6. Freight Element

Freight Element /Key Points

- Freight movement is a critical element of an advanced industrial economy, and the ease of freight movement is one component of a region’s economic competitiveness for attracting and retaining heavy industry, manufacturing, warehousing and other light industrial functions.
- The effectiveness and efficiency of freight transportation is a major factor in manufacturing costs and, directly and indirectly, in retail costs. If shipments of raw materials do not arrive on time, all other processes are affected, degrading productivity, which in turn affects total company costs.
- Freight moves by highways, rail, aviation, pipeline and waterways (ports).
- The Winston-Salem/Forsyth County Urban Area has a roadway system that easily supports truck freight transportation. For safety reasons the City limits the amount of truck traffic on certain streets.
- Rail freight transportation in the Winston-Salem Urban Area is operated by three different railroads, the Yadkin Valley Railroad, the Winston-Salem Southbound Railway, and the Norfolk Southern Railway.
- Located just minutes from downtown Winston-Salem, North Carolina, Smith Reynolds Airport provides an effective base of operations for corporate aircraft, air charter services, general aviation, and air cargo.

Map and Table References

Maps
- Piedmont Triad Region 2015 Freight Facilities and Truck Network

Tables
- Table 6-1 Winston-Salem MPO Freight Transportation Improvement Project List

6.1 Introduction

Freight movement is a critical element of an advanced industrial economy, and the ease of freight movement is one component of a region’s economic competitiveness for attracting and retaining heavy industry, manufacturing, warehousing and other light industrial functions. Freight movement can also have an impact on a region’s quality of life, particularly with the need to ensure heavy truck traffic has suitable routes to/from the national highway or rail networks, avoiding established residential areas.

Recognizing the key role that freight transportation plays in the Piedmont Triad region; the Burlington-Graham, Greensboro, High Point, and Winston-Salem Metropolitan Planning Organization’s (MPO’s) have undertaken a Regional approach to the Metropolitan Transportation Plan (MTP) to develop a framework for an integrated freight planning documents (See Appendix).

The Piedmont Triad has become increasingly focused on freight transportation planning over the last several years with the loss of textile manufacturing and a shift to major Freight and Goods Movement Industry. The goals guiding regional freight planning and investments are:

- Provide a safe freight transportation system that sustains or improves existing levels of freight access and mobility;
- Support the region’s economic well-being, while remaining sensitive to environmental needs and concerns; and
- Achieve efficiency in operations and investments in the freight transportation system.
6.2 Relevance to the Transportation System and the Plan

Since NCDOT issued its previous State Transportation Plan (STP), “Charting a New Direction for NCDOT” in 2004, several initiatives have highlighted the importance of freight and logistics in relation to economic health and growth. In North Carolina, freight and logistics have emerged as a state priority that can affect economic development and competitiveness. In North Carolina, this topic relates to the movement of raw goods and materials as well as finished goods and products, between their origins and destinations including in- state distribution to businesses and consumers and out-of-state markets. As a result, freight and logistics touch all aspects of the state’s economic development targets including agriculture, biomedical, education, manufacturing, military, and tourism.

The Governor’s 25 Year Vision, the Strategic Transportation Investments program, and the Transportation Strategic Corridor framework are all elements of this new focus on freight flows. Underlying this effort is the recognition of the intimate relationship between freight flows and economic development. In recognition of the diverse needs of the state with respect to transportation, the 25 year strategic plan has divided the state into four fundamental regions (Western, Central, Eastern and Coastal) and developed different long-term initiatives and goals for each region. In addition to this, some statewide goals and initiatives have been developed such as improving public transportation to include passenger rail and supporting greater broadband connectivity through existing Right of Way.

The Central North Carolina region stretches from Charlotte to Research Triangle Park and includes the Piedmont Triad. The report recognizes the Central region as a center for high-tech industry, life science industry, and higher education. The Central region is the state’s largest economic engine, “providing $300 billion in gross domestic product and accounting for 67 percent of the state’s total GDP” and currently housing 61% of the total population of the state. In recognition of the challenges faced by this region over the next 25 years such as population growth outstripping the current capacity of the transportation system, deteriorating quality of the infrastructure, and the associated growing costs of maintenance, the plan has set the following goals and initiatives for the Central Region over the next 25 years:

- Relieve Congestion for People and Products
- Expand Mass Transit Options
- Enhance Access to Inland Ports
- Improve Connectivity to Logistics Hubs and
- Support Connections to Privately Developed Mega-sites.

An element of the new transportation planning process undertaken by the NC Department of Transportation is the identification of strategic transport corridors throughout the state. These corridors include both road and rail routes. Some of the corridors are wholly within the boundaries of North Carolina, while others link to adjoining states.

The NCDOT is defining the network of multimodal Strategic Transportation Corridors because they form the backbone of the state’s transportation system. The corridors are recognized as routes used by most of the state’s freight and intercity travel (passengers), link critical centers of economic activity and international air and sea ports, and generally support interstate commerce.

