



## Transportation

## B. Transportation

The City of Raleigh recognizes the importance of developing a balanced, efficient, multi-modal transportation network that minimizes impacts to the environment and reinforces the livability of neighborhoods. The Transportation Element is meant to guide future development of the City's corridors, roads and highways for motorized and non-motorized transportation including public transit systems, bicycle, and pedestrian networks. The transportation network is developed in a sustainable pattern that supports the City's future land uses and urban form, minimizes vehicle miles traveled and single-occupancy vehicles, and reduces air pollution and greenhouse gas emissions.



Raleigh has a well-established roadway network of streets, arterials, expressways and freeways. While some of these roads are maintained by the NCDOT, the City itself maintains over 1,000 miles of streets, as well as 1,190 miles of sidewalks, nearly 100 miles of bikeable greenway trails and bikeways, and 22 miles of bicycle facilities.

By 2035, Raleigh's roadway network is projected to become more congested, with both the amount of time and number of miles spent on the roads increasing. Vehicle miles traveled (VMT) and vehicle hours traveled (VHT) are both projected to increase from 2005 levels by over 50 percent – travel along freeways and other major streets will be most affected. In addition, the total number of trips (AM, PM, and overall) taken on Raleigh's road network is projected to increase by over 50 percent.

Capital Boulevard (north of I-540), I-540 (from Capital Boulevard to I-40), and U.S. 401 (north of I-540) in north Raleigh are three roadways where both the traffic and level of service are projected to worsen greatly from 2005 to 2035. To affect these projections, not only will existing facilities and services have to be improved, but new mobility options – including increased and higher capacity transit service – must be created to meet the growing needs of Raleigh through the year 2030.

The Transportation Element contains policies that will create a well-connected, multi-modal transportation network, support increased densities, help walking become more practical for short trips, support bicycling for both short- and long-distance trips, improve transit to serve frequented destinations, conserve energy resources, reduce greenhouse gas emissions and air pollution, and do so while maintaining vehicular access and circulation. More specifically, the policies and actions within this element address the following key transportation issues:

- Sprawling and segregated land use patterns have led to a high dependency on single-occupancy automobile trips;
- There is a need for better coordination of land use and transportation project review procedures to enable efficient and connected development patterns;
- Road widening and new facilities to address automobile congestion are not by themselves feasible solutions to the region's mounting congestion and long commutes (See Policy T 3.3: Redefining LOS);
- Even with programmed investments, the future transportation system is projected to be severely constrained by the year 2035;
- The enormous growth experienced and planned in Raleigh will transform the City into the center of the region, and has the potential of changing the dynamics of the region's transportation system;
- Traffic calming will continue to be an issue for many neighborhoods as traffic levels increase on major streets and drivers seek alternative routes using local residential streets;



- There are limited multi-modal facilities that provide transit, bicycle and pedestrian accessibility, and help reduce congestion;
- Better coordination is needed among transportation planning partners such as: NCDOT, CAMPO, Triangle Transit, Capital Area Transit, and the surrounding counties and cities;
- Safety issues must be addressed along corridors, at intersections, and at locations with bicycles and pedestrians; and,
- Limited efficiency and coverage area of the current transit system prevents it from being an attractive alternative to the automobile.

Achieving a balanced and effective transportation system will require a greater investment in transit, pedestrian, and bicycle infrastructure. Detailed information concerning the underlying issues and background information can be found in the *Community Inventory Report*.



For Raleigh to meet the vision theme of *Economic Prosperity and Equity*, the transportation system must be multi-modal, operate efficiently, and provide all users with the ability to reach their destinations safely. Raleigh needs to provide facilities and services that meet the needs of the City's residents and visitors including senior citizens, the disabled, and transit-dependent persons.

Not only does the transportation system provide for the mobility of people and goods, but over the long term it influences patterns of growth and the level of economic activity through the accessibility it provides to adjacent land uses. To meet the vision theme of *Coordinating Land Use and Transportation*, the Comprehensive Plan must provide policies to

help reduce the need for trip-making (particularly single-occupant vehicle, or SOV, trips), provide choices for shorter trips, and encourage walking, bicycling, and transit use. The Transportation and Land Use Elements must mutually reinforce one another and provide Raleigh with a foundation to make informed decisions.

When considering the relationship of transportation with vision themes such as *Growing Successful Neighborhoods and Communities* and *Greenprint Raleigh*, it is important to consider social and environmental impacts. Reducing auto trips and auto dependency can make significant improvements to air quality. By using Context Sensitive Solutions (CSS), transportation investments can be developed that meet the needs of citizens and the surrounding land uses.

Another vision theme addressed in the Transportation Element is *Managing Our Growth*. By 2035, Raleigh's roadway network will be extremely congested. It will not be possible to widen many congested roads due to limited funding and right-of-way. The problem can be attributed to extensive low density growth patterns, where 35 percent of commuters have a commuting travel time greater than 30 minutes, and per capita vehicle miles greatly exceed national norms for metro areas. Additionally, nearly 94 percent of Raleigh's population relies on highway-based trips, concentrating traffic pressure on highway corridors. In order for Raleigh's transportation network to remain sustainable and continue to operate effectively, it will be important to manage the assets already in place and determine the most fiscally responsible transportation investments. This will also take considerable coordination between planning partners such as: North Carolina Department of Transportation (NCDOT), Capital Area Metropolitan Planning Organization (CAMPO), Triangle Transit, Capital Area Transit, and the surrounding counties and cities.

Policies and actions of this element appear below. Numbers indicate their relationship to the themes, as follows:

1. Economic Prosperity and Equity
2. Expanding Housing Choices
3. Managing Our Growth

4. Coordinating Land Use and Transportation
5. Greenprint Raleigh
6. Growing Successful Neighborhoods and Communities

## B.1 Land Use and Transportation Coordination

Like many growing cities, Raleigh is experiencing extensive low density suburban growth that has had a negative impact on the overall transportation system. Projects exclusively designed to address automobile congestion are not feasible solutions to the City’s mounting congestion and long commutes. Roadway investments must be balanced with investments in other transportation modes such as public transportation and greenways. In addition, it is important to link development to sidewalks and greenways, as well as provide adequate connections to transit.

Land use patterns have a significant effect on trip generation and travel behavior. Compact, mixed-use and walkable developments mitigate traffic generation and impacts to the street system by shortening trip distances, capturing a greater share of trips internally, and facilitating transit and non-motorized trip-making. Successful mixed-use areas with multi-modal access can thrive with lower parking ratios, freeing up land and capital for open space amenities and productive, revenue-producing uses.

Policies in this section are used to develop and maintain a sustainable multi-modal transportation system that supports new and existing residential, commercial and recreational areas, preserves and enhances neighborhood livability and the quality of life for Raleigh’s residents, and provides for the safe and efficient movement of people and goods. Land use and transportation decisions should mutually reinforce each other.

*See also A.4 ‘Land Use and Transportation Coordination’ in Element A: ‘Land Use’ for additional policies related to improving land use and transportation coordination.*

### Policy T 1.1

#### Coordination with Land Use Map

Transportation planning, development, expansion, and investment in transportation facilities should be coordinated with the Future Land Use Map. (2, 3, 4, 5)

### Policy T 1.2

#### Right-of-Way Reservation

Support the early identification and acquisition of land for future transportation corridors through land use planning and development permitting. (3, 4, 5)

### Policy T 1.3

#### Multi-modal Transportation Design

Offer residents safe and attractive choices among modes including pedestrian walkways, bikeways, public transportation, roadways, railways, and aviation. The street patterns of newly developed areas should provide multi-modal transportation alternatives for access to and circulation between adjacent neighborhoods, parks, shopping centers, and employment areas. (4, 5, 6)



### **Sensitive Area Streets**

Sensitive area streets are generally designed with a shoulder and swale section. They are typically utilized within a Metro Park or Watershed Protection Overlay District, or in other areas approved by the City Council. Special design standards for these streets are contained within the Raleigh Street Design Manual.

### **Policy T 1.4**

#### **Increasing Mobility Choice**

Diversify the mobility choices for work trips by targeting transit investments along corridors that connect concentrations of office, retail, and residential uses. (4, 6)

### **Action T 1.1**

#### **Corridor Preservation**

Create a “tool kit” of actions to help preserve future transportation corridors through development review and land use planning.

### **Policy T 1.5**

#### **Context Sensitive Road Design**

“Context Sensitive” approaches shall be used for new roadways or widening of existing roads to minimize impacts to historic business districts and neighborhoods and sensitive natural areas (particularly in watershed protection, conservation management and metro park protection areas). (4, 5, 6)  
*See Text Box: Sensitive Area Streets.*

### **Action T 1.2**

#### **Reserved**

### **Policy T 1.6**

#### **Transportation Impacts**

Identify and address transportation impacts before a development is implemented. (3, 4)

### Action T 1.3

#### Context Sensitive Solutions

Adopt Context Sensitive Solution practices to determine the most appropriate transportation improvements to minimize environmental impacts and serve adjacent and future land uses within a multi-modal network. These practices should be included in a revision to the Raleigh Street Design Manual.

- development (2.2 units per acre); City of Charlotte: Daily Trips  $\geq$  2,500 VPD; or affects a location with a high crash history; or takes place at a high congestion location (vehicles/capacity > 1); or creates a fourth leg at an existing signalized intersection; or exacerbates an already difficult situation (railroad crossing, school access, etc.).

#### Thresholds for Transportation Impact Analysis

NCDOT has adopted guidelines for when and how a Transportation Impact Analysis (TIA) should be performed. Many local jurisdictions, including Wake County, have also adopted TIA thresholds, typically lower than those chosen by NCDOT. NCDOT recommends a TIA when one of the following conditions is met:

- Access is from a four-lane street or greater;
- Daily trips exceed 3,000 vehicles per day (VPD);
- Within 1,000 feet of an interchange;
- Affects a location with a high crash history;
- Involves existing or proposed median crossover;
- Involves an active roadway construction project; or
- Involves an active TIP project.

Some example thresholds from local jurisdictions include:

- City of Durham: Peak Hour Trips  $\geq$  150 Vehicles per Hour (VPH);
- Wake County: Peak Hour Trips  $\geq$  100 VPH or Daily Trips  $\geq$  1,000 VPD;
- Town of Cary: Peak Hour Trips  $\geq$  20 VPH and any development where expected trips exceed traffic generated by R-20

## B.2 Roadway System and Transportation Demand Management

Raleigh is currently served by a mixture of streets striking different balances between the two major functions: providing mobility for through traffic, and providing access to adjacent land uses. Historically, Raleigh’s roadway system was planned according to the common functional classification scheme of arterials, thoroughfares and collectors. This approach, while useful for determining road function and width, did not provide for much variation in street design based on land use context, nor did it identify how to implement a “complete streets” approach to integrating other modes (pedestrians, cyclists, and transit riders) within the right-of-way.

With the adoption of a new development code in 2013, Raleigh has implemented an entirely new street classification system that is reflected in three locations: the policy basis for the street system is described in this section of the Comprehensive Plan; the regulatory requirements are set forth in the Unified Development Ordinance; and the engineering standards are detailed in the Raleigh Street Design Manual. The new street classification system addresses contexts ranging from high volume avenues to low-speed neighborhood streets and mixed-use main streets. It also sets forth requirements for bicycle and pedestrian facilities within streets. The function and purpose of each of the street types illustrated on **Map T.1** are described below:

### Street System

**Map T.1** reflects the adopted Street Plan for the



urbanized area, approved by the City Council and set forth in the Unified Development Ordinance. The adopted Street Plan is a component of the regional Comprehensive Transportation Plan, which is mutually approved by the governing bodies of all local jurisdictions in the region through the Capital Area Metropolitan Planning Organization (CAMPO) and the North Carolina Department of Transportation (NCDOT).

The street system is classified into six major categories:

- **Sensitive Area Streets** for locations such as watersheds or other environmentally sensitive lands where storm sewer infrastructure is not available or recommended.
- **Local Streets** provide access to primarily residential areas.
- **Mixed Use Streets** provide access to areas with ground floor commercial uses and generally feature on-street parking.
- **Major Streets** are facilities of four or more lanes that primarily serve mobility functions while providing varying levels of access to adjacent land uses.
- **Industrial and Service Streets** serve low volumes and provide access to industrial and commercial areas where demand for pedestrian and bicycle amenities is low.
- **Limited Access Highways** are major transportation facilities serving heavy volumes of traffic, often of a regional nature. These facilities are designed to handle the heavy peak hour demands of commuting, or to serve concentrated destinations such as sports and entertainment facilities.

A more detailed description of these categories and the specific street types found in each is provided below:

### **Sensitive Area Streets**

Portions of the City adjacent to environmentally-sensitive areas require streets to be designed in a manner that reflect this context and the need for a higher degree of environmental and/or aesthetic control. The City has utilized sensitive area street

designs for some time within designated watershed areas and adjacent to Umstead State Park. Streets in these areas have historically employed narrower impervious surface footprints and utilized open channel shoulder and ditch cross-sections. Newer facility designs for this class of streets have included pedestrian or greenway infrastructure located behind the ditchline. The following roadway cross-sections are intended for use in these “Sensitive” areas.

- **Sensitive Area Parkways** are four-lane streets intended to support regional travel. Medians are a standard feature of parkways in almost every case, except where a narrower cross-section is needed to minimize right-of-way and environmental impact.
- **Sensitive Area Avenues** are two-lane streets for use in low-intensity areas. They have relatively narrow paved widths, which includes paved shoulders for bicycle and pedestrian uses in retrofit situations lacking sidewalks.
- **Sensitive Area Residential Streets** are appropriate in rural conditions with large lot homes, typically without water and sewer provisions.

### **Local Streets**

The local street system provides direct access to individual property throughout the City and makes up the majority of the City’s street inventory. Design of these streets can provide substantial flexibility relative to the adjacent land use context and an area’s multimodal transportation needs. However the street design must not be taken for granted, as poorly designed local streets can lead to unsafe driving conditions, negative aesthetics, and poor bicycle and pedestrian access for the community. Local Streets should place a high priority on pedestrian accessibility, and they should also be considered as low speed bicycle and vehicle routes. Local streets should be relatively short in total distance and used less frequently compared to other street typologies. Sidewalks on both sides of the street should be provided in all cases. Travel lanes should not be striped, consistent with the flexible shared-use nature of these streets.

- **Neighborhood Local** streets come in three varieties that vary in the width allocated to travel and parking lanes. At their narrowest, opposing cars may need to yield to one another in order to pass. Street widths should be chosen based on anticipated traffic demand and consistent with the Raleigh Street Design Manual.
- **Multifamily Streets** are a special street type for use in townhouse and apartment/condominium communities where much of the parking demand is accommodated in continuous parking areas adjacent to the public right-of-way. These streets look like a street with parallel, diagonal or perpendicular street, but with an arrangement by which the parking is outside of the public right of way.

### Mixed Use Streets

Mixed-use streets come in two basic types: Avenues, which are intended for areas of more suburban development, and Main Streets, which are appropriate for urban mixed-use settings where buildings front on the sidewalk.

- **Mixed-Use Avenues** are two- or three-lane facilities that provide access to abutting commercial and mixed land uses as well as higher density residences. They serve as primary bicycle and pedestrian routes with bicycle lanes and sidewalks, and may also accommodate local transit vehicles. Avenues may feature a median or center turn lane, and may provide on-street parking.
- **Main Streets** are intended for denser, more urban areas with lower vehicular speeds. Unlike Avenues, bike lanes are not provided, as cyclists are intended to use the full travel lane. Wider sidewalks and the option of diagonal on-street parking are also provided.

### Major Streets

The Major Street category includes Avenues of four or more lanes, and also introduces a new street type, the multi-way boulevard.

- **Avenues** functioning as Major Streets have a similar purpose to two- and three-lane Avenues but apply to thoroughfare and arterial

streets that require four or more lanes to accommodate traffic demand. Avenues with four or more lanes always feature medians. Signalized intersections are spaced further apart on major streets to better facilitate vehicular mobility. Major transit routes are often found on these corridors. Midblock pedestrian crossings shall be installed on long blocks to maintain walkability in areas where pedestrian usage could be heavy and to provide easy access to transit facilities. On-street parking on facilities of six or more lanes is not recommended; such streets should be designed as Boulevards.

- **Boulevards** represent a unique street cross-section that are intended to provide a high level of both access and mobility—accommodating a significant volume of through traffic, while also providing a high level of access to urban land uses with welcoming pedestrian amenities. Multi-way boulevards solve this conflict by using medians to separate through travel lanes from lanes used for parking access and bicycle circulation. Pedestrian accessibility is typically provided directly adjacent to the land uses and separated from the through travel lanes.

### Industrial and Service Streets

Streets within industrial and service areas typically carry lower traffic volumes but accommodate a higher proportion of truck traffic. Pedestrian facilities do not need to be as generous as in mixed-use areas, and separate bicycle facilities are not provided. On-street parking may be provided along these streets, however parking may be restricted in cases where industrial access points require additional space to accommodate larger vehicles.

### Limited Access Highways

Limited Access Highways include both limited-access freeways and expressways. **Freeways** are multi-lane, median-divided highways designed to the highest possible standard. Freeways are characterized by complete control of access and are subject to regulation by NCDOT and the Federal Highway Administration (FHWA). These facilities are designed to carry heavy amounts of traffic at higher rates of speed and do not typically



**Table T-1 Summary of General Street Capacity**

Street Type	Typical Two-Way Volumes	Typical Section	Examples
Freeway	> 40,000 Vehicles per Day (VPD)	At least two or three lanes in each direction, with medians no direct driveway access	I-40, I-440, US 64 Bypass
Eight-Lane Street	40,000-60,000 VPD	Four lanes in each direction with medians and limitations on driveway access	Portions of Glenwood Ave., Capital Blvd., S. Saunders St.
Six-Lane Street	25,000 – 45,000 VPD	Three lanes in each direction, with medians or a center turn lane and limitations on driveway access	US 401 (Louisburg Rd.), NC 50 (Creedmoor Rd.), Wake Forest Rd., Falls of Neuse Rd., Hammond Rd..
Four-Lane Street	15,000 – 35,000 VPD	Two lanes in each direction, with medians or a center turn lane and varying limitations on driveway access	Millbrook Rd., Lynn Rd., Hillsborough St., Blue Ridge Rd., Leesville Rd., Martin Luther King Jr. Blvd., Brier Creek Pkwy.
Three-Lane Street	8,000 – 20,000 VPD	At least one lane in each direction, with medians or a center turn lane	Clark Avenue, Ray Rd., Newton Rd., Lassiter Mill Rd., Peace St.
Two-Lane Street	<10,000 VPD	One lane in each direction with various configurations for on-street parking	Various

include any multimodal infrastructure within the corridor. Access is provided through grade-separated interchanges and no perpendicular access via at-grade intersections or driveways is allowed. Examples of this type of roadway are Interstates 40 and 440. **Expressways** are multi-lane, median-divided highways with lower design standards than freeways and a high degree of access restriction, however at-grade intersections, traffic signals, and direct driveway access may be utilized. Multimodal infrastructure within these corridors is usually provided via separated, parallel facilities. Capital Boulevard between Wade Avenue and Wake Forest Road is an example of an expressway.

### Special Study Areas

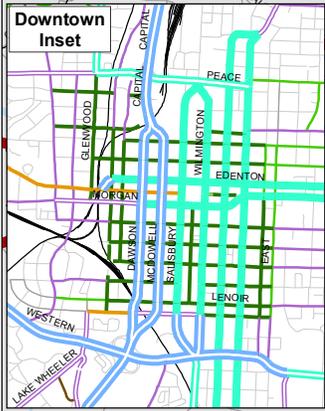
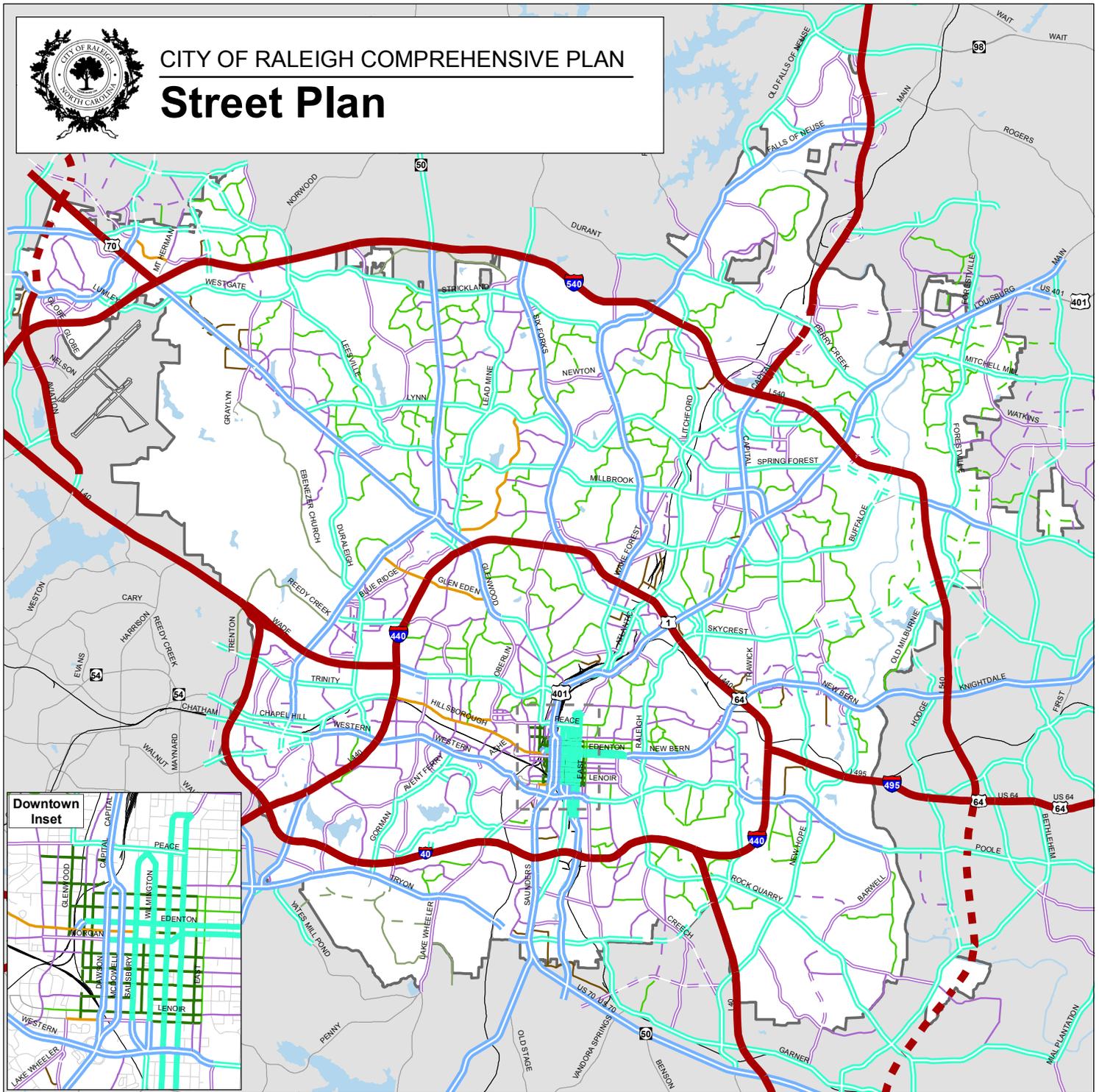
During the comprehensive planning process, five specific areas of Raleigh were identified for focused transportation studies to either determine preferred roadway alignments, locate potential new connections, or identify other roadway projects needed to address specific transportation and land use issues or problems. The Crabtree Valley Study was completed and presented to City Council in 2011. The Gorman Street extension will be evaluated as part of a larger regional effort. Some areas are forecasted to suffer from significant congestion based on 2040 growth projections; some require increased connectivity to set the stage for future

**Reserved**



# CITY OF RALEIGH COMPREHENSIVE PLAN

## Street Plan



MAP T-1

**A. Sensitive Area Streets**

- Sensitive Area Parkway
- Sensitive Area Parkway Proposed
- Sensitive Area Avenue
- Sensitive Area Avenue Proposed

**B. Local Streets**

- Neighborhood Street
- Neighborhood Street Proposed
- Multifamily Street
- Multifamily Street Proposed

**C. Mixed Use Streets**

- Avenue 2-Lane, Undivided
- Avenue 2-Lane, Undivided Proposed

- Avenue 2-Lane, Divided
- Avenue 2-Lane, Divided Proposed
- Avenue 3-Lane, Parallel Parking
- Avenue 3-Lane, Parallel Parking Proposed
- Main Street, Parallel Parking
- Main Street, Parallel Parking Proposed
- Main Street, Angle Parking
- Main Street, Angle Parking Proposed

**D. Major Streets**

- Avenue 4-Lane, Parallel Parking
- Avenue 4-Lane, Parallel Parking Proposed
- Avenue 4-Lane, Divided
- Avenue 4-Lane, Divided Proposed

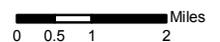
- Avenue 6-Lane, Divided
- Avenue 6-Lane, Divided Proposed
- Multi-Way Boulevard, Parallel Parking
- Multi-Way Boulevard, Parallel Parking Proposed
- Multi-Way Boulevard, Angle Parking
- Multi-Way Boulevard, Angle Parking Proposed

**E. Industrial and Service Streets**

- Industrial Street
- Industrial Street Proposed

**Other Streets**

- Limited Access Highway
- Limited Access Highway Proposed
- Raleigh Jurisdictional Limit



Map created 10/9/2015  
by the City of Raleigh  
Department of City Planning

redevelopment; and in some cases the City and affected property owners would greatly benefit from resolving uncertainty regarding future alignments. The remaining three areas and the study purpose are described below:

1. **Six Forks/Wake Forest Road Corridor:** Evaluate the growth projections for this area from I-440 to Wake Forest Road. Future volume projections indicate roadways in this area may be significantly over capacity in the future.
2. **Centennial Parkway/Lake Wheeler Road/Maywood Avenue Area:** Evaluate future roadway improvements and connectivity needs, consistent with the recommendations of the “Big Ideas” workshops to accommodate a new land use vision for this area.
3. **Atlantic Avenue Corridor:** Evaluate the growth projections for the corridor between Capital Boulevard and Millbrook Road. Future volume projections indicate Atlantic Avenue may be over capacity in the future and may warrant reclassification.

### Policy T 2.1

#### Integration of Travel Modes

Promote and develop an integrated, multi-modal transportation system that offers safe and attractive choices among modes including pedestrian walkways, bikeways, public transportation, roadways, railways, and aviation. (3, 5, 6)

### Policy T 2.2

#### Defining Future Rights-of-Way

As resources permit, move from "conceptual" routes for future streets to more specifically mapped future rights-of-way, backed by engineering studies. Mapping streets also determines where to install water and sewer infrastructure and reduces the need for easements across private property. (3, 5)

### Policy T 2.3

#### Eliminating Gaps

Eliminate “gaps” in the roadway system and provide a higher roadway grid density that will increase mobility options and promote the accessibility of nearby land uses. (3, 4, 5)

### Policy T 2.4

#### Road Connectivity

The use of cul-de-sacs and dead-end streets should be minimized. (3, 5)

### Policy T 2.5

#### Multi-modal Grids

All new residential, commercial, or mixed-use developments that construct or extend roadways should include a multi-modal network (including non-motorized modes) that provides for a well-connected, walkable community, preferably as a grid or modified grid. (4, 6, 5)



### **Policy T 2.6**

#### **Preserving the Grid**

Existing street grid networks should be preserved and extended where feasible and appropriate to increase overall connectivity. (4, 6, 5)

### **Policy T 2.8**

#### **Access Management Strategies**

Appropriate access management strategies (i.e. location and spacing of permitted driveways) should be applied based on a roadway's functional characteristics, surrounding land uses, and the roadway's users. (3, 4, 5)

### **Policy T 2.7**

#### **Conditions for Roadway Closure**

No street, alley, or other public right-of-way shall be abandoned without the highest level of scrutiny and concurrence among affected City departments and utility companies. Right-of-way abandonment shall be subject to the following findings:

- The closure will not compromise the integrity of the City's street network, nor lead to a significant loss of vehicular or pedestrian connectivity;
- The closure will not impair the ability to provide utility service;
- The closure will not adversely impact the health, safety and welfare of the community, including access by emergency vehicles;
- The proposed closure is not in conflict with adopted Raleigh Historic Development Commission policy regarding street, alley, or other public right-of-way closures in local historic and National Register districts; and
- The proposed closure is in the public interest. (4, 6)

### **Policy T 2.9**

#### **Curb Cuts**

The development of curb cuts along public streets—particularly on major streets—should be minimized to reduce vehicular conflicts, increase pedestrian safety, and improve roadway capacity. (3, 4, 5)

### **Policy T 2.10**

#### **Level of Service**

Maintain level of service (LOS) "E" or better on all roadways and for overall intersection operation at all times, including peak travel times, unless maintaining this LOS would be infeasible and/or conflict with the achievement of other goals. (3)

Level of Service (LOS)

LOS A	Drivers perceive little or no delay and easily progress along a corridor.
LOS B	Drivers experience some delay but generally driving conditions are favorable.
LOS C	Travel speeds are slightly lower than the posted speed with noticeable delay in intersection areas.
LOS D	Travel speeds are well below the posted speed with few opportunities to pass and considerable intersection delay.
LOS E	The facility is operating at capacity and there are virtually no useable gaps in the traffic. This is typically the acceptable threshold for urban areas.
LOS F	More traffic desires to use a particular facility than it is designed to handle resulting in extreme delays.

*Source: Highway Capacity Manual 2000 (HCM)*

**Policy T 2.11**

**Lane Additions**

Consider adding lanes to increase roadway capacity only after the roadway exceeds 20 percent of full capacity and all other alternative approaches have been considered. This includes enhancing other transportation modes and roadway modifications such as restricting driveway access and adding turn lanes. Improvements to the roadway network should increase vehicle dispersion and circulation. (3, 5)

that sufficient right-of-way may be preserved. (3, 5, 6)

**Policy T 2.13**

**Increasing Vehicle Occupancy**

Encourage and support programs that increase vehicle occupancy, including the provision of traveler information, shuttles, preferential parking for carpools/vanpools, park and ride, transit pass subsidies, and other methods (refer to Triangle Region Long Range TDM Plan). (3, 5)

**Policy T 2.12**

**Interjurisdictional Transportation Planning**

Continue to work with regional planning partners and local transportation agencies to coordinate transportation planning, operations, and funding priorities and to identify existing and future transportation corridors that should be linked across jurisdictional boundaries so

**Policy T 2.14**

**Employer-Based Trip Reduction**

Encourage employers to provide transit subsidies, bicycle facilities, alternative work schedules, ridesharing, telecommuting and



work-at-home programs, employee education, and preferential parking for carpools/vanpools. (3, 5)

### Policy T 2.15

#### Sensitive Road Design

Ensure that all new roadway projects and major reconstruction projects preserve existing trees and topography to the maximum extent feasible and provide an adequate street tree canopy while providing for the safest facility possible. Involve relevant experts (such as a certified arborist) in project planning when implementing this policy. (5)

### Policy T 2.16

#### Assessing Changes in Road Design

Subject all proposed changes to the treatment of existing vehicular rights-of-way, such as changes to the number and type of travel lanes, to a study prior to implementation to determine the impacts on the larger network and the level of service of all relevant modes. (3, 4)

### Policy T 2.17

#### Bridge Improvements

Coordinate with NCDOT for bridge monitoring, maintenance, and rehabilitation. Bridge improvements should be considered when roadway investments are being pursued. (3, 5)

### Policy T 2.18

#### Roadway Tree Canopies

Provide additional tree canopies consistent with recommendations from the Urban Forestry Division. Along multi-lane roads with planted medians, this reduces the visual height-to-width ratio of the overall streetscape and provides pedestrian refuges at signalized crossings. (5)

### Action T 2.1

#### Reserved

### Action T 2.2

#### Access Management Plan

Establish a flexible Access Management Plan that identifies and helps preserve priority corridors.

### Action T 2.3

#### Right-of-Way Reservation

Conduct detailed analyses of proposed corridors and roadway connections to establish alignments, and take proactive

steps to resolve future corridors and connections via development coordination or by acquisition.

### **Action T 2.4**

#### **Limited Access Lane Management**

Coordinate with NCDOT on limited access facilities to investigate the feasibility of establishing lane management policies such as high occupancy vehicle (HOV) lanes, truck lanes, express lanes, and toll lanes.

### **Action T 2.5**

#### **Inter-modal Facility Prioritization**

Work with CAMPO in the prioritization of inter-modal transportation facilities to ensure that adequate funding consideration for the planning and programming of these facilities is being given as part of CAMPO's Transportation Improvement Program (TIP).

### **Action T 2.6**

**Reserved**

### **Action T 2.7**

#### **Special Transportation Studies**

Undertake special studies for the three areas identified in the introduction to this section:

1. Six Forks/Wake Forest Road Corridor
2. Centennial Parkway/Lake Wheeler Road/ Maywood Avenue Area
3. Atlantic Avenue Corridor

### **Action T 2.8**

#### **Transportation Funding Strategy**

Develop a funding strategy for all maintenance and new construction transportation projects, including public/private partnerships for construction of strategic transportation facilities. The strategy should reflect a multi-modal approach to transportation issues.

### **Action T 2.9**

**Reserved**



### B.3 Complete Streets: Hierarchy and Design

Transportation corridors should be more than just roadways for automobiles. Corridors can be designed and classified to reflect a balance between various modes and surrounding land uses. The term "Complete Streets" refers to streets that are designed to enable safe access and mobility for all users (i.e., pedestrians, bicyclists, motorists, and transit riders) of all ages and abilities. The urban form, trees, and buffers along such streets should also relate to the modes of transportation they support and the land uses they serve. Complete streets further social justice by accommodating users of different means and abilities, and enhance real estate value by improving the public realm.

While the CAMPO Comprehensive Transportation Plan classifies roadways based on vehicle capacity and function, the Raleigh Street Plan provides guidance on how streets should relate to the land uses they serve, and the role of pedestrian and bicycle circulation and transit. Raleigh has transitioned to a new typology that includes the dimensions of street character and land use in addition to capacity and function, and broadens the notion of capacity to encompass the movement of people, not just cars. The new classifications include typologies such as Avenues, Boulevards, Parkways, and Main Streets.

NCDOT is considering similar transitions to its street classification system as part of its implementation of its Complete Streets Policy. The Street Map, displayed in Map T-1, further applies a new system of street overlays as part of the Growth Framework Map (see Map F-1 in 2 'Framework'). There are four types of corridors identified on the Map: highway, multi-modal, urban, and parkway. These types have been applied to all existing and proposed major streets within the City.

- **Multi-modal Streets:** Transit and non-motorized modes are anticipated to provide a significant share of the total capacity of these streets, and the street right-of-way should be managed accordingly. Where bus is the transit mode, these streets should be targeted for improvements such as turn-out lanes, shelters and benches at every stop. Queue jump lanes, signal priorities, and exclusive lanes for transit may also be appropriate. Some transit streets may eventually convert to streetcar service, and for all such streets, a high level of pedestrian facilities and amenities should be provided. Land uses are expected to directly connect to and address the street. Bicycles should be accommodated. Alternative cross-sections may be employed to meet these goals.
- **Urban Streets:** These are like multi-modal streets but are not anticipated to have the same level of transit service. Urban streets can be narrower than other streets in the same classification, and should include on-street parking (where appropriate) and enhanced pedestrian facilities.
- **Parkways:** These streets are suburban in nature and more likely to be framed by landscaping rather than buildings. More traditional cross-sections can be employed on these streets. Landscaped medians are encouraged.
- **Highways:** These are limited-access, grade separated roadways providing little to no direct access to adjacent land uses. NCDOT maintains jurisdiction over these facilities and no changes are proposed to how these are planned and developed.

### Implementing a Complete Streets Network

The City of Raleigh is dedicated to improving the lives, health, and well-being of our residents and visitors, regardless of age, income, health, or mode of transport. A network of Complete Streets across the City contributes to both livability and sustainability in that it provides safe and equitable mobility choices, recognizes all users regardless of physical ability or mode of travel, provides amenities and infrastructure for all modes, and complements adjoining architectural, economic, community, and land use patterns. With a Complete Streets Policy, the City recognizes that all streets are different and that the needs of various users must be balanced. Such a network will be accessible to users of all ages and ability—including bicyclists, pedestrians, transit users, motorists, freight providers, and municipal and emergency service providers—and ensure that all users experience a functional and visually attractive environment.

In developing a Complete Streets network, transportation improvements may include a wide variety of facilities and amenities, as appropriate, to meet the needs of all users. These may include but are not limited to:

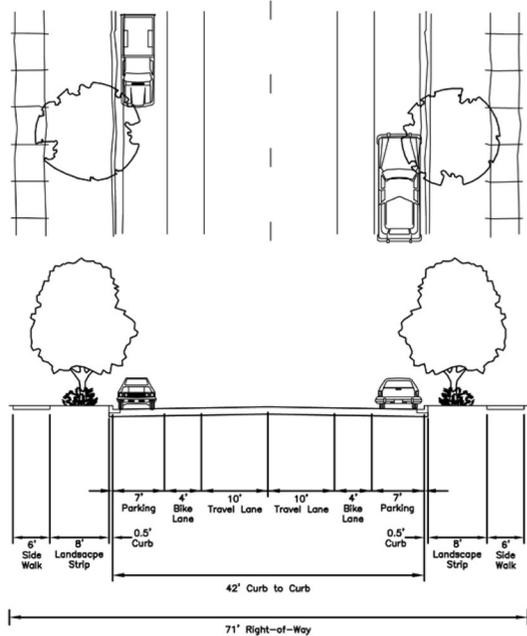
- Sidewalks and pedestrian safety improvements, such as traffic signals, roundabouts, bulb-outs, curb extensions, high visibility crossings, buffer zones, and shared use pathways;
- Bicycle safety improvements, such as bike lanes bike parking, cycle tracks, wide outside lanes, sharrows, paved shoulders, and signal detection;
- ADA compliance and full accessibility;
- Transit infrastructure including bus shelters, benches, trash cans, and pads;
- Street- and pedestrian-level lighting;
- Street trees, landscaping, street furniture, and adequate stormwater/drainage facilities;
- Access for emergency services without compromising safety or accessibility; and,
- Infrastructure for freight providers, including designated routes, large turning radii, and loading zones.

Complete street designs should be context-sensitive, consider local needs, and incorporate up-to-date design standards appropriate for the project setting. Each project must be considered both individually and as part of a connected network. Design should consider such elements as natural features, adjacent land uses, input from local stakeholders and merchants, community values, and future development patterns as outlined in the City's Future Land Use Map, Comprehensive Plan, and adopted studies. When determining the community context and the feasibility of implementing Complete Streets concepts, there should be a balance between the safety of all users, the roadway's vehicular level-of-service, and the multi-modal quality-of-service.

The City's Complete Streets Policy applies to all street projects, including those involving new construction, reconstruction, retrofits, repaving, rehabilitation, or changes in pavement marking. The City will actively look for opportunities to repurpose rights-of-way to enhance connectivity for all travelers. The development of a Complete Streets network will be achieved incrementally through single projects, as well as through continuing minor improvements, maintenance, and operational activities. The City will need to work closely with local, regional, and federal transportation agencies to promote compliance, as well as collaborate with all users of the public rights-of-way - such as utilities- to ensure that the principles and practices of Complete Streets are embedded within their planning, design, construction, and maintenance activities.



**Figure T-1: Sample Complete Streets Cross Section**



Source: Sacramento Transportation and Air Quality Collaborative

### Policy T 3.1

#### Complete Street Implementation

For all street projects and improvements affecting the public right-of way, consider and incorporate Complete Street principles and design standards that provide mobility for all types of transportation modes (pedestrian, bicycle, auto, transit, freight) and support mutually-reinforcing land use and transportation decisions. Work with NCDOT to implement these design standards for state-maintained roads within the City’s jurisdiction. (3, 4, 5, 6) See Text Box: *Implementing a Complete Streets Network*

### Policy T 3.2

#### Accommodating Multiple Users

Ensure that all new roadway projects and major reconstruction projects provide appropriate and adequate right-of-way for safe and convenient movement for all users including bicyclists, pedestrians, transit riders, and motorists. Manage the use of rights-of-way to best serve future travel demand (e.g., Multi-modal Streets—incorporate wider sidewalks where appropriate). (3, 5)

### Policy T 3.3

#### Redefining LOS

Expand the City’s use of level of service standards to include bicycle (BLOS), and pedestrian (PLOS), and transit (TLOS) levels of service. (3, 5)

### Policy T 3.4

#### Pedestrian-Friendly Road Design

Design Complete Street amenities with the pedestrian in mind, avoiding the use of traffic control and safety devices that favor vehicles. (4, 5, 6)

### Policy T 3.5

#### Medians

Limit the use of undivided multi-lane streets and utilize raised or landscaped medians, where feasible, to improve safety and vehicle throughput while providing opportunities for pedestrian refuges and landscaping. (5)

**Action T 3.1**

Reserved

**Action T 3.2**

Reserved

**Action T 3.3**

Reserved

**Action T 3.4**

**Transportation Data Collection**

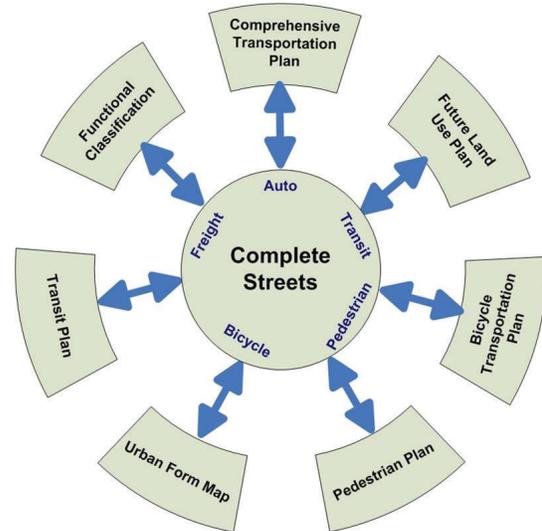
Collect data that supports the monitoring of roadway, transit, bicycle, and pedestrian performance measures such as level of service. (Refer to Bicycle Transportation Plan to obtain BLOS)

**Action T 3.5**

**Operationalizing Complete Streets**

Restructure planning, design, and construction procedures to accommodate the new Complete Streets approach in every project.

**Figure T-2**



**B.4 Public Transportation**

While Raleigh supports efforts for a regional transit system, emphasis must also be placed on improving transit services within the City. Additional transit services will be required to enhance mobility options, reduce vehicle miles traveled, and



encourage transit-oriented development around planned transit station areas. Transit connections need to be considered for the major trip generators in Raleigh (e.g. Wake Medical Campus, NCSU, downtown Raleigh, Crabtree, the Blue Ridge corridor, Highwoods, etc.). Further, enhanced local bus service will be needed to deliver riders to new rail stations, reducing the need to drive to these stations.

Policies in this section seek to foster increased transit use through the extension of existing lines, the provision of new services, increased frequency of service, and the provision of direct pedestrian and bicycle access to transit station areas. Increased transit use will further the City’s efforts to become more sustainable and energy efficient. Transit and land use will be tightly linked, with transit stations integrated into walkable, transit-oriented developments. Plans will be developed for new transit services such as regional rail, bus rapid transit (BRT), new bus routes between activity centers, and neighborhood bus service. Planned transit facilities are shown in **Map T-2**.

*See also L.2 Transportation Investments in Element L: Regional and Inter-Jurisdictional Element for related policies.*



## The Special Transit Advisory Commission (STAC) Report

The Special Transit Advisory Commission (STAC) was appointed by the Capital Area MPO and the Durham-Chapel Hill-Carrboro MPO to reevaluate regional transit options and develop a regional transit vision plan. The Commission’s final report, presented May 2008, covers three major categories of investment – enhanced region-wide bus service, circulators, and rail.

### Enhanced region-wide bus service

This would expand bus service throughout the region to connect communities and bring communities not presently served by transit into a regional transit network. Specific elements of this service include:

- High frequency express service between the Raleigh–Durham International Airport (RDU) and downtown Durham, downtown Raleigh (including the Convention Center), and the Cary train station park and ride;
- Rush Hour Only service to outlying communities;
- Enhanced bus service in core areas to support the rail and circulator investments;
- A system of park and ride lots to be served by the regional network and the express service; and
- Enhanced transit access for pedestrians and bicycles around park and ride lots and bus stops.

### **Circulators**

New circulator service would provide increased and flexible travel options within major activity centers. The report recommends circulator “zones,” leaving the specific designation of routes to individual jurisdictions and the MPOs. All circulators are anticipated to be buses initially, with the potential to transition to modern streetcars or trolleys in the future, depending on conditions and cost. Specific elements of this service include:

- RDU/RTP circulator connecting RDU to the Triangle Metro Center and other major activity areas in RTP; and
- Circulators in the downtown areas of Raleigh, Durham, Chapel Hill/Carrboro and Cary.

### **Rail**

Recommended rail service and investments would connect the region’s major activity centers, serve congested corridors, and provide opportunities to influence land use and development patterns. The North Carolina Railroad Shared Corridor Track Expansion Study is examining the feasibility of rush hour rail service on the Burlington-to-Goldsboro and Hillsborough-to-Chapel Hill/Carrboro corridors; STAC-recommended investments should be coordinated with the results of this study. Specific aspects of the recommended rail service include:

- The segments connecting Durham, RTP, Cary, downtown Raleigh, and north Raleigh will use diesel multiple unit (DMU) rail cars operating within existing railroad rights-of-way; and
- The segment connecting Chapel Hill to Durham will use Light Rail Transit (LRT), electrically-driven rail cars on a new alignment.

### **Implementation Challenges**

Three central implementation challenges for this Vision Plan are funding, land use, and leadership and governance. STAC recommends a half-cent sales tax (5¢ per \$10 in purchases) and a \$10 increase in vehicle registration fee as two ways to increase local funding available for transit investments. These new funds, when combined with existing local, state, and federal funding, plus debt financing, would be adequate to make the recommended transit improvements.

Pairing transit service and investment with local government investment in transit-supportive development policies and applying existing transit-supportive policies consistently are two specific strategies STAC recommends be used to encourage development patterns suited to transit investments and provide opportunities for increased transit usage.

Leadership and governance recommendations center on increased local and regional coordination. Specific STAC recommendations include: a greater accountability to voters by ensuring that elected officials serve in decision-making capacities for regional transit investments; encouraging continued cooperation between the MPOs; and establishing a regional staff committee from the working group that supported the work of the STAC to consult, study, and coordinate the completion of the Regional Transit Vision Plan.



### **Policy T 4.1**

#### **Promoting Transit**

Promote and support quality transit services to enhance mobility options and to meet the needs of the City's residents and visitors, with a focus on transit-dependent households. (1, 2, 5)

### **Policy T 4.5**

#### **Transit Efficiency**

Promote transit efficiency by reducing waiting time and transfer time within the Capital Area Transit (CAT) system and to other transit providers. (3)

### **Policy T 4.2**

#### **Short-Term Bus Improvements**

Enhance local and regional bus transit service in the short-term along key corridors where long-term rail transit improvements are planned and identified in the Regional Transit Vision Plan. (3, 4, 5)

### **Policy T 4.6**

#### **Event-Based Transit Services**

Substitute event-based transit services for on-site parking capacity where feasible, to free land for other uses around event locations. (3, 4, 5, 6)

### **Policy T 4.3**

#### **Fixed Guideway Priorities**

Prioritize fixed-guideway transit investments in corridors with the greatest potential to attract riders and shape development and redevelopment. (5)

### **Policy T 4.7**

#### **Transit Availability**

Increase the availability of public transportation between residential and employment areas, as well as to regional facilities such as RDU International Airport and Research Triangle Park. (2, 5, 6)

### **Policy T 4.4**

#### **R.O.W. Reservation for Transit**

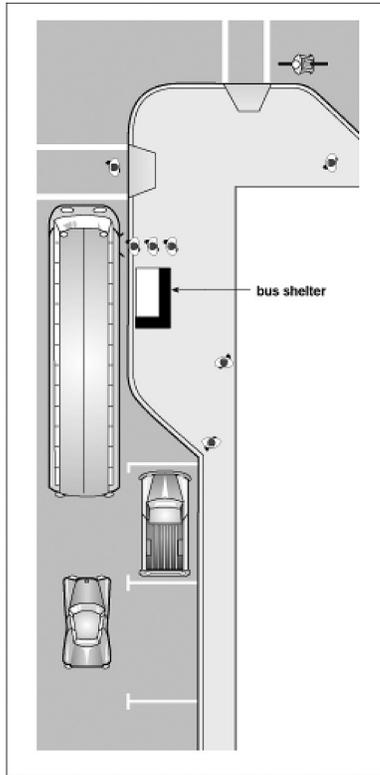
Preserve right-of-way for future transit and require that new development and redevelopment provide transit easements for planned alignments, rail stations, and bus stops within existing and planned transit corridors as identified in the Regional Transit Vision Plan. (3, 4, 5)

### **Policy T 4.8**

#### **Bus Waiting Areas**

Developments located within existing and planned bus transit corridors should coordinate with CAT to provide a stop facility that is lit and includes a shelter, bench, and other amenities (such as a waste receptacle) as appropriate. (4, 6)

**Picture T-3 Bus Stop Design**



Bus Stop Standards

*(distances represent the appropriate no parking zone to encompass the actual stopping point of the bus, plus room for it to approach and leave the stop)*

*Near side of intersection: 85 – 100 feet in length*

*Mid-block: 130 – 175 feet in length*

*Far side of intersection: 80 – 85 feet in length*

**Policy T 4.9**

**Sidewalk Improvements Near Transit**

Coordinate with local transit providers to identify sidewalks within one-third mile of transit stops in need of enhancement for persons with disabilities. (4)

**Policy T 4.10**

**Transit-First Features**

Incorporate features such as traffic signal priority, queue jumps, and exclusive transit lanes to improve transit operations and reliability, where appropriate. (3, 5)

**Policy T 4.11**

**Demand-Responsive Transit**

Support the provision of demand-responsive services [e.g., expansion of Accessible Raleigh Transportation (ART) and paratransit services] and other transportation services for those unable to use conventional transit. (1)

**Policy T 4.12**

**Special Needs**

Provide adequate and accessible transit for residents and visitors with special needs, including senior citizens, the disabled, and transit-dependent persons. (1)

**Policy T 4.13**

**Crosstown Travel**

Create routes and a network of secondary transfer hubs that facilitate cross-town and suburb-to-suburb travel patterns. (4, 5)



### **Policy T 4.14**

#### **Growth Centers**

Provide circulator services to facilitate mobility within identified City Growth Centers and to connect these centers with fixed-guideway stops and major transit routes. (4)

### **Policy T 4.7**

#### **Transit Service Coordination**

Coordinate local bus route planning including feeder services with new fixed-guideway services, as they become available. (3, 4)

### **Policy T 4.15**

#### **Enhanced Rider Amenities**

Promote the use of transit facilities and services through enhanced pedestrian access and provisions for seating, shelter, and amenities. (6)

### **Action T 4.1**

#### **Multi-modal Transportation Center**

Pursue the development of the Multi-modal Transportation Center in downtown Raleigh. The Multi-modal Center is a proposed central station linking multiple travel modes including local, regional, and long-distance bus; regional, commuter, and long-distance rail (Amtrak); taxis, cars, and downtown transit circulators. (4)

### **Policy T 4.16**

#### **Bus Stop Spacing**

Explore opportunities to provide more widely spaced bus stops with higher amenity levels, trading shorter walking distances with faster transit service and better facilities. (6)

### **Action T 4.2**

#### **Transit Stop Evaluations**

Evaluate transit stops to determine their convenience and effectiveness to serve riders and support land use policies.

### **Policy T 4.17**

#### **Anticipating Streetcar Service**

Infrastructure investments impacting proposed streetcar corridors, such as new or replacement bridges, should be designed to accommodate such service in the future. (3, 4)

### **Action T 4.3**

#### **Intercity Fixed Route Transit**

Explore, develop, and promote options for an intercity fixed-route transit system that will link neighborhoods to major activity centers in the region. Work with regional partners to use existing rail lines within the next 10 to 15 years, but also allow for services to run outside of existing rail lines in the longer-term.

### Action T 4.4

#### Streetcars

Explore future streetcar service for key multi-modal corridors including New Bern and Glenwood avenues, and South Saunders and Hillsborough streets.



facilities along the following existing and proposed Express Bus Routes: Capital Boulevard/Atlantic Avenue; Six Forks Avenue; Glenwood Avenue; Creedmoor Road; and New Bern Avenue. Also develop enhanced Park and Ride facilities in West Raleigh in the Arena area and in the South Saunders/Tryon area near the proposed secondary bus hub.

### Action T 4.7

#### Shared Parking and Transit

Evaluate the need and benefits of shared Park and Ride lots in areas that have significant unused daytime parking, such as shopping malls. Work with property owners and local communities to allocate off-street parking surpluses for carpooling and transit users.

### Action T 4.5

#### Transit Infrastructure

Study and implement a network of premium transit infrastructure that builds upon the STAC recommendations and augments the planned regional transit with enhanced local transit service, such as light rail transit, bus rapid transit, and/or streetcar lines to provide travel options, better connect Raleigh, and improve surface-level public transportation.

### Action T 4.8

#### Secondary Transit Hubs

Enhance secondary transit hubs at Crabtree Mall, NCSU, Triangle Town Center, and Wake Med. Establish a new hub in south Raleigh near Garner (e.g. South Saunders Street Park and Ride facility) and explore the potential for additional hubs as the system expands.

### Action T 4.6

#### Park and Ride Lots

Locate Park and Ride lots along the fringes of the City, with a direct connection to transit. Specifically, develop Park and Ride



### **Action T 4.9**

#### **Commitment to Regional Rail**

Lead regional efforts to improve transit services and pursue a regional rail system. This includes supporting a half-cent sales tax dedicated to transit funding.

### **Action T 4.13**

**Reserved**

### **Action T 4.10**

#### **Local Financing for Transit**

Pursue local and innovative financing options, beyond the proposed transit sales tax, to assist in funding transit infrastructure investments.

### **Action T 4.11**

**Reserved**

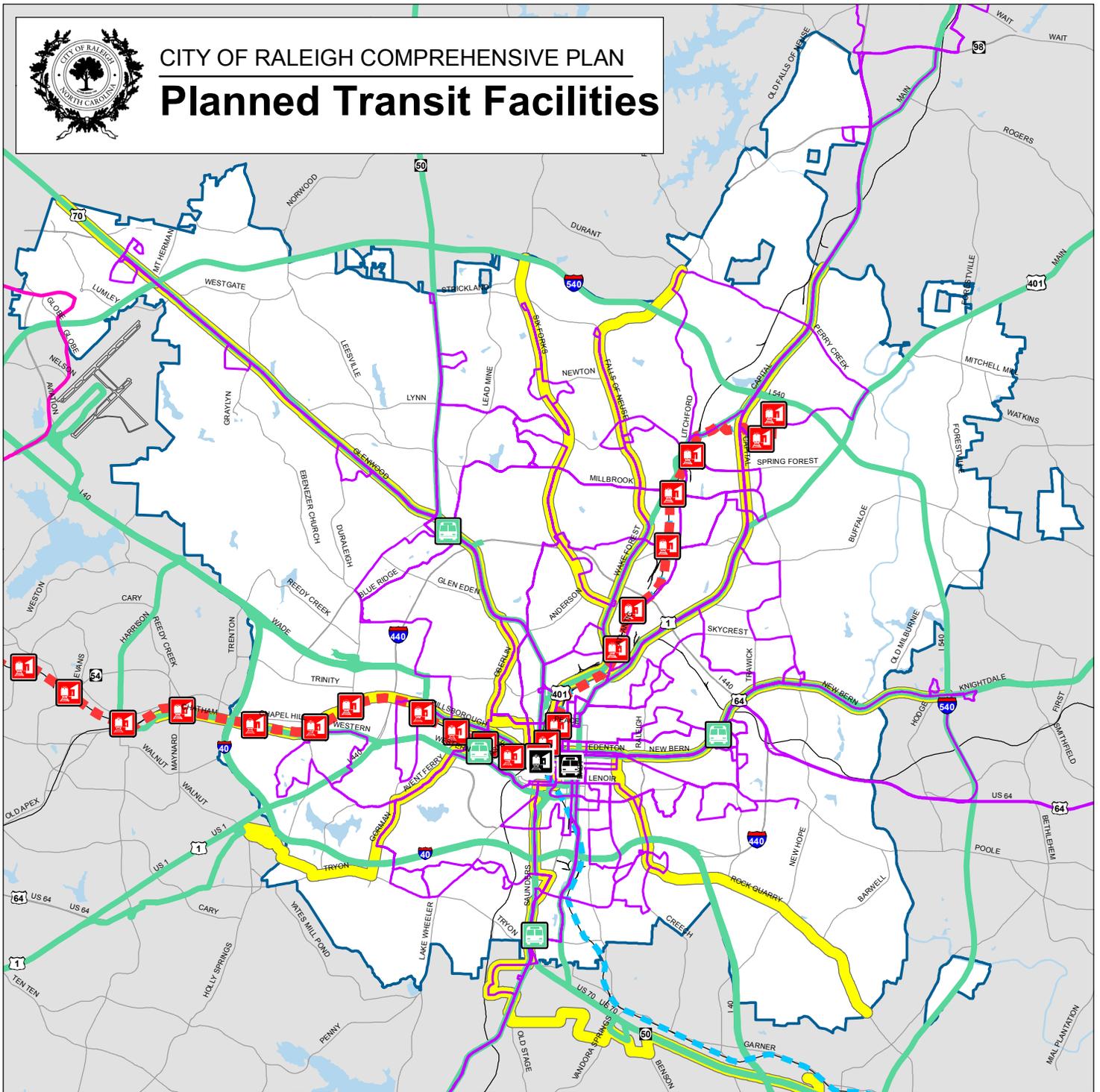
### **Action T 4.12**

#### **Bench and Shelter Siting**

Work with NCDOT to modernize the rules governing state-maintained roadways, to facilitate the placement of benches and shelters along Raleigh's major transit corridor.



CITY OF RALEIGH COMPREHENSIVE PLAN  
**Planned Transit Facilities**



MAP T-2

-  Multi-Modal Transit Center
-  Moore Square Station
-  Secondary Bus Hubs
-  Rail Transit Stations
-  CORE Loop
-  Regional Rail
-  Proposed Commuter Rail
-  Fixed Bus Routes
-  Enhanced Regional Bus Service
-  Priority Transit Corridors

 Raleigh Jurisdictional Limit



0 0.5 1 2 Miles

Map created 2/21/2014 by the City of Raleigh  
 Department of City Planning



## B.5 Pedestrian and Bicycle Circulation

Bicycles and pedestrians are an important component of Raleigh’s transportation system. There are significant gaps in the bicycle and pedestrian networks that hinder effective and safe circulation. This is particularly important in key locations such as retail and mixed used centers, schools, libraries, and parks. The quality of life will be greatly enhