the Strategic Highway Corridor and Intrastate System vision for this Corridor.

1.5.1.1 Strategic Highway Corridor Initiative

On September 2, 2004, the North Carolina Board of Transportation established a system of Strategic Highway Corridors for North Carolina as part of the State's Long-Range, Multi-Modal Statewide Transportation Plan.

In October 2005, NCDOT issued a Concept Development Report for the statewide network of SHC routes. The SHC Report explained that the primary purpose of the SHC Concept is to "provide a safe, reliable, and high-speed network of highways that connect to travel destinations throughout and just outside of North Carolina." A related goal is to use the SHC Concept as a tool to influence and affect ongoing planning and project related decisions in order to realize the facility type vision.

North Carolina's Department of Transportation (NCDOT), Department of Commerce (NCDOC) and Department of Environmental and Natural Resources (NCDENR) collaborated in developing the SHC Report and the process of selecting the strategic highway corridors. In developing the SHC concept, NCDOT held nine regional forums with local, regional, state and federal agencies; economic development and environmental organizations; freight industry representatives; political leadership organizations, and other advocacy groups.

Central to the SHC initiative was identifying Strategic Highway Corridors, which are a set of highways vital to moving people and goods to destinations within and just outside of the state. Corridors were

selected using quantitative data (*e.g.*, current and future traffic volumes, route classifications and truck traffic percentages) and subjective criteria (*e.g.*, a corridor's role and function, its significance to a regional area, and/or its historical role in national and/or statewide movement). Primary criteria utilized to select the SHCs included:

- Mobility. Whether the corridor serves or has the potential to expeditiously move large volumes of traffic.

- Connectivity. Whether a corridor provides a vital link between activity centers, which include urban areas (with populations of 200,000 or greater), state seaports, major airports, major intermodal terminals, major military bases, University of North Carolina campuses, trauma centers, and major tourist attractions.

- Interstate Connectivity. Whether a corridor provides an important connection between existing and/or planned interstates.

- Interstate Relievers. Whether a corridor currently serves or has the potential to serve as a reliever route to an existing interstate facility.

In addition to these primary criteria, NCDOT considered additional elements to support the SHC corridor selection process. One element was the classification of a roadway as part of a national, statewide, economic or military highway system, including the North Carolina Intrastate System, the National Highway System, and the Department of Defense Strategic Highway Network (STRAHNET).

For each SHC corridor, a Vision Plan was established by NCDOT that identified the minimum preferred type of roadway for the corridor. The proposed facility types are primarily based upon the function of the roadway, level of mobility and access, and whether the facility has (or will have) traffic signals, driveways and/or medians. The facility types were developed by a committee comprised of representatives from FHWA, and the following NCDOT branches: Traffic Engineering, Highway Design, Project Development, and Transportation Planning. The facility types on the SHC system are: Freeway, Expressway; Boulevard; and Thoroughfare.

1.5.1.2 Strategic Highway Corridor Vision Plan for US 74

As part of the SHC initiative, NCDOT designated 55 corridors throughout the State. The SHC map is shown in **Figure 1-6**. The US 74 corridor, from Charlotte to Florence, South Carolina, was identified as Corridor 23. The SHC Report noted that US 74 is significant because it connects the State's largest port (Wilmington) to the second largest city (Charlotte); it serves as a connector route between I-85 and I-95; and it supports the State's tourism industry by connecting Charlotte and the southern piedmont to beaches in South Carolina and southeastern North Carolina. The SHC Vision Plan for the US 74 corridor between I-485 and US 601 calls for a "Freeway."

The term "freeway" is defined in NCDOT's publication, *Facility Type & Control of Access Definitions* (August 2005), which the North Carolina Board of Transportation adopted on September 2, 2004. It is attached as **Appendix C** to the SHC Report. A freeway is defined as follows:

- Functional Purpose: High Mobility, Low Access

- AASHTO Design Classification: Interstate or Freeway

- Posted Speed Limit: 55 mph or greater

- Control of Access: Full
- Traffic Signals: Not Allowed
- Driveways: Not Allowed
- Cross-Section: Minimum 4 Lanes with a Median
- Connections: Provided only at interchanges; All cross streets are grade-separated
- Median Crossovers: Public-use crossovers not allowed; U-turn median openings for use by authorized vehicles only when need is justified.

Existing US 74 in the study area is inconsistent with the designation of this corridor as a "freeway" in the SHC Vision Plan. The existing roadway is four to six lanes wide, but it is an arterial with numerous at-grade access points and 26 traffic signals. The existing roadway does not have the design characteristics of a freeway and does not provide the high levels of mobility (high speeds) that are associated with freeways.

1.5.1.3 Implementation of the Strategic Highway Corridor Vision

A critical step in the Strategic Highway Corridor implementation process is incorporating recommendations from the Vision Plans into individual projects. This is to be accomplished by local and statewide transportation planners incorporating Strategic Highway Corridors and associated designations into the statewide and regional transportation planning process and into a project's development process, including its NEPA study.

According to the SHC Report, existing STIP projects located along Strategic Highway Corridors should be examined and modified for consistency with the corridor vision. New STIP projects should be developed from the beginning of the project development process in a manner that considers the long-term vision and goals of the Strategic Highway Corridor Concept. The SHC report states that:

> Engineers should develop project scopes and make design decisions that are consistent with the corridor vision, including the preparation of Purpose and Need Statements and the development and evaluation of alternatives. *Purpose and Need Statements should demonstrate how the project meets the criteria set forth in the Strategic Highway Corridor concept and describes the need for improvements to corridor as they relate to corridor's function and vision.* Alternatives should be developed and analyzed in a manner which reflects the mobility and connectivity goals of the vision, while attempting to maximize the use of existing infrastructure. (SHC Report, page 68)

As contemplated by the SHC Report, the corridor vision for US 74 as a freeway has been adopted in both the metropolitan long-range transportation plan and the STIP. The 2030 Long Range Transportation Plan, adopted by MUMPO, includes the Monroe Bypass and Monroe Connector as "new freeway" projects. The 2007-2013 STIP includes the Monroe Connector (R-3329) as a "multi-lane freeway on new location" and includes the Monroe Bypass as a "four lane divided [facility] on new location." Similarly, NCDOT and MUMPO have included the proposed action in their plans consistent with the Strategic Highway Corridor freeway designation.

1.5.2 North Carolina Intrastate System

The Intrastate System has been established by statute in North Carolina (NC Gen. Stat. § 136-178). The purpose of the Intrastate System is to provide "high-speed, safe travel service throughout the State." As defined in statute, the Intrastate System:

- "connects major population centers both inside and outside the State";
- "provides safe, convenient, through-travel for motorists";
- "is designed to support statewide growth and development objectives and to connect to major highways of adjoining states."

The statute governing the development of the Intrastate System requires that the routes in the Intrastate System have at least four travel lanes unless traffic volume projections and environmental considerations dictate fewer lanes. The legislation also requires vertical separation or interchanges at crossings, more than four travel lanes, and bypasses "when warranted." In other words, Intrastate System designation requires a four-lane, access-controlled roadway if such a facility is warranted by traffic volumes and is not precluded by environmental constraints.

Existing US 74 in the study area (between I-485 in Mecklenburg County and just west of the Town of Marshville) is a four-to-six lane facility with numerous at-grade access points at 26 traffic signals in approximately 20 miles. As further explained below, average travel speeds on this section of US 74 currently range from approximately 20 to 30 miles per hour – far below posted speed limits – and those speed are expected to decline further by 2030. Traffic volumes on existing US 74 range from [xxx] to [xxx], resulting in a high level of congestion during the peak hour. These conditions demonstrate that the existing roadway characteristics (traffic signals, at-grade access) are not consistent with the requirements for routes on the Intrastate System.

1.5.3 National Highway System and STRAHNET

In addition to its designation as a Strategic Highway Corridor and as part of the Intrastate System in North Carolina, US 74 also is designated at the federal level as part of the National Highway System (NHS) and as part of the Strategic Highway Network (STRAHNET), which itself is part of the NHS.

1.5.3.1 National Highway System

The Code of Federal Regulations (CFR), Title 23, Part 470, Section 107 (23 CFR 470.107), defines the federal-aid highway system, which includes the interstate system and the National Highway System (NHS). The NHS includes approximately 160,000 of roadway that is important to the nation's economy, defense and mobility. In North Carolina, US 74 in the study area is included as a roadway on the NHS system. The Monroe Bypass project is identified on the NHS system map as an "Unbuilt NHS Route."

1.5.3.2 Strategic Highway Corridor Network

STRAHNET is a designation given to roads that provide defense access, continuity, and emergency capabilities for movements of personnel and equipment. STRAHNET includes routes (for long-distance travel) and connectors (to connect individual installations to the routes). STRAHNET routes include the 45,376-mile Interstate System and 15,668 miles of other important public highways. STRAHNET connectors comprise approximately 1,700 miles and link over 200 important military installations and ports to STRAHNET routes. US 74 from Charlotte to Wilmington is classified as a non-interstate STRAHNET route. STRAHNET routes are required to meet AASHTO (American Association of State

Highway Transportation Officials) guidelines for the facility type proposed. Any improvements made to the US 74 corridor are part of the proposed project would meet these guidelines.

1.5.4 Modal Interrelationships

Although private automobiles are the primary means of transportation in the study area, other modes of travel; including mass transit, rail, motor freight, and air service, are integral parts of the transportation system, and are briefly described below.

1.5.4.1 Public Transportation

The Charlotte Area Transit System (CATS), formed in 2000, is the largest provider of mass transit services in the region. CATS provides fixed-route bus services, paratransit, community and neighborhood based shuttle services (including demand response services), and a multi-county vanpool program for work trip destinations in Mecklenburg County. The only fixed-route, fixed-schedule transit service within the study area is the Union County Express (Route 74X) (www.charmeck.org/Departments/CATS, accessed July 13, 2007). This route uses US 74, extending into Union County to Marshville. It provides transportation between uptown Charlotte and three park-and-ride lots along US 74 in Union County: Union Towne Shopping Center in Indian Trail, K-Mart in Monroe, and Christ Bible Teaching Center in Marshville. Union County does not provide a public bus service. However, it does provide transportation services to the clients of contracting human service agencies such as the Department of Social Services, Mental Health, ARC of Union County, Vocational Rehabilitation and Veterans.

1.5.4.2 Rail Service

One rail line is located in the study area. CSX Transportation provides freight service within the area; however, passenger rail service is not available. The rail line is located south of, and parallel to, US 74 (**Figure 1-3**).

1.5.4.3 Motor Freight Service

According to the Charlotte Chamber of Commerce, North Carolina is currently the 16th largest trucking center in the country, and 47 percent of the nation's top 100 trucking companies operate in Charlotte, including all of the top ten firms. Charlotte has become a major transfer point for freight service and has become the sixth largest trading area in the nation. The Charlotte metropolitan area is home to 282 trucking companies and over 32,000 transportation employees, including truckers.

As previously noted, US 74 is the primary route connecting Charlotte and Wilmington, North Carolina's largest port. In addition to the regional truck traffic utilizing US 74, dense development along the US 74 corridor, including various commercial uses, grocery distribution centers, and a rock quarry, also contribute to truck traffic within the corridor. Consequently, tractor trailer and semi-trucks constitute a substantial percentage of the traffic on US 74. In 2007, trucks are estimated to comprise approximately 13 percent of the daily traffic on US 74 in the study area. The presence of these trucks in the traffic mix greatly increases the congestion and travel times along US 74.

1.5.4.4 Air Service

Two airports are located within the region. Charlotte-Douglas International Airport is located approximately 20 miles northwest of the study area on the west side of Charlotte. This airport provides passenger and parcel service to destinations worldwide. Primary access to Charlotte-Douglas International Airport is provided from US 521 (Billy Graham Parkway), which connects I-77 to I-85 in

the southwest quadrant of Charlotte. Monroe Municipal Airport is located south of US 74 and west of Rocky River Road (SR 1514). This airport is a general aviation facility with charter service.

1.6 SOCIAL AND ECONOMIC CONDITIONS

1.6.1 Regional Context

The project area is part of the MUMPO planning area, which includes all of Mecklenburg County and the western and central portions of Union County. The MUMPO area is part of the larger Charlotte/Mecklenburg metropolitan region.

The Charlotte-Mecklenburg region is the commercial capital of the Carolinas and Charlotte is the largest city in North Carolina. "Mecklenburg County contains the vast majority of both people (87 percent) and jobs (93.1 percent) in the MUMPO planning area….Charlotte remains the economic engine not just of the MUMPO planning area, but of the broader region as well." (MUMPO 2030 LRTP, page 4-1).

"Population growth in the MUMPO planning area (Mecklenburg County and the western and central portions of Union County) is driven by strong economic growth, with an economy traditionally dominated by producer services, wholesale industries, and transportation-related industries. The latter categories reflect the areas' historic ability to capitalize on strong transportation connections to major east coast and Midwest markets via I-85 and I-77, which intersect in Charlotte." (MUMPO 2030 LRTP, page 4-1).

1.6.2 Population and Employment

United States Census figures for 2007 show Union County as the 15th fastest growing county in the nation, with a growth rate of 41.6 percent from 2000 to 2006. With 7.2 percent growth from 2005 to 2006, Union County had the highest percentage of growth of all North Carolina counties. The growth of other counties in the Metrolina region and their ranking during this same period is shown in **Table 1-1**:

Table 1-1: Population Growth 2005 - 2006

County	Percent Growth from 2005 to 2006	State Ranking
Union	7.2%	1
Mecklenburg	3.9%	9
Cabarrus	4.6	5
Iredell	4.1%	6
Gaston	1.6%	36
Anson	-0.8%	97
Cleveland	0.4	73
Lincoln	3.1	14
Rowan	1.1	47
Stanly	0.6	67
Chester, SC	-0.7	*
Lancaster, SC	0.9	*
York, SC	4.7	*

Source: US Census: CO-EST-2006-03: Population Estimates by County:
* - Not Applicable, counties in South Carolina that are also part of the Metrolina Region

The population and employment of both Mecklenburg and Union Counties are expected to increase through 2030. **Table 1-2** lists the existing and projected population and employment of Mecklenburg County, Union County, and the MUMPO region for 2000 through 2030.

Approximately 87 percent of Union County's 2030 population will reside within the MUMPO portion of the County (western and central portions of the County, including Monroe). Union County's population growth rate is projected to exceed that of Mecklenburg County, but the total amount of population growth in Mecklenburg County will be much larger that that projected for Union County (MUMPO 2030 LRTP, Chapter 5).

Table 1-2: Existing and Projected Population and Employment in the Region

	Union County[1]	Mecklenburg County	MUMPO Region	Union County	Mecklenburg County	MUMPO Region
	Total			Percent Change from Previous Year		
Population						
2000	123,677	693,454	794,517	--	--	--
2010	176,684	867,451	1,015,303	42.9%	24.7%	27.8%
2020	240,370	1,059,519	1,265,409	36.0%	22.1%	24.6%
2030	323,377	1,227,928	1,513,805	36.2%	15.9%	19.6%
Employment						
2000	44,390	529,672	568,883	--	--	--
2010	61,653	627,809	683,498	38.9%	18.5%	20.1%
2020	92,522	782,328	865,851	50.1%	24.6%	26.7%
2030	126,794	948,921	1,060,798	37.0%	21.2%	22.5%

Source: MUMPO 2030 LRTP, Table 5-1, which references the following sources for this table:

- UNC-Charlotte Urban Institute, "Land Use and Socio-Economic Data and Projections for the Greater Charlotte Region" (Draft Report)

1. The column for Union County includes all of Union County, not just the portion within the MUMPO planning area.

In 2006 (third quarter), Mecklenburg County's workforce was primarily employed in retail trade (10.4 percent) and in finance and insurance (10.0 percent), followed by health care and social assistance (9.3 percent), accommodation and food services (7.9 percent), and management of companies and enterprises (7.7 percent). In the same year, Union County's workforce was primarily employed in manufacturing (21.3 percent) and construction (15.9 percent), followed by educational services (10.6 percent), retail trade (9.5 percent), and health care and social assistance (7.3 percent) (http://cmedis.commerce.state.nc.us/countyprofiles/profile.cfm, accessed June 19, 2007). Areas in Union County where businesses are concentrated include the City of Monroe and along the US 74 corridor from Monroe west to the Union/Mecklenburg County line.

Through 2030, Mecklenburg County will continue to be the dominant employment center in the region and in the MUMPO planning area. Union County is projected to almost triple its employment between 2000 and 2030.

1.6.3 Commuting Patterns

Commuting pattern data available from the US Census show the importance of Mecklenburg County/Charlotte as a work destination for residents of Union County. A substantial percentage of Union County's residents commute to Mecklenburg County for work. According to the 2000 Census, approximately 28,604 (53 percent) of the 61,217 total workers residing in Union County commuted outside the county to work. Of those who commuted outside Union County to work, approximately 87 percent of them (24,892) commuted to Mecklenburg County (www.census.gov/population/www/cen2000/commuting.htm).

Commuters in Mecklenburg and Union Counties, and throughout the state, are, as a group, heavily dependent on the private automobile, with approximately 80 percent of all commuters driving alone to work and approximately 13 percent using private carpools. **Table 1-3** lists the percentages of commuters using various modes to get to work. Less than seven percent use some mode of transportation that is not dependent on an automobile, such as public transportation, bicycling, or walking.

Year 2000 average commute times in Mecklenburg County (26 minutes) and Union County (29 minutes) are typically more than the statewide average (24 minutes).

Table 1-3: Journey to Work by Mode

Mode	North Carolina	Mecklenburg County	Union County
Drive Alone	79.4	79.2	81.4
Carpool	14.0	12.5	13.0
Public Transportation	0.9	2.6	0.4
Motorcycle, Bicycle	0.3	0.2	0.2
Walked	1.9	1.4	0.9
Other Means	0.8	0.7	0.6
Worked at Home	2.7	3.4	3.5

Source: QT-P23. Journey to Work: 2000

1.6.4 Growth and Development Patterns

According to the MUMPO 2030 LRTP (page 4-2): "Growth and development patterns within the MUMPO planning area generally reflect the fact of more people and jobs in the Mecklenburg portions versus the Union County portions of the area. Mecklenburg County's development pattern reflects a strong historical preference for residential and office development in the southern portions of the county, and a more recent surge of growth in the north and northeast portions of Mecklenburg."

In Union County, most employment is concentrated in Monroe or along the US 74 corridor. The vast majority of land development changes in Union County have been residential development, with employment related development lagging far behind (MUMPO 2030 LRTP, page 4-3).

The areas along the Union County and Cabarras County lines abutting Mecklenburg County are expected to be the most rapidly growing areas in the MUMPO planning area. Much of this growth will be around the areas between Monroe and Matthews. Central and western Union County are projected to achieve high employment growth, but with a relatively low density employment pattern overall by 2030. Jobs are likely to continue to concentrate along existing US 74 and in Monroe (MUMPO 2030 LRTP, page 5-3).

1.7 TRANSPORTATION AND LAND USE PLANS

Statewide, regional and local plans are in place to plan roadway improvements needed to meet future transportation demands in areas throughout the state. The transportation needs and goals of the Mecklenburg-Union region relating to roadways are addressed in three inter-related plans: the NCDOT State Transportation Improvement Program (STIP), the MUMPO's Long-Range Transportation Plan (LRTP), and the Mecklenburg-Union Thoroughfare Plan. The proposed action is included in each of these plans in a manner that is consistent with NCDOT's and the General Assembly's vision for the facility and corridor. As discussed in each of the following sections, the inclusion of US 74 in these plans, specifically the portion of US 74 in the project study area, demonstrates its regional and local importance.

1.7.1 North Carolina State Transportation Improvement Program

The STIP is the State's 7-year plan for funding transportation projects statewide, and includes roads, ferries, public transportation, aviation, and passenger rail projects. It is updated every two years. The STIP, as it applies to the Mecklenburg-Union area, lays out the program of projects in the area that are, or are planned to be, state-owned or maintained. Based on the projected availability of funds, the North Carolina Board of Transportation, in coordination with the MUMPO, determines which projects will be included in the STIP. STIP projects are then carried forward into the Long Range Transportation Plan.

The proposed action is included in the 2007-2013 STIP. The project is listed under two separate STIP numbers. The STIP includes the Monroe Connector (R-2559) as a "multi-lane freeway on new location" and the Monroe Bypass (R-3329) as "four lane divided on new location."

Other STIP projects located within the vicinity of the proposed action are listed below and are illustrated in **Figure 1-7**:

- **U-4913** Mecklenburg and Union Counties. Widen Idlewild Road (SR 3174/SR 1501) from I-485 to SR 1524 (Stevens Mill Road) to multi-lanes.

- **U-4713** Matthews, Mecklenburg County. Extend SR 3440 (McKee Road) from SR 3457 (Campus Ridge Road) to SR 3448 (Pleasant Plains Road) to two lanes on multi-lane right of way on new location.

- **R-211EC** Mecklenburg County. Construct an interchange at I-485/SR 3469 (Weddington Road).

- **U-3825** Stallings, Union County. Widen SR 1365 (Stallings Road) from SR 1009 (Old Charlotte Highway) to US 74 to multi-lanes (coordinate with R-3329).

- **U-3809** Indian Trail, Union County. Widen SR 1008 (Indian Trail Road) from SR 1009 (Old Charlotte Highway) to US 74 to multi-lanes (includes B-3520).

- **U-3412** Monroe, Union County. SR 1223 (Martin Luther King, Jr. Boulevard), NC 200 (Lancaster Avenue) to SR 1009 (Charlotte Avenue). Two lanes on multi-lane right-of-way on new location.

- **U-2547** Monroe, Union County. Widen SR 2188 (Charles Street) from SR 2181 (Sunset Drive) to SR 2100 (Franklin Street) to multi-lanes.

- **B-4651** Union County. Replace SR 1506 Bridge #257 over South Fork Crooked Creek.

- **U-4024** Monroe, Union County. Widen US 601, from US 74 to the proposed Monroe Bypass (R-2559) to multi-lanes.

- **R-2616 Union County. Widen US 601 from South Carolina state line to US 74 in Monroe to multi-lanes.**

1.7.2 Metropolitan Long Range Transportation Plan

1.7.2.1 Background

MUMPO is the federally-designated regional transportation planning entity for all of Mecklenburg County and the western and central urbanized portions of Union County. MUMPO's *2030 Long Range Transportation Plan* defines the policies, programs and projects to be implemented during the next twenty to twenty five years in order to provide mobility choices to residents and visitors. The LRTP is developed with public input.

The LRTP contains recommendations for streets and roads, transit systems, and bicycle and pedestrian facilities. The LRTP also contains descriptions and assessments of conditions or factors affecting the surface transportation of persons and/or the movement of freight within the planning area. According to the LRTP:

> "MUMPO's approach to planning for highways and streets has been to balance competing interests when deciding how or when to expand or extend the existing thoroughfare network. The underlying premise of this approach is that it is not possible to build our way out of congestion by constructing more through lanes along every congested roadway. The best way to respond to the increasing demand on the road network is to look at options from a network perspective, meaning that changes to one part of the network will impact other portions of the network, either positively or negatively." (LRTP, Page 6-1).

Federal law requires that projects in the LRTP be categorized in financially constrained *horizon years* for air quality analysis. Horizon years are no more than ten years apart. The projects recommended for implementation in the LRTP respond directly to projected travel demand, policy decisions and available funding. The recommended projects are listed by the following three horizon years: 2010, 2020 and 2030.

1.7.2.2 Monroe Connector / Bypass in the LRTP

Both the Monroe Connector and Monroe Bypass projects are included in the LRTP as regionally significant projects. As shown in **Figure 1-8**, the LRTP identifies both projects as "new freeway" projects. The Monroe Connector is identified as a toll road, while the Monroe Bypass portion is not. The Monroe Bypass is a 2010 horizon year project, and the Monroe Connector is a 2020 horizon year project. The MUMPO currently is considering designating the Monroe Bypass as a toll road in their LRTP. This decision is expected by the fall of 2007.