The goals of the Strategic Transportation Corridors program include:

- System connectivity – essential links within the entire transport system;
- Mobility – facilitating significant movements of freight and people; and
- Economic prosperity – support economic development and efficiency of transport logistics.

A significant number of Strategic Transportation Corridors are within the Piedmont Triad region. They include numerous interstate and major highway corridors including I-40, I-73, I-74, I-77, I-85, US 29 and US 220 as well as rail corridors including the NS Crescent Corridor. These corridors not only serve economic centers within the Piedmont Triad region, but also provide critical links to other parts of North Carolina as well as the rest of the United States.
Piedmont Together, a recent regional study of the Piedmont Triad, highlights the importance of freight transportation and logistics infrastructure and services with regard to the economic wellbeing of the region and its residents. The study identified a series of goals and objectives directly related to enhancing and developing the multimodal freight system of the region as a tool to benefit the residents and the economic development of the Piedmont Triad.

Piedmont Together noted “freight movement will remain a driving economic force. To protect this asset the region includes freight movement in the planning and prioritization of the regional transportation infrastructure. Providing more transportation options on a regional scale will help us maintain minimal congestion and create advantages to provide an attractive lifestyle and a welcoming environment for businesses to thrive and create more job opportunities” (Piedmont Together, Comprehensive Regional Plan, PART, 2014).

The study identified two primary goals related to freight planning and operations within the region.

1. Provide more transportation choices through the development of safe, reliable and economical transportation infrastructure and services to decrease household transportation costs, reduce our nation’s dependence on foreign oil, improve air quality, and promote public health.
   - Objective 1 Establish and enhance a robust network of multimodal transportation choices at the statewide, regional, county and municipal levels involving highways, passenger and freight rail, regional and local transit, para-transit services, sidewalks, cycling infrastructure, and recreational trails and greenways.
   - Objective 2 Conduct local research and education on the benefits of a multimodal regional network.

2. Maintain and enhance the region’s competitive edge as a freight transportation and logistics hub on the Eastern Seaboard by focusing on facilities and infrastructure planning, and improving coordination and cooperation among stakeholders.
   - Objective 1 Develop a comprehensive vision for freight infrastructure in the region.
   - Objective 2 Develop a multimodal freight network strategy in the region designed to create, protect and maintain transport links, connecting intermodal facilities and appropriate modes, both public and private.
   - Objective 3 Maintain a low level of traffic congestion in the region along Unlimited Truck Routes.
   - Objective 4 Expand logistics education and career opportunities for the Piedmont Triad workforce.

These goals and their associated objectives underscore the importance of freight flows to the Piedmont Triad region and recognized need by PART to devote efforts to understand the existing freight infrastructure and flows and to formulate focused plans that will enhance the existing freight system in the Piedmont Triad region. Freight transportation is a major factor in manufacturing retail costs. Manufacturers look for reliability, speed, and quality control in the carriers that deliver their raw materials and finished products. If materials do not arrive on time, all other processes are affected, productivity falls and costs go up. Finally, the formation of the North Carolina Freight Advisory Council (NCFAC) signifies recognition by NCDOT as to the importance of freight transportation and infrastructure. The NCFAC will provide advice and counsel to the NCDOT Secretary of Transportation regarding strategies that will enhance the status of North Carolina as a freight friendly state.

6.2 Why is Freight Transportation Important?
The effectiveness and efficiency of freight transportation is a major factor in manufacturing costs and, directly and indirectly, in retail costs. Manufacturers look for reliability, speed, and quality control in the carriers that deliver their raw materials and deliver their finished products. If shipments of raw materials do not arrive on time, all other processes are affected, degrading productivity, which in turn affects total company costs.
On the retail side, sellers now assume that the cost of transport will be less than the cost of maintaining large inventories (and paying for additional real estate to house it). This process, called ‘just-in-time’ inventory, is now widespread and points to the overall strength of our transportation system. However, as congestion affects transportation reliability, costs will increase because reliability will be a premium – affecting the price of retail items from bread to basketballs at the local distributor.

The movement of freight may be slightly mysterious to the average consumer, but it is crucial to maintaining the high quality of life that we expect. Additionally, transportation jobs generally pay well and, through multipliers, this income positively affects the local economy in a direct way.

Freight moves by highways, rail, aviation, pipeline and waterways (ports). The Piedmont Triad was an early crossroad for the railroads, moving freight between the ports to the east and inland connections to the north, west and south. This logistical network contributes significantly to the regional economy. The highway system also placed the Piedmont Triad at a crossroad of the interstate system. Two major pipelines provide another important source of freight transport, once again with the Piedmont Triad at the crossroad.

