Chapter 2 — Area Dynamics

The land use and transportation dynamics surrounding western Forsyth County and the portion of the Village of Clemmons in the vicinity of the Peace Haven Road/Styers Ferry Road Connector study area results from its rural heritage and access to regional roadways. The area continues to grow, and as a result, continues to transform from its agricultural roots to a collection of residential neighborhoods of varying age surrounded by service retail, schools, and churches. Balancing the transportation needs of such an area requires a thorough understanding of what has been accomplished in the past, what the conditions are today, and what needs to be achieved in the future. The following chapter presents an overview of the current land use considerations and a summary of the environmental, historic, and social resources within the study area. The chapter also reviews the existing transportation network and assesses its performance based on safety and mobility. Analysis by the project team and information provided through public outreach and the involvement of the Advisory Committee all served as the basis for this chapter. These existing conditions directly inform the future conditions detailed in Chapter 3 and provide a base level of measure from which to the alternative corridors and selected conceptual design.

Land Use Considerations

The cyclical influence of land use patterns and transportation systems is well documented. Elements of transportation – including roads, sidewalks, and bicycle facilities – can impact how land is developed in terms of type and density. Further, where land uses fall and how they are distributed inevitably impact decisions regarding where people travel and how transportation facilities are prioritized. For instance, residents have expressed concern that the eventual completion of the Connector will attract commercial uses along the corridor.

Because of this relationship between land use planning and transportation systems, the Peace Haven Road/Styers Ferry Road Connector Study must forward appropriate strategies that protect the residential integrity of the land along the preferred corridor. While the design of the roadway as a minor thoroughfare and access management restrictions will go a long way in ensuring the corridor remains residential at heart, certain land use tools may need to be employed that protect the mobility, safety, and development integrity of the corridor.

Existing Land Use

Existing land use within the study area is characterized by residential uses, including newer neighborhoods such as Springfield Farms, older neighborhoods, and rural homes not within an existing subdivision. These residential uses are surrounded by working farms and open fields. Commercial land uses have located where transportation access is greatest (near interchanges with US 421 and I-40) as well as near strategic crossroads (intersection of Lewisville Clemmons Road and Peace Haven Road). Commercial land uses also extend south along Lewisville-Clemmons Road from US 421.

Residential and commercial land uses in the study area are complemented by a variety of civic land uses, including numerous churches and cemeteries as well as West Forsyth High School, Southwest Elementary School, the Montessori School, and the West Forsyth Family YMCA. In addition, a few properties in the vicinity of the study area have been surveyed for potential historic significance. These properties are detailed later in this chapter.

The extensive growth in Clemmons and western Forsyth County is well documented. The North Carolina Center for Statistics reports population growth in Clemmons of 130% between 1990 and 2000. The growth is evident in both the number of new homes in the area and in the stores and restaurants that line the commercial corridors. Zoning in the area has laid the framework for residential growth. As shown in Figure 2.1, most of the study area is zoned for residential homes on large lots, including areas west of Lewisville-Clemmons Road. Locations east of Lewisville-Clemmons are zoned to accommodate relatively more dense detached homes. Zoning in the area supports the County's growth management plan, which except for areas south of I-40 along Lewisville-Clemmons Road and in the vicinity of Village Hall, calls for suburban neighborhoods.
Preliminary Environmental and Cultural Screening

Transportation projects can impact the natural environment and disrupt communities even as they improve traffic mobility. Only through early awareness and responsible planning can these impacts be minimized or avoided. Environmental and social issues must be addressed early in the planning process in order to avoid inefficient use of time and resources. The result is a corridor plan that is respectful of the environment, avoids potential sensitive areas, and is cost-effective in its implementation.

The following section examines the environmental, cultural, and social conditions in the study area. It also includes maps that illustrate the results of the environmental and cultural screening. These maps include elements such as water features, threatened or endangered species, schools, churches, and historic properties. Other maps display socioeconomic distributions in the study area. When overlaid with the potential alternative alignments developed using public feedback, these maps provide a useful tool in assessing each alternative’s relative impact to the environment.

Natural and Environmental Resources

With the development of a new roadway, it will be important to manage and minimize environmental impacts. Some natural amenities, such as clean water and open spaces must be maintained to satisfy not only residents’ desires for a high quality of life but also to comply with state and federal environmental policies.

Figure 2.2 depicts important natural features within the study area. Two creeks traverse the study area, both of which flow into the Yadkin River to the south. Blanket Bottom Creek enters the study area from the south along Peace Haven Road between North Lakeshore Drive and Lasater Road. The creek meanders northeast through the study area before exiting along Styers Ferry Road between Chardale Road and Immanuel Road. The larger Muddy Creek and its floodplain carve a swath across the eastern portion of the study area, following the proposed alignment of the Western Section of the Northern Beltway. Both creeks have tributaries that are impacted to varying degrees by the alternative alignments considered for the Peace Haven Road/Styers Ferry Road Connector Study.

The North Carolina Department of Environment and Natural Resources (DENR) manages the Natural Heritage Program. One product of this program is a statewide database of Natural Heritage Element Occurrences, which identifies the location of rare and endangered animals and plants and exemplary natural communities. Current data does not indicate the presence of any rare or endangered species within the study area, as shown in Figure 2.2.

Figure 2.3 depicts the slope intensity of the elevation change which helps determine the planning level alignments for potential alignments. The slope intensity is considered because building roadways in relatively flat areas can reduce costs by limiting earthwork.

Historic Properties and Places

The North Carolina State Historic Preservation Office (SHPO) maintains databases of nationally registered historic sites. SHPO resources indicated a historic home — the Cos Blackburn House — located west of the intersection of Peace Haven Road and Lewisville-Clemmons Road. The information contained in the statewide database was supplemented with information provided by City-County planning staff during an ongoing update to Forsyth County’s 1981 Architectural Survey. Discussions with the consultant assisting with the survey update indicated that the Cos Blackburn House had been demolished.

Several properties within or near the study area were identified during the Architectural Survey update process as having potential historic significance. Because the inventory and assessment is not complete, this list does not indicate a final assessment of any properties eligibility for historic designation. The properties – shown in Figure 2.4 – include:

- Union Hill Baptist Church
- Johnathon Lewis Lowder House
- Frederick Binkley House
- Harmony Grove Methodist Church Cemetery
- Sapp House
- Walter Harper House
- Luette Harper House
- Watkins House #1 & #2
- Harper-Bullard Farm
- Jack Boyer House
- Dobson House
- Warner House
- House at 6611 Styers Ferry Rd
- House at 8174 Hawkins Rd
Natural and Environmental Resources

- Freeway/Expressway
- Major Thoroughfare
- Minor Thoroughfare
- Collector Street
- Local Street
- Study Area
- Body of Water
- Wetland
- 100-Year Floodplain
- Park

Natural Heritage Element Occurrences*

- Non-Vascular Plant
- Vascular Plant
- Vertabrate Animal
- Invertebrate Animal
- Specific Animal Habitat
- Natural Community

*Source: N.C. Dept of Environment & Natural Resources

Figure 2.2

*Source: N.C. Dept of Environment & Natural Resources*
Figure 2.4

Historic and Cultural Resources

<table>
<thead>
<tr>
<th>Map ID</th>
<th>Inventoried Site</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Union Hill Baptist Church</td>
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<td>Jonathan Lewis Lowder House</td>
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<td>Frederick Birchley House</td>
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<td>4</td>
<td>Harmony Grove Methodist Church Cemetery</td>
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<td>5</td>
<td>Sapp House</td>
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<td>6</td>
<td>Walter Harper House</td>
</tr>
<tr>
<td>7</td>
<td>Luette Harper House</td>
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<td>8</td>
<td>Watkins House 1</td>
</tr>
<tr>
<td>9</td>
<td>Watkins House 2</td>
</tr>
<tr>
<td>10</td>
<td>Harper-Ballard Farm</td>
</tr>
<tr>
<td>11</td>
<td>Jack Boyer House</td>
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<td>Dobson House</td>
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<tr>
<td>14</td>
<td>House at 6611 Styers Ferry Road</td>
</tr>
<tr>
<td>15</td>
<td>House at 8174 Hawkins Road</td>
</tr>
</tbody>
</table>

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- Freeway/Expressway
- Major Thoroughfare
- Minor Thoroughfare
- Collector Street
- Local Street
- Study Area
- Body of Water
- 100-Year Floodplain
- Parks
  - School
  - Fire Station
  - Church
- Inventoried Structure (Potentially Historic)
- Cos Blackburn House Site (Demolished)
Cultural and Community Resources

Cultural and community resources identified include schools and churches located within the study area. These locations are civic destinations for residents of all ages, and in some cases, community landmarks. As alternative alignments were evaluated, the project team considered potential impacts that might affect these important community features. Figure 2.4 shows the location of schools, churches, fire stations, and the YMCA.