1.7.3 Mecklenburg-Union Thoroughfare Plan

1.7.3.1 Background

The Mecklenburg-Union Thoroughfare Plan (MUTP) recognizes the need to accommodate projected long-term increases in traffic volumes and as such, serves as the starting point from which MUMPO determines which roadways require upgrades in ten or twenty years. .

Implementation of a Thoroughfare Plan is accomplished through federal, state or local highway construction projects, or by directing private interests to fund or build improvements through the land development process. Larger scale projects are most often built by the public sector, with the private sector building smaller scale projects. Local funding is typically used on streets that are part of a local network, with federal and state funds being the primary source for improvements to the roadways maintained by the NCDOT's roadway system.

1.7.3.2 US 74 in the MUTP

US 74 is listed in the inventory of roadways in need of upgrades. Specifically, the MUTP includes the Monroe Connector and Monroe Bypass as new major thoroughfares (**Figure 1-9**).

1.7.4 Land Use Plans

Several of the municipalities within the study area have plans or maps to guide development within their respective jurisdictions. These are listed below:

Union County – *Vision 2020 a Union County Long Range Plan Created by the Citizens of Union County*, dated November 30, 1999, provides general guidance regarding the community's vision for Union County.

Matthews - The *Matthews Land Use Plan a Guide for Growth 2002 – 2012* was adopted in October 2002.

Stallings - The Town of Stallings updated their Land Use Plan in April 2006.

Indian Trail - *The Villages of Indian Trail – A Plan for Managed Growth and Livability*, was adopted by the Town Council on November 8, 2005, and is the first comprehensive plan for the Town of Indian Trail.

Monroe - The City of Monroe adopted their *Land Development Plan 2000-2010* in May 2000.

Wingate – The Town of Wingate adopted a Land Use Ordinance in December 2001, with the latest amendment in February 2006.

In general, development along US 74 is planned to continue as office, commercial, industrial, and institutional uses. Indian Trail's land use plan includes a section about the importance of the existing US 74 corridor (Section 4.2.9 74 Business Corridor). An excerpt is below:

> "The US 74 Business Corridor provides a significant amount of the shopping opportunities within not only the Town of Indian Trail, but also this part of Union County. This corridor provides land for intense commercial uses and larger structures along US 74 that are not appropriate for residential areas. It also provides opportunities for high-traffic generators, such as entertainment and lodging uses. The 74 Business Corridor is a critical element to the Town of Indian Trail, providing the fiscal benefit of sales and property tax revenue to the town and school districts and the quality of life benefit with major shopping opportunities convenient to businesses and visitors." (page 57)

Indian Trail's land use plan also notes that a new location Monroe Connector and Bypass "will divert most through traffic from US 74, allowing it to become a more effective regional commercial road in Indian Trail." (page 18).

1.8 ROADWAY CONDITIONS AND OPERATIONS

1.8.1 Existing US 74 Characteristics

US 74, also known as Independence Boulevard in Mecklenburg County and Roosevelt Boulevard in Union County, is a four-lane to six-lane divided highway within the study area, with 26 at-grade signalized intersections, additional unsignalized intersections, and numerous commercial and residential driveway connections. Few, if any, access management techniques have been applied to this roadway. This causes significant delays along the corridor. Traffic signal spacing ranges from less than a quarter-mile to a maximum of two and a half miles. Roadway characteristics along US 74 are shown in **Figure 1-10** and described below for each section in the study area:

- From I-485 to Blenheim Lane (about 0.8 miles long)

  US 74 is a six-lane median divided facility with no access control, except for the interchange with I-485. This portion of US 74 also has two median breaks and numerous driveways.

- From Blenheim Lane to just west of Secrest Short Cut Road (about 9.4 miles long)

  US 74 is a four-lane median divided facility with no access control. There are several signalized intersections, unsignalized intersections, median breaks, and numerous driveways.

- From west of Secrest Short Cut Road, through Monroe to just east of the US 601/US 74 split (about 3.2 miles long)

  US 74 is a six-lane median divided facility with no access control, except for interchanges with Concord Boulevard and US 601. This portion of US 74 also has several signalized and unsignalized intersections, median breaks, and numerous driveways.

- From the US 74 / US 601 split to Edgewood Drive just west of Wingate (about 3.6 miles long)
  US 74 is a four-lane median divided facility with no access control. There are several signalized intersections, unsignalized intersections, median breaks, and numerous driveways.

- From Edgewood Drive just west of Wingate to east of Old Highway 74 (SR 1740) (about 1.3 miles long)
  US 74 is a five-lane section with a center left-turn lane. There are several signalized intersections, unsignalized intersections, median breaks, and numerous driveways.

- From Old Highway 74 (SR 1740) to west of Marshville (about 3 miles long)
  US 74 is a four-lane median divided facility with no access control. There are unsignalized intersections, median breaks, and driveways.

The speed limits posted for US 74 within the project study area are shown in **Table 1-4**.

Table 1-4: Speed Limits on US 74

Speed Limit (mph)	US 74 Segment from West to East
55	I-485 to Fowler Secrest Road
45	Fowler Secrest Road to US 601 (Pageland Hwy)
55	US 601 (Pageland Hwy) to east of Presson Road
45	East of Presson Road to Wingate City Limit
35	Wingate City Limit to SR 1740 (Old Hwy 74)
45	SR 1740 (Old Hwy 74) to Olde Country Lane
55	Olde Country Lane to 0.3 mile west of Marshville Town Limit
45	0.3 mile west of Marshville Town Limit to Marshville Town Limit
35	Within Marshville Town Limit

1.8.2 Existing Traffic Operations

1.8.2.1 Existing Traffic Volumes

Figure 1-11 shows the existing (2007) traffic volumes along US 74 in the project study area. Average daily traffic (ADT) volumes range from a high of about 62,000 ADT near I-485 in Mecklenburg County and between Secrest Shortcut Road (SR 1501) and NC 200 in Monroe to a low of about 20,000 – 28,000 ADT on the eastern end of the project study area. **Appendix D** contains a table listing the existing (2007) and projected (2030) traffic volumes between major intersecting roadways.

1.8.2.2 Existing Levels of Service on US 74

Table 1-5 includes the existing peak hour LOS for the 26 signalized intersections along US 74 within the project study area. Due to the close spacing of the signalized intersections, the intersections are the primary factor influencing the level of service along the corridor.

As this table shows, nine intersections along the corridor (about one-third) currently operate above capacity (LOS E or F). There are two main existing areas of congestion; the western end of the corridor, from I-485 to Rocky River Road (SR 1514), and near the Monroe Mall.

Table 1-5: Existing Signalized Intersection Levels of Service

US 74 Intersection (from west to east)	AM Peak Period		PM Peak Period	
	Average Delay (Seconds)	LOS	Average Delay (Seconds)	LOS
Stallings Road (SR 1365)	170	F	142	F
Indian Trail-Fairview (SR 1520)	194	F	152	F
Unionville-Indian Trail (SR 1367)	106	F	90	F
Faith Church Road (SR 1518)	69	E	55	D
Sardis Church Road (SR 1377)	189	F	156	F
Chamber Drive (SR 2356)	40	D	18	B
North Rocky River Road (SR 1514)	202	F	84	F
Fowler-Secrest Road (SR 1510)	21	C	23	C
Rolling Hills Drive (SR 1572) – Carroll Street (SR 1187)	17	B	16	B
Round Table Road – Roland Drive (SR 1172)	21	C	22	C
Williams Road (SR 1169)	102	F	61	E
Hanover Drive	66	E	98	F
Dickerson Boulevard (SR 1223)	56	E	152	E
Secrest Shortcut Road (SR 1501)	46	D	39	D
Stafford Street (SR 1624)	34	C	31	C
Boyte Street	21	C	19	B
NC 200 (Morgan Mill Road)	42	D	40	D
Walkup Avenue (SR 1751)	51	D	45	D
Sutherland Avenue	19	B	27	C
Dove-Venus Street	15	B	20	B
East Franklin Street (SR 2110)	32	C	34	C
US 601 - Pageland Highway	40	D	22	C
South Secrest Avenue (SR 1941)	20	C	34	C
Bivens Street (SR 1762)	9	A	11	B
Main Street (Sr 1758)	25	C	32	C
Forest Hills School Road (SR 1754)	11	B	21	C

Source: Monroe Connector / Bypass Traffic *Technical Memorandum, July 2007. LOS calculated using Synchro.*

1.8.2.3 Existing Crash Data

Traffic crashes are often the result of deficiencies in the capacity of a transportation facility. Crash data was collected for 23 intersections along US 74 within the project study area for the three year period from November 1, 2003 to October 31, 2006. Crash data collected for these intersections includes the total number of crashes, type of crash, crash rates, and numbers of injury and property-only crashes. No fatality crashes were reported for the subject intersections. Details of the crash data are included in **Appendix E**.

A review of the crash data suggests a direct correlation between the prevalent crash types and traffic congestion along US 74. Out of the total of 1,032 crashes recorded, 650 (approximately 63 percent) of

the crashes involved rear-end collisions. These types of crashes are expected to occur where a combination of high volumes and a large number of slowing, stopping and/or turning movements cause interruptions to the traffic flow. The highest concentrations of rear-end crashes occurred at the intersections of US 74 (Independence Boulevard) with Unionville-Indian Trail Road (SR 1367), Dickerson Boulevard (SR 1223), and Williams Road (SR 1169).

The second most common crash type within the study area is angle. Within the study area, 158 (approximately 15 percent) of the total crashes involved angle type collisions. These types of crashes typically occur when a driver fails to respond to changes in traffic signal phases (running red lights) or attempts to use insufficient gaps in the opposing traffic stream. An angle type crash is an indicator of congested conditions and represents the effect such conditions can have on driver behavior. Sideswipes, the third most common crash type (98 sideswipes representing approximately 9.5 percent), also reflects congested conditions.

In addition to crash data, there is another tool relative to traffic safety concerns that can be used in evaluating traffic congestion. The North Carolina Highway Safety Improvement Program (HSIP) provides a continuous and systematic procedure that identifies and reviews specific traffic safety concerns throughout the state. Within these areas, the potentially hazardous locations that are possibly deficient are determined. The ultimate goal of the HSIP process is to reduce the number of traffic crashes, injuries, and fatalities by reducing the potential for these incidents on public roadways (www.ncdot.org/doh/preconstruct/traffic/Safety/reports/HSIP/2005HSIP.pdf, accessed July 17, 2007).

The 2005 HSIP includes list of statewide locations divided into five categories: intersections, sections, bridges, bicycle/pedestrian intersections, and bicycle/pedestrian sections. The 2005 HSIP list includes two intersection warrants on US 74 within the project study area: US 74 at Bivens Street (SR 1762) and US 74 at Craft Road (SR 1518) (www.ncdot.org/doh/preconstruct/traffic/Safety/reports/HSIP/unio.pdf, accessed July 17, 2007). The inclusion of these two intersections in the 2005 HSIP further demonstrates the level of congestion along US 74 within the project study area.

1.8.3 Projected Operations in 2030

1.8.3.1 Design Year 2030 Traffic Volumes

Figure 1-12 shows the projected (2030) traffic volumes along US 74 in the project study area, if the proposed action is not implemented. The traffic forecasts assume all other projects in the LRTP are implemented.

Overall, traffic volumes are projected to increase about 30-35 percent along the corridor from 2007 to 2030, except near where the new Northern Outer Loop, listed in the LRTP for completion in 2030, is proposed to connect to existing US 74. In this area, from Dickerson Boulevard (SR 1223) to US 601, traffic volumes are projected to increase about 5-7 percent since the new roadway would divert traffic from this short segment of US 74.

Average daily traffic (ADT) volumes range from highs of about 84,000 ADT near I-485 in Mecklenburg County and about 72,000 ADT between NC 200 (Morgan Mill Road) and Boyte Street in Monroe, to a low of about 33,000 – 40,000 ADT on the eastern end of the project study area. **Appendix D** contains a table listing the existing (2007) and projected (2030) traffic volumes between major intersecting roadways.

1.8.3.2 Design Year 2030 Levels of Service on US 74

Anticipated increases in population and employment opportunities in the region will result in higher traffic volumes along US 74 and other major roads in the area. **Table 1-6** includes the 2030 No Build peak hour traffic LOS for the 26 signalized intersections along US 74 within the project study area.

By 2030, most of the intersections analyzed along US 74 will be over capacity and long queues will form during peak hours. Delays at individual intersections can average up to several minutes. As this table shows, eighteen intersections along the corridor are projected to operate above capacity (LOS E or F) by 2030. There will be congested conditions along US 74 from I-485 all the way to Walkup Avenue near the center of Monroe.

Table 1-6: 2030 Signalized Intersection Levels of Service

Intersections on US 74 (from west to east)	AM Peak Period		PM Peak Period	
	Average Delay (Seconds)	LOS	Average Delay (Seconds)	LOS
Stallings Road (SR 1365)	345	F	310	F
Indian Trail-Fairview (SR 1520)	341	F	273	F
Unionville-Indian Trail (SR 1367)	288	F	279	F
Faith Church Road (SR 1518)	195	F	197	F
Sardis Church Road (SR 1377)	390	F	385	F
Chamber Drive (SR 2356)	170	F	97	E
North Rocky River Road (SR 1514)	502	F	244	F
Fowler-Secrest Road (SR 1510)	103	F	86	F
Rolling Hills Drive (SR 1572) – Carroll Street (SR 1187)	49	D	54	E
Round Table Road – Roland Drive (SR 1172)	59	E	88	F
Williams Road (SR 1169)	131	F	130	F
Hanover Dive	141	F	159	F
Dickerson Boulevard (and new Northern Outer Loop)	170	F	146	F
Secret Shortcut Road (SR 1501)	69	E	62	E
Stafford Street (SR 1624)	128	F	70	F
Boyte Street	69	E	34	D
Morgan Mill Road (SR 1751)	105	F	72	E
Walkup Avenue (NC 200)	79	E	59	E
Sutherland Avenue	46	D	53	E
Dove- Venus Street	19	B	22	C
East Franklin Street (SR 2110)	39	D	36	D
US 601 Pageland Highway	53	D	48	D
South Secrest Avenue (SR 1941)	33	C	40	D
Bivens Street (SR 1762)	21	C	27	C
Main Street (SR 1758)	116	F	115	F
Forest Hill School Road (SR 1754)	31	C	38	D

Source: Monroe Connector / Bypass Traffic *Technical Memorandum, July 2007*

1.8.4 Travel Times Along the US 74 Corridor

In order to gather evidence of the congestion drivers currently experience along US 74, the route through the study area was driven on two separate occasions during the morning and evening peak hours. Eastbound trips occurred on April 27 and 30, 2007 while the westbound trips occurred on April 30 and May 2, 2007. Eastbound trips began at 5:00 PM and westbound trips began at 8:00 AM.

During both trips, US 74 was heavily congested, with a high percentage of trucks. The slow acceleration of the trucks from each traffic signal stop dramatically restricted traffic flow. Due to the delays at the numerous signalized intersections and the level of congestion on US 74, vehicles traveled at speeds far less than what is posted. If there were no signalized intersections and a vehicle traveled at the posted speed limit, its average speed through the corridor would be 50 mph and it would take about 24 minutes to travel the length of the corridor (about 20 miles).

Estimates were made of average travel times and speeds in morning and evening peak hours for both directions of travel along US 74 from Forest Hills School Road to I-485. Times and speeds were calculated as described below.

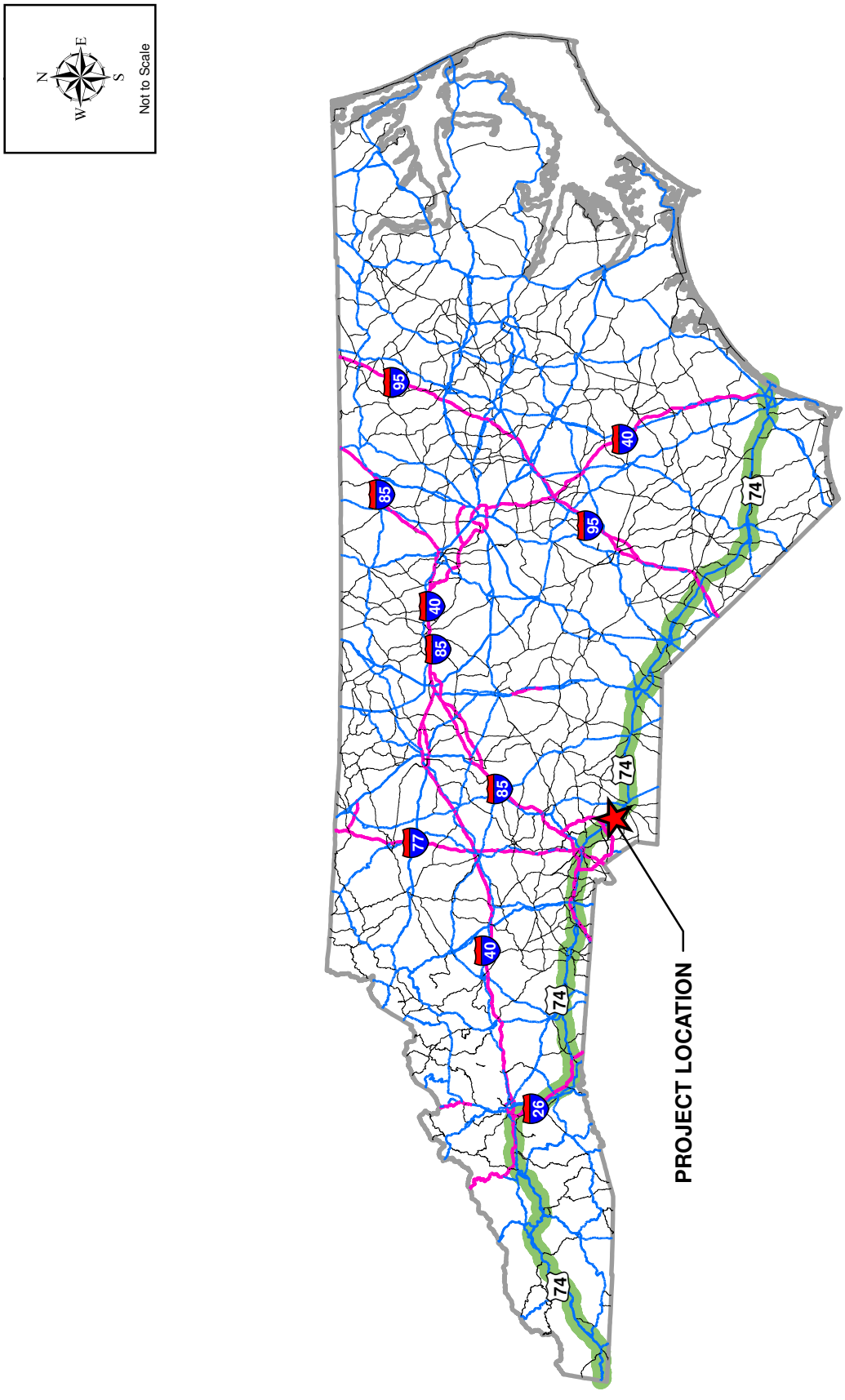
Simtraffic was used to link and model the 26 signalized intersections along US 74 in the project study area. The existing and future forecasted traffic volumes and turning movements were used in the model, along with the actual turn bay lengths. Model simulations were run for existing (2007) and future (2030) AM and PM peak periods (eastbound and westbound). The data and details on the methodology used to perform these calculations are included in the Traffic Operations Technical Memorandum (PBS&J, July 2007).

Table 1-7 lists the existing and future estimated travel times on US 74 through the study area. As shown in the table, existing average speeds through the corridor are slow; at 22-23 mph in the peak direction and 28-31 mph in the off peak direction. By 2030, average speeds are projected to decrease substantially to 12-16 mph in the peak direction and 18-22 mph in the off peak direction, taking over an hour to travel the length of the corridor.

Table 1-7: Average Travel Times and Speeds Through the US 74 Corridor

Scenario	2007 (existing)		2030 (No-Build)	
	Travel Time (minutes)	Average Speed (mph)	Travel Time (minutes)	Average Speed (mph)
Eastbound PM Peak	47	29	68	21
Westbound AM Peak	50	24	70	17

Source: Monroe Connector / Bypass Traffic *Technical Memorandum, July 2007*



NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS

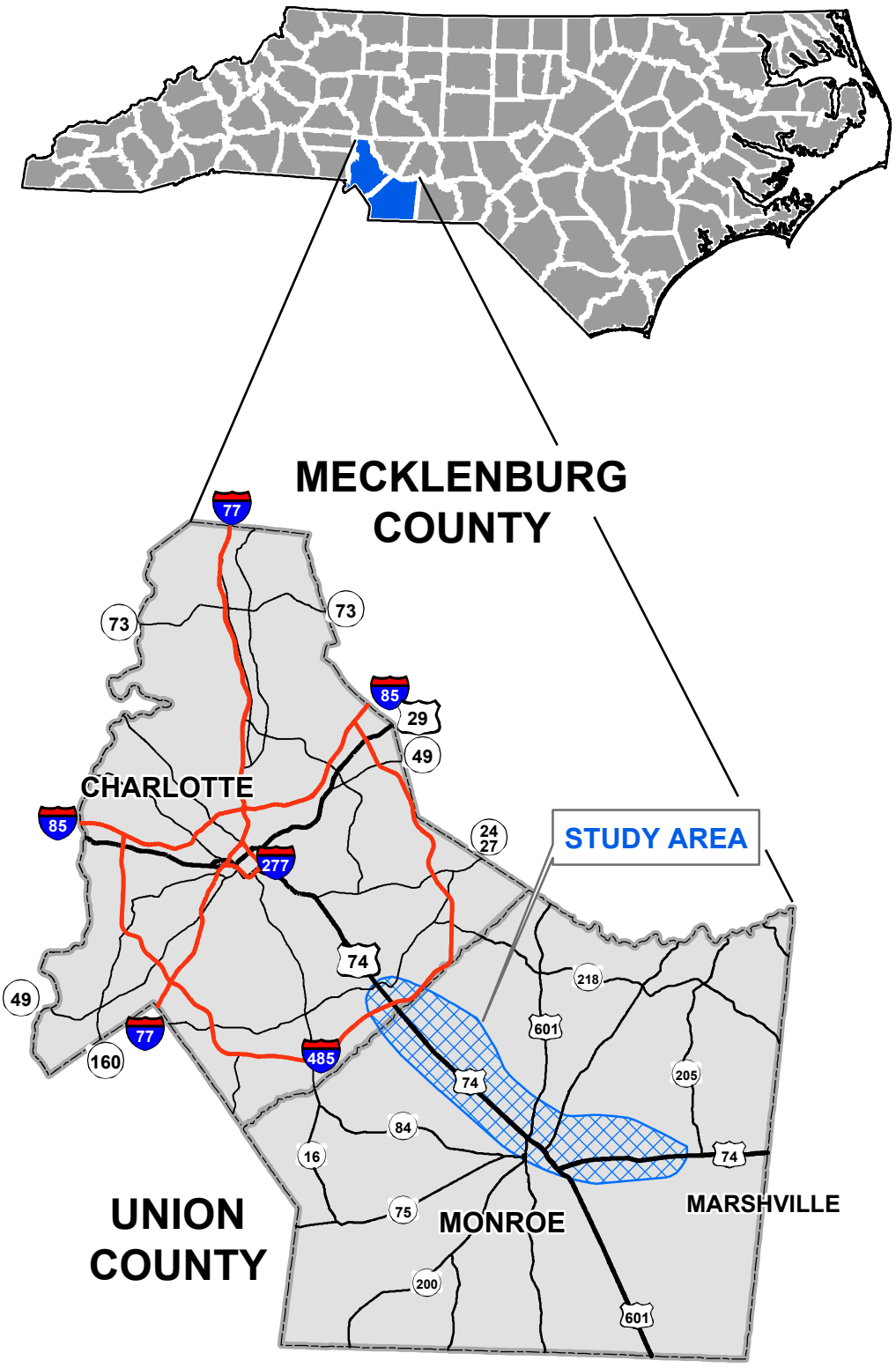
STIP Project Numbers R-3329 & R-2559
Mecklenburg and Union Counties