6.3 Highway and Rail Freight Trends

Truck mileage has been consistently increasing nationally over the past decades, but has been confined to essentially the same road capacity. Urban freeways and arterials in particular have become increasingly congested, and this trend is expected to continue. Trucks are affected just as much as commuters by congestion with additional implications for freight travel time and reliability. By 2020, the trucking industry expects to move three billion more tons of freight than it hauls today. To meet this demand, the industry will put another 1.8 million trucks on the road. On average, 10,500 trucks a day travel on the Interstate Highway System. By 2035, this will more than double, to 22,700 trucks on the most heavily used parts of the Interstate, with the most popular segments seeing upwards of 50,000 trucks a day. (Transportation Reboot, 2010)

Freight railroads are classified as Class I, Regional, or Short Line. Class I railroads are those with annual revenues of greater than $253.7 million. Examples of Class I railroads include Norfolk Southern and CSX. Regional and short line railroads are smaller companies serving specific regional and local markets. There are 2,422 miles of Class I railroads comprising 72.4 percent of all railroads in the state.

North Carolina’s freight rail network serves 86 of the state’s 100 counties. The network provides access to the state’s strategic locations, such as ports, power plants, mines, and military installations, and facilitates the movement of goods for a variety of industries, including agriculture, forestry, plastic, furniture, coal, food products, and chemicals.

The majority of the state’s freight rail system is owned, operated, and maintained by the private sector. With 3,345 miles of rail lines throughout North Carolina, all but 491 miles are owned by the state’s private sector freight railroads. The state of North Carolina owns the North Carolina Railroad Company (NCRR), with Norfolk Southern Railroad Company (NS) operating trackage rights over its 317-mile corridor from Charlotte to Morehead City.

6.4 North Carolina Total Rail Freight Flows

The highest volume of rail freight traffic is on the CSX line connecting Charlotte to the Port at Wilmington, the Norfolk Southern/NCRR line from Charlotte through Greensboro to Raleigh, and the CSX line that runs north-south roughly parallel to Interstate Highway 95. Those three corridors handle approximately 20 million tons of freight annually. In spite of a relatively robust condition of the overall rail freight system in the state, there continue to be issues with the loss of rail access to individual businesses from time to time. Over the past three decades, over 700 miles of track have been abandoned. Some of these miles have been adapted to “Rails to Trails” use, but some have created shifts in freight mode and forced industry to ship products by truck where lines were abandoned.
6.5 Winston-Salem Rail Freight

Rail freight transportation in the Winston-Salem Urban Area is operated by three different railroads, the Yadkin Valley Railroad, the Winston-Salem Southbound Railway, and the Norfolk Southern Railway. The Yadkin Valley Railroad Company is owned and operated by Gulf and Ohio Railways of Knoxville, TN and operates in the counties of Forsyth, Stokes, Surry, and Wilkes. Commodities carried by the railroad are forest products, coal, grain, and fiberboard. The Yadkin Valley Railroad consists of two lines, one from Rural Hall to Mount Airy and one from Rural Hall to North Wilkesboro. Both lines connect to the Norfolk Southern Railway at Rural Hall.

Norfolk Southern Railway (NS) is owned and operated by Norfolk Southern Corporation headquartered in Norfolk, VA. NS connects the Winston-Salem Urban Area to Roanoke, VA to the north and Greensboro to the east. NS also owns a line which is currently not in use that connects Winston-Salem with Charlotte. One of the largest commodities carried by the railroad is automobiles. NS operates an automobile distribution center in Winston-Salem.

Winston-Salem Southbound Railway (WSS) began service in 1910 and is independently operated; however, CSX and Norfolk Southern jointly own all of its stock. WSS connects Winston-Salem and Forsyth County to Lexington, Albemarle, and Wadesboro to the south. The railway operates in Forsyth, Davidson, Stanly, and Anson Counties. Commodities carried by the railroad are grain, sand, gravel, stone, forest products, paper products, coal, coke, cement, clay, fertilizer, chemicals, aluminum, iron, and steel. One of the principal shippers is Corn Products Co., manufacturers of corn syrup and related products. WSS connects with NS in Winston-Salem on the north end and with CSX in Wadesboro on the south end. WSS is also connected to High Point, Thomasville, and Denton Railroad (HPTD) and Aberdeen, Carolina, and Western Railroad (ACWR) along the railway.

6.6 Winston-Salem Roadway System

The Winston-Salem/Forsyth County Urban Area has a roadway system that easily supports truck freight transportation. For safety reasons the City limits the amount of truck traffic on certain streets which have low traffic carrying capacities to encourage truck traffic to use roadways with higher capacities and speeds. Convergence of major arteries such as Interstate 40, Business I-40 and US 52 (Future I-74) provide ideal access for the movement of goods, and connects industry in our Urban Area with other regions throughout the state and country. Continual roadway improvements by the City and the North Carolina Department of Transportation (NCDOT) have allowed all of the Urban Area's major industries to operate without truck freight transportation problems.

