

1. PURPOSE AND NEED FOR ACTION



This section describes the proposed action, the purpose of the project, and the need for the project. Updates to supporting information since the Final EIS was published are described, including new Census data, updated land use plans, and recent improvements along existing US 74. The reader is referred to the Final EIS for additional data and information that have not changed since the Final EIS.

The purpose and need statement for the project was originally developed in 2007 and documented in the “Final Statement of Purpose and Need for the Monroe Connector/Bypass” (PBS&J, February 2008), the Draft EIS (March 2009), and the Final EIS (May 2010). Although supporting information has been updated, the purpose and need for the project remains unchanged.

In conclusion, based upon a review of new information and public and agency comments received to date, the purpose and need for the project remains unchanged.

1.1 PROPOSED ACTION

As stated in the Final EIS Section 1.1.1, the NCDOT¹, in cooperation with the FHWA, proposes to construct a project known as the Monroe Connector/Bypass, which would be a controlled-access toll road extending from US 74 near I-485 in Mecklenburg County to US 74 between the towns of Wingate and Marshville in Union County, a distance of approximately 20 miles.

Figure 1-1 shows the project study area.

The proposed project begins and ends on existing US 74 in order to provide continuity for the US 74 corridor. On the western end, the project would begin at I-485, another controlled-access facility. On the eastern end, the proposed project would terminate on US 74 between the towns of Wingate and Marshville. This is where existing and projected traffic volumes decrease and the study area transitions to a more rural character.

The project is included in the Charlotte Regional Transportation Planning Organization’s (CRTPO) 2035 Long-Range Transportation Plan (LRTP) and its Transportation Improvement Program (TIP). The Project is included in the NCDOT 2012-2020 State TIP (STIP) as Project R-3329 (Monroe Connector) and Project R-2559 (Monroe Bypass) as a toll facility. Previously, the Final EIS reported that project was in the NCDOT 2009-2015 STIP. Similar to previous state and local TIPs and the conclusion in the Final EIS, current fiscally constrained planning documents do not have sufficient funds available from traditional sources in the foreseeable future to construct all priority projects in the state.

1.1.1 EVALUATION OF NEED FOR PROPOSED ACTION

FHWA and NCDOT have re-evaluated the primary needs for the proposed action and determined that those needs have not changed since the Draft EIS and Final EIS.

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 port at Wilmington (North Carolina’s largest port). In addition, US 74 is the primary transportation connection between Union County, the fastest growing county in North Carolina between 2000 and 2010, and

¹ On July 27, 2009, NCTA became a division of NCDOT (NC Session Law 2009-343). Where applicable, references to NCDOT as a separate agency have been removed.

Mecklenburg County/City of Charlotte, the economic hub of the region. Although Union County is the fastest growing county in the State, it is the only county adjacent to Mecklenburg County that does not have a high-speed interstate-type 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.

Because of its statewide and regional importance, NCDOT designated the US 74 corridor as a Strategic Highway Corridor (SHC) and it is also designated as part of the North Carolina Intrastate System. Consistent with local planning documents, these state designations call for this corridor to serve high-speed regional travel. The SHC designation specifically calls for a freeway. The North Carolina Intrastate System designation calls for a multi-lane facility with access control and grade separations (if warranted by traffic volumes).

Finally, the US 74 corridor is designated as part of the National Highway System Strategic Highway Network (STRAHNET), which includes roads that provide defense access, continuity, and emergency capabilities for movements of military personnel and equipment.

Since the Final EIS, the existing roadway corridor has been reevaluated and the factors supporting the needs for the proposed action have been updated. These are summarized below, with more details provided in **Section 1.2.4**.

Existing and Projected Roadway Capacity Deficiencies. Currently, US 74 in the project study area is a four- to six-lane arterial roadway with speed limits that range from 35 miles per hour (mph) to 55 mph along the corridor. As shown in **Table 1-1**, the weighted average posted speed limit is 49 mph. There is limited control of access along the facility; meaning there are numerous driveway access points, turning points and intersections, including 27 at-grade signalized intersections. Thus, traffic signals and the lack of access control cause delay and congestion during typical week day peak travel times.

TABLE 1-1: Speed Limits on Existing US 74

Speed Limit (mph)	US 74 Segment from West to East	Approximate Segment Length (miles)
55	I-485 to Fowler Secrest Road (SR 1754)	8.2
45	Fowler Secrest Road to US 601 (Pageland Highway)	5.5
55	US 601 (Pageland Highway) to east of Presson Road	3.0
45	East of Presson Road to Wingate City Limit	0.2
35	Wingate City Limit to Old Highway 74 (SR 1740)	1.4
45	Old Highway 74 (SR 1740) to Olde Country Lane	0.7
55	Olde Country Lane to 0.3 mile west of Marshville Town Limit	1.5
45	0.3 miles west of Marshville Town Limit to Marshville Town Limit	0.3
35	Within Marshville Town Limit	2.5
49	Weighted average speed limit*	23.3

Source: *Existing and Year 2030 No-Build Traffic Operations Technical Memorandum* (PBS&J, March 2008).

*Weighted average speed limit = sum of individual segment lengths x speed limits divided by total length

In the Final EIS, traffic simulation software was used to estimate that average speeds on existing US 74 through the project area range from 20 to 30 mph during peak hours, and were expected to decline to 20 mph by 2030 (Final EIS Section 1.1.2).

Since 2007, NCDOT implemented several measures to improve traffic flow along existing US 74 and partially mitigate congestion (listed in **Table 2-2**), as recommended in the July 2007 *US 74 Corridor Study* (Stantec). However, there is still congestion along the corridor during a typical day. As described in greater detail in **Section 1.2.4**, current real time travel information available from INRIX, Inc., which was validated through travel time field surveys, shows that average travel speeds during peak hours are still lower than posted speed limits.

Based on midweek traffic volumes for all of 2011 and 2012 and August 2013, the average peak period travel speed through the corridor ranges from 37 mph to 41 mph in the westbound direction, and 42 mph to 45 mph in the eastbound direction. These average speeds compared to the corridor weighted average posted speed limit of 49 mph show that congestion exists along US 74 today, and it will only get worse because traffic volumes are expected to increase in the future due to projected growth in Union County.

In summary, real-time travel flow information demonstrates that US 74 currently experiences congestion during peak periods of the day, and the corridor does not currently operate as a high-speed facility (average speed of 50 mph or greater), nor will it in the future without substantial improvements.

1.1.2 PURPOSE OF PROPOSED ACTION

Based on NCDOT's review of changes and updates to project information, the purpose of the proposed action has not changed since the Draft EIS and Final EIS. The purpose of the project is to improve mobility and capacity within the project study area by providing a facility for the US 74 corridor from near I-485 in Mecklenburg County to between the towns of Wingate and Marshville in Union County that allows for high-speed regional travel consistent with the designations of the North Carolina SHC program and the North Carolina Intrastate System, while maintaining access to properties along existing US 74.

1.2 PROJECT SETTING AND HISTORY

The project setting, the existing road network, and public and agency involvement in the development of the purpose and need are discussed in more detail in Section 1.4 of the Draft EIS. Changes and updates to these sections are noted in the summary below.

Project Setting. There are no changes to the project setting described in the Draft EIS and referenced in the Final EIS. The majority of the project study area is within Union County, with a portion adjacent to (and northwest of) I-485 within Mecklenburg County. Portions of the project study area are within the jurisdictions of the Towns of Mint Hill, Matthews, Stallings, Hemby Bridge, Indian Trail, Wingate, and Marshville; the Village of Lake Park; and the City of Monroe.

Public and Agency Involvement in Development of the Purpose and Need. There are no updates to the history of public and agency involvement presented in the Draft EIS. A formal scoping letter was distributed on January 5, 2007 to solicit early coordination and input (Appendix A-3 of the Draft EIS). Purpose and need also was discussed at five coordination meetings with environmental resource and regulatory agencies in 2007. Public comment was

solicited at the first series of Citizens Informational Workshops, held in June 2007. A majority of the citizens providing written comments supported the use of tolls and the purpose of the project.

1.2.1 TRANSPORTATION SYSTEMS

The project's designation in various national and statewide networks and its relationship to other transportation modes are discussed in more detail in Section 1.5 of the Draft EIS. There are no changes or updates to these sections since the Final EIS.

1.2.2 SOCIAL AND ECONOMIC CONDITIONS

Section 1.6 of the Draft EIS discusses population and employment, commuting patterns, and growth and development patterns. This information from the Draft EIS is summarized in Section 1.1.6 of the Final EIS. Since that time, 2010 Census data has become available. It is presented in **Appendix D** and summarized below.

Regional Context. There are no changes to the regional context since the Final EIS, with the exception of an expansion of the MUMPO planning area. The project study area is part of the MUMPO planning area, which at the time of the Final EIS included all of Mecklenburg County and the western and central portions of Union County. MUMPO's governing body approved a new planning area boundary on July 17, 2013 due to growth of the Charlotte urbanized area. The new MUMPO planning boundary extends to include most of Iredell County. As of September 2013, MUMPO is now known as the Charlotte Regional Transportation Planning Organization (CRTPO). The Charlotte-Mecklenburg County region is the commercial capital of the Carolinas, and Charlotte is the largest city in North Carolina.

Population and Employment. Since the Final EIS, 2010 Census data became available, and the same trends that occurred from 1990 to 2000 continue from 2000 to 2010. As discussed in Section 1.3.1.1 of the Final EIS, the population of the Demographic Study Area (33 Union County and 6 Mecklenburg County Census Block Groups surrounding the project study area) grew 49.0 percent between 1990 and 2000. Based on 2010 Census data, the Demographic Study Area grew another 49.3 percent between 2000 and 2010. Union County as a whole grew 46.9 percent from 1990 to 2000, and 62.8 percent from 2000 to 2010. Union County had the highest percentage of growth among all North Carolina counties from 2000 to 2010. The population and employment of both Mecklenburg and Union Counties are expected to increase through the year 2030. Additional information on socioeconomic characteristics of the project study area is provided in **Section 4.1.1**. Growth trends are discussed in more detail in Section 1.6 of the *Indirect and Cumulative Effects Quantitative Analysis Update* (Michael Baker Engineering, Inc., November 2013). Union County has exhibited strong growth in the past, and the factors driving those trends are poised to continue attracting growth to Union County regardless of whether the Monroe Connector/Bypass is constructed.

Commuting Patterns. Based on 2006 data reported in the Draft EIS and Final EIS, 61 percent of Union County's residents commuted to outside Union County for work. Since the Final EIS, updated information is available regarding place of work. Based on commuting data from the US Census Bureau for 2006-2010, approximately 50 percent of workers living in Union County commute outside of Union County for work. Of the workers that commute outside of Union County, approximately 85 percent commute to Mecklenburg County.

According to the 2007-2011 American Community Survey (ACS) five-year estimates, over 87 percent of Union County workers (that work outside the home) drive alone to work.

Approximately ten percent travel to work in a carpool (mostly 2-person carpools), and only around one percent use public transportation, bicycle, or walk to work. In addition, approximately 46 percent of workers residing in Union County travel 30 or more minutes to work.