DRAFT

Project Location Map within Eastern North Carolina

Figure 1-1

Regional_Location.mxd 8-03-07



NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS
STIP Project Numbers R-3329 & R-2559
Mecklenburg and Union Counties

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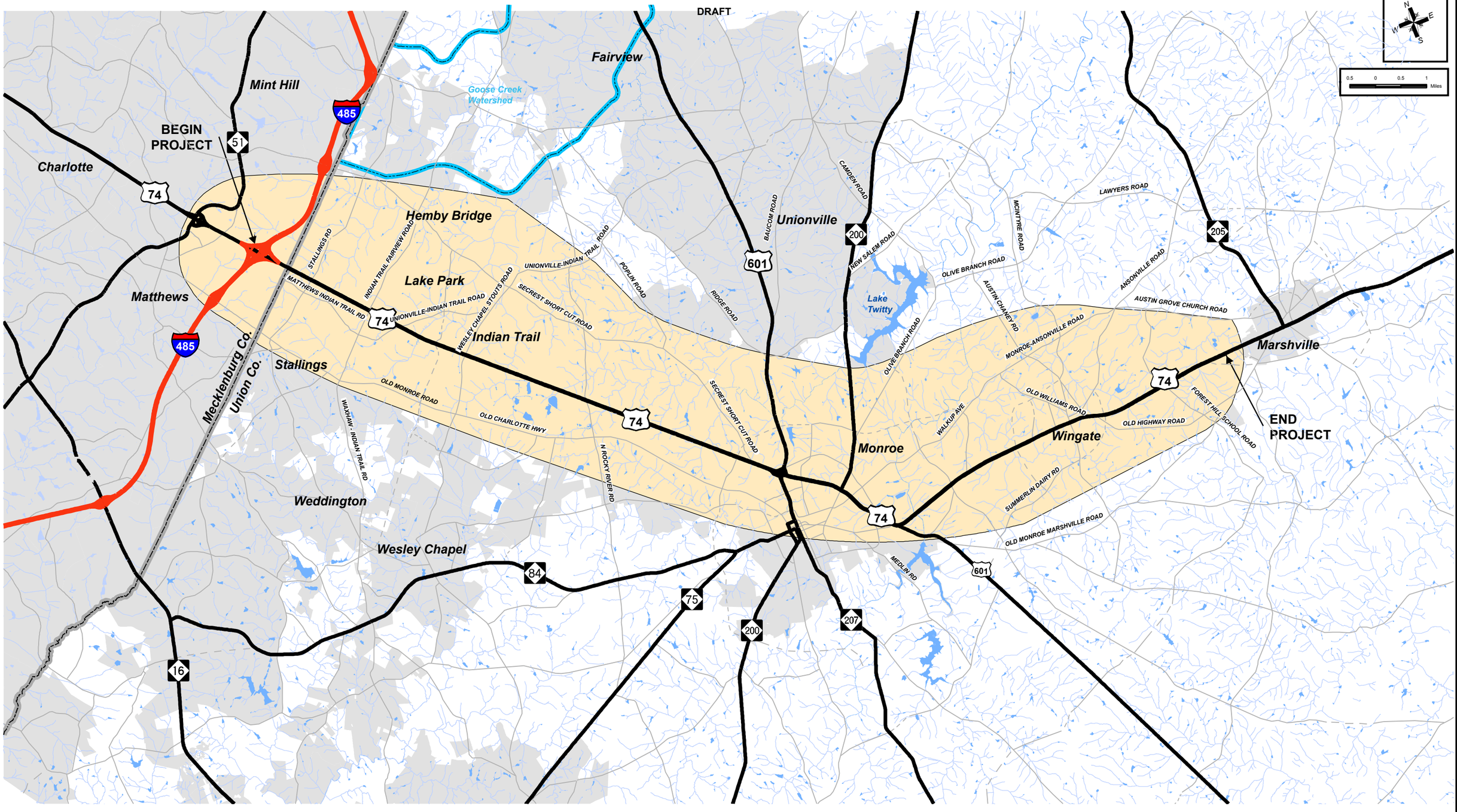
Project Location within Union and Mecklenburg Counties

Figure 1-2

Monroe_Vicinity_rev.ai 7-30-07

DRAFT



NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS
STIP Project Numbers R-3329 & R-2559
Mecklenburg and Union Counties

Legend
- Final Combined Study Area
- Watershed Basin

Note:
Detailed Study Alternatives for the combined study have not been determined.

Map last updated 03-21-07.

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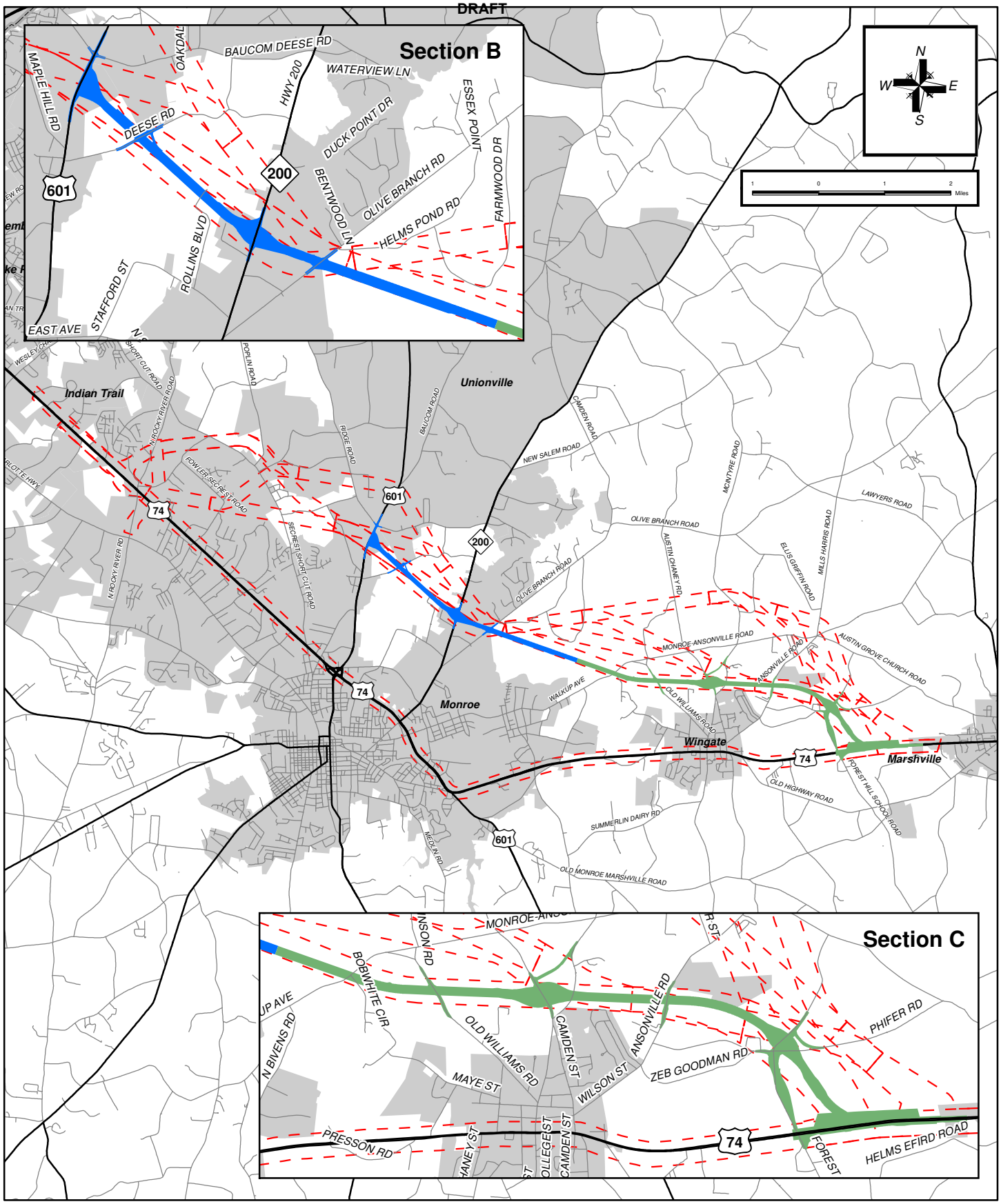
Project Study Area

Figure 1-3

Monroe_Project_Study_Area at 8-23-07



NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS

STIP Project Numbers R-3329 & R-2559
Mecklenburg and Union Counties

Legend

- Preferred Alignment - Project R-2559 Section B
- Preferred Alignment - Project R-2559 Section C
- Preliminary Study Corridor Boundary - Project R-2559

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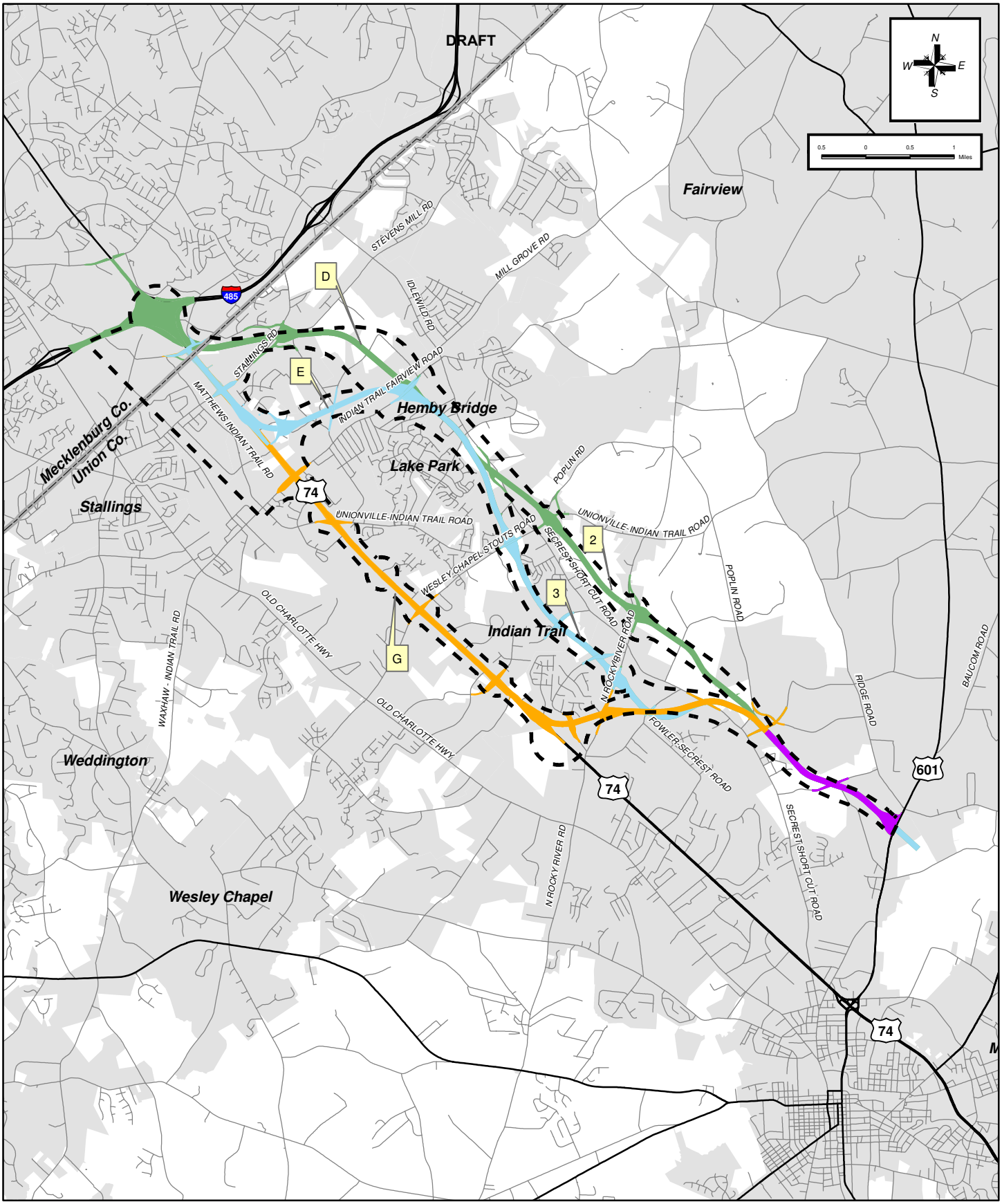
Monroe Bypass Study Area and Preferred Alternative

Figure 1-4

Monroe_Bypass_Preferred_Alt_Template_test.mxd 8-03-07



NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS

STIP Project Numbers R-3329 & R-2559
Mecklenburg and Union Counties

Legend

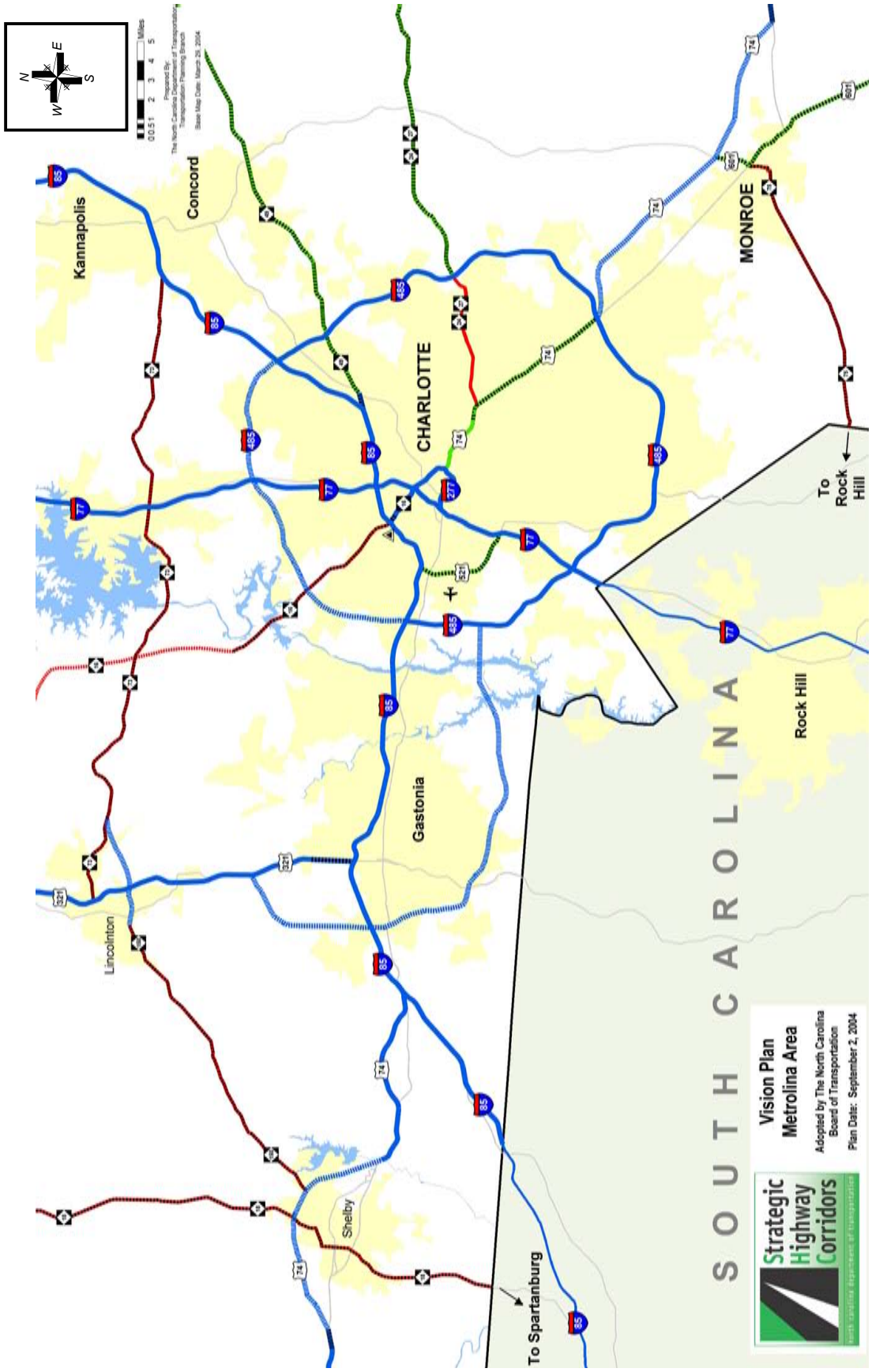
- Detailed Study Corridors - Project R-3329
- Detailed Study Corridor Boundary - Project R-3329
- D — Detailed Study Corridor Segment Identification

Monroe Connector Study Area and DSAs

Figure 1-5

DRAFT

Monroe_Conn_DSA_Template.mxd 8-03-07



NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS

STIP Project Numbers R-3329 & R-2559

Mecklenburg and Union Counties

Legend

Freeways	Boulevards	
Existing	Existing	US/Other Route
Needs Upgrade	Needs Upgrade	State Port
Recommended	Recommended	Major Airport
Expressways	**Thoroughfares**	Intermodal Connector
Existing	Existing	Coast Guard Station
Needs Upgrade	Needs Upgrade	Major Military Base
Recommended	Recommended	Urban Area
		Water Features

Strategic Highway Corridor Map

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Figure 1-6

Strategic_Hwy_Map.ai 8-03-07

NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS

STIP Project Numbers R-3329 & R-2559

Mecklenburg and Union Counties

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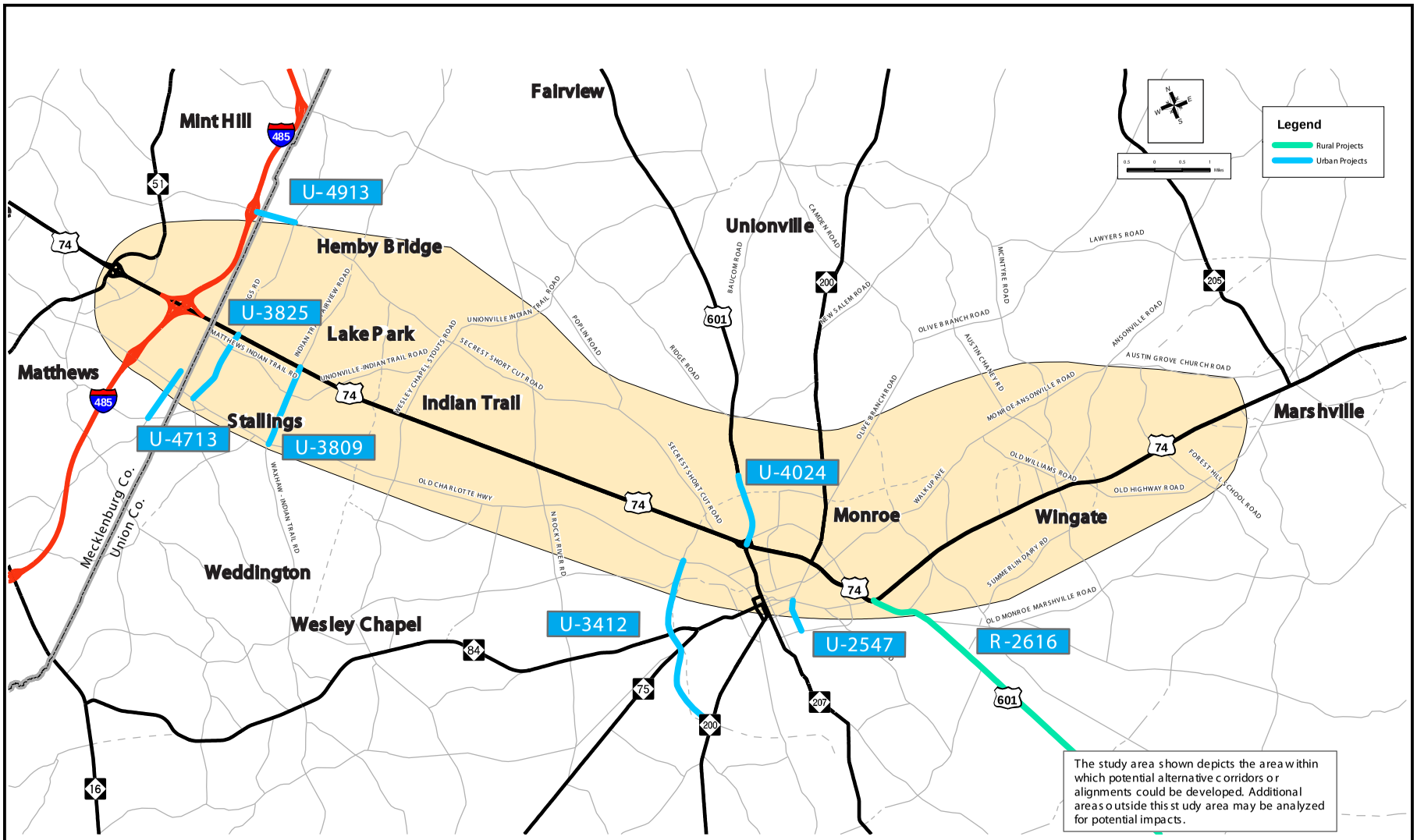
STIP Projects in Study Area



Project Descriptions

U-3825: SR 1365 (Stallings Rd), Sr 1009 (Old Charlotte Highway) to US 74.
Widen to Multi Lanes.

U-3809: SR 1008 (Indian Trail Rd), SR 1009 (Old Charlotte Highway) to US 74.
Widen to Multi Lanes.

U-3412: SR 1223 (Martin Luther King, Jr. Blvd), NC 200 (Lancaster Ave) to SR 1009 (Charlotte Avenue).
Two Lanes on New Location.

U-4024: US 601, US 74 to the Proposed Monroe Connector Bypass.
Widen to Multi Lanes.

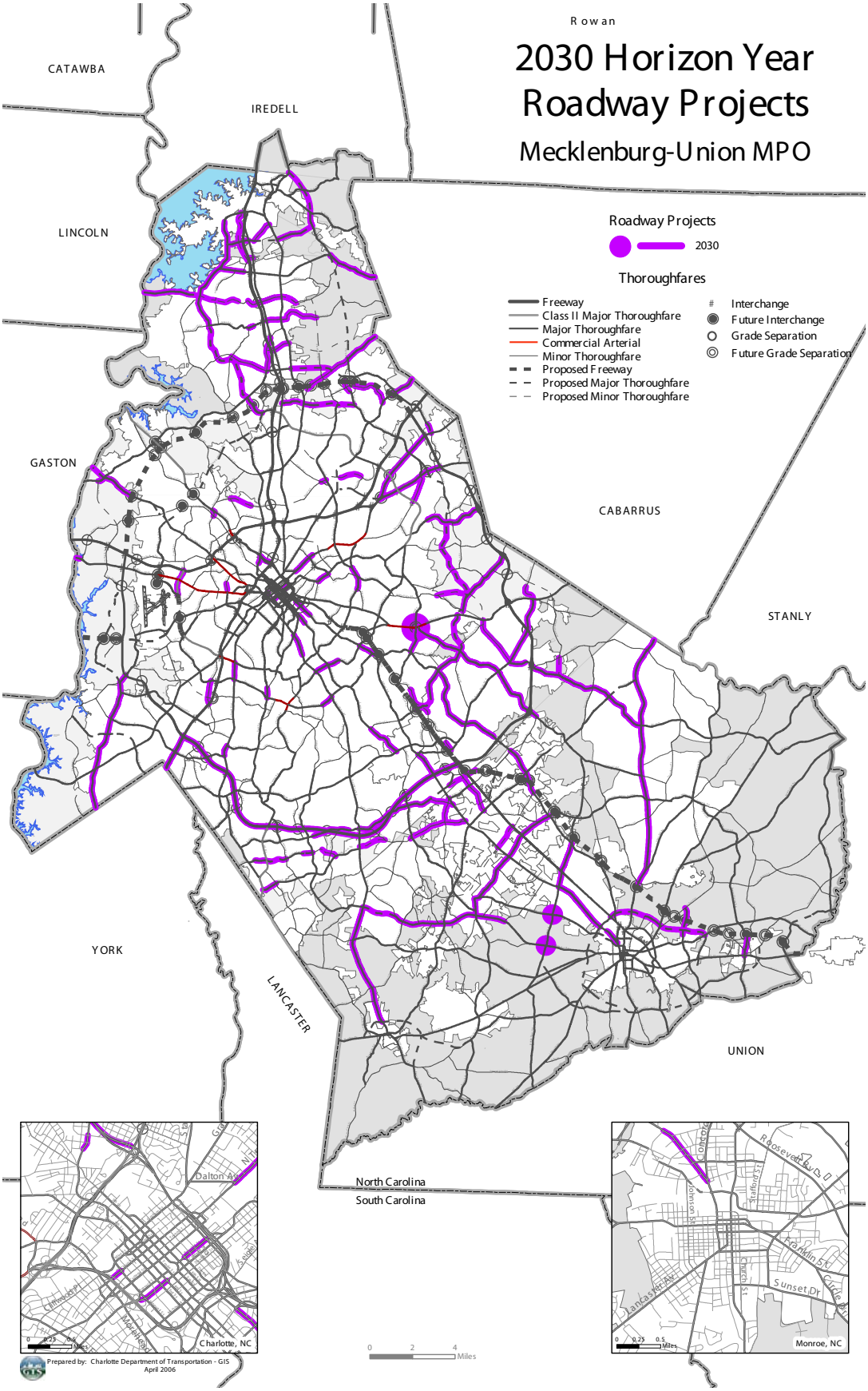
U-2547: SR 2188 (Charles St), SR 2181 (Sunset Dr) to SR 2100 (Franklin St).
Widen to Multi Lanes.