Public schools in the study area include Southwest Elementary School (grades kindergarten through 5) and West Forsyth High School (grades 9 through 12). Several private schools also are located in the study area, including the Montessori School, Agape Faith Christian Academy, and Center Grove Christian Academy.

Planning level alignment alternatives also must respect the location of cemeteries. Aerial photography and field analysis proved ineffective in determining the location of cemeteries. The cemetery shown in Figure 2.4 was identified through the historic inventory underway by City-County planning staff. Tax data provided by the Village of Clemmons also was reviewed to identify cemeteries, though none were determined to be impacted by potential alignments of the Connector.

Environmental Justice

Environmental justice is a law intended to avoid the use of federal funds for projects, programs, or other activities that generate disproportionate or discriminatory adverse impacts on minority or low-income populations. This effort is consistent with Title IV of the 1964 Civil Rights Act, and is promoted by the U.S. Department of Transportation as an integral part of project planning and design. While federal funding is not expected to be the funding source of the Connector, the environmental justice assessment was based on three basic principles derived from USDOT guidelines as a best practices planning effort:

- The planning process should avoid, minimize, or mitigate economic, social, and human health impacts that affect minority and low-income populations with disproportionate severity.
- Transportation benefits should not be delayed, reduced, or denied to minority and low-income populations.
- Any community potentially affected by outcomes of the transportation planning process should be provided with the opportunity for complete and equitable participation in decision-making.

The assessment used 2000 Census Data to identify the geographic distribution of minority, Hispanic, and low-income populations within the study area. As shown in Figures 2.5 to 2.7 the presence of these populations within the study area is relatively minor. The assessment of minority, Hispanic, and low-income populations within the study area also was compare with overall rates for Forsyth County. The study area populations mostly fall below the countywide threshold for minorities (31.5% of total county population), Hispanics (6.4%), and persons living below poverty (11.0%).

It should be noted that the environmental justice assessment does not attempt to quantify specific impacts to the populations of interest. Rather, the assessment guides the selection of the preferred alternative by ensuring potential impacts — if any — are noted and the benefits and impacts of the proposed roadway are evenly distributed among the study area population.
Figure 2.7

Percent Below Poverty

Source: 2000 Census (Data at Census Tract Level)
Planned Development and Future Land Use

While land use has traditionally been planned for as a stand-alone entity, it does not exist in a vacuum. Transportation systems and land use patterns traditionally influence each other in a cyclical pattern. Elements of transportation — including roads and pedestrian, bicycle, and transit facilities — can impact how land is developed. Further, where land uses fall and how they are distributed inevitably impacts decisions regarding where people travel, what means of travel they choose, and how transportation facilities are prioritized. If land continues to develop in a rural/suburban form, residents will rely almost entirely on automobiles to get from one location or use to another. However, the construction of a connected network of sidewalks and bicycle facilities will go a long way in ensuring that those people walk or bicycle — whether or not they have other options — will be afforded the same safety and efficiency considerations extended to motorists.

As these two elements are combined and their relationship enhanced, the Peace Haven Road/Styers Ferry Road Connector Study must strike a delicate balance. Plans, policies, and programs not only must preserve mobility through effective transportation but also must reinforce the area’s “sense of place” through land use that reflects the true community.

Transportation Considerations

A high-quality transportation system balances the needs of all users by operating safely and efficiently while supporting the community and enhancing its character. Two regionally significant roadways bookend the study area to the north (US 421) and south (I-40). Both roadways provide east-west connectivity, though via controlled access facilities. Other significant roadways in the study area include Lewisville-Clemmons Road, which accommodates north-south travel and provides the main access to the commercial areas south of I-40 and the Village Hall area.