The Union Cross Road Widening Project (TIP Number U-4909) will provide relief for Union Cross Road as subdivisions, shopping centers, and Caterpillar Inc. develops. The project will widen 4.2 miles of Union Cross Road in Winston-Salem and Kernersville from Sedge Garden Road north of I-40 to just south of U.S. 311. It also includes constructing the area’s first diverging diamond interchange at I-40. Construction is now under way with a completion date of November 15, 2015. The North Carolina Department of Transportation (NCDOT) is beginning the project development studies for Business 40 (also known as I-40 Business) from west of 4th Street to east of Church Street in Winston-Salem. The project will include removing and replacing highway pavement, replacing bridges and improving ramps on to and off of Business 40. Today, this roadway carries approximately 70,000 vehicles per day. The North Carolina Department of Transportation is preparing an engineering and environmental study to ease traffic congestion and improve safety on NC 109 from Old Greensboro Road to I-40/US 311 in Davidson and Forsyth Counties. This study (TIP Project No.R-2568C) includes evaluating improvements to the existing roadways, reviewing new roadway corridors, and preparing preliminary engineering, traffic analysis, environmental evaluations, and a Federal Environmental Document. The proposed Northern Beltway will offer an alternative route for freight carriers traveling through the Urban Area while providing more connectivity to local freight carriers. This will also allow freight carriers to bypass the very heavily congested area of Business I-40 and US 52 near downtown Winston-Salem, especially during peak hours.
6.7 Design Considerations
The design of all roadways should be consistent with their intended function and be responsive to the environment. This principle is equally important when considering roads designated as truck routes or as industrial collectors where the movements of goods and materials occur with frequency. All routes used by trucks, however, are not identical in their design or intended functions. Industrial collectors — such as the one shown in the illustration below — require different types and sizes of context-sensitive design features when compared with other street types that may handle limited truck traffic.

**Industrial Collector**

2-Land Divided, Left-Turn Lane, 42' Back-To-Back

**Context Sensitive Design Features**

This Industrial Collector is designed to limit automobile travel speeds to 30 miles per hour. It provides two travel lanes with opportunities for center left turn bays, where needed. The larger curb radius allows larger trucks to turn without damaging the curb. The wide travel lanes better accommodate larger vehicle traffic and provide the opportunity for motor vehicles and bicycles to share the travel corridor. In these instances, the facilities should be designated as collector bicycle routes and supplemented by appropriate signage. Street trees are envisioned along both sides of the street to provide shade and help soften the built environment. Sidewalks are preferred for both sides of the street to connect complementary land uses. However, a ten-foot multiuse path along one side of the street is acceptable in less intense areas. Context sensitive design considerations should include:

- Drainage (swale vs. curb and gutter)
- Street Trees (formal vs. random plantings)
- Pedestrian Circulation (sidewalk vs. multi-use path)
- Street Lighting (height/placement concerns)

**Suburban Boulevard**

4-Lane Divided, Advanced Left-Turn, Sidewalks, Landscaping

**Context Sensitive Design Features**

This Suburban Boulevard is designed to limit automobile travel speeds to 45 miles per hour. It provides four travel lanes including wide outside lanes to accommodate experienced cyclists. Street trees along both sides of the street provide shade and help soften the built environment. Sidewalks are preferred for both sides of the street in suburban areas, however, a ten-foot, multiuse path on one side of the street is acceptable in less dense areas. A natural traffic corridor from the back of the sidewalk to the power property line along the entire corridor. Context sensitive design considerations should include:

- Edge Treatment — Curb and gutter preferred; ditch/swale in unincorporated areas
- Lane Widths — Minimum 12 feet
- Bike/Pedestrian Accommodations — Minimum 5-foot sidewalks and 5-foot verge
- Design/Posted Speed — 30-55 mph
- Turning Radii — Minimum 25 feet
- On-Street Parking — Prohibited within 30 feet of intersections

Common design elements that are a priority for all truck routes include appropriate lane widths, turning radii, and adequate separation for pedestrian facilities. A general set of design considerations for truck routes, industrial collectors and suburban boulevards, should include:

- Edge Treatment — Curb and gutter preferred; ditch/swale in unincorporated areas
- Lane Widths — Minimum 12 feet
- Bike/Pedestrian Accommodations — Minimum 5-foot sidewalks and 5-foot verge
- Design/Posted Speed — 30-55 mph
- Turning Radii — Minimum 25 feet
- On-Street Parking — Prohibited within 30 feet of intersections
### 6.8 Winston-Salem Freight Transportation Improvement Project Lists

#### Table 6-1 Winston-Salem MPO Freight Transportation Improvement Project List

<table>
<thead>
<tr>
<th>STIP Number</th>
<th>Project Name</th>
<th>Project Description and Limits</th>
<th>Proposed Cross-Section</th>
<th>Federal Functional Class (FFC)</th>
<th>Completion Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>U-2827B</td>
<td>Business 40 (US 421) Improvements- Pavement Rehabilitation, replacement of bridges and various safety improvements.</td>
<td>West of Fourth Street to East of Church Street - Full interchange at Cherry/Marshall via two partial interchanges acting as a full interchange, full interchange at Peters Creek Parkway, and a partial interchange at Main Street.</td>
<td>4 lane with Interchange Improvements</td>
<td>Freeway/ Expressway</td>
<td>2016-2021</td>
</tr>
<tr>
<td>U-2579 B</td>
<td>Winston-Salem Northern Beltway, Eastern Section (Future I-74)</td>
<td>US 52 to US 311. Multi-Lane Freeway on New Location. (Business 40 to US 158)</td>
<td>New 4 - 6 lane freeway</td>
<td>Freeway/ Expressway</td>
<td>2016-2021</td>
</tr>
<tr>
<td>U-2579 C</td>
<td>Winston-Salem Northern Beltway, Eastern Section (Future I-74)</td>
<td>US 52 to US 311. Multi-Lane Freeway on New Location. (US 158 to US 311)</td>
<td>New 4 - 6 lane freeway</td>
<td>Freeway/ Expressway</td>
<td>2016-2021</td>
</tr>
<tr>
<td>R-2247CD</td>
<td>Winston-Salem, Northern Beltway (Western Loop). US 421 Interchange with Peace Haven Road (SR 1140)</td>
<td>Replace interchange at US 421 and Peace Haven Road (SR 1140) and improve approaches.</td>
<td>Reconstruct multi-lane Interchange</td>
<td>Freeway/ Expressway</td>
<td>2016-2021</td>
</tr>
<tr>
<td>R-2247EC</td>
<td>Winston-Salem, Northern Beltway (Western Loop). US 52 Interchange with NC 65 (Bethania-Rural Hall Road)</td>
<td>Replace interchange at US 52 and NC 65 (Bethania-Rural Hall Road) and improve approaches.</td>
<td>Reconstruct multi-lane Interchange</td>
<td>Freeway/ Expressway</td>
<td>2016-2021</td>
</tr>
<tr>
<td>U-2924</td>
<td>SR 4000 (University Parkway)</td>
<td>SR 3973 (North Point Boulevard) to SR 1672 (Hanes Mill Road (North)) Add Additional Lanes except for US 52 Bridge</td>
<td>6 lane divided</td>
<td>Other Principal Arterial/ Minor Arterial</td>
<td>2022-2030</td>
</tr>
<tr>
<td></td>
<td></td>
<td>North Main Street (NC 150) to Piney Grove Road (SR 1969)</td>
<td>New 2 lane divided w/bike and sidewalk</td>
<td>Proposed Major Collector</td>
<td>2022-2030</td>
</tr>
<tr>
<td>I-0911A</td>
<td>Interstate 40</td>
<td>West of NC 801 (exit 180) to east of Harper Road (SR 1101). Pavement Rehabilitation and Construct fifth and sixth lanes. (Coordinate with I-2102)</td>
<td>6 lane freeway</td>
<td>Interstate</td>
<td>2022-2030</td>
</tr>
<tr>
<td>R-2577A</td>
<td>US 158</td>
<td>Multi-Lanes North of US 421/Business 40 in Winston-Salem to US 220 (Part A to Belews Creek Road (SR 1965)). Widen to Multi-lanes.</td>
<td>4 lane divided w/ sidewalk</td>
<td>Other Principal Arterial</td>
<td>2022-2030</td>
</tr>
<tr>
<td>R-2568C</td>
<td>NC 109</td>
<td>South of I-85 Business in Thomasville to I-40/US 311 in Winston-Salem. Widen to Multi-Lanes with Bypass of Wallburg. Some New Location.</td>
<td>4 lane divided w/bike and sidewalk</td>
<td>Other Principal Arterial</td>
<td>2022-2030</td>
</tr>
<tr>
<td>U-2579 D, E, F</td>
<td>Winston-Salem Northern Beltway, Eastern Section (Future I-74)</td>
<td>US 52 to US 311. Multi-Lane Freeway on New Location. (US 311/New Walkertown Road to US 52)</td>
<td>New 4 - 6 lane freeway</td>
<td>Freeway/ Expressway</td>
<td>2022-2030</td>
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<tr>
<td>U-2729</td>
<td>SR 1672 (Hanes Mill Road)</td>
<td>Museum Dr to SR 4000 (University Pkwy). Widen to Multi-Lanes with Curb and Gutter.</td>
<td>5 lane w/bike and sidewalk</td>
<td>Major Collector</td>
<td>2022-2030</td>
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</table>
Table 6-1 Winston-Salem MPO Freight Transportation Improvement Project List Cont.

<table>
<thead>
<tr>
<th>STIP Number</th>
<th>Project Name</th>
<th>Project Description and Limits</th>
<th>Proposed Cross-Section</th>
<th>Federal Functional Class (FFC)</th>
<th>Completion</th>
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<tbody>
<tr>
<td>Interstate 40</td>
<td>US 311 to Guilford County (US 311 to I-40 Bus./US 421)</td>
<td>6 lane freeway</td>
<td>Interstate</td>
<td>2022-2030</td>
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<tr>
<td>U-5760</td>
<td>Business I-40 (US 421) Interchange at Big Mill Farm Road</td>
<td>Hopkins Road to S. Main Street</td>
<td>Proposed Major Collector</td>
<td>2022-2030</td>
<td></td>
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<tr>
<td>Ebert/Stratford Connector</td>
<td>New alignment from Ebert Road to South Stratford Road (US 158)</td>
<td>New 3 lane w/bike and sidewalk</td>
<td>Proposed Collector</td>
<td>2022-2030</td>
<td></td>
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<tr>
<td>FS-1509A</td>
<td>Forum Parkway Connector</td>
<td>Forum Parkway (SR 3955) to University Parkway (NC 66)</td>
<td>Proposed Collector</td>
<td>2022-2030</td>
<td></td>
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<tr>
<td>I-5880</td>
<td>Interstate 40 at NC 109 and Clemmonsville Road</td>
<td>Interchange modification - Convert half diamond interchange at NC 109 to a full diamond and remove half diamond at Clemmonsville Road. Remove one-way service roads between NC 109 and Clemmonsville Road.</td>
<td>Full diamond interchange</td>
<td>Interstate</td>
<td>2022-2030</td>
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<tr>
<td>U-5786</td>
<td>Hickory Tree Road</td>
<td>US 52 to NC 150</td>
<td>Widen to multilane (3 or more)</td>
<td>Major Collector</td>
<td>2022-2030</td>
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<tr>
<td>U-5824</td>
<td>NC 66 - Old Hollow Road</td>
<td>Bellaire Circle/Whitehall Village Lane to Harley Drive. Widen to 3 lanes with curb and gutter, sidewalk and bicycle accommodation</td>
<td>Widen to multilane (3 lanes)</td>
<td>Minor Arterial</td>
<td>2022-2030</td>
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<tr>
<td>I-5887</td>
<td>US 52 at Trinity Church Road</td>
<td>Convert existing grade separation at Trinity Church Road to full interchange.</td>
<td>New Interchange</td>
<td>Freeway/Expressway</td>
<td>2022-2030</td>
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<tr>
<td>U-3617</td>
<td>SR 2045 East Mountain Street/Old US 421, SR 1005, SR 1008</td>
<td>NC 66 in Kernersville to SR 2001 (Winthrop Street) in Guilford County. Widen to Multi-Lanes.</td>
<td>4 lane divided w/bike and sidewalk</td>
<td>Minor Arterial</td>
<td>2022-2030</td>
</tr>
<tr>
<td>R-2577B</td>
<td>US 158</td>
<td>Multi-Lanes North of US 421/I-40 Business in Winston-Salem to US 220 (Part B - NC 66 to Guilford County Line). Widen to a Multi-Lanes.</td>
<td>4 lane divided w/ sidewalk</td>
<td>Other Principal Arterial</td>
<td>2031-2040</td>
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<tr>
<td>U-2826</td>
<td>US 52</td>
<td>I-40 Bypass to Proposed Northern Beltway (Western Loop) Interchange. Widen and Upgrade Roadway and Interchanges.</td>
<td>6 lane Interstate with auxiliary lanes</td>
<td>Freeway/Expressway</td>
<td>2031-2040</td>
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<tr>
<td>R-2247</td>
<td>Winston-Salem, Northern Beltway (Western Loop).</td>
<td>Winston-Salem Northern Beltway - Western Section. Interstate-40 to US 52. Four Lane Freeway on New Location.</td>
<td>New 4 lane freeway</td>
<td>Freeway/Expressway</td>
<td>2031-2040</td>
</tr>
<tr>
<td>R-2247A</td>
<td>Winston-Salem, Northern Beltway (Western Loop)</td>
<td>Winston-Salem Northern Beltway, US 158 (South Stratford Road) to I-40. Four Lane Freeway on New Location.</td>
<td>New 4 lane freeway</td>
<td>Freeway/Expressway</td>
<td>2031-2040</td>
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<tr>
<td>U-2730B</td>
<td>NC 65 (Bethania-Rural Hall Road)</td>
<td>US 52 to NC 66 in Rural Hall. Widen to 5-lanes, US 52 to SR 3983 (Northridge Park Dr) and to 3-lanes, SR 3983 (Northridge Park Dr) to NC 66.</td>
<td>3 - 5 lane w/bike and sidewalk</td>
<td>Minor Arterial</td>
<td>2031-2040</td>
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<tr>
<td>Business Interstate 40 (US 421)</td>
<td>Northern Beltway to Guilford County</td>
<td>6 lane freeway</td>
<td>Freeway/Expressway</td>
<td>2031-2040</td>
<td></td>
</tr>
</tbody>
</table>
6.9 Truck Route Recommendations

Trucks should be defined as vehicles with a manufacturer’s gross vehicle weight of 33,000 pounds or more. This definition excludes most straight, panel, and delivery trucks, but includes large trucks with more than two axles, such as tractor-trailers and tandem axle dump trucks. This definition also excludes public service vehicles, such as garbage collection trucks.