U-4713: SR 3440 (McKee Rd) Extension, SR 3457 (Campus Ridge Rd) to SR 3448 (Pleasant Plains Rd).
Two Lanes on New Location.

U-4913: SR 3174/SR 1501 (Idlewild Rd), I-485 to SR 1524 (Stevens Mill Rd).
Widen to Multi Lanes.

R-2616: US 601, South Carolina State Line to US 74 in Monroe.
Widen to Multi Lanes.

Figure 1-7



NORTH CAROLINA Turnpike Authority

MUMPO Long Range Transportation Plan

MONROE CONNECTOR / BYPASS
STIP Project Numbers R-3329 & R-2559
Mecklenburg and Union Counties

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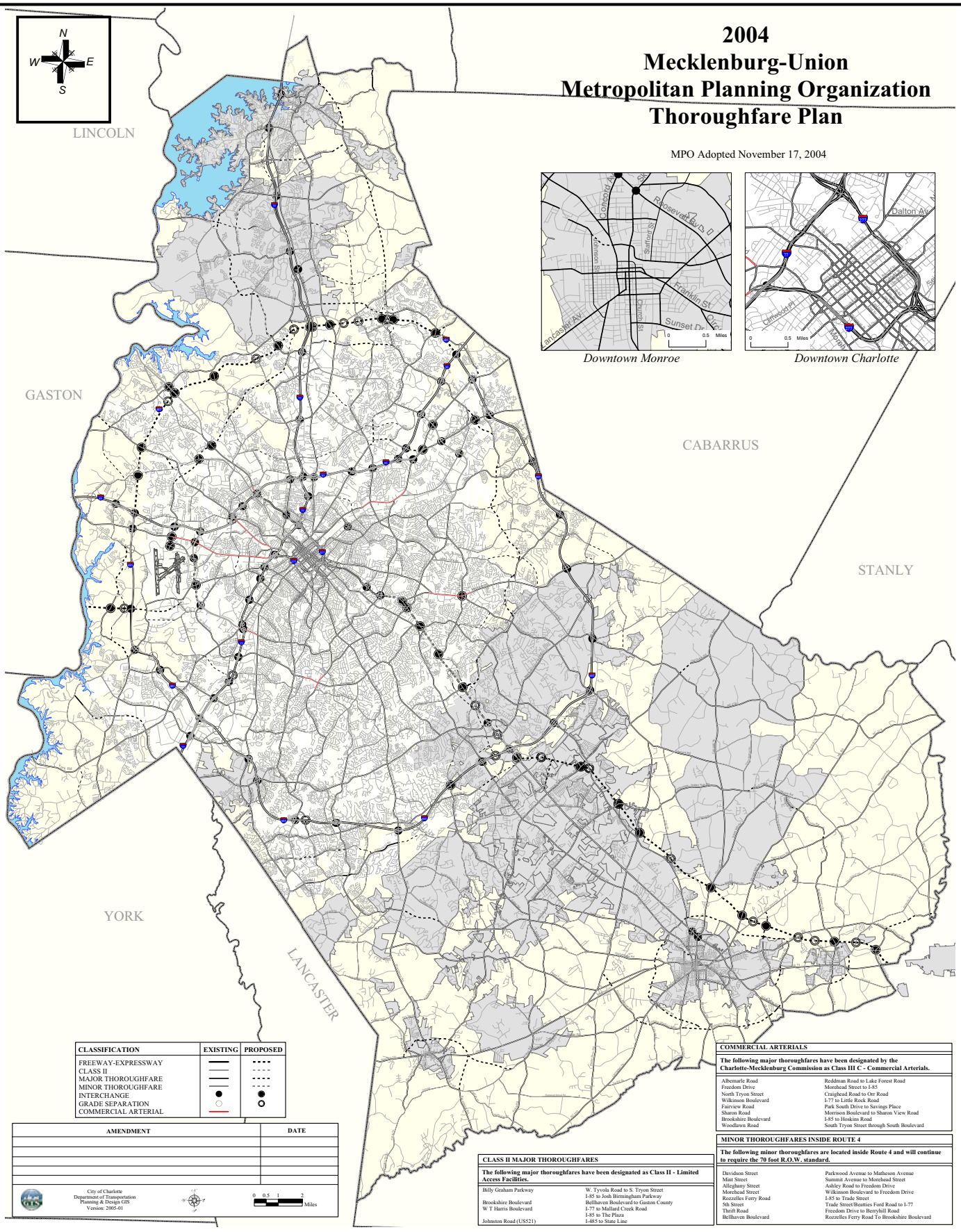
Figure 1-8

Fig_1-8_MUMPO_LRTP.pdf 8-03-07



NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS
STIP Project Numbers R-3329 & R-2559
Mecklenburg and Union Counties

Mecklenburg-Union Thoroughfare Plan

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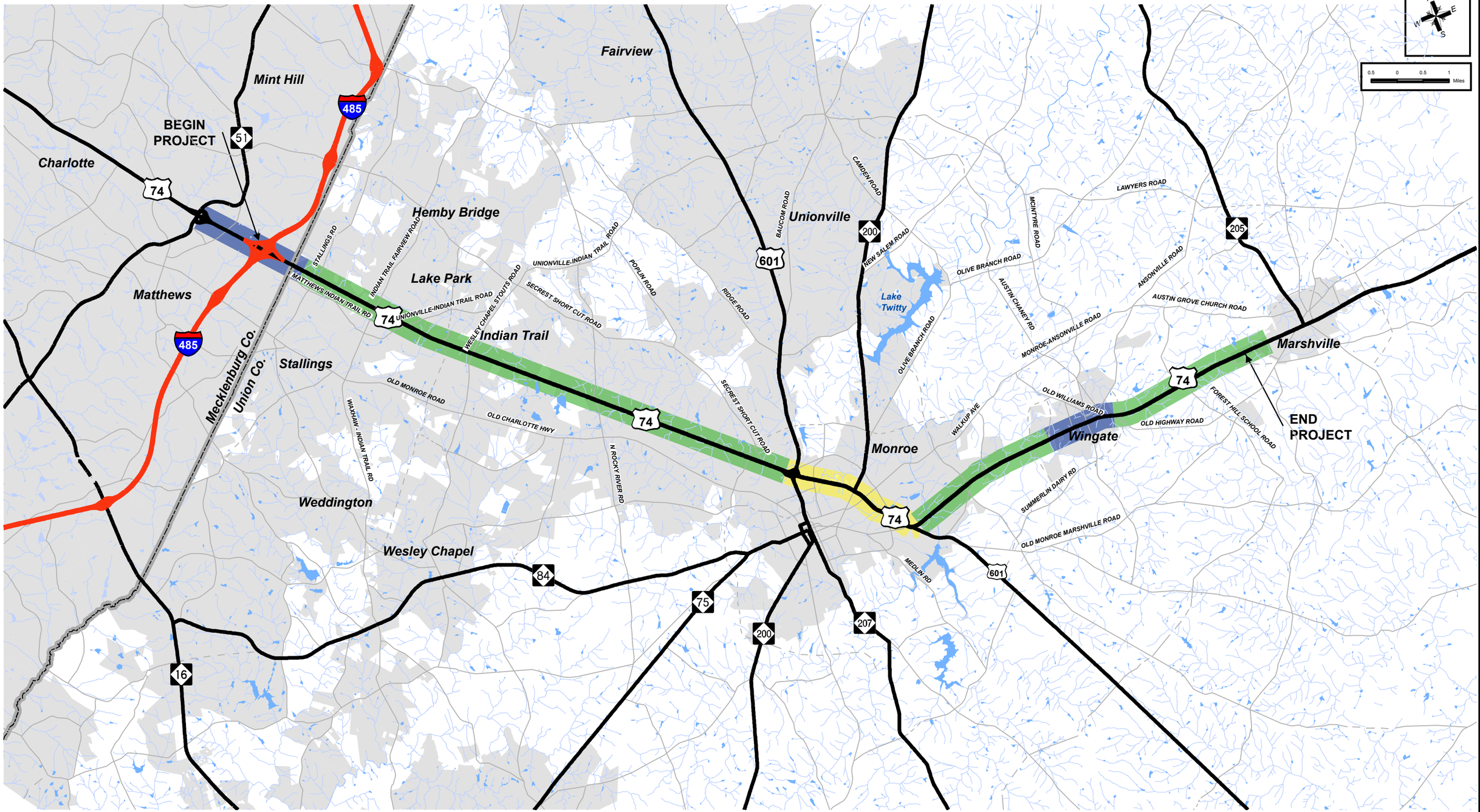
Figure 1-9

Meck_Union_Thfare.pdf 8-03-07



NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS
STIP Project Numbers R-3329 & R-2559
Mecklenburg and Union Counties

Legend

- Four-Lane Median Divided Facility with No Access Control
- Six-Lane Median Divided Facility with No Access Control
- Five-Lane Section with a Center Turn Lane

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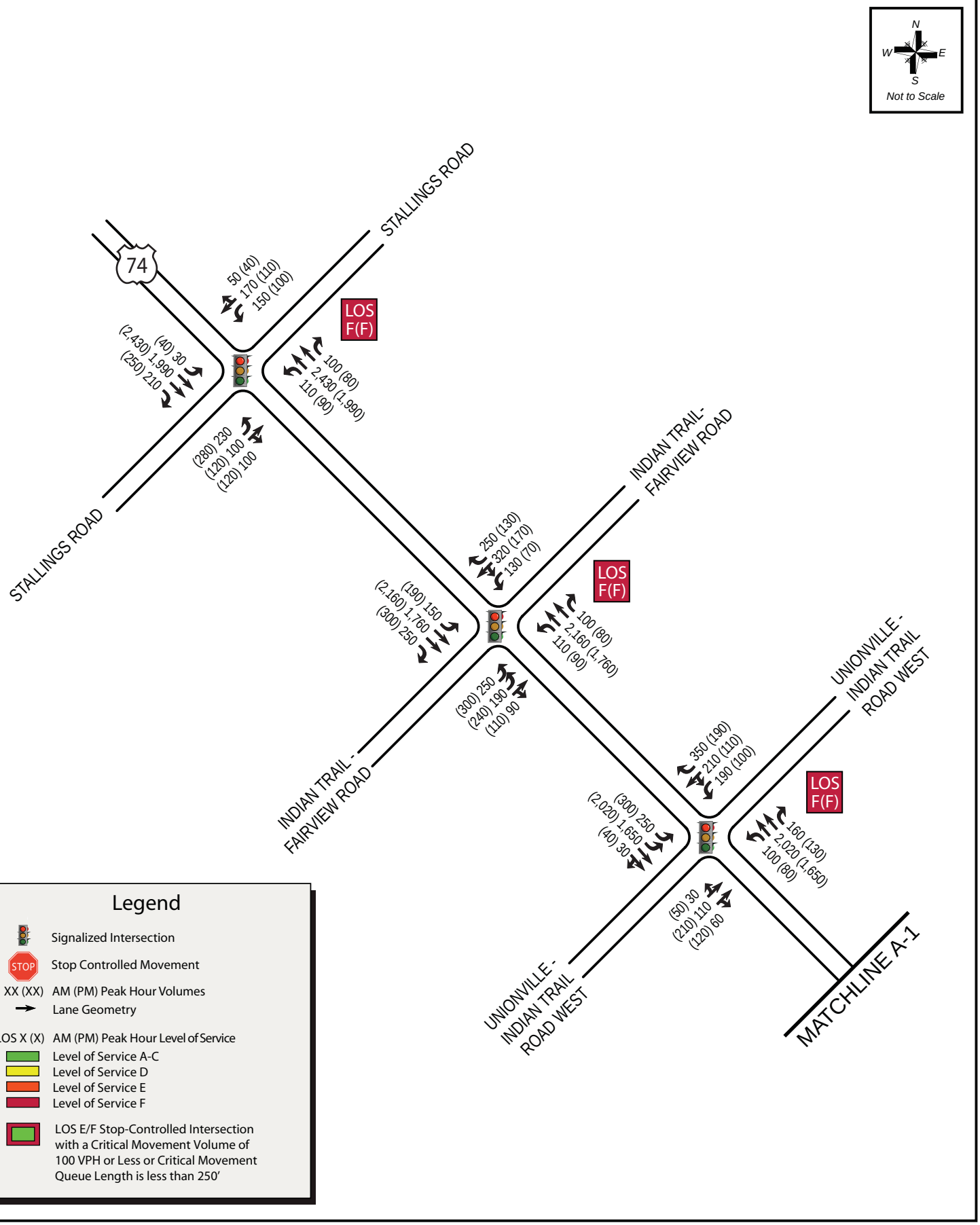
Roadway Characteristics

Figure 1-10

Roadway_Characteristics at 8.5-3.07



NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS
STIP Project Numbers R-3329 & R-2559
Mecklenburg and Union Counties

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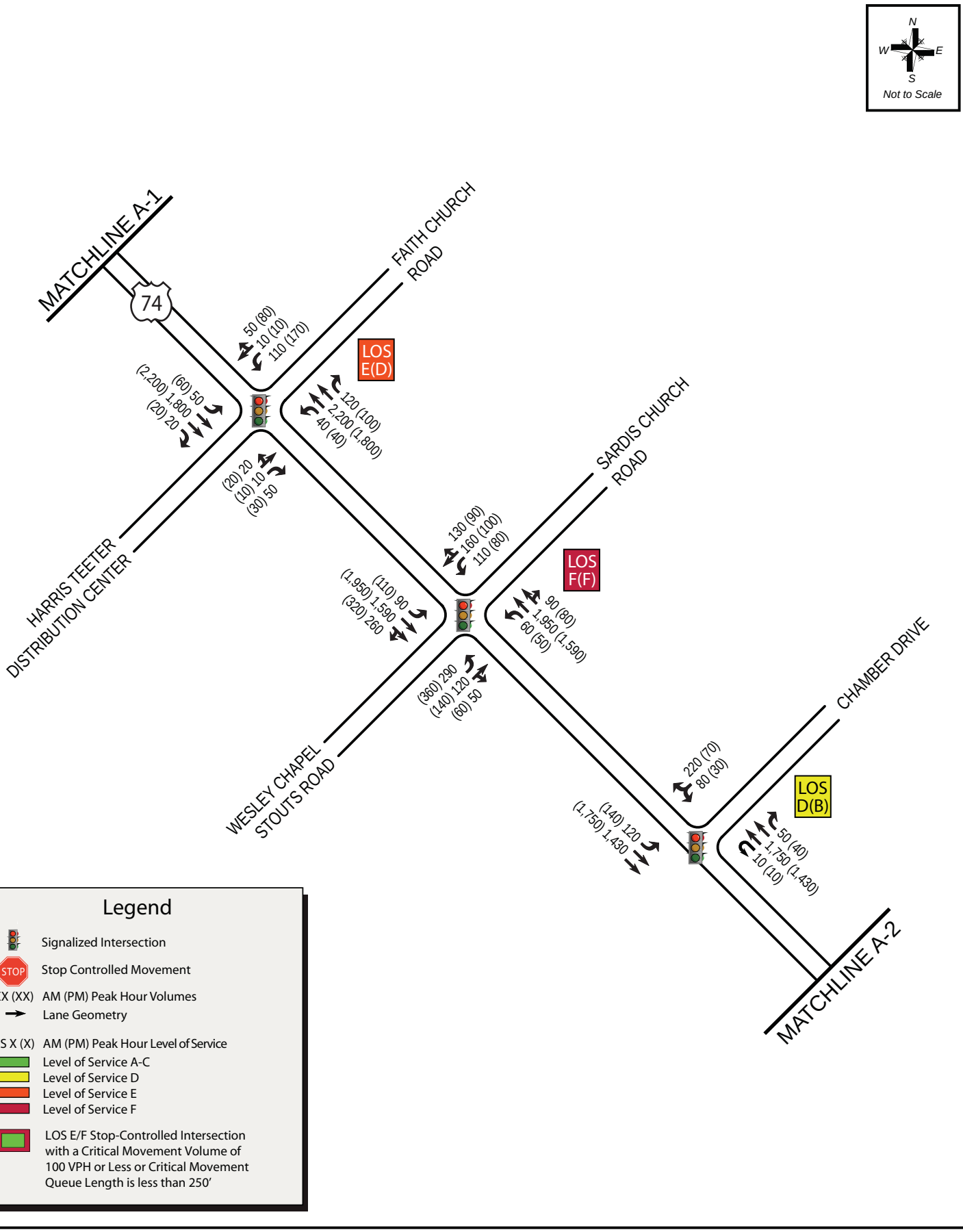
Existing (2007) Traffic Volumes along US 74

Figure 1-11a

allexisting.ai 8-03-07



NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS
STIP Project Numbers R-3329 & R-2559
Mecklenburg and Union Counties

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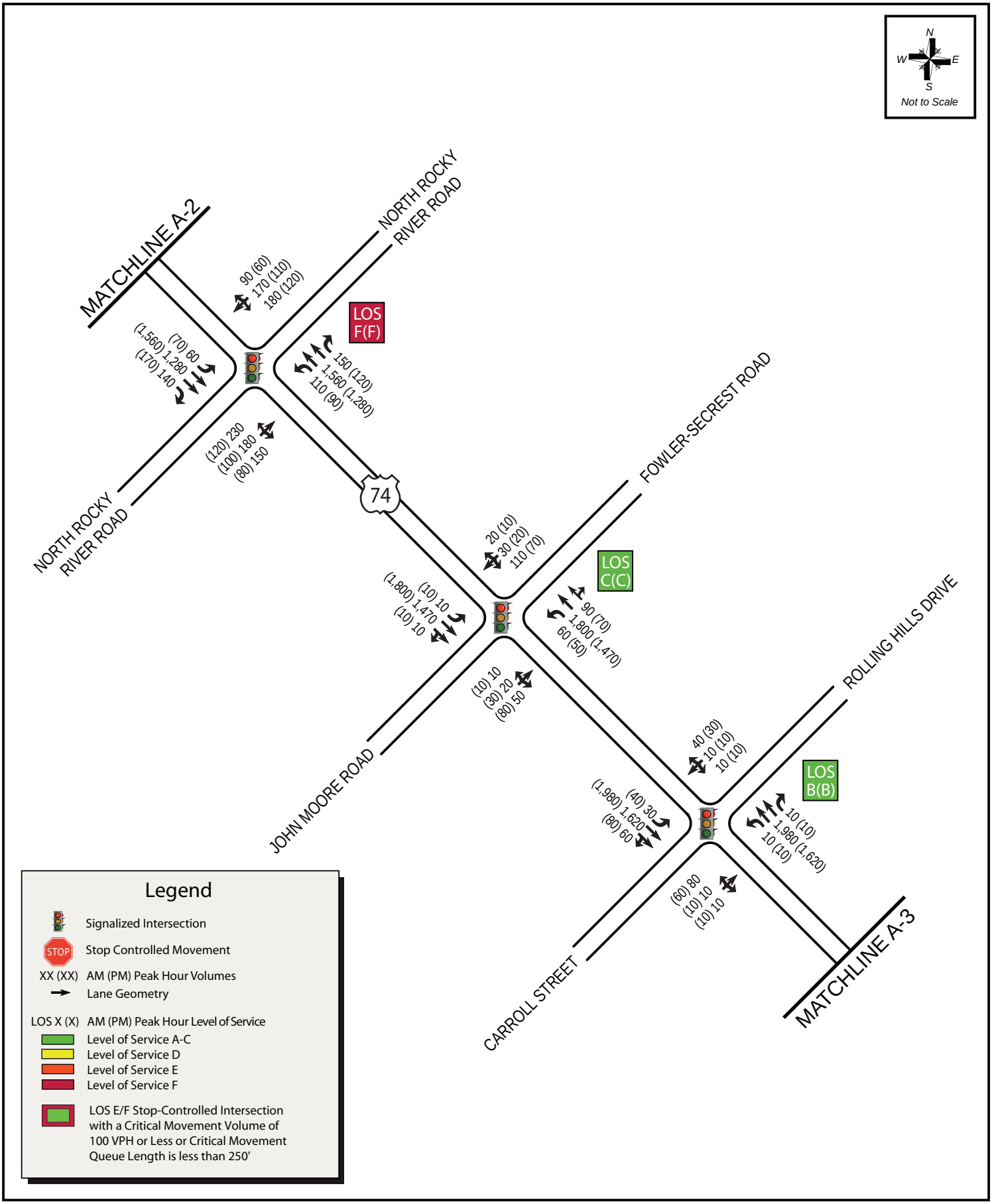
Existing (2007) Traffic Volumes along US 74

Figure 1-11b

allexisting.ai 8-03-07



NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS
STIP Project Numbers R-3329 & R-2559
Mecklenburg and Union Counties