Functional Classification

The classification of streets into several “functional” categories aids in communication among policy makers, planners, engineers, and citizens for expanding the transportation system. The functional classification system groups streets according to the land use served (or to be served) and provides a general designation of the type of traffic each street is intended to serve. The street functional classification system defines the street in terms of roadway design and character as well as operational features for the movement of vehicles.

Two major considerations for classifying arterials from local streets are access and mobility. The primary function of local or neighborhood streets is to provide access. These streets are intended to serve localized areas or neighborhoods, including local mixed-use and commercial land uses (i.e. low speeds, low volumes, short distances). Local streets are not intended for use by through traffic. On the other hand, the primary function of arterials is mobility. Limiting access points (intersections and driveways) on arterials enhances mobility. Too much mobility at high speeds limits access by pedestrians and bicyclists. The arterial is designed with the intent to carry more traffic than is generated within its corridor (i.e. higher speeds, higher volumes, longer distances).

The existing street network in the vicinity of the proposed connector is divided into several functional classifications, including thoroughfares (i.e. arterials), collectors, and locals. Figure 2.8 illustrates the functional classifications for existing study area roadways.

Freeways and Expressways

Freeways and expressways provide the most mobility and least access (since access is only available at interchanges). Freeway/expressway facilities typically serve longer distance travel and support regional mobility. The state funds roadway improvement and maintenance on these facilities. I-40 and US 421 are classified as freeways/expressways.

Thoroughfares (Arterials)

Thoroughfares provide high mobility, operate at higher speeds (45 mph and above), provide significant roadway capacity, have a great degree of access control, and serve longer distance travel. These facilities usually connect to one another or to collector streets, and very few thoroughfares connect to local streets.

Major Thoroughfares

Major thoroughfares typically have tightly controlled access and few, if any, individual site driveways. These facilities serve medium to longer distance travel and typically connect minor thoroughfares and collector streets to freeways and other higher type roadway facilities. Generally, roadway improvements and maintenance on major thoroughfares are funded by the state.

Major thoroughfares in the area include Lewisville-Clemmons Road and Clemmons Road/Stratford Road (US 158).
Figure 2.8

Existing Functional Classification

- Freeway/Expressway
- Major Thoroughfare
- Minor Thoroughfare
- Collector Street
- Local Street
- Study Area
- Body of Water
- Wetland
- 100-Year Floodplain

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Klingner & Associates, Inc.
Minor Thoroughfares

Minor thoroughfares primarily serve a mobility function but often have more closely spaced intersections, some individual site driveways, and generally lower design and posted speeds compared to other arterials. The minor thoroughfare network is primarily intended to serve travel demand within the local area. These roadways connect to other minor thoroughfares, to major thoroughfares, and to collector streets. Minor thoroughfares provide a higher level of access to adjacent land uses than major thoroughfares and typically have lower traffic volumes. For the most part, minor thoroughfares are maintained by the state, but the cost of improvement may be the responsibility of local governments or private developers.

In general, minor thoroughfares in the study area have two-lane undivided cross sections with little or no paved shoulders and an occasional left-turn lane at intersections and major driveways. Posted speed limits on minor thoroughfares range from 35 mph to 45 mph.

Minor thoroughfares in the study area include Peace Haven Road, Harper Road, Styers Ferry Road, and Springfield Farm Road. The proposed Peace Haven Road/Styers Ferry Road Connector will be designated as a minor thoroughfare.

Collectors

Collectors typically provide less overall mobility, operate at lower speeds (less than 35 mph), have more frequent and greater access flexibility with adjacent land uses, and serve shorter distance travel than arterials. Collectors provide critical connections in the roadway network by bridging the gap between arterials and locals. Thus, the majority of collector streets connect with one another, with local streets, and with non-freeway/expressway arterials.

The primary purpose of the collector street system is to collect traffic from neighborhoods and distribute it to the system of major and minor arterials. In general, collector streets have two lanes and often have exclusive left-turn lanes at intersections with major and minor arterials and less frequently at intersections with other collector streets. Collector streets are rarely constructed and funded by the state. Responsibility for collector streets usually falls to the local government and the development community for funding, design, and construction.

Examples of collector streets in the study area include Bullard Road, Knob Hill Drive, and Holder Road.