Growth and Development Patterns. There are no substantial changes to regional growth and development patterns since the Final EIS. According to the CRTPO *2035 LRTP*, the southern and eastern portions of Mecklenburg County, which is the area along the Union County line, is expected to be one of the most rapidly growing areas in the region.

1.2.3 TRANSPORTATION AND LAND USE PLANS

As discussed in Section 1.7 of the Draft EIS, the transportation needs and goals of the Mecklenburg-Union County region relating to roadways are addressed in three inter-related plans: the NCDOT *2009-2015 STIP*, the CRTPO *2030 LRTP*, and the *Mecklenburg-Union Thoroughfare Plan*. The proposed action is included in each of these plans in a manner that is consistent with the SHC and the North Carolina Intrastate System visions for the facility and corridor. Each of these plans has been updated, or is currently being updated, as described below.

Between the Draft EIS and Final EIS, the CRTPO *2030 LRTP* was updated to 2035. The Monroe Connector/Bypass project is included in the CRTPO *2035 LRTP* as a regionally significant project and is ranked as the CRTPO's number one project. The project is designated as a toll facility in the *2035 LRTP*, and the design concept and scope included in the *2035 LRTP* are consistent with the Preferred Alternative.

Since the Final EIS, the STIP has been updated to the *2012-2020 STIP*. The project is included in this STIP as a NCTA project.

The most recent Mecklenburg-Union Thoroughfare Plan (2004) will be replaced by the Comprehensive Transportation Plan (CTP), in accordance with NC General Statute 136-66.2. A draft version of the CTP dated June 2013 is available. The Monroe Connector/Bypass is included on the Highway Map of the Draft CTP as a recommended freeway (CRTPO Web site: www.mumpo.org/plans-programs/comprehensive-transportation-plan).

Land use plans are discussed in Section 3.3 of the Draft EIS and Section 1.3.1.3 of the Final EIS. Several local governments have updated their land use plans and/or other planning documents since the Final EIS. The Town of Fairview adopted a new land use plan in 2010 that added some commercial nodes at major intersections in the project study area, but otherwise the updated land use plans do not include major changes in the project study area. Changes in growth expectations, land use, and zoning based on interviews with local planners were incorporated into the updated quantitative assessment of indirect and cumulative effects, as summarized in Section 4.5.

1.2.4 ROADWAY CONDITIONS AND OPERATIONS

Section 1.8 of the Draft EIS discusses roadway conditions and operations along existing US 74 within the project study area. There were no changes to this information in the Final EIS. Since the Final EIS was published in May 2010, additional improvements have been implemented by NCDOT along the existing US 74 corridor, including signal timing optimization, signal phasing modification, increased turn lane storage lengths, and lane assignment modifications. These

improvements, many of which implement the recommendations of the *US 74 Corridor Study* (Stantec, July 2007), are discussed in **Section 2.4**.

Due to improvements along the US 74 corridor since the Final EIS was published, the previous roadway conditions presented in Section 1.8 of the Draft EIS (and summarized in Section 1.1.2 and Section 1.1.8 of the Final EIS) have been updated to more accurately reflect existing conditions. Updated information on existing and projected roadway conditions and operations is presented in the following sections.

Existing US 74 Characteristics. US 74, also known as Independence Boulevard in Mecklenburg County and Roosevelt Boulevard in Union County, is a four- to six-lane highway within the project study area, with 27 at-grade signalized intersections, additional unsignalized intersections, and numerous commercial and residential driveway connections. The traffic signals are shown in **Figure 1-1**. The Final EIS reported 26 signalized intersections, but this number has been updated to include a new signal at the entrance to the Poplin Place Shopping Center (Wellness Boulevard) in Monroe. Traffic signal spacing ranges from less than ¼ mile to a maximum of 2½ miles. The characteristics of US 74 discussed in Section 1.8.1 of the Draft EIS remain valid, except for the changes described above.

The speed limits posted for US 74 within the project study area are shown in **Table 1-1**. Posted speed limits were verified in May 2013, and there have been no changes since the Final EIS.

Travel Times Along the US 74 Corridor. Travel times are discussed in Section 1.8.2 of the Draft EIS and summarized in the Final EIS based on the *Existing and Year 2030 No-Build Traffic Operations Technical Memorandum* (PBS&J, March 2008). The Draft EIS and Final EIS reported that, based on traffic simulation computer models (Sim Traffic), average travel speeds in 2007 on US 74 in the project study area were estimated to range from approximately 20 mph to 30 mph during the peak hour, and were expected to decline through 2030.

To account for improvements to the US 74 corridor since the Final EIS was published (see **Section 2.4** for a description of these improvements), FHWA and NCDOT collected new travel time information to update travel performance along the existing corridor. The update includes travel time runs conducted along the US 74 corridor in March 2013, and the use of a larger set of traffic flow information available from INRIX, Inc. INRIX (www.inrix.com) is a company that provides real-time, historical, and predictive traffic flow information based on blending real-time road sensor data with real-time data points from GPS-enabled vehicles and mobile devices. The results are described below.

The results of the travel time runs conducted along the corridor in March 2013 are documented in the memorandum titled *US 74 Corridor Travel Time Comparison* (HNTB, October 2013), which is incorporated by reference and available for review on the project website. For these travel time runs, US 74 through the project study area was driven eastbound and westbound on midweek days in March 2013 for the AM (6:30-9:00 AM), noon (11:30 AM-1:30 PM), and PM (4:00-6:00 PM) peak periods. The travel time runs were conducted on midweek days (Tuesday-Thursday) to represent average weekday traffic conditions since conditions on Mondays and Fridays typically have higher variability. The travel time runs were conducted based on standards published by the Institute of Transportation Engineers (ITE) (*Manual of Transportation Engineering Studies, 2nd Edition*, November 2010) and FHWA (*FHWA Travel Time Data Collection Handbook*, March 1998). Based on these field travel time runs, corridor average travel speeds are approximately 40 mph eastbound and westbound during all three peak periods.

The March 2013 travel time runs were compared to INRIX data to determine if INRIX data could be used to describe existing conditions for a broader set of time periods. INRIX data was obtained for segments along the corridor for the same time periods as the field travel time runs to provide for a direct comparison. Combining the corridor segment data, INRIX data results show average travel speeds of approximately 44 mph eastbound and westbound during all three peak periods. In comparison to the field travel time runs, INRIX data generally shows slightly faster average travel speeds and slightly shorter average travel times. Therefore, average speeds and travel times based on INRIX data are deemed reasonable to simulate existing conditions, with the speeds reported in INRIX likely being equal to or slightly faster than actual driver experience.

INRIX data was then obtained and analyzed for each midweek day for all of 2011, all of 2012, and for August 2013. Based on a review of the data, the peak periods are lunch and evening (PM) for eastbound travel on US 74, and morning (AM) and evening (PM) for westbound travel.

Table 1-2 presents the results for eastbound peak hour travel speeds compared to speed limits, and **Table 1-3** presents the results for westbound peak hour travel speeds. In order for the speed limits to match up with the segment data provided by INRIX, a weighted average speed limit had to be calculated for the posted speed limits between US 601 (Pageland Highway – the easternmost intersection of US 74 and US 601 east of Monroe) and the easternmost segment within the Marshville town limit. It should be noted that US 74 east of US 601 (Pageland Highway) is where the corridor begins to transition to a more rural character and traffic volumes are lower than the more urban/suburban segments of US 74 to the west that comprise the majority of the corridor.

TABLE 1-2: Peak Hour Speeds Along US 74 Eastbound (2011, 2012, August 2013)

Approx. Length (miles)	Eastbound US 74 Segments (from west to east)	Speed Limit (mph)	Weighted Avg Speed Limit to Match INRIX Segments (mph)	2011 Peak Hour Avg Speed (mph)		2012 Peak Hour Avg Speed (mph)		August 2013 Peak Hour Avg Speed (mph)	
				Lunch	PM	Lunch	PM	Lunch	PM
8.2	I-485 to Fowler Secret Road (SR 1754)	55	55	46	40	45	40	45	40
5.5	Fowler Secret Road to US 601 (Pageland Hwy) (easternmost intersection of US 74 and US 601 east of Monroe)	45	45	35	38	37	39	38	38
3.0	US 601 (Pageland Hwy) to east of Presson Road	55	46	47	46	48	47	49	48
0.2	East of Presson Road to Wingate City Limit	45							
1.4	Wingate City Limit to Old Highway 74 (SR 1740)	35							
0.7	Old Highway 74 (SR 1740) to Olde Country Lane	45							
1.5	Olde Country Lane to 0.3 mile west of Marshville Town Limit	55							
0.3	0.3 miles west of Marshville Town Limit to Marshville Town Limit	45							
2.5	Within Marshville Town Limit	35							
23.3	Corridor Weighted Average Speed (mph)		49	44	42	44	43	45	43

TABLE 1-2: Peak Hour Speeds Along US 74 Eastbound (2011, 2012, August 2013)

Approx. Length (miles)	Eastbound US 74 Segments (from west to east)	Speed Limit (mph)	Weighted Avg Speed Limit to Match INRIX Segments (mph)	2011 Peak Hour Avg Speed (mph)		2012 Peak Hour Avg Speed (mph)		August 2013 Peak Hour Avg Speed (mph)	
				Lunch	PM	Lunch	PM	Lunch	PM
Comparison - Average Travel Speeds to Speed Limits									
I-485 to Fowler Secret Road (SR 1754)			-9 to -15 mph	below speed limit					
Fowler Secret Road to US 601 (Pageland Hwy)			-6 to -10 mph	below speed limit					
US 601 (Pageland Hwy) to within Marshville			+3 to 0 mph	about/slightly above speed limit					
OVERALL CORRIDOR			-4 to -7 mph	below speed limit					

Source: INRIX, Inc.

TABLE 1-3: Peak Hour Speeds Along US 74 Westbound (2011, 2012, August 2013)

Approx. Length (miles)	Eastbound US 74 Segments (from east to west)	Speed Limit (mph)	Weighted Avg Speed Limit to Match INRIX Segments (mph)	2011 Peak Hour Avg Speed (mph)		2012 Peak Hour Avg Speed (mph)		August 2013 Peak Hour Avg Speed (mph)	
				AM	PM	AM	PM	AM	PM
2.5	Within Marshville Town Limit	35	46	37	38	38	39	40	41
0.3	0.3 miles west of Marshville Town Limit to Marshville Town Limit	45							
1.5	Olde Country Lane to 0.3 mile west of Marshville Town Limit	55							
0.7	Old Highway 74 (SR 1740) to Olde Country Lane	45							
1.4	Wingate City Limit to Old Highway 74 (SR 1740)	35							
0.2	East of Presson Road to Wingate City Limit	45							
3.0	US 601 (Pageland Highway) to east of Presson Road	55							
5.5	Fowler Secret Road to US 601 (Pageland Highway)	45	45	38	37	39	39	39	36
8.2	I-485 to Fowler Secret Road (SR 1754)	55	55	38	43	41	44	40	42
23.3	Corridor Weighted Average Speed (mph)		49	37	39	39	41	40	40
Comparison - Average Travel Speeds to Speed Limits									
Within Marshville to US 601 (Pageland Hwy)			-5 to -9 mph	below speed limit					
US 601 (Pageland Hwy) to Fowler Secret Road			-6 to -9 mph	below speed limit					
Fowler Secret Road to I-485			-11 to -17 mph	below speed limit					
OVERALL CORRIDOR			-8 to -12 mph	below speed limit					

Source: INRIX, Inc.

Table 1-2 and Table 1-3 show that the majority (60 percent) of the corridor (from I-485 to US 601 (Pageland Highway – east of Monroe)) operates substantially below the posted speed limits, both eastbound and westbound during all peak periods. For the portion of the corridor east of US 601 (Pageland Highway), eastbound operates at or slightly above the weighted average posted speed limit, while westbound operates at 5-9 mph below the posted speed limit. All speeds are still below the desired 50 mph.

For the overall corridor (Marshville to I-485), the weighted average posted speed limit is 49 mph. Eastbound US 74 weighted average travel speeds range from 42-45 mph (4-7 mph below weighted average speed limit), and westbound US 74 weighted average travel speeds range from 37-41 mph (8-12 mph below weighted average speed limit).

INRIX data can be graphically illustrated using a software tool (Regional Integrated Transportation Information System [RITIS]) from the University of Maryland’s Center for Advanced Transportation Technology Lab (CATT Lab) (RITIS Web site: <http://vpp.ritis.org>).

Exhibits 1-1 through 1-4 are screenshots from the RITIS software tool that graphically illustrate the August 2013 average operating speeds (in mph) summarized in Table 1-2 and Table 1-3. Green lines in the exhibits correspond to speeds of 49 mph or greater. Yellow, red, and orange colors designate slower operating speeds.

Exhibit 1-1: Average Operating Speeds for US 74 Eastbound (August 2013 Lunch Peak)

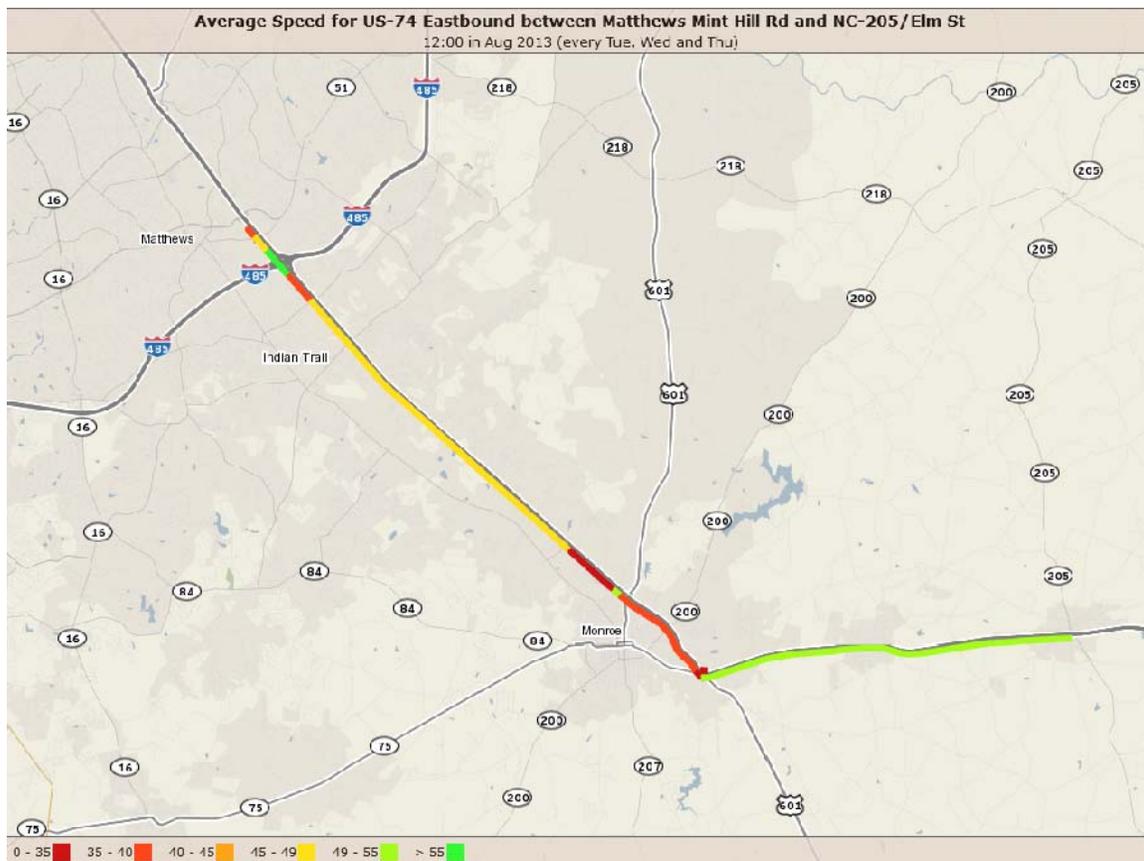


Exhibit 1-2: Average Operating Speeds for US 74 Eastbound (August 2013 PM Peak)