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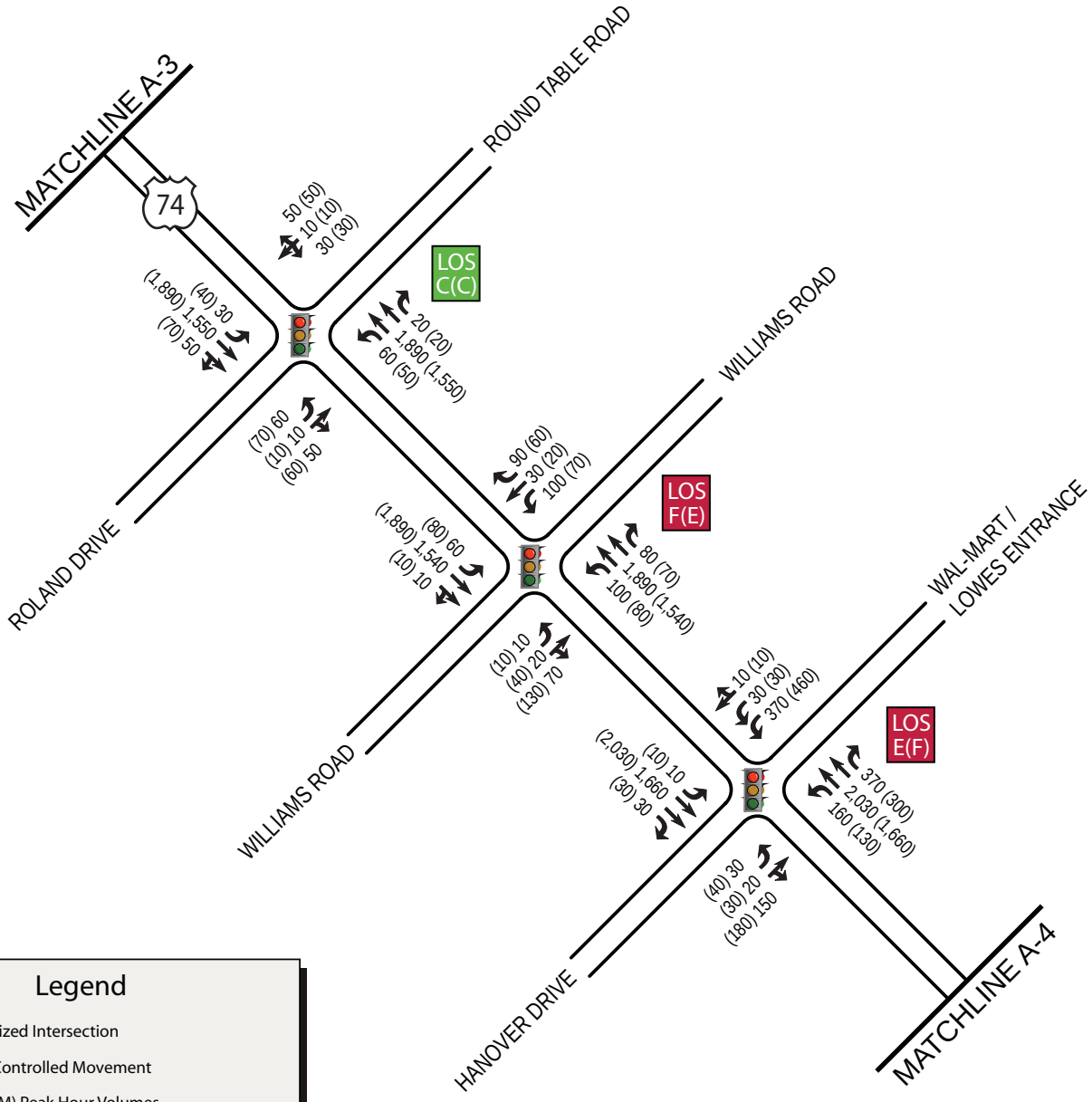
Existing (2007) Traffic Volumes along US 74

Figure 1-11c

allexisting.ai 8-03-07



Legend

- Signalized Intersection
- Stop Controlled Movement
- XX (XX) AM (PM) Peak Hour Volumes
- Lane Geometry
- LOS X (X) AM (PM) Peak Hour Level of Service
  - Level of Service A-C
  - Level of Service D
  - Level of Service E
  - Level of Service F
- LOS E/F Stop-Controlled Intersection with a Critical Movement Volume of 100 VPH or Less or Critical Movement Queue Length is less than 250'

NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS
STIP Project Numbers R-3329 & R-2559
Mecklenburg and Union Counties

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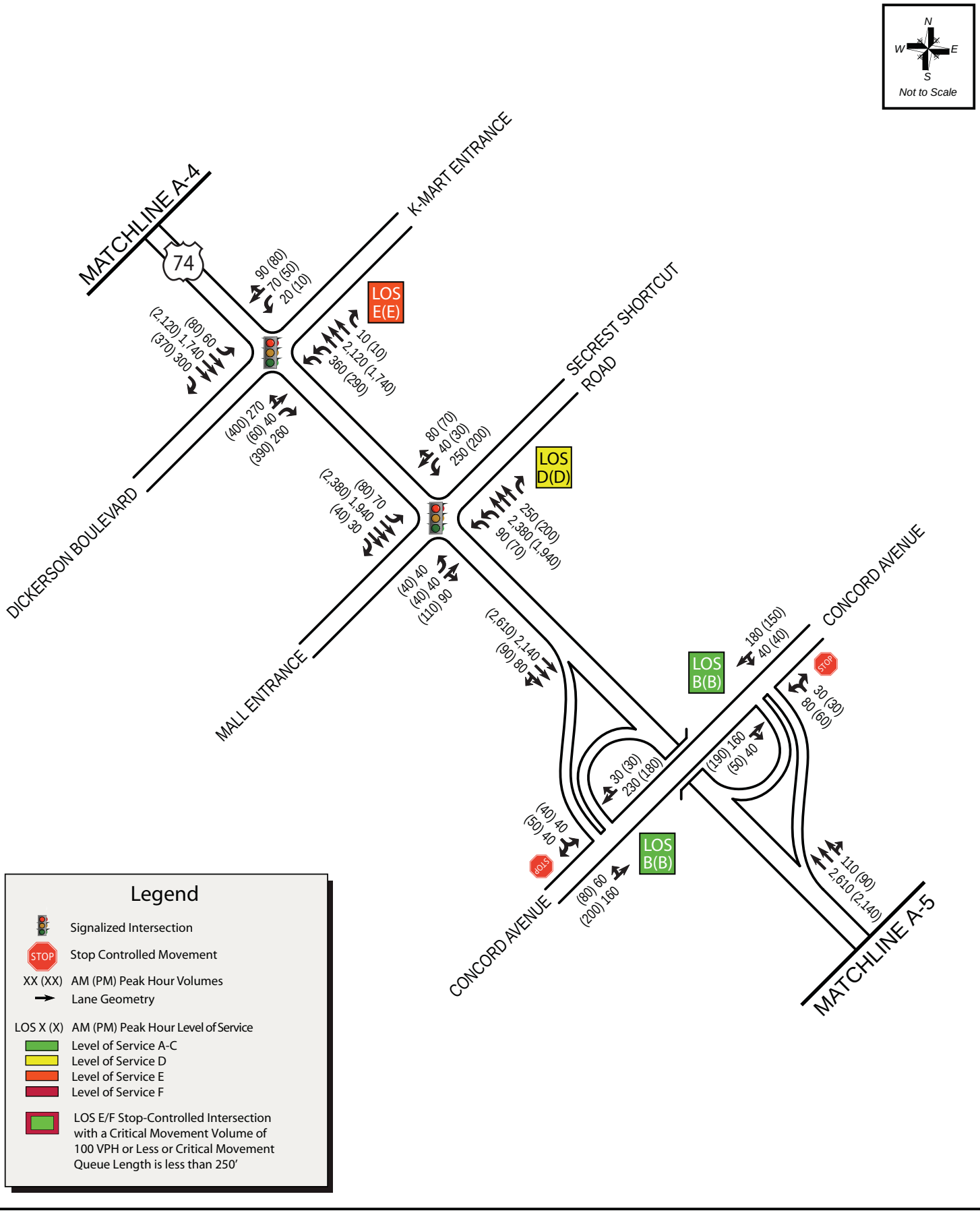
Existing (2007) Traffic Volumes along US 74

Figure 1-11d

allexisting.ai 8-03-07



NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS
STIP Project Numbers R-3329 & R-2559
Mecklenburg and Union Counties

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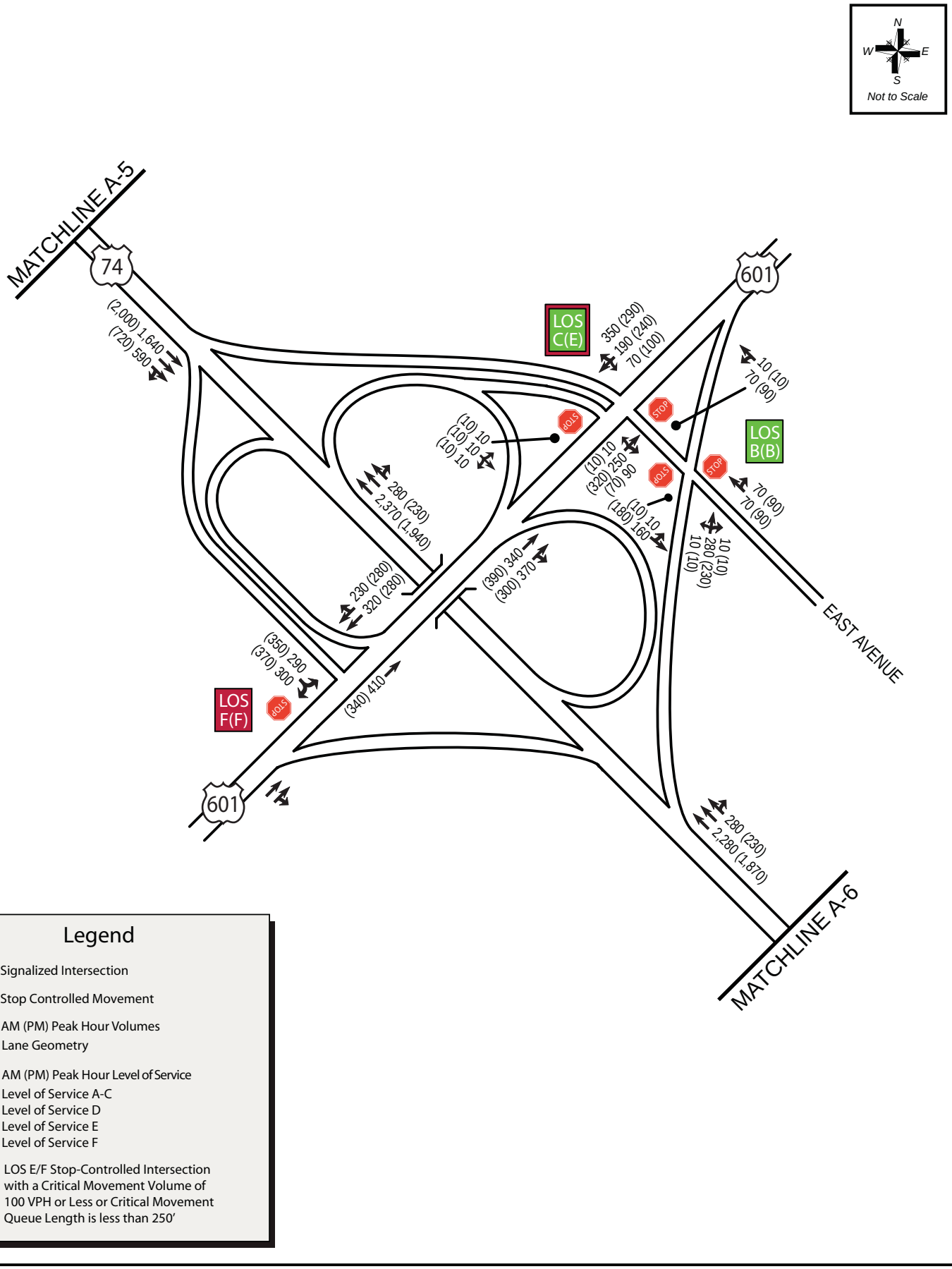
Existing (2007) Traffic Volumes along US 74

Figure 1-11e

allexisting.ai 8-03-07



NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS
STIP Project Numbers R-3329 & R-2559
Mecklenburg and Union Counties

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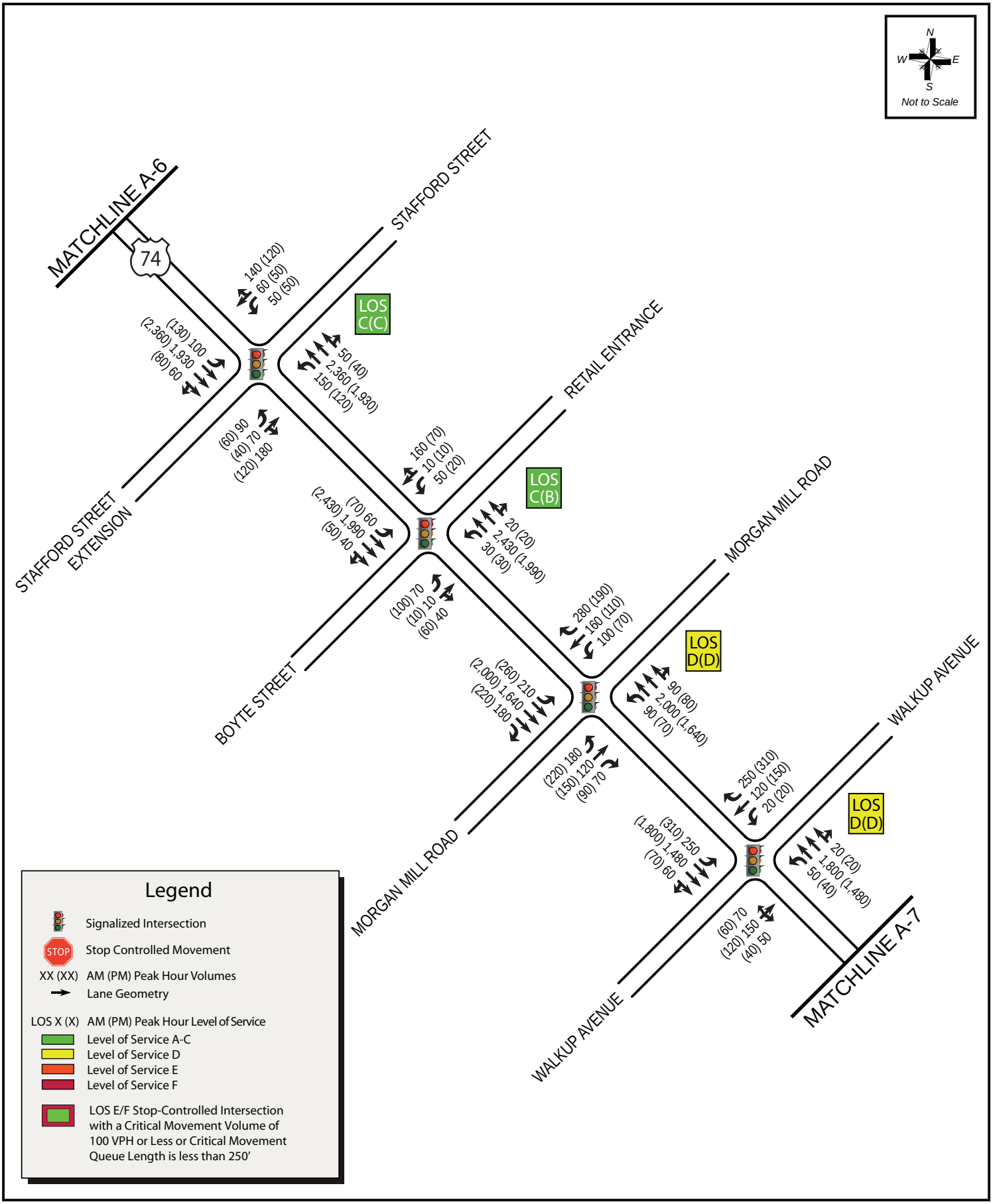
Existing (2007) Traffic Volumes along US 74

Figure 1-11f

allexisting.ai 8-03-07



NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS
STIP Project Numbers R-3329 & R-2559
Mecklenburg and Union Counties

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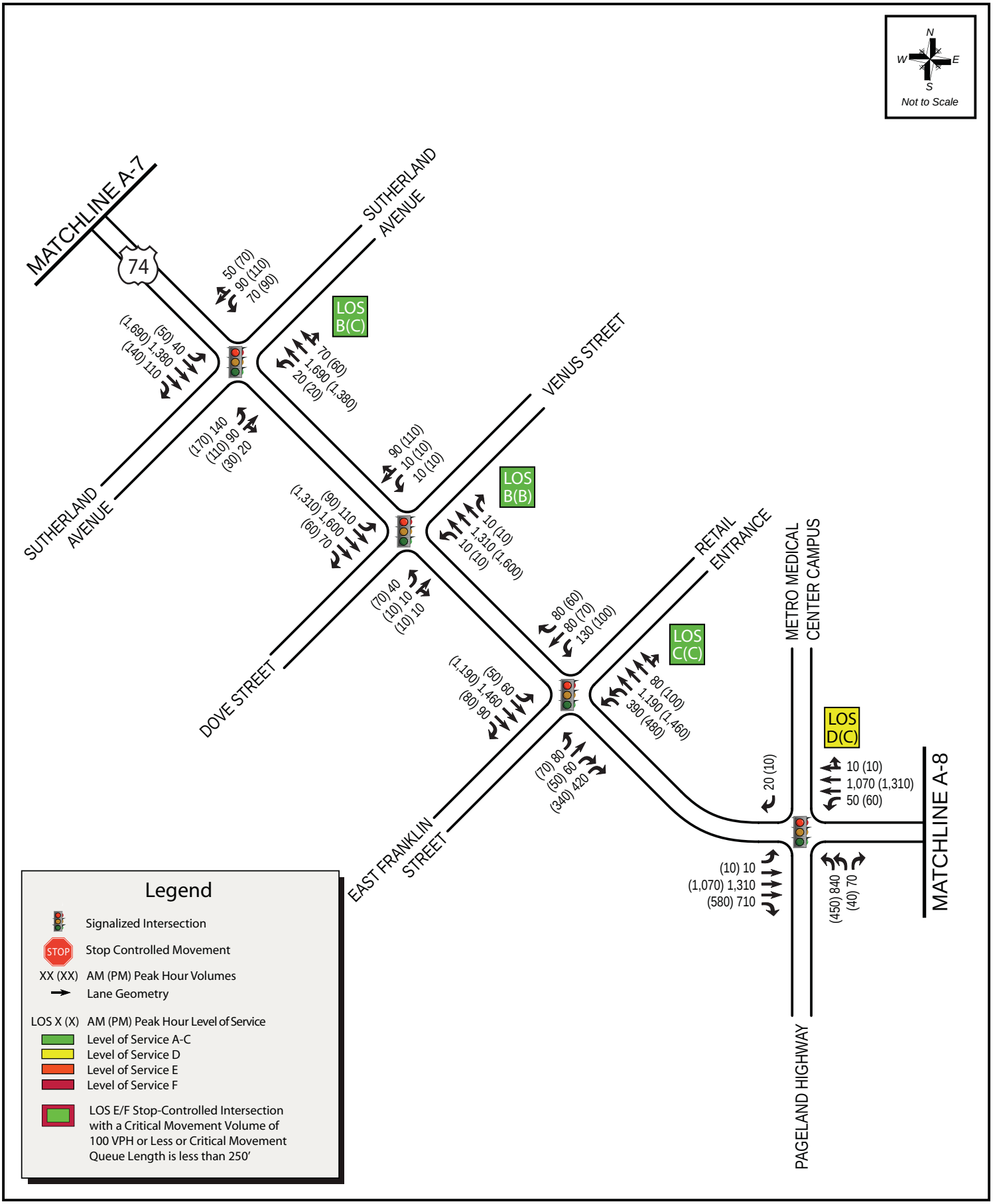
Existing (2007) Traffic Volumes along US 74

Figure 1-11g

allexisting.ai 8-03-07



NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS
STIP Project Numbers R-3329 & R-2559
Mecklenburg and Union Counties

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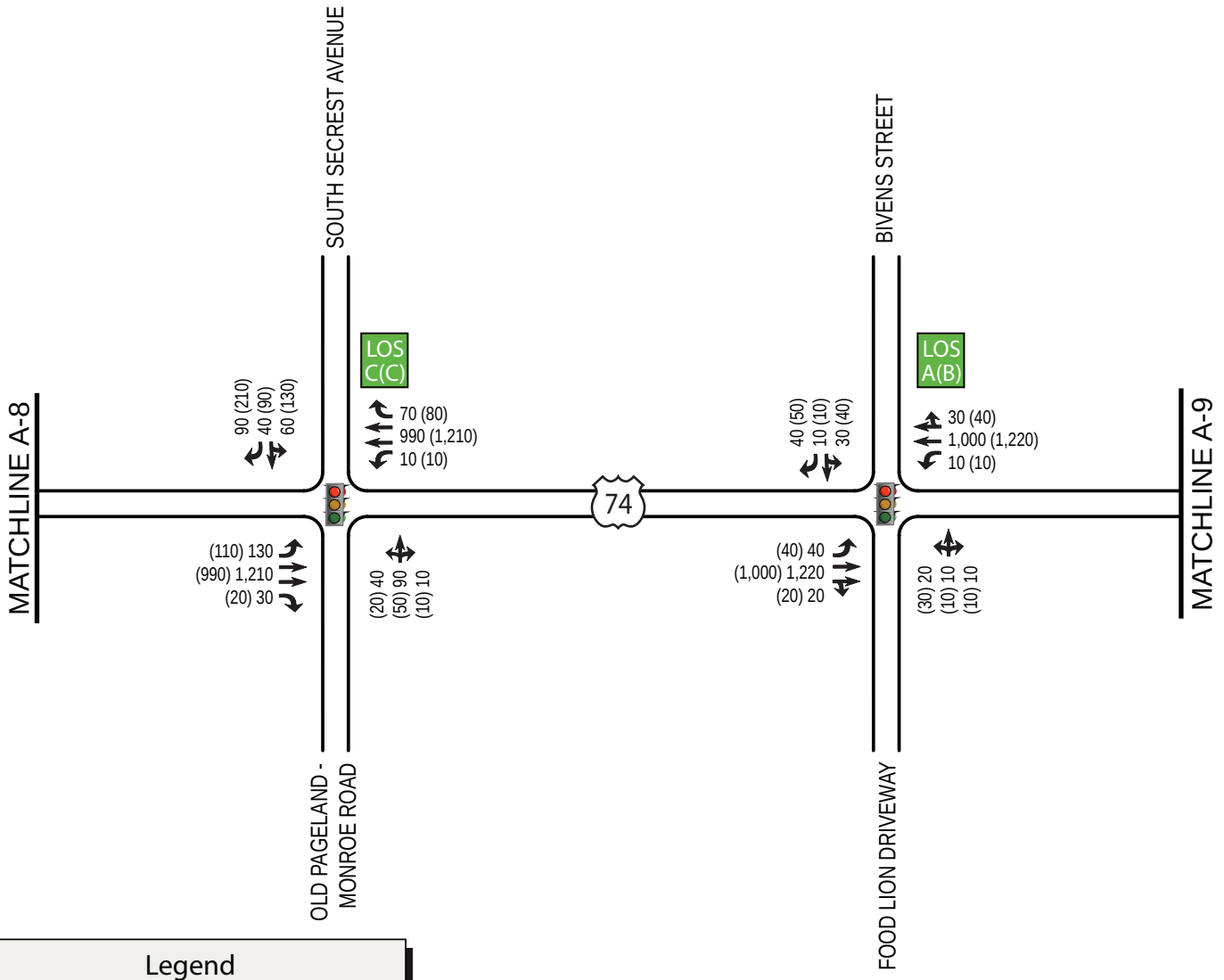
Existing (2007) Traffic Volumes along US 74

Figure 1-11h

allexisting.ai 8-03-07



Legend

- Signalized Intersection
- Stop Controlled Movement
- XX (XX) AM (PM) Peak Hour Volumes
- Lane Geometry
- LOS X (X) AM (PM) Peak Hour Level of Service
- Level of Service A-C
- Level of Service D
- Level of Service E
- Level of Service F
- LOS E/F Stop-Controlled Intersection with a Critical Movement Volume of 100 VPH or Less or Critical Movement Queue Length is less than 250'

NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS
STIP Project Numbers R-3329 & R-2559
Mecklenburg and Union Counties

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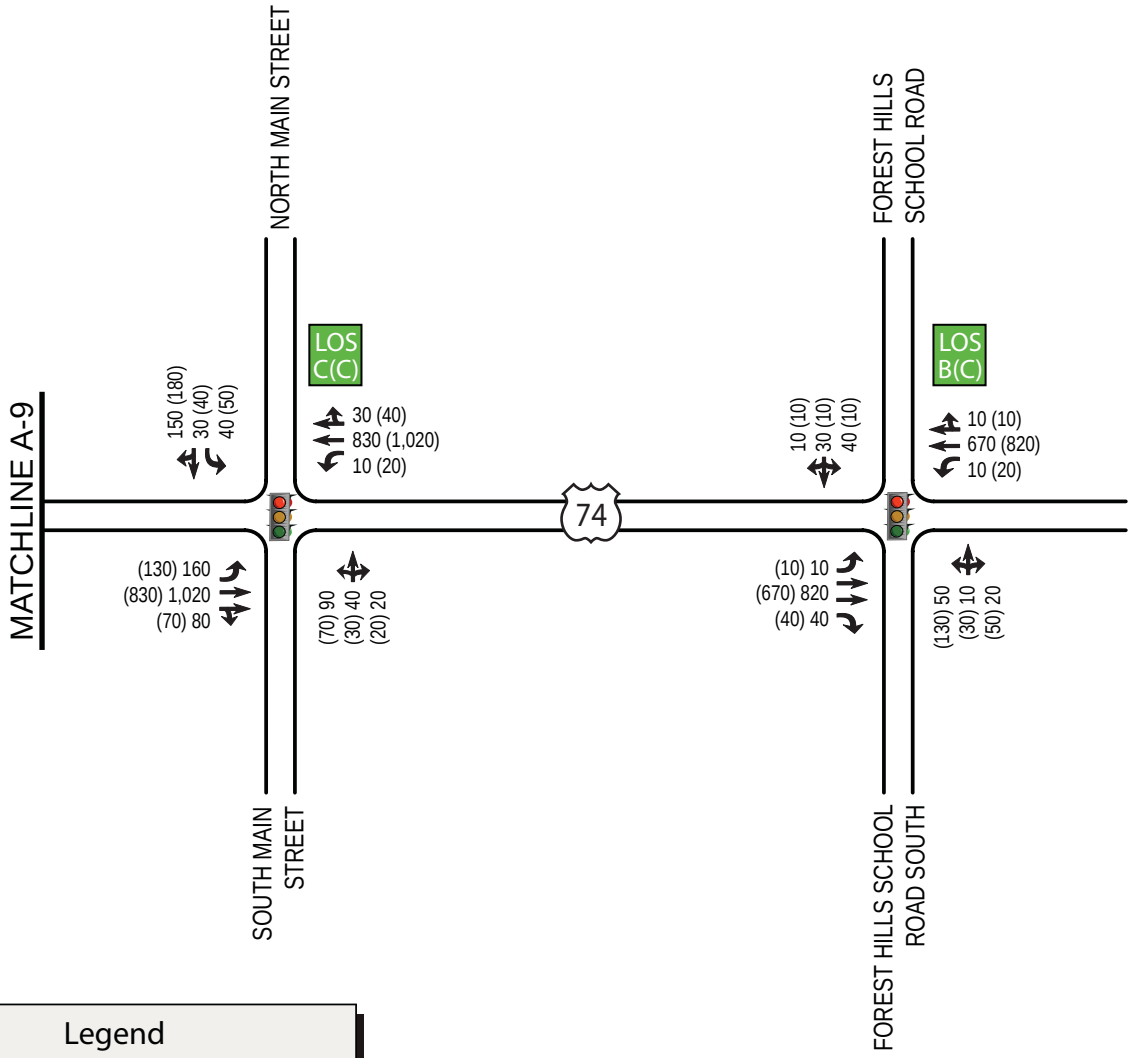
Existing (2007) Traffic Volumes along US 74

Figure 1-11i

allexisting.ai 8-03-07



Legend

- Signalized Intersection
- Stop Controlled Movement
- XX (XX) AM (PM) Peak Hour Volumes
- Lane Geometry
- LOS X (X) AM (PM) Peak Hour Level of Service
- Level of Service A-C
- Level of Service D
- Level of Service E
- Level of Service F
- LOS E/F Stop-Controlled Intersection with a Critical Movement Volume of 100 VPH or Less or Critical Movement Queue Length is less than 250'

NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS
STIP Project Numbers R-3329 & R-2559
Mecklenburg and Union Counties

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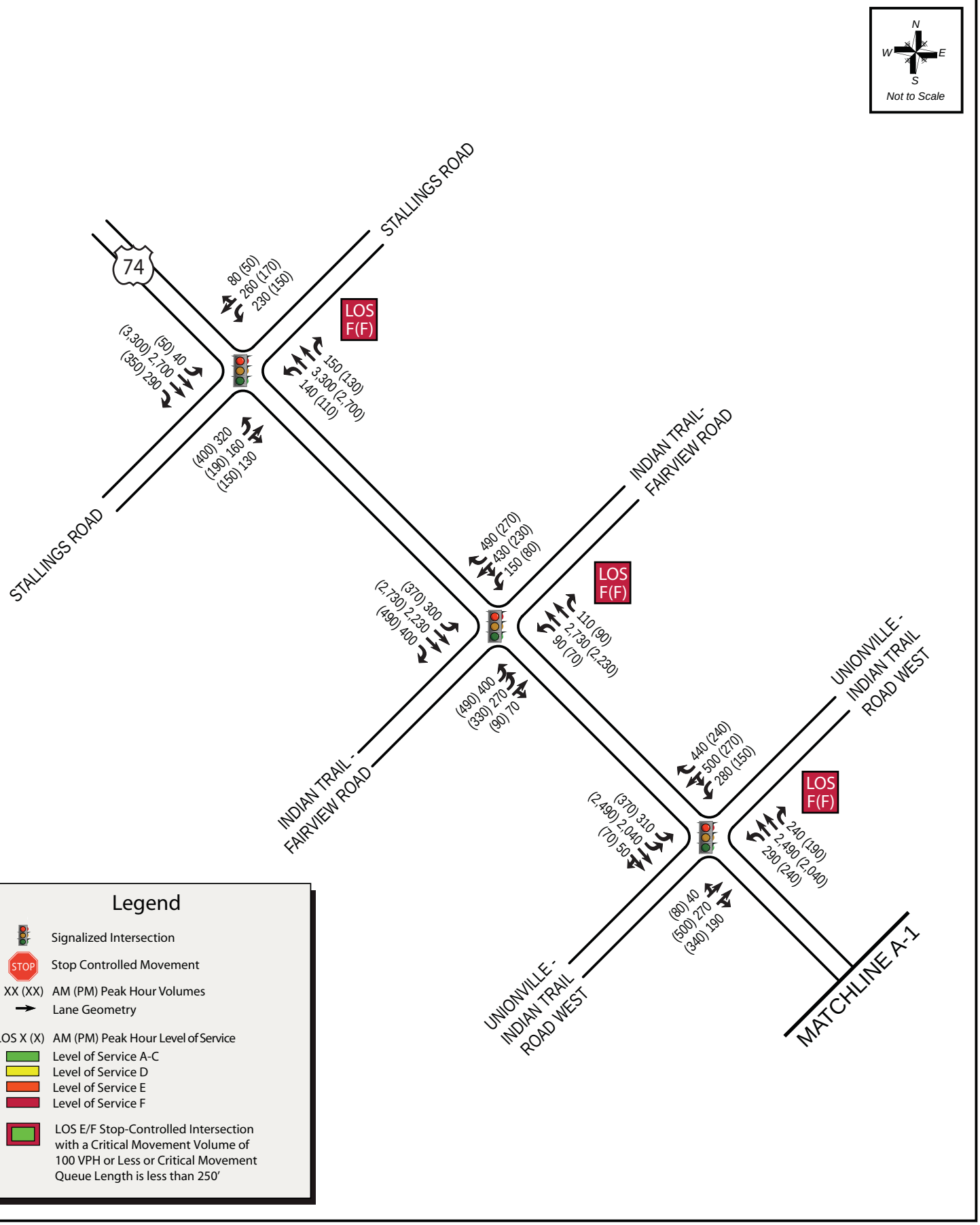
Existing (2007) Traffic Volumes along US 74

Figure 1-11j

allexisting.ai 8-03-07



NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS
STIP Project Numbers R-3329 & R-2559
Mecklenburg and Union Counties

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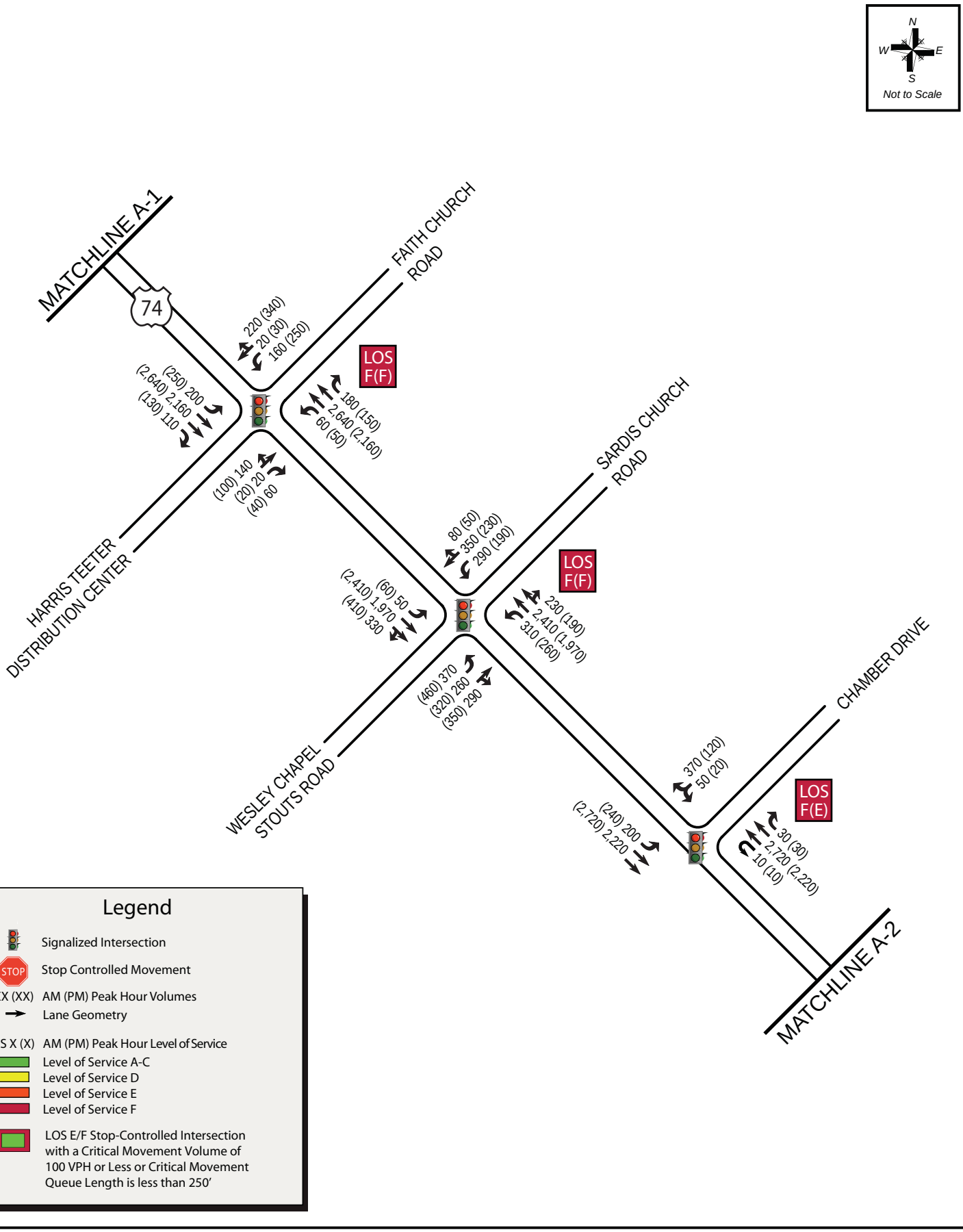
Projected (2030) Traffic Volumes along US 74

Figure 1-12a

allmodnet.ai 8-03-07



NORTH CAROLINA Turnpike Authority

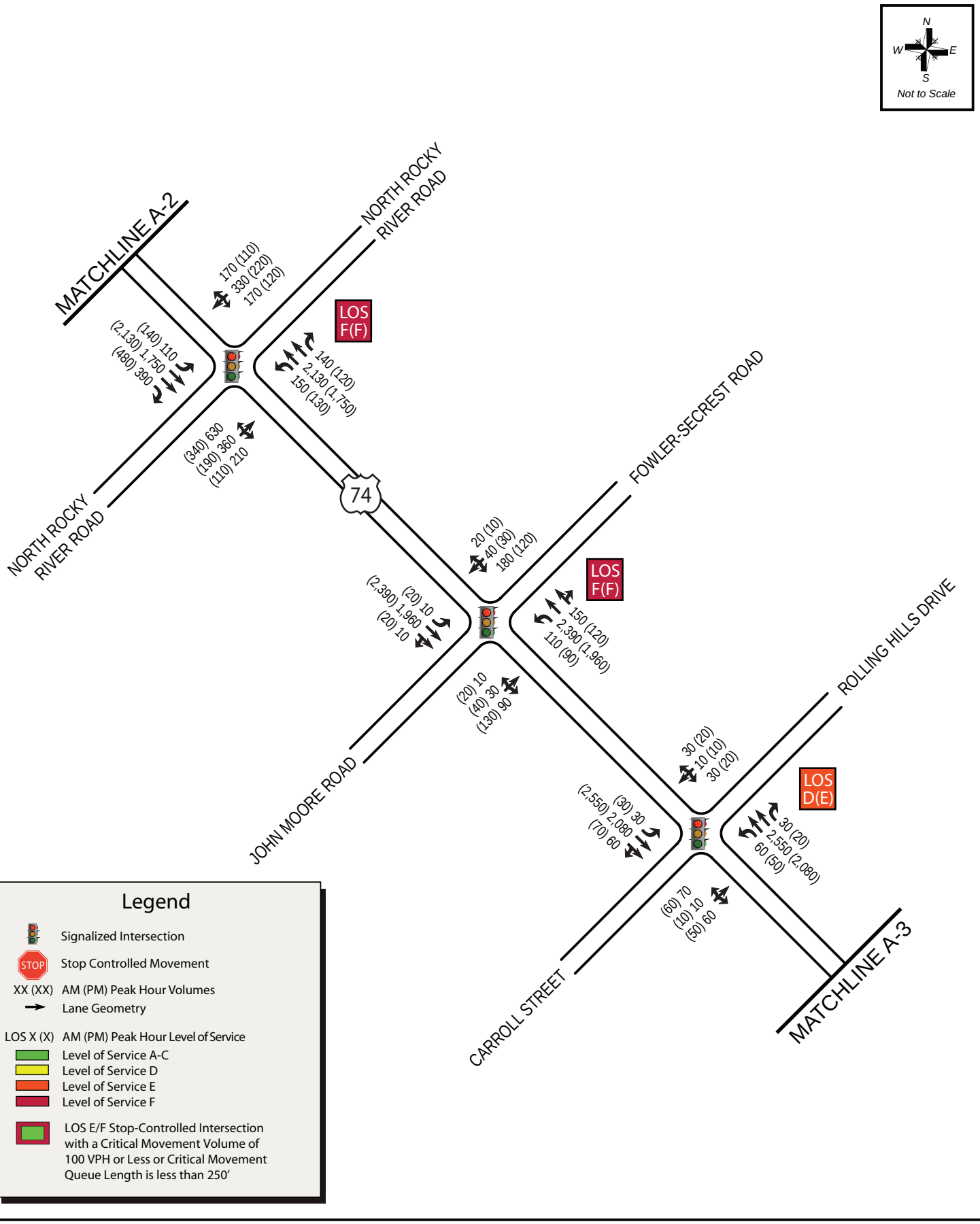
MONROE CONNECTOR / BYPASS
STIP Project Numbers R-3329 & R-2559
Mecklenburg and Union Counties

DRAFT

Projected (2030) Traffic Volumes along US 74

Figure 1-12b

allmodunit.ai 8-03-07



NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS
STIP Project Numbers R-3329 & R-2559
Mecklenburg and Union Counties

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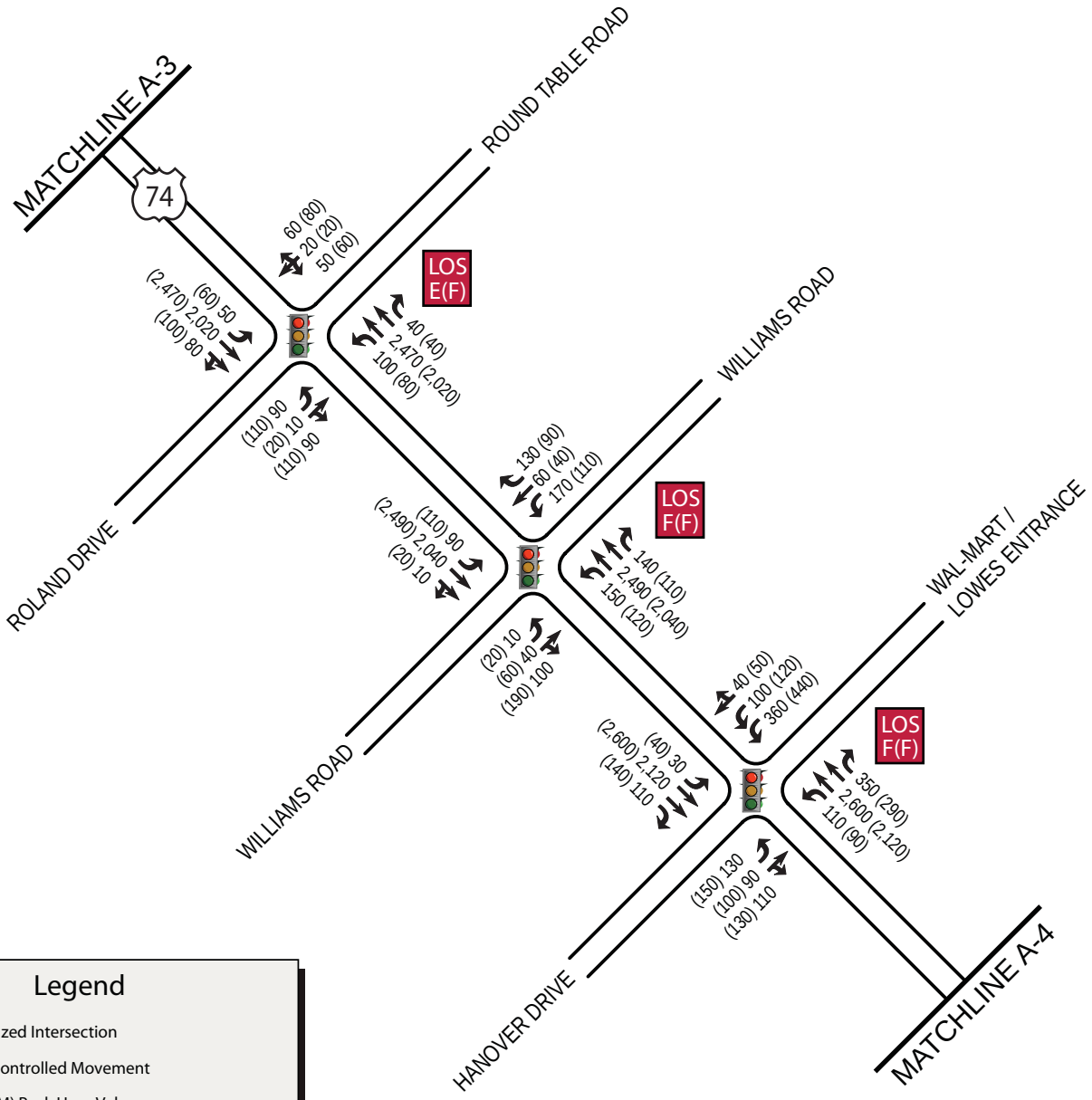
Projected (2030) Traffic Volumes along US 74

Figure 1-12c

allmcbuild_a 8-03-07



NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS
STIP Project Numbers R-3329 & R-2559
Mecklenburg and Union Counties

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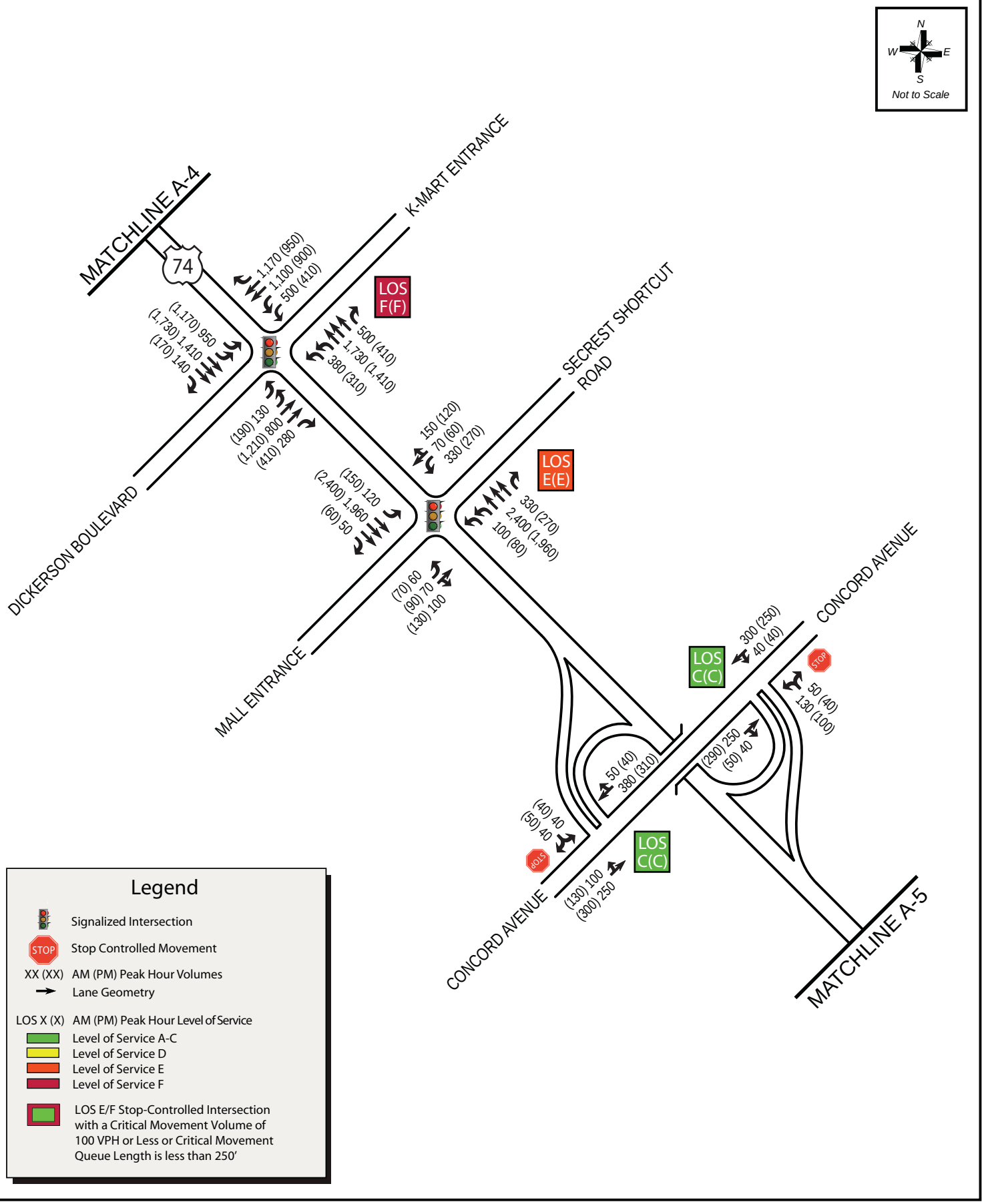
Projected (2030) Traffic Volumes along US 74

Figure 1-12d

almcbuild_a 8-03-07



NORTH CAROLINA Turnpike Authority

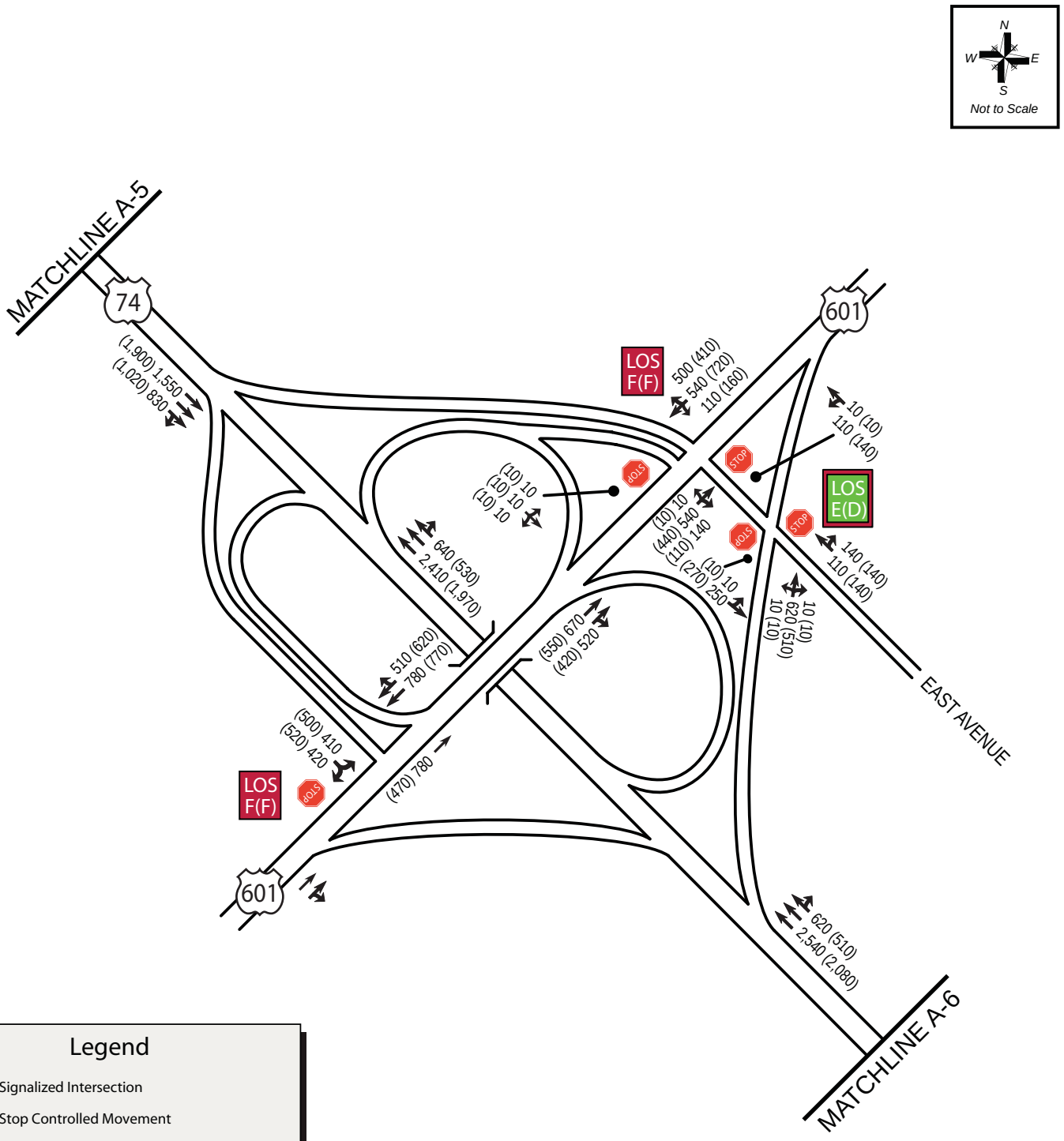
MONROE CONNECTOR / BYPASS
STIP Project Numbers R-3329 & R-2559
Mecklenburg and Union Counties

DRAFT

Projected (2030) Traffic Volumes along US 74

Figure 1-12e

allmodel.ai 8-03-07



NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS
STIP Project Numbers R-3329 & R-2559
Mecklenburg and Union Counties

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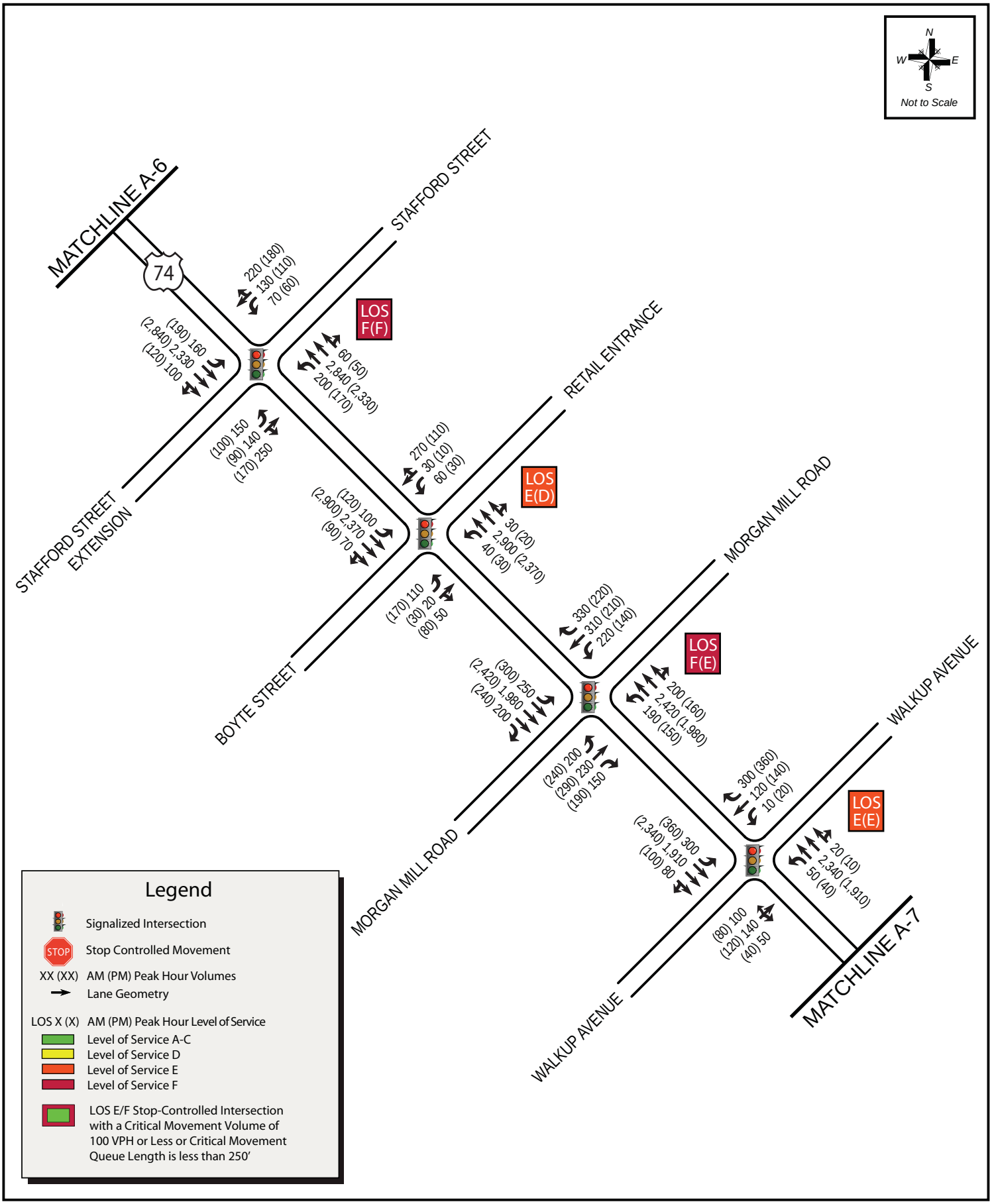
Projected (2030) Traffic Volumes along US 74

Figure 1-12f

allmodnet.ai 8-03-07



NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS
STIP Project Numbers R-3329 & R-2559
Mecklenburg and Union Counties

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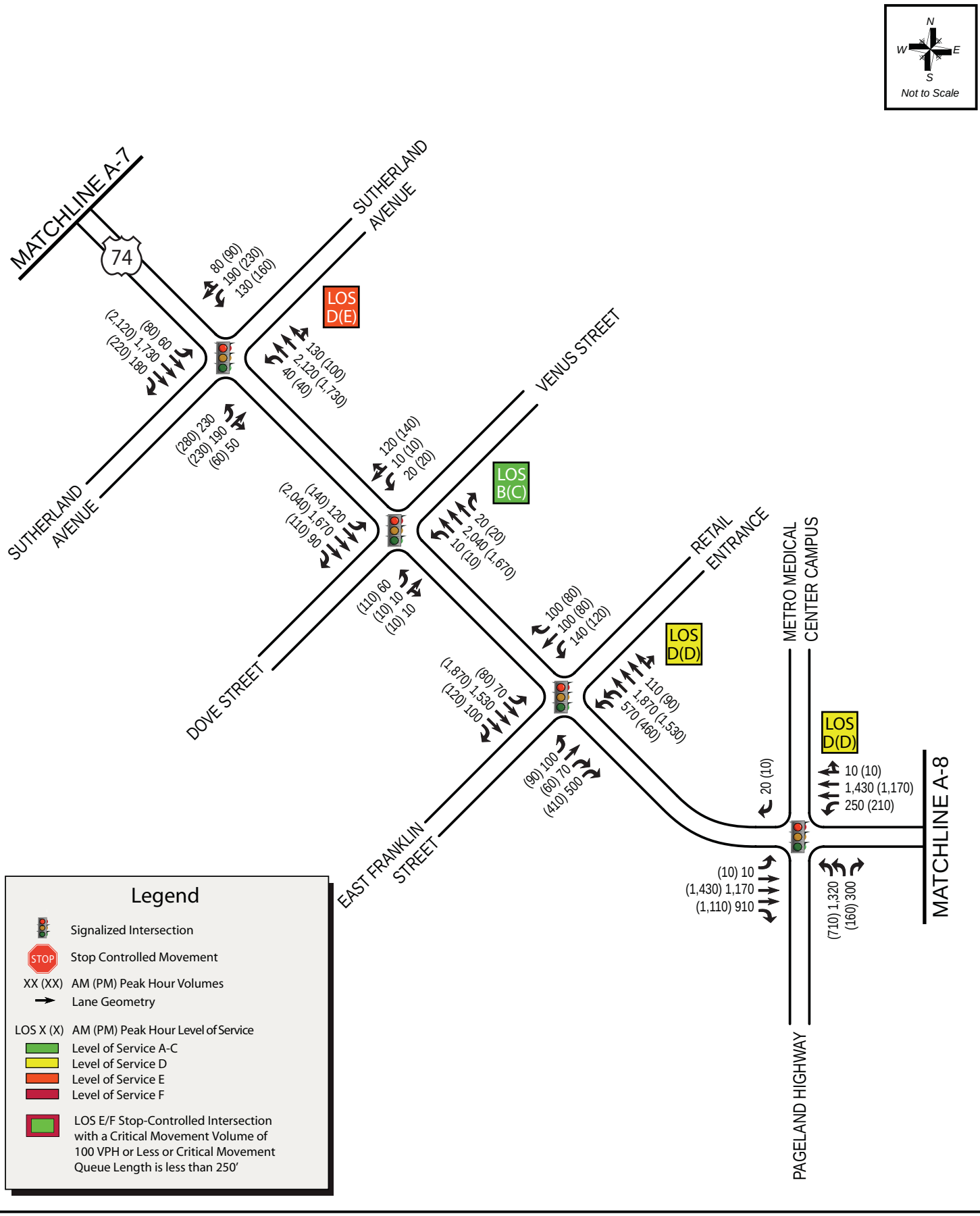
Projected (2030) Traffic Volumes along US 74

Figure 1-12g

allmaps.ai 8-03-07



NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS
STIP Project Numbers R-3329 & R-2559
Mecklenburg and Union Counties

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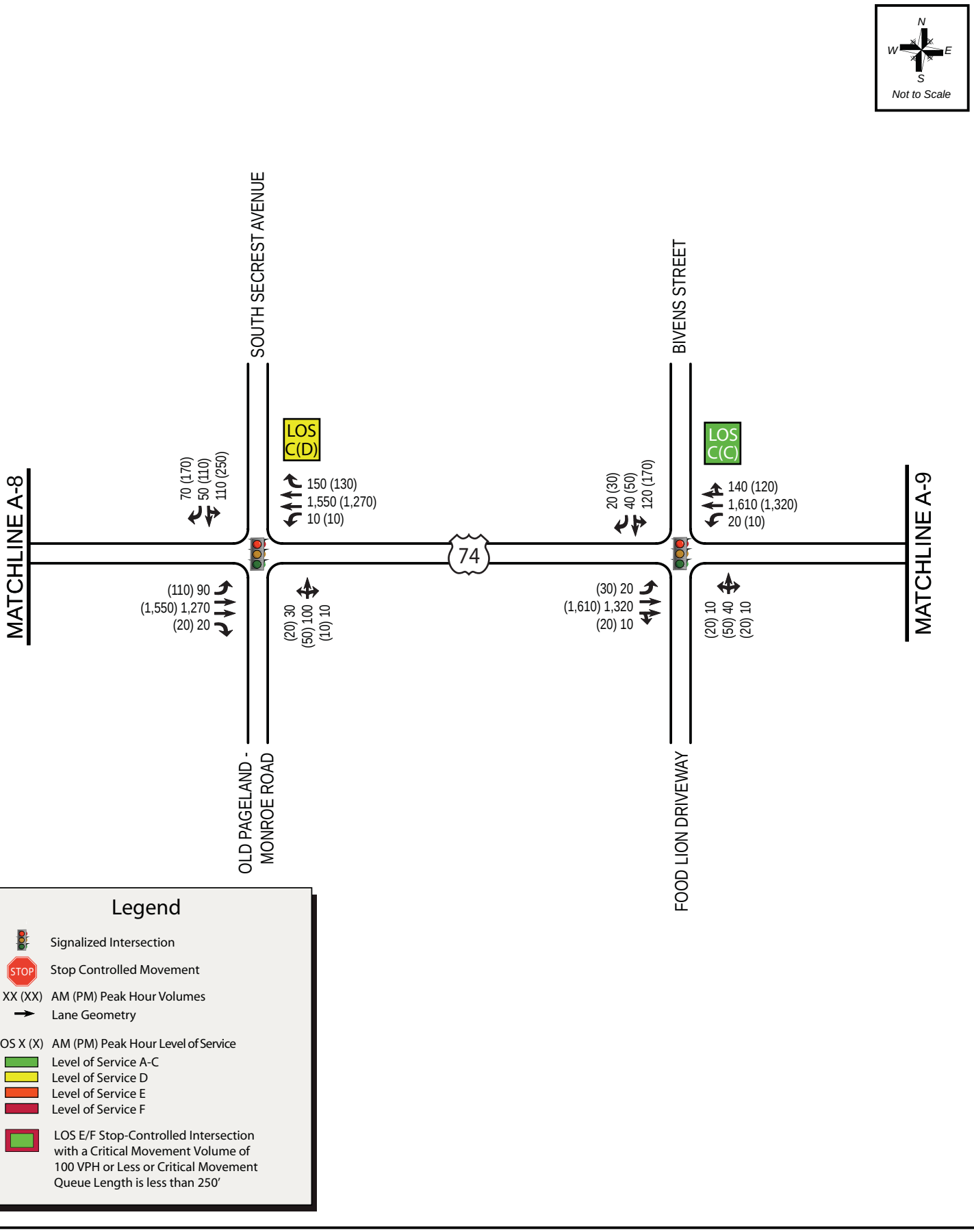
Projected (2030) Traffic Volumes along US 74

Figure 1-12h

allmodel.ai 8-03-07



NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS
STIP Project Numbers R-3329 & R-2559
Mecklenburg and Union Counties

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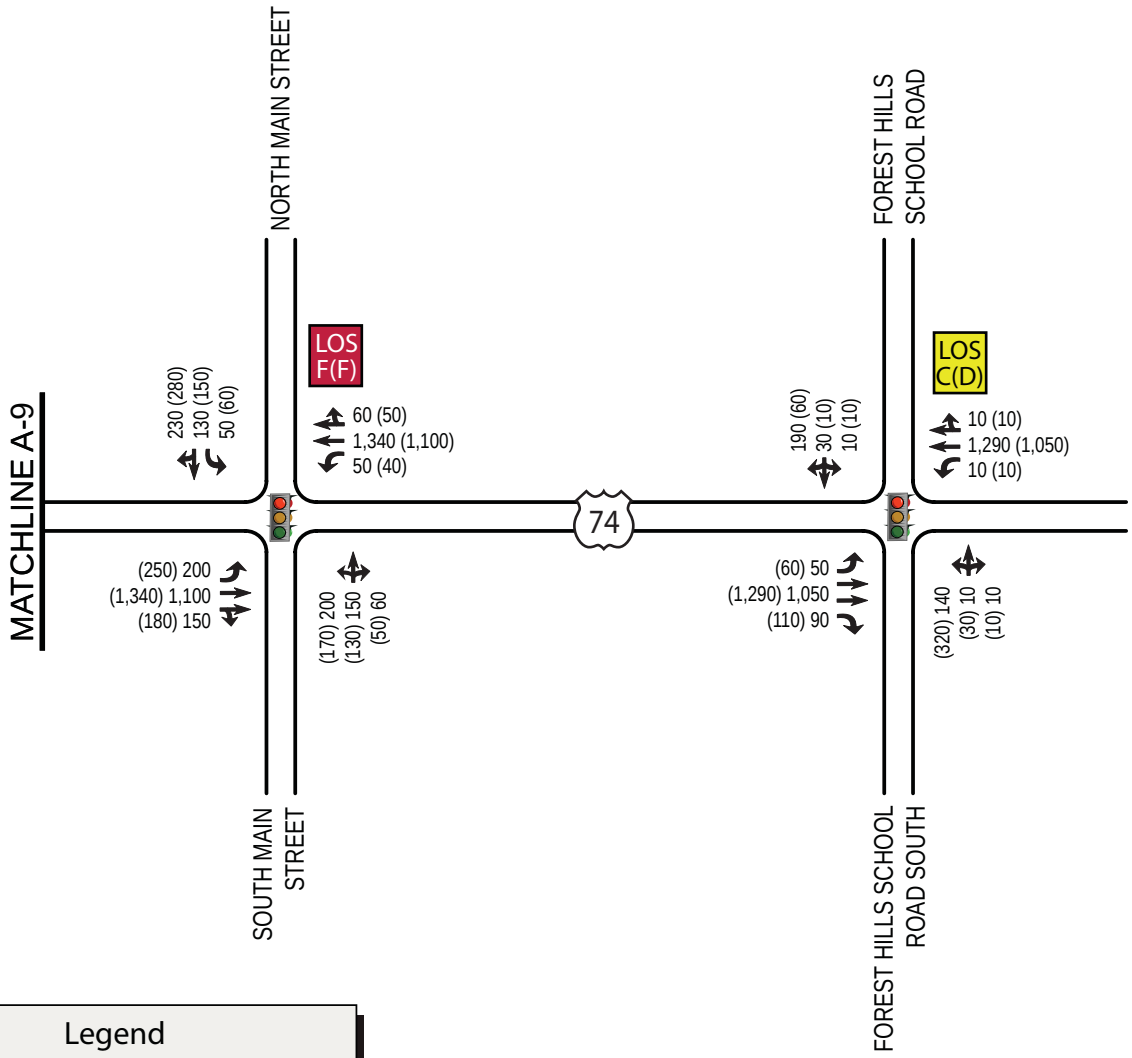
Projected (2030) Traffic Volumes along US 74

Figure 1-12i

almcbypt.ai 8-03-07



Legend

- Signalized Intersection
- Stop Controlled Movement
- XX (XX) AM (PM) Peak Hour Volumes
- Lane Geometry
- LOS X (X) AM (PM) Peak Hour Level of Service
- Level of Service A-C
- Level of Service D
- Level of Service E
- Level of Service F
- LOS E/F Stop-Controlled Intersection with a Critical Movement Volume of 100 VPH or Less or Critical Movement Queue Length is less than 250'

NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS
STIP Project Numbers R-3329 & R-2559
Mecklenburg and Union Counties

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Projected (2030) Traffic Volumes along US 74

Figure 1-12j

almcbuild_a 8-03-07

NORTH CAROLINA Turnpike Authority

Turnpike Environmental Agency Coordination (TEAC) Meeting - West

MEETING MINUTES

Date: January 25, 2007
1:30 pm to 4:30 pm
NC Turnpike Authority Board Room

Project: TIP U-3321 Gaston E-W Connector – STP-1213(6)
TIP R-3329 Monroe Connector – NHF-74(21)
TIP R-2559 Monroe Bypass – NHF-74(8)

Attendees:

Rob Ayers, FHWA
Donnie Brew, FHWA
Clarence Coleman, FHWA
George Hoops, FHWA
Sarah McBride, NCDCR-SHPO
John Hennessy, NCDENR-DWQ
John Conforti, NCDOT- PDEA
Teresa Hart, NCDOT- PDEA
Tony Houser, NCDOT-Roadway Design
Glen Mumford, NCDOT-Roadway Design
Carla Dagnino, NCDOT-NEU
Bruce Ellis, NCDOT-NEU
Elizabeth Lusk, NCDOT- NEU
Michael Turchy, NCDOT-NEU
Lonnie Brooks, NCDOT-Structure Design
Marla Chambers, NCDENR-WRC
Scott McLendon, USACE
Steve Lund, USACE
Kathy Matthews, USEPA
Chris Militscher, USEPA
Marella Buncick, USFWS
Bill Malley, Akin Gump
Steve DeWitt, NCTA
Gail Grimes, NCTA
Jennifer Harris, NCTA
Jerry McCrain, EcoScience
Ross Andrews, EcoScience
Jeff Dayton, HNTB
Craig Deal, HNTB
Donna Keener, HNTB
Anne Redmond, HNTB
Christy Shumate, HNTB
David Bass, PBS&J
Jill Gurak, PBS&J
Carl Gibilaro, PBS&J (via telephone)
Craig Mesimer, PBS&J
Lou Raymond, PBS&J

Presentation Materials: (Posted on TEAC website)
- December 15, 2006 TEAC draft meeting minutes
- Draft Section 6002 Coordination Plan Template
- Gaston East-West Connector Status Report

General Topics:
- **Minutes** - The draft minutes are scheduled for approval at the February 2007 TEAC meeting. No comments from agencies at this time.
- **Draft Section 6002 Coordination Plan Template -** The draft coordination plan template includes the suggested revisions from the December 2006 TEAC meeting. Detailed discussions will occur at the February TEAC meeting. The template is schedule for adoption at the March TEAC meetings.

Gaston East-West Connector Snapshot:

- A brief update of the proposed Gaston East-West Connector was provided. A detailed schedule is being developed.

Q&A:

Where in the NEPA process is the Gaston project?
Concurrence Points 1 and 2 in the NEPA/404 merger process were achieved prior to NCDOT transferring the project to the NCTA. The NCTA is moving forward with the next steps of the project, which are the preliminary engineering designs, hydraulic studies, and Draft EIS studies.

Could the results of the 2030 toll traffic forecasts cause an alternative to be eliminated from consideration?
The 2030 non-toll traffic forecasts for the Detailed Study Alternatives do not show substantial differences in projected volumes between alternatives. Therefore, it is unlikely that difference in traffic volumes will result in the elimination of an alternative.

What is the schedule for identifying the Preferred Alternative?
The Preferred Alternative is scheduled for identification in about 1 ½ years.

Does the traffic and revenue study conclude that the project is viable?
The traffic and revenue study concluded that the project was potentially viable if constructed in stages; however, an additional funding source would be needed to fill the "gap" between the estimated construction costs and toll revenues. The traffic and revenue study considered three scenarios – Scenario A is building from I-485 to NC 279; Scenario B is building from I-485 to US 321; and Scenario C is building the entire project from I-485 to I-85. The NEPA document will evaluate the entire project. No decision has been reached as to what scenario would be constructed.

Is the original purpose and need still being used?
Yes.

Is the planned expansion and construction of the intermodal freight terminal at the Charlotte-Douglas Airport needed to make the Gaston project an economically viable toll facility?
The Charlotte-Douglas International Airport expansion currently includes a realignment of West Boulevard (NC 160) to a new interchange at I-485. This interchange is graded but not paved. The airport will construct the interchange. The airport expansion project is proceeding without the Gaston East-West Connector project. The project consultants have met with the airport authority to coordinate the design of the Gaston East-West Connector in the
I-485 area so as not to encroach on airport facilities or operations. The contribution of traffic from the airport facilities and operations to the Gaston East-West Connector will be reviewed in the investment grade traffic and revenue study.

Would the airport project be included in the indirect and cumulative effects analysis for the Gaston East-West Connector? The indirect and cumulative effects analysis will include discussions of all reasonably foreseeable projects in the study area. The airport expansion project appears to be a reasonably foreseeable project, so it would be included in the indirect and cumulative effects study.

Are the consultants performing the jurisdictional resources surveys identifying potential on-site mitigation areas?
The consultants performing the jurisdictional resources surveys will identify potential on-site mitigation areas and mention any potential sites in their report.

Is the NCTA aware that the Gaston & Monroe projects are potential pilot projects for robust MSAT analysis?
The Gaston East-West Connector and the Monroe Connector/Bypass are potential pilot projects for MSAT analysis, due to the large-scale nature of these projects and the fact they are in a non-attainment area. For the Gaston project, there is the additional consideration of the Charlotte-Douglas Airport's new intermodal freight facility, which could generate MSAT. MSAT is not a new issue. The FHWA is aware of the issue and has a nationally recognized air quality expert on staff in Raleigh.

When will NCTA ask for input on analysis methodologies?
The NCDOT has requested concurrence on a No Effect call for impacts to mussels from the NCDOT. USFWS typically does not need to review No Effects calls at this point in project development, but appreciates being provided the report prepared by NCDOT.

Action Items for TEAC Members:

- The draft 6002 coordination plan is expected to be finalized after the February meeting. Agencies to provide comments to NCTA by the February 2007 meeting.
- The FHWA has developed interim guidance for MSAT. The adequacy of this guidance was questioned by the USEPA representative. The USEPA may request a different methodology and/or on-site monitoring. The FHWA and USEPA to resolve the requirements for MSAT analysis on NCTA candidate projects.
- The Charlotte-Douglas airport may perform a MSAT analysis on the Charlotte-Douglas airport project. The NCTA will coordinate with the airport on this issue.
- The USFWS cannot issue a No Effect on mussels call this early in the NEPA process. The NCTA will provide information on all protected species in one package prior to the scheduled publication date for the DEIS.

Resolutions:

- None

Monroe Connector/Bypass Spotlight:

Additional Attendees:
Bob Cook, MUMPO
Barry Mosely, MUMPO
John Conforti, NCDOT- PDEA
Teresa Hart, NCDOT- PDEA
Rick Mason, NCDOT-TEB
Jonathan Parker, NCDOT-TPB
BenJetta Johnson, NCDOT-Congestion Management
Brian Matthews, Town of Stallings
Barbara Anne Price, Town of Stallings Town Council
Whit Webb, HNTB (via telephone)

Presentation Materials: (Posted on TEAC website)
- Meeting Agenda
- Preliminary Draft Purpose and Need Statement and Purpose and Need Summaries from previous Connector and Bypass studies
- Summary of Previous Findings Regarding Preliminary Corridors for the Monroe Connector and the Monroe Bypass
- Scoping Meeting Project Overview
- Summary of Previous Agency Comments on the Monroe Connector and the Monroe Bypass
- Project Vicinity & Previous Corridors Map
- Draft Section 6002 Project Coordination Plan for Monroe Connector/Bypass (dated 1/25/07)
- Federal Register Notice of Intent (dated 1/19/07)

General Discussion:
- *Preliminary Purpose and Need*
  - The previous purpose and need statements for the Monroe Connector and the Monroe Bypass were similar, citing congestion and travel delay on existing US 74, its importance as a regional route, the need to improve mobility, and its inability to function as part of the Intrastate System. The draft preliminary purpose and need includes these same elements.

- *Project Study Area*
  - To the west, the study area boundary is I-485, which would connect the proposed project to another controlled-access facility. The eastern boundary is Marshville, which is where the original Monroe Bypass study area boundary was drawn, and the US 74 corridor becomes rural, with few existing or projected congestion issues. To the north, the boundary would not encroach on the Goose Creek watershed or on Lake Twitty (a water supply). To the south, the boundary was drawn near existing US 74. This study area is for developing alternatives. Different study areas will be developed for specific environmental studies such as indirect and cumulative effects.

- *Known Significant Environmental Issues*
  - Other known issues include the Carolina heelsplitter, indirect and cumulative effects, community impacts, jurisdictional impacts, prime farmland, and environmental justice. Mitigation will be an important issue and should be addressed in the DEIS. Opportunities for onsite mitigation are limited in the project area.

- *Project Approach and Schedule*
  - NCTA proposes a two-year schedule. More details will be provided in February.

Q&A:

Should safety be included in purpose and need?
Not at this time. The FHWA limits the use of safety as an element of purpose and need statements unless specific data support its inclusion. In the case of the Monroe Connector/Bypass Project, a safe facility is desired, but it is not a primary element of the purpose and need for the project.

Does the emphasis on the regional nature of the route create a need to study the whole route in a cumulative impacts assessment?
A question was asked if the emphasis on the regional nature of the route would create a need to study the whole route in a cumulative effects assessment. The regional importance of the route was included to show how the route functions and the types of travelers who use the road. Improving this part of the route would be independent from other improvements made at other locations.

Does including providing a "high speed" facility in the purpose and need eliminate upgrade existing facilities alternatives?
No. In the Monroe Connector DEIS, Detailed Study Corridor (DSC) G improved a portion of existing US 74 to a high speed freeway, while still maintaining access to adjacent properties through a frontage road system. The improve existing corridor alternative will need to be considered, however, whether this alternative is reasonable and practicable would need to be addressed before including this alternative for detailed study in the DEIS. The DSC G in the Monroe Connector DEIS impacted more than 130 businesses.

Why is "maintaining access to properties along existing US 74" in the preliminary purpose and need statement?
US 74 and the development along US 74 are economically important to Union County. The road is densely developed with many types of businesses, particularly between I-485 and Monroe. Many businesses have access only to US 74. Even if interchanges were provided at major streets, access to properties between interchanges would be eliminated.

Are tolls included in the purpose and need?
Not at this time. If tolls are included as part of the purpose and need for the project, studying improving existing US 74 would be eliminated because current laws prohibit NCTA from tolling existing roads. It is anticipated that the following combinations of tolling and non-tolling alternative will be considered in the EIS: toll both Monroe Connector and Monroe Bypass, toll only Monroe Connector, and toll neither. Tolling only the Monroe Bypass will not be considered because the Mecklenburg-Union Metropolitan Planning Organization (MUMPO) Technical Coordinating Committee (TCC) has endorsed tolling the Monroe Connector, which is consistent with their LRTP. MUMPO's TCC has not yet made a decision on tolling the Monroe Bypass. The TCC was presented tolling for the Bypass as an agenda item at their January meeting and a decision is expected by the summer.

How will NCTA apply for NPDES permits?
NCTA is considering a statewide programmatic permit to apply to all NCTA projects. NCDWQ noted that there was a recent court case regarding NPDES permits in Union County and a statewide permit may be best.

Action Items for TEAC Members:

- Agencies provide comments on preliminary draft purpose and need statement
- Agencies provide comments on study area (*study area discussion to conclude in February*)
- Agencies provide comments on significant environmental issues and methodologies
- USFWS will provide NCTA with previous comments from Monroe Connector DEIS
- NCTA will include a discussion of the Monroe Section 6002 Project Coordination Plan
- NCTA will present a more detailed project schedule
- NCTA will post a map showing the new proposed study area along with the previous study areas for the Monroe Connector and the Monroe Bypass on the TEAC website

Resolutions:

- A clear action plan should be transmitted prior to each TEAC meeting so agencies know what is expected at each meeting and they can prepare appropriately.
- Email may be used as an appropriate correspondence method, keeping in mind that this correspondence can become part of the administrative record.

NORTH CAROLINA Turnpike Authority

Monroe Connector / Bypass

Mecklenburg And Union Counties
TIP Nos. R-3329 / R-2559

LOCAL OFFICIALS SCOPING KICKOFF MEETING
MEETING MINUTES
(Draft)

Date: February 9, 2007

Time: 12:30 pm

Place: Charlotte Mecklenburg Government Center, 8th Floor

Purpose: Continuation of Scoping Kickoff process for the Monroe Connector / Bypass.

Attendees:

Name	Organization	Email Address
Christy Putnam	Union County	cputnam@co.union.ns.us
Amy Helms	Union County	amyhelms@co.union.nc.us
Jim Loyd	City of Monroe	jloyd@monroenc.org
Barry Moose	NCDOT – Div 10	bmoose@dot.state.nc.us
Bjorn Hansen	Centralina Council of Government	bhansen@centralina.org
Susan Habina	Town of Indian Trail	slh@indiantrail.org
Shelley DeHart	Town of Indian Trail	srd@indiantrail.org
Timothy Gibbs	Charlotte DOT	tgibbs@ci.charlotte.nc.us
Bob Cook	MUMPO	rwcook@ci.charlotte.nc.us
Dana Stoogenke	Rocky River RPO	dstoogenkw@rockyriverrpo.org
Jason Wager	Centralina Council of Government	jwager@centralina.org
Jack Flaherty	NCDOT – Transit	jflaherty@dot.state.nc.us
Jonathan Parker	NCDOT – Planning	jhparker@dot.state.fl.us
C.J. O'Neill	Town of Matthews	cjoneill@matthewsnc.com
Jay Camp	Town of Matthews	jcamp@matthewsnc.com
Justin Krieg	Wesley Chapel	justin.krieg@wesleychapel
Dana Goins	Town of Mint Hill	dgoins@minthill@com
Wayne Herron	City of Monroe	wherron@monroenc.org
Lynne Hair	Town of Stallings	lhair@stallingsnc.org
Lynda Paxton	Town of Stallings	lpaxton@stallingsnc.org
Barbara Anne Price	Town of Stallings	Vote-4-barbara-anne@earthlink.net
Barry Mosley	MUMPO	bmosley@ci.charlotte.nc.us

Ken Trippette	CDOT Bicycle Program	ktippette@ci.charlotte.nc.us
George Hoops	FHWA	george.hoops@fhwa.dot.gov
Steve Dewitt	NCTA	steve.dewitt@ncturnpike.org
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Christy Shumate	HNTB	christy.shumate@ncturnpike.org
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Lou Raymond	PBS&J	lmraymond@pbsj.com
Craig Mesimer	PBS&J	jcmesimer@pbsj.com

Action Items:

1) Local officials will review the Draft Study Area and Preliminary Draft Purpose and Need and forward any comments on these items or any other local issues to Jennifer Harris at the North Carolina Turnpike Authority (NCTA) by February 16, 2007.

History

Following introductions, a brief project history was given by PBS&J. The Monroe Bypass was studied in the mid-90's and resulted in an approved Finding of No Significant Impact (FONSI) in 1997. In 1998 a Public Hearing was held which explained that Section A of the Bypass was being removed from the study and would be replaced by the Monroe Connector which would extend from I-485 to the Monroe Bypass. NCDOT completed the construction plans for Sections B & C and purchased required right-of-way in 2000 and 2001.

The Monroe Connector Study began in the late 90's and resulted in an approved DEIS which was signed in 2003. Five detailed study alternatives were identified in the DEIS but a preferred alternative was never identified. In 2005 the decision was made to turn this project over to the NCTA. In 2006 the approved DEIS was rescinded and the Monroe Connector and Monroe Bypass Studies were combined into one study.

Purpose and Need

The Preliminary Draft Purpose and Need (P&N) along with the previous P&N Statements prepared for the original Monroe Connector and Monroe Bypass Studies were distributed to the attendees. The original P&N Statements were similar to one another in that they each stressed the need to improve travel along US 74 in Union County to serve as an important route between the western and eastern parts of the State. US 74 also is identified as a Strategic Highway Corridor where the vision for the roadway is a freeway facility, a North Carolina Intrastate Highway and part of the Strategic Highway Network or STRAHNET. STRAHNET are roadways identified by the Department of Defense as important corridors linking important military installations and ports.

Study Area

A map of the proposed study area is attached to these minutes. Primary differences between the new study area and the area studied in the previous Monroe Connector and Monroe Bypass Studies are the Goose Creek Basin and Lake Twitty have now been excluded from the Study Area. The Study Area has also been extended southward to include Old US 74.

Known Significant Environmental Issues
Agency Comments previously submitted as part of the previous studies were distributed to the meeting attendees.

Key agency comments received during the scoping process of the Monroe Connector included:

- Disagreement with study area limits.

Key agency comments received during the DEIS review process of the Monroe Connector included:

- Concerns with the Indirect and Cumulative Impact analysis.
- Increased median width.
- Unresolved issues regarding the Carolina Heelsplitter.
- Inconsistency with local use and transportation plans.

Key agency comments received during the scoping process of the Monroe Bypass included:

- Avoid impacts to Lake Twitty.

Key agency comments received during the EA review process of the Monroe Bypass included:

- Reduction of median width to reduce impacts.

Questions and Comments offered at this point of the meeting included:
A representative from Stallings unofficially opposed the connection to US 74 near I-485 because of anticipated disruption to the Town's tax base and accessibility issues. The previous connection near Idlewild Road was preferred. Stallings also shared the location of a new school site located within their borders.

A question was asked if describing the proposed corridor as a high speed facility would eliminate looking at alternatives south of US 74 or improving existing facilities. All options will be explored as part of the study.

Project Approach
A Draft Project Coordination Plan has been prepared that oulines how NCTA will coordinate with agencies and local officials. A copy of the draft plan was presented to the attendees.

Schedule
A new Notice of Intent was issued in January 2007. This project will have an approximate 2 year schedule. A Public Workshop is tentatively scheduled for May 2007.

MEMORANDUM

To: Jennifer Harris, P.E. - NCTA

From: Carl Gibilaro, PE

CC: Christy Shumate- HNTB, Anne Redmond - HNTB, Jill Gurak - PBSJ

Date: July 30, 2007

Project: Monroe Connector / Bypass
TIP Project R-3329 / 2559, Mecklenburg and Union Counties

Re: Preliminary Summary of the Citizens Informational Workshop Comment Form

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Below is a summary of the 480 comment forms that have been received to date as a result of the June 25th and 26th Citizens Informational Workshops held for the subject project. The questions provided on the comment sheet are listed below along with the top three responses received for each question.

1. Which project development issues are important to you and your community and should be examined in this study? *These might include natural resources (protected species, streams, wetlands), neighborhoods and communities, noise, visual impacts, economic development and land use, cultural resources such as historic sites, etc.*

Top Three Responses

Number of Responses	Project Development Issue
454	Neighborhoods and Communities
229	Natural Resources
139	Land Use

**38 comment forms had no response to this question.*

2. Based on the maps displayed at the workshops, which alternative do you feel would best serve transportation needs in the US 74 corridor area? Are there additional alternatives that you think should be considered?

Of the responses received, **292** commented "Alternates 1,10,13,18 and 31 follow existing Secrest Shortcut as closely as possible, thereby reducing right of way acquisitions and cost." But many provided new route suggestions or blanket statements such as don't widen Secrest Shortcut Road or Old Charlotte Highway. Others simply stated their desire for the project to stay out of their neighborhoods.

3. What do you perceive are the transportation problems in the US 74 corridor?

Top Three Responses

Number of Responses	Transportation Problem
372	Extremely heavy traffic volume
39	Too many stop lights/traffic signal cycles
23	Too many commercial trucks

**42 comment forms had no response to this question.*

4. Do you agree with the proposed project purposes of: 1) Improving mobility, 2) Providing high-speed regional travel, and 3) Maintaining existing property access?

Top Three Responses

Number of Responses	Agrees with Project Purposes?
408	Yes
33	No response
12	No

5. When you think about the potential impacts of this project, please tell us how concerned you are with each of the following.

Impact	Very Concerned	Somewhat Concerned	Little Concern	No Concern	No Opinion
Potential impacts to the environment	**81**	56	21	11	3
Potential impacts to local resident	**130**	32	7	2	1
Potential impacts to local businesses	46	**89**	25	10	2
The construction schedule	**75**	71	24	4	2
Traffic congestion	**105**	56	12	1	2
Growth in the area	**92**	62	12	6	1
Project delay	**87**	59	13	5	5

*The number of responses received for each category are shown in the table above. The number which is in **bold** and underlined is the most common response for each impact.*

6. Do you have any questions or comments regarding charging people who choose to use this roadway a toll to help accelerate its construction and to pay for on-going operations and upkeep of the road?

Top Three Responses

Number of Responses	Questions/Comments Regarding Tolls
31	Great idea
329	I do not oppose
17	I oppose

**49 comment forms had no response to this question.*

Of the 400 responses to Question #6, 360 responses were clearly not opposed to a toll and only 17 responses specifically stated that they were against tolling. The remaining responses were not specifically against tolling but expressed other concerns such as:
1) Financial burden, 2) Will this be a Toll Road forever or is it temporary?, 3) Concerned that travelers will avoid the road to avoid having to pay toll which will negate the value, 4) Need to restrict heavy trucks to only the toll road area to avoid them using other smaller roads, 5) Great Idea but it might be tough to convince citizens to pay, 6) Discount to local residents and or senior citizens.(7) suggestions to allow residents the option to purchase monthly Electronic passes for ease of use.

7. Other comments or questions (use additional sheets if necessary).

83 comment forms did not include a response to this question. Of the answers received, there were **292** comments forms that said "take Alternate 22 and 30 off the list". This comes from residents of Bonterra Village. There were also **115** comment forms that said "take alternate 18 off the list". This comes from the residents of the Fairhaven Subdivision. Lastly, comments were expressed concerning doing proper planning to avoid another I-485 parking lot which was included on 3 forms and many said, "just do it".

We will continue to update these totals as additional comment forms are received.

Table 1: Crash Types Per Intersection

US 74 Intersection	Left Turn	Right Turn	Rear End	Run off Road & Fixed Object	Angle	Side Swipe	Other
Roosevelt Boulevard & SR 1187 (Carroll Street) – SR 1572 (Rolling Hills Drive)	0	0	16	1	2	0	0
Independence Boulevard & SR 2356 (Chambers Drive)	1	0	12	1	5	1	0
Monroe Street & SR 1762 (Bivens Street)	0	0	1	0	3	0	1
US 601-NC 200-Roosevlet Boulevard and Boyte Street	1	0	18	0	11	4	1
Roosevelt Boulevard & SR 1223 (Dickerson Boulevard)	1	2	57	2	14	5	5
US 601-Roosevelt Boulevard & SR 2100 (Franklin Street)	1	0	33	2	6	9	3
Independence Boulevard & SR 1510 (Fowler Secrest Road)- SR 1174 (John Moore Road)	0	0	19	2	5	1	2
US 601-NC 200-Roosevelt Boulevard & SR 1624 (Stafford Street exit) – Stafford Street	4	2	45	2	14	11	3
Roosevelt Boulevard & SR 1501 (Secrest Shortcut Road)	3	1	37	0	7	1	2
Roosevelt Boulevard & SR 1172 (Roland Road) – Round Table Road	0	1	12	0	10	1	0
Independence Boulevard & SR 1007-SR 1514 (Rocky River Road)	3	2	27	0	10	5	1
Roosevelt Boulevard & DR 1941 (Old Pageland-Monroe Road) – Secrest Avenue	2	0	9	0	5	3	2
US 601-NC 200-Roosevelt Boulevard & SR 2188 (Morgan Mill Road)	2	0	55	1	13	11	7
Monroe Street & DR 1758 (Main Street)	0	0	4	0	2	1	1
Independence Boulevard & SR 1008 (Indian Trail Fairview Road) – SR 1520 (Furr Road)	8	7	42	0	7	4	4
Monroe Street & SR 1754 (Forest Hill School Road)	1	0	4	2	2	0	1
Independence Boulevard & SR 3014 (Faith Church Road) – SR 1518 (Craft Road)	1	0	11	0	0	4	0
Roosevelt Boulevard & US 601-Pageland Highway	0	0	25	1	7	7	1
Independence Boulevard & SR 1367 (Unionville-Indian Trail Road)	4	3	72	2	4	5	0
US 601-Roosevelt Boulevard & Sutherland Avenue	1	0	31	2	8	2	3
Roosevelt Boulevard & SR 1169 (Williams Road)	0	0	55	0	5	3	4
US 601-Roosevelt Boulevard & SR 1751 (Walkup Avenue)	4	2	28	1	14	8	4
Roosevelt Boulevard & Williams Road exit – Hanover Drive	4	1	37	0	4	12	0
TOTAL	**41**	**21**	**650**	**19**	**158**	**98**	**45**

Source: NCDOT Traffic Engineering Accident Analysis System Intersection Analysis Report (November 1, 2003 through October 31, 2006).

Table 2: Intersection Crash Data

US 74 Intersection	No. of Crashes	Crash Rate	No. of Injury Crashes	No. or Property Only Crashes
Roosevelt Boulevard & SR 1187 (Carroll Street) – SR 1572 (Rolling Hills Drive)	19	38.52	5	14
Independence Boulevard & SR 2356 (Chambers Drive)	20	52.89	3	17
Monroe Street & SR 1762 (Bivens Street)	5	16.29	3	2
US 601-NC 200-Roosevlet Boulevard and Boyte Street	35	57.64	17	18
Roosevelt Boulevard & SR 1223 (Dickerson Boulevard)	86	166.95	26	60
US 601-Roosevelt Boulevard & SR 2100 (Franklin Street)	54	133.52	16	38
Independence Boulevard & SR 1510 (Fowler Secrest Road)- SR 1174 (John Moore Road)	29	66.15	8	21
US 601-NC 200-Roosevelt Boulevard & SR 1624 (Stafford Street exit) – Stafford Street	81	132.21	32	49
Roosevelt Boulevard & SR 1501 (Secrest Shortcut Road)	51	84.15	15	36
Roosevelt Boulevard & SR 1172 (Roland Road) – Round Table Road	24	219.00	4	20
Independence Boulevard & SR 1007-SR 1514 (Rocky River Road)	48	107.61	16	32
Roosevelt Boulevard & DR 1941 (Old Pageland-Monroe Road) – Secrest Avenue	21	66.07	9	12
US 601-NC 200-Roosevelt Boulevard & SR 2188 (Morgan Mill Road)	89	135.57	29	60
Monroe Street & DR 1758 (Main Street)	8	24.83	3	5
Independence Boulevard & SR 1008 (Indian Trail Fairview Road) – SR 1520 (Furr Road)	72	104.28	19	53
Monroe Street & SR 1754 (Forest Hill School Road)	10	36.50	4	6
Independence Boulevard & SR 3014 (Faith Church Road) – SR 1518 (Craft Road)	16	31.06	7	9
Roosevelt Boulevard & US 601-Pageland Highway	41	86.00	12	29
Independence Boulevard & SR 1367 (Unionville-Indian Trail Road)	90	153.49	31	59
US 601-Roosevelt Boulevard & Sutherland Avenue	47	119.12	22	25
Roosevelt Boulevard & SR 1169 (Williams Road)	67	135.85	23	44
US 601-Roosevelt Boulevard & SR 1751 (Walkup Avenue)	61	110.21	18	43
Roosevelt Boulevard & Williams Road exit – Hanover Drive	58	117.60	20	38

Source: NCDOT Traffic Engineering Accident Analysis System Intersection Analysis Report (November 1, 2003 through October 31, 2006).