Locals (Neighborhood Streets)

Locals serve short distance travel and have low posted speed limits (25 mph to 35 mph). Examples of local streets in the study area include Moravian Heights Lane, May Lake Road, as well as most of the roads in the Springfield Farms community.

Existing Roadway Conditions

Many factors go into the assessment of existing roadway conditions for the purpose of evaluating the potential benefit of a new roadway such as the Connector. Two general categories of particular interest to transportation planners and decision-makers are congestion and travel safety. The existing roadway conditions described below are illustrated in Figure 2.9.

Congestion

Congestion along corridors is related to a number of factors but often is the result of bottlenecks — primarily at intersections — along the corridor. Aside from individual bottleneck locations in corridors, congestion frequently results from too many people trying to use a route that is already at or over-capacity.

Determining the level of congestion on area roadways often can be limited by the amount of information available. While the Piedmont Triad Regional Travel Demand Model typically is a good place to start, imperfections in the model as it relates to the proposed Connector rendered the tool ineffective for evaluating existing and future travel conditions in the study area. Analysis of 2005 average annual daily traffic volumes provided by NCDOT and 24-hour tube counts completed in October 2007 coupled with public feedback proved to be the most effective way to evaluate the real and perceived levels of congestion on roadways in the study area.

Traffic volumes signify the total number of vehicles traveling along a roadway segment on an average day. Figure 2.9 illustrates in red the 2005 average annual daily traffic (AADT) volumes on study roadways in the study area. As expected, US 421 and I-40 carry the most vehicles, with an average of 54,000 vehicles traveling on the segment of US 421 east of Peace Haven Road and 37,000 vehicles traveling on I-40 east of Harper Road.
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Lewisville-Clemmons at Styers Ferry
- Total Crashes: 44
- Crashes with Injuries: 21
- Most Frequent Crash Type: Left Turn, Same Roadway (22 crashes)

Lewisville-Clemmons at Peace Haven/Kinnamon
- Total Crashes: 49
- Crashes with Injuries: 12
- Most Frequent Crash Type: Left Turn, Same Roadway (10 crashes)

Peace Haven at Harper
- Total Crashes: 12
- Crashes with Injuries: 5
- Most Frequent Crash Type: Angle (7 crashes)

Peace Haven at McGregor
- Total Crashes: 10
- Crashes with Injuries: 5
- Most Frequent Crash Type: Rear End, Slow or Stop (5 crashes)

Crash Summary (6/1/04 to 5/31/07, NCDOT)

Most Frequent Crash Type: Left Turn, Same Roadway (22 crashes)

Crashes with Injuries: 21

Crashes with Injuries: 5

With Thoroughfare Plan as Adopted

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Legend:
- Freeway/Expressway
- Major Thoroughfare
- Minor Thoroughfare
- Collector Street
- Local Street
- Proposed Freeway/Expressway
- Proposed Major Thoroughfare
- Proposed Minor Thoroughfare
- Proposed Collector Street

Intersection Level of Service (October 2007)

Crash Summary (6/1/04 to 5/31/07, NCDOT)

24-hour Tube Counts (October 2007)

2005 Average Annual Daily Traffic Volumes

Kinko-Kenn and Associates, Inc.
Other locations with noticeably high traffic volumes include Lewisville-Clemmons Road, which carries 25,000 vehicles just south of the US 421 interchange and 29,000 vehicles between I-40 and Peace Haven Road. Despite these higher volumes, Lewisville-Clemmons Road is aided by the on-going widening of the roadway and the presence of additional options for north-south travel (Harper Road). Peace Haven Road, despite its two-lane cross-section, carries upwards of 19,000 vehicles per day. The lack of other east-west travel options puts pressure on this roadway. At the first workshop, several members of the public commented on the congested conditions plaguing Peace Haven Road, particularly in the vicinity of Lewisville-Clemmons Road.

Level of Service analysis was calculated for two intersections identified by the Advisory Committee as experiencing congestion and safety-related problems. Much like corridor level of service, the study involved a capacity analysis to assign a letter grade based on vehicle delay — LOS A representing the shortest average delay and LOS F representing the longest. Based on the analysis, the intersections of Lewisville-Clemmons Road at Styers Ferry Road and at Peace Haven Road operates at LOS C and LOS D, respectively.

Much of the congestion can be attributed to a lack of connectivity throughout the study area, particularly east-west. The lack of connectivity was evident during a review of the existing roadway network and acknowledged by the public at the workshops. Besides the limited access facilities of US 421 and I-40, the only option for east-west travel through the study area is Peace Haven Road. More connectivity is provided for north-south travel, including Lewisville-Clemmons Road, Harper Road, and the Lasater Road/Styers Ferry Road corridor.

Other issues brought forth at the workshop included areas for connectivity improvement at locations beyond the scope and area studied as part of the Peace Haven Road/Styers Ferry Road Connector. These opportunities for connectivity improvements – including ideas for bicycle and pedestrian improvements – were forwarded to the project team conducting the Village Transportation Plan.

**Travel Safety and Crash History**

Traffic safety is a key component when assessing the existing transportation conditions in a defined area such as the Peace Haven Road/Styers Ferry Road Connector study area. A thorough examination of crash history and traffic patterns can usually predict key locations where improvement in travel mobility and safety will be beneficial to both motorists and the community as a whole.

**Segment Analysis**

NCDOT crash records provided the base measurement of traffic safety for roadway segments and intersections in the study area. The analyzed crashes occurred between June 2004 and May 2007. The type and frequency of crashes were analyzed along four roadways, as summarized in Table 2.1. Lewisville-Clemmons Road from I-40 to US 421.

Of the 345 total crashes, 1 involved a fatality and 101 involved non-fatal injuries. The lone fatality occurred near the intersection of Lewisville-Clemmons Road and Millbridge Road. The vehicle was traveling approximately 90 miles per hour when the driver lost control and ran off the road, striking a fixed object. Along this segment, the highest crash location occurred at the ramp termini for I-40. At this intersection, 44 crashes occurred, including 11 injury crashes. Other intersections with high crash occurrences include Peace Haven Road (49 crashes, 12 injuries), Forest Oak Drive (12 crashes, 3 injuries), Styers Ferry Road (44 crashes, 21 injuries), and US 421 (26 crashes, 6 injuries).

**Table 2.1 – Crash Rates**

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<th>Segment</th>
<th>Length</th>
<th>ADT</th>
<th>Total</th>
<th>Fatal</th>
<th>Injury</th>
<th>EPDO Rate*</th>
<th>Crash Rate**</th>
<th>NC Average Crash Rate</th>
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<tr>
<td>Lewisville-Clemmons Rd</td>
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<td>4.37</td>
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<td>43</td>
<td>3.45</td>
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<td>26</td>
<td>0</td>
<td>8</td>
<td>3.41</td>
<td>413.59</td>
<td>370.44</td>
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<td>Styers Ferry Rd to Peace Haven Rd</td>
<td>1.76</td>
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<td>1</td>
<td>141.51</td>
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<td>Lasater Rd</td>
<td>1.76</td>
<td>2,200</td>
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<td>0</td>
<td>0</td>
<td>1</td>
<td>141.51</td>
<td>370.44</td>
</tr>
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</table>

* EPDO (Equivalent Property Damage Only) Rate = (76.8*(F+A)+8.4*(B+C)+PDO)/Total Crashes
** Crash Rate is the number of crashes per hundred million vehicles miles travelled

Source: NCDOT for crashes occurring 6/1/04 to 5/31/07
Peace Haven Road from Lasater Road to US 421
A total of 130 crashes occurred along Peace Haven Road, 43 of which resulted in some type of injury (no fatalities). The intersection with the highest crash occurrence was Lewisville-Clemmons Road, with 49 crashes and 12 total injuries. Other intersection with high crash occurrences include Harper Road (12 crashes, 5 injuries), McGregor Road (10 crashes, 5 injuries), and US 421 (29 crashes, 9 injuries).

Harper Road from Styers Ferry Road to Peace Haven Road
A total of 26 crashes occurred on Harper Road, 8 of which involved an injury. The intersection with the highest crash occurrence was Peace Haven Road, with 12 crashes and 5 injury crashes.

Lasater Road from Peace Haven Road to Styers Ferry Road
The analysis segment with the fewest crashes was Lasater Road, which saw 6 crashes with no injuries.

Intersection Analysis
In addition to the segment analysis, intersection crash data was reviewed to determine intersections with the highest safety concerns. As shown in Figure 2.9, the Lewisville-Clemmons Road intersections with Styers Ferry Road and Peace Haven Road had the highest frequency of crashes over the three-year period, with 44 and 49 crashes, respectively. Together, these two intersections alone accounted for 33 crashes with injuries.

Contributing factors to a location’s high crash frequency include intersection design, access considerations, and traffic congestion. Many of the segments and intersections identified with high crash frequency also were locations where congestion often exists. A direct relationship exists between traffic congestion and crash frequency, which justifies the ongoing efforts to enhance connectivity by offering alternative corridors. The Connector should improve connectivity and provide some measure of safety improvement throughout the study area.

Future Roadway Considerations
Changes in land use, whether an increase in land use mix and intensity or the conversion of farmland and open space to neighborhoods, shops, and businesses can greatly impact the functionality of roadways in the future by placing more demand on the area’s roads. As mentioned previously, most of the land within the study area is zoned for rural residential use. If current trends in land development persist without improvements to roadway connectivity, congestion will grip the study area, and specifically, the region’s key mobility corridors.

Improvements are underway or planned for some existing roadways in the study area. Other new roadways lie in various stages of the planning, design, and construction process. Improvements to Lewisville-Clemmons Road are underway, and once complete, it will operate as a four-lane divided roadway between US 421 and I-40. South of I-40, a feasibility study is underway to determine options for conversion of the commercial corridor into a four-lane divided street.

The Winston-Salem Northern Beltway is a proposed multi-lane freeway facility on 34.2 miles of new location around the northern portion of Winston-Salem. Environmental studies for the project are complete, and design is underway. The Western Section (TIP Project R-2247) stretches from US 158 east of Clemmons to US 52 north of Winston-Salem and is expected to relieve congestion by improving north-south connectivity in western Forsyth County with direct connections to I-40 and US 421. This corridor was selected in 1993 after reviewing eight alternatives. Final environmental studies and engineering designs for the segment were completed in 1996 and right-of-way acquisition began. Following a lawsuit in 1999, a combined environmental impact statement for the entire Northern Beltway was launched in 2001.

Today, the potential positive and negative impacts of the Western Section of the Northern Beltway remain. The alignment of the Beltway was considered when analyzing the eastern section of the Peace Haven Road/Styers Ferry Road Connector. Given the necessary redesign of the Beltway and its uncertain funding reality, two alternatives of this segment of the Connector were designed — an at-grade option and an above-grade option. These options are detailed in Chapter 4. As discussed in Chapters 3 and 4, the environmental issues and high cost in constructing the eastern link of the Connector combined with a general unsuitability for private development east of the proposed alignment of the Beltway will make the construction of this segment difficult.
**Thoroughfare Plan**

In North Carolina, a thoroughfare plan is an official plan that outlines the development of the major street system for a defined area. The plans are adopted by NCDOT and the local government. Thoroughfare plans have been a key element of roadway planning in Winston-Salem and Forsyth County for decades. The Peace Haven Road/Styers Ferry Road Connector has appeared on the Winston-Salem Urban Area Thoroughfare Plan since 1987. As such, local planners and elected officials have acknowledged the need for additional east-west connectivity by way of the Connector for more than two decades.

Based on the thoroughfare plan, the corridor represented is identified as a three-lane minor thoroughfare with 11’ to 12’ lanes, curb and gutter, and 5’ sidewalks at the face of the curb. The thoroughfare plan suggests the Connector will provide “access to the Northern Beltway for the residential development in the area” and will provide a bypass to the “heavily traveled US 421, Country Club Road, I-40, and Peace Haven Road.”

The Peace Haven Road/Styers Ferry Road Connector Study adjusts not only the corridor as identified in the Thoroughfare Plan but envisions — and through roadway design and implementation actions — ensures a much different look and functionality to the corridor. The study classifies the connector as a minor thoroughfare, with a main focus on serving neighborhood traffic as well as bicyclists and pedestrians. As discussed in Chapter 4, the Connector will include a landscaped median and safe accommodation for non-motorized transportation.