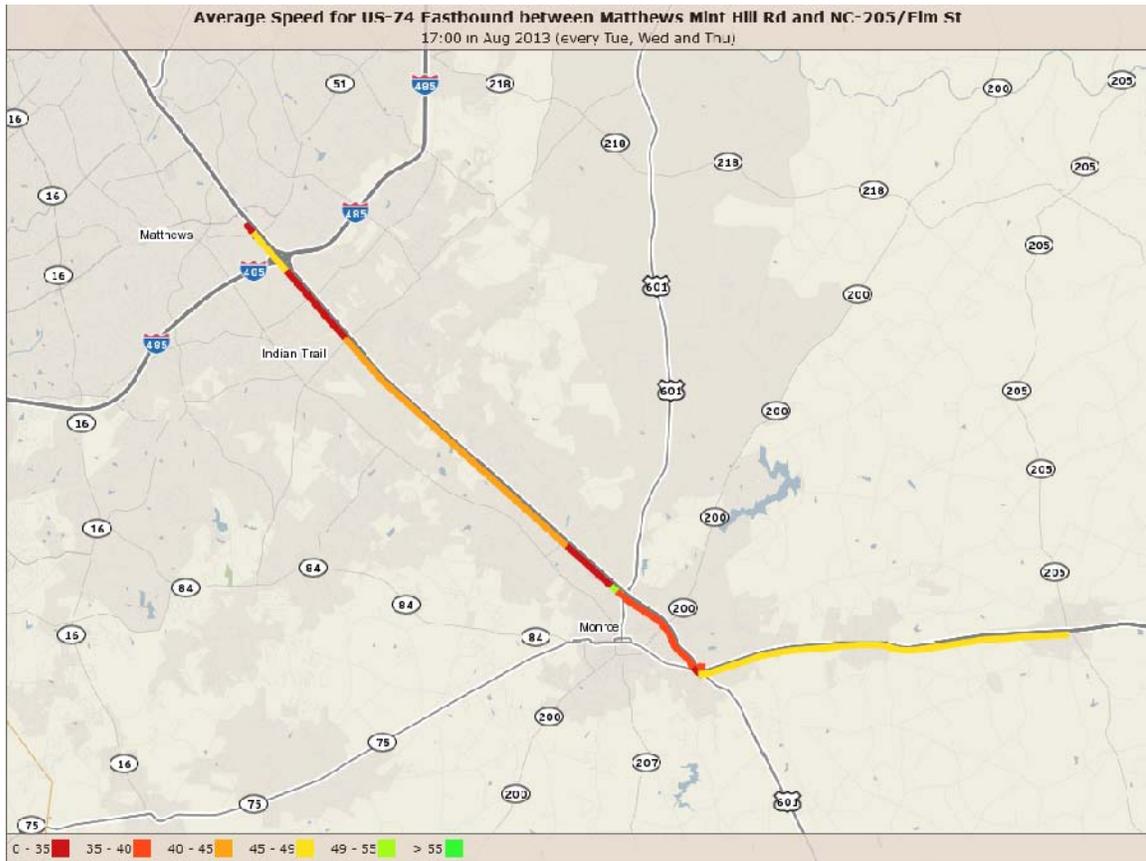


Exhibit 1-3: Average Operating Speeds for US 74 Westbound (August 2013 AM Peak)

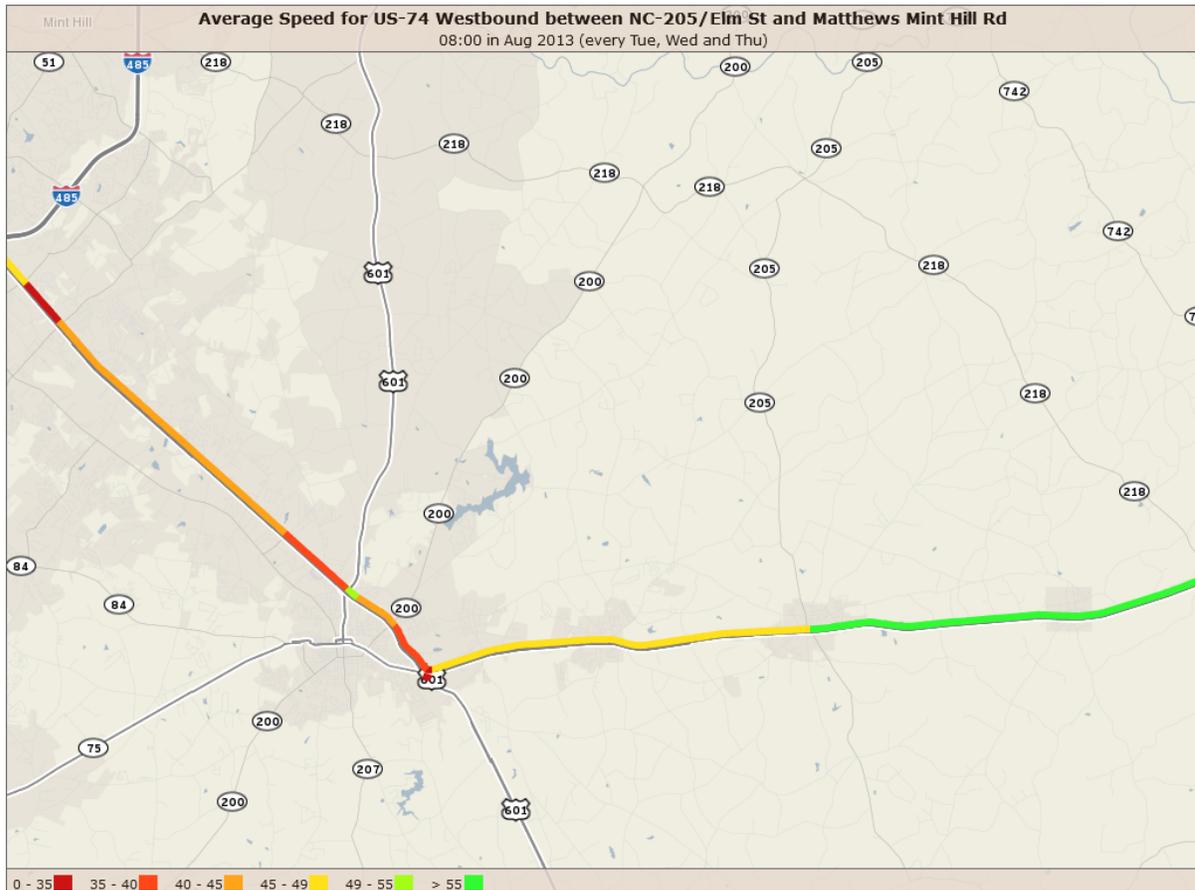
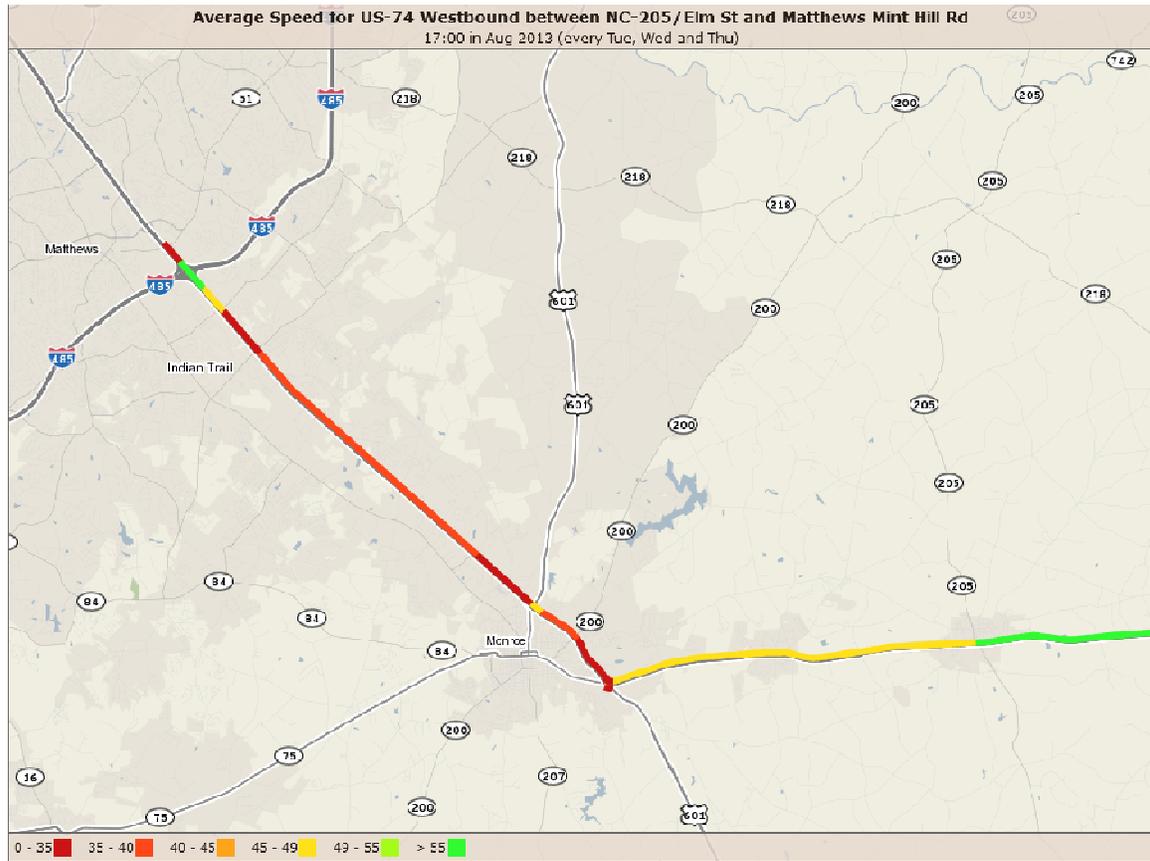


Exhibit 1-4: Average Operating Speeds for US 74 Westbound (August 2013 PM Peak)



While intersection and corridor improvements along existing US 74 (Table 2-2) have been beneficial, present day operating speeds are still substantially less than desirable. Adding lanes to the current facility would likely have little impact on the operating speeds because the frequent intersections and numerous driveway access points are two controlling features of the facility that limit the ability to raise the posted and operating speeds. The FHWA *Benefits of Access Management Brochure* (FHWA Web site: http://ops.fhwa.dot.gov/access_mgmt/docs/benefits_am_trifold.pdf) states that for every 10 driveway access points per mile, the operating speed is decreased on average by 2.5 mph, up to a maximum of a 10 mph reduction. The same brochure provides a table on the impact signal spacing has on travel time, reproduced as Table 1-4.

TABLE 1-4: Impact of Signal Spacing on Travel Time

Signals Per Mile	Increase in Travel Time (%)
2	--
3	9
4	16
5	23
6	29
7	34
8	39

Source: FHWA *Benefits of Access Management Brochure* (FHWA Web site: http://ops.fhwa.dot.gov/access_mgmt/docs/benefits_am_trifold.pdf)

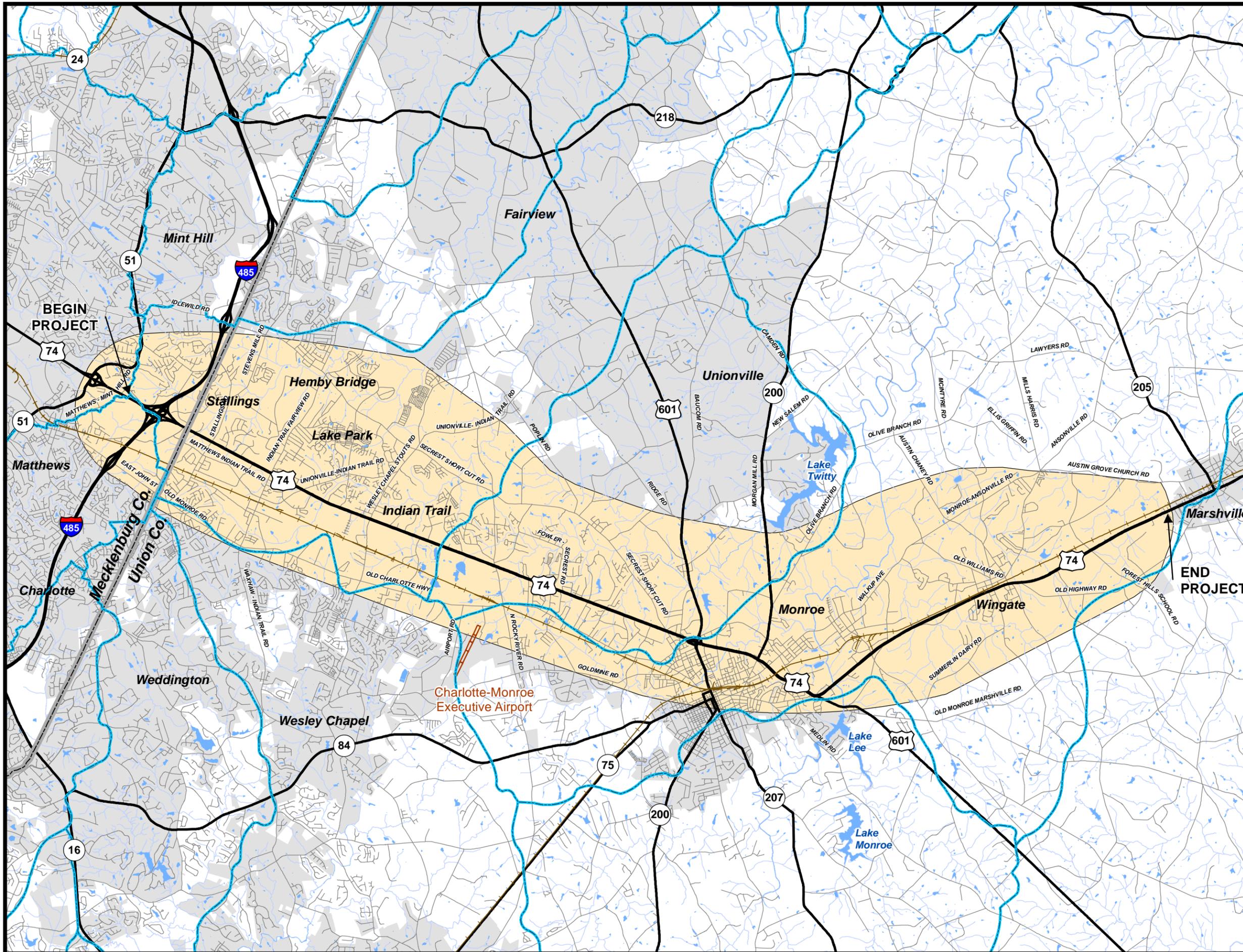
In regards to driveway spacing, in the westbound direction, the corridor has four one-mile segments with 10-19 driveways, and six one-mile segments with 20-29 driveways; having an impact of an approximately 2.5 mph reduction and a 5.0 mph reduction in operating speeds on those segments, respectively. In the eastbound direction, the corridor has nine one-mile segments with 10-19 driveways, two one-mile segments with 20-29 driveways, and one one-mile segment with 30-39 driveways; having an impact of an approximately 2.5 mph, a 5.0 mph, and a 7.5 mph reduction in operating speeds on those segments, respectively.

In regards to traffic signals, the two densest areas of traffic signals can be seen on **Figure 1-1**, and are from Fowler Secrest Road east to Secrest Shortcut Road (3.5 traffic signals per mile), and from Stafford Road just east of US 601 North to Campus Park Drive just west of US 601 South (3.7 traffic signals per mile). The impact of this spacing places an extra 9-16 percent travel time on corridor users.

Increasing traffic volumes also will negatively impact operating speeds along existing US 74. Since traffic volumes are projected to continue to increase through 2035, the average travel speed along existing US 74 will decline as traffic volumes increase due to anticipated population and employment growth in the region. Based on 2008 and 2035 No-Build traffic forecasts (HNTB, March 2010), average volumes along the US 74 corridor are projected to increase approximately 34 percent.

In conclusion, even with improvements implemented along US 74 since the Final EIS, average travel speeds along the US 74 corridor are still below 50 mph. Conditions are not expected to improve in the future as traffic volumes increase; therefore average travel times in 2035 are expected to be longer and average travel speeds are expected to decrease compared to existing conditions, supporting the need for the project.

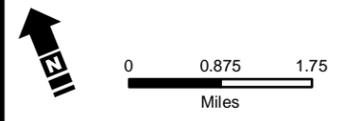
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- Legend**
- Project Study Area
 - Municipal Limits
 - Watershed Basin
 - Lakes
 - Streams
 - Railroad



Source: Mecklenburg County and Union County GIS.
Map Printed May 2013.



STIP PROJECT
NO. R-3329/R-2559
Mecklenburg County and Union County

**MONROE CONNECTOR/
BYPASS**

**PROJECT STUDY
AREA**

Figure 1-1