Upon designation of routes, signs should be posted at the city limits, highway exits, and other appropriate locations directing truck drivers to streets which permit their movements. Restrictions may include limiting travel to US and NC routes or designated/signed routes through the city. Within the city limits, consideration could be given to amending the local ordinance to specifically prohibit through truck movements on local streets. Prohibition of trucks on any segment of state-maintained roadways will require approval from NCDOT. Truck designations for major routes and industrial streets could prove beneficial. Utilization of these routes provides better defined east-west and north-south freight corridors. Likewise, truck traffic should be discouraged on roadways that do not meet the design criteria necessary to facilitate heavy truck traffic.

Increased industrial development will require efficient truck access and circulation to the arterial system, ultimately improving freight mobility while limiting cut-through truck traffic in neighboring subdivisions. Additional tasks associated with establishing a series of truck routes through the urban area include:

- Work with NCDOT to prioritize resurfacing of designated routes in an effort to reduce noise and vibration from trucks.
- Adjust signal timing along high priority routes to allow uninterrupted through movements based on posted speed limits. The result will be improved travel times and reduced noise and air pollution.
- Publish and distribute educational materials to businesses and industries concerning proposed designated truck routes.
- Work with NCDOT to make improvements to critical intersections on truck routes to facilitate and encourage their use by truck operators. Improved turning radii, lane width and the provision of dedicate turn lanes will greatly improve the efficiency and safety of these corridors.
- Identify streets in industrial areas that function as industrial collectors and work with stakeholders to evaluate and implement the appropriate cross-section.

6.10 Winston-Salem Air Freight

The Forsyth County Airport Commission and the City of Winston-Salem Economic Development Office are cooperatively working to develop a 50-acre office/light industry Airport Business Park. This is a large part of the Liberty Street Revitalization Corridor Project. The park will be marketed to uses that need to be close to air, rail, and interstate transportation. The business park also will be marketed toward those uses that could result from from the Federal Express hub at Piedmont Triad International Airport. This is a long-range project and is currently in its initial stages of development.

6.11 Air Freight Recommendations

Piedmont Triad leaders have placed high priority on leveraging the FedEx hub and the Region’s highway and other location and logistics assets to develop a world-class competency in global logistics and air cargo for business recruitment and economic growth. An immediate need is for coordinated Region-wide planning and local government partnerships to accomplish this, thereby helping Piedmont Triad International Airport (PTI) to achieve its full potential as an engine for job creation and economic development, not only immediately around the airport but also throughout the entire 12-county Piedmont Triad Region. Air logistics, which includes air cargo, air express, and their supporting logistics services, represented a $ 250 billion industry in 2006. It is expected to nearly triple by 2025, while international air-express shipments are expected to increase at least four-fold during this period (Boeing Company, 2006). Already, air cargo and air express are the preferred modes of international shipping of higher value to weight B2B transactions in microelectronics, automobile electronic components, aircraft parts, mobile telephones, fashion clothing, pharmaceuticals, optics and small precision manufacturing equipment, as well as many perishables such as seafood and fresh cut flowers.
The FedEx Mid-Atlantic hub represents a unique opportunity for the Piedmont Triad to attract new investment to the Region while boosting the competitiveness of existing firms in the area. Full leveraging of the hub requires incorporating six broad functional capabilities. These six capabilities provide examples of key infrastructure elements for each:

1. Multi-modal Transportation System with Access to Local, National and Global Transportation Networks;
2. On-site Cargo Processing Capability to Supplement the FedEx Hub;
3. On-site Cargo Transport System;
4. Shared Communications System with Transparent User Interface;
5. Access to On-site and Remote Services for Commercial Support, Vocational Education and Worker Training; and

Construction at and around Piedmont Triad International Airport to prepare for the FedEx hub began in the first quarter of 2004. A third runway and connecting road will be constructed to accommodate the additional FedEx flights, plus provide capacity for more commercial airline traffic. Bryan Boulevard, the main airport thoroughfare, and other secondary roads will be relocated and expanded to accommodate the additional traffic and allow room for runway construction and operation.

FedEx opened the hub building at Piedmont Triad International Airport in June 2009. Greensboro was chosen for its new Mid-Atlantic hub in 1998 over competing proposals from airports in Charlotte, Raleigh-Durham, Columbia, Greenville-Spartanburg and Kinston, North Carolina. A third runway was built to accommodate the additional FedEx flights, plus provide capacity for more commercial airline traffic. The 9,000-foot (2,700 m) Runway 5L-23R opened January 27, 2010 after six years and $150 million in spending, giving the airport the ability to have takeoffs and landings at the same time on two different runways.

6.12 Piedmont Triad Freight Prospects

The three overarching goals of the region are:

1. Be recognized as the Premier Logistics Center of the East Coast of the United States providing air, highway, and rail infrastructure within and easily accessible to companies operating in the region.
2. Be a major player in the aviation industry, including companies that engage in aircraft design and construction, aviation parts manufacturers, and aviation services providers, the aviation industry continues to generate economic and job growth. In the region the greatest level of activity in this cluster is currently taking place on and around the Piedmont Triad International Airport. However, aviation-related activity is rapidly spreading throughout the region, notably in Winston-Salem and Davidson County.
3. Fulfill the potential of the Aerotropolis/NC Center for Global Logistics initiative which targets the melding of business, education, research, and planned economic development to provide a blueprint for a vibrant future for the Triad Region and the entire state. The elements of the initiative operate synchronously to provide the leverage and critical mass necessary to promote the development of economic development, job growth, and educational opportunity throughout the region and state. (Seven Portals Study, An Investigation of How Economic Development Can be Encouraged in North Carolina Through Infrastructure Investment, p.84)

Given the Piedmont Triad's logistics and other assets which are reinforced by the FedEx Mid-Atlantic hub, the Region has a propitious opportunity to create a world-class, differentiating competency in multi-modal logistics that can strengthen its traditional manufacturing economy and attract new economy industries such as microelectronics, pharmaceuticals, medical devices, and aerospace equipment. Indeed, the Piedmont Triad's confluence of location, interstate highways, PTI and its new FedEx hub provide the Region competitive advantage that can help brand the Piedmont Triad nationally and globally in the same way that RTP and research have branded the Raleigh-Durham-Chapel Hill area and financial services have branded Charlotte. Beyond branding, the Piedmont Triad's combination of logistics assets gives the Region true economic advantage that can have the potential to drive the creation of ten of thousands of new jobs across the entire 12-county Region. The decision by FedEx to construct a new hub at Piedmont Triad International Airport has raised the profile of the Triad and proves the area has the infrastructure, climate, quality of life, and physical ability to support such an enterprise. The communities of the Triad are taking advantage of FedEx's
decision through infrastructure enhancements and business recruitment efforts that will attract new businesses and allow existing ones to increase their size, scope, and profitability.

The addition of the FedEx Mid-Atlantic Hub should help overland transportation companies, distribution and logistics professionals, as well as FedEx suppliers recognize Winston-Salem as the ideal location for their business ventures. Proximity to the hub will allow local companies to access overnight delivery with a later drop-off time (usually 11 pm), increasing company response time. Furthermore, companies in the fields of biotechnology, medical technology, and other high value-added industries will be attracted to Winston-Salem, particularly since the city has focused its efforts on these industries. In addition to building the planned expansion of the Piedmont Triad Research Park, which will become the nation’s largest urban research park, there is an unmatched ability to collaborate with premier scientists at Wake Forest University Baptist Medical Center. Finally, companies involved in advanced manufacturing will benefit from the manufacturing expertise of the area workforce.

With Regional groups representing interest of the Piedmont Triad’s economy and vitality of life; the Metropolitan Planning Organizations (MPOs) of Burlington-Graham, Greensboro, High Point, and Winston-Salem can rely on organizations like the Piedmont Triad Partnership, Piedmont Triad International Airport, Piedmont Authority for Regional Transportation, and the Piedmont Triad Transportation Association to engage in the future of the region’s logistical planning and infrastructure needs for the betterment of the industry. With the above in mind, an area that should be paid close attention to is the region’s push to develop a major economic driver called a "Mega-Site". As economic development efforts are extremely competitive and as they have far reaching impact to job creation, real estate values and incentive packages, any information, other than conjecture, that is contained in the following paragraphs are gleaned from various items within the public domain (press, publications, internet, etc.).

It is understood that four possible locations are being studied for their inclusion in the regions efforts to create a mega-site. These are 1) Heart of North Carolina MegaPark straddling Moore and Montgomery Counties just east of I-73; 2) Davidson County, close to the intersections of I-85 Business and I-85; 3) Berry Hill Mega Park in Virginia close to the intersections of Rockingham and Caswell County in North Carolina and Pittsylvania County in Virginia and 4) Randolph County at a site northeast of Liberty, NC. If the local and regional economic development teams working these sites are successful, a major impact to traffic and freight flow will be an understatement. Not only will the areas outlined in the comments below have a significant increase in traffic flow, the area surrounding the possible sites and the region in general will see a major increase in both transit and freight flow due to the increase of workers and suppliers of the company or companies that would locate to these sites. Further, with manufacturing now a fully global endeavor, freight flowing to and from major container ports will further impact traffic congestion in this area. Import and export freight movement would increase on primarily I-40 and I-85 as they are the major routes into and out of the region from the ports of Norfolk, Wilmington and Charleston. Intermodal cargo movements will increase along these routes with a major impact being felt at the Norfolk Southern Intermodal ramp in Greensboro. With no additional room to grow, the Greensboro intermodal ramp may be required to shift cargo movement to the Charlotte, NC facility. In any case, the increase of truck traffic will be serious.

Appendix References

Documents
2012 Piedmont Triad Region Freight Movement Report
2015 Triad Freight Study Project Report
Legend

Freight Distribution Centers
- Freight Distribution Centers
- Truck Stops
  - Class A
  - Class B
- Airports
  - Type Minor
  - Type Major
- Counties
- Truck Network
  - National Truck Network
  - State-Designated

Map Prepared July 9, 2015
Winston-Salem Urban Area Metropolitan Planning Organization
For project information, see accompanying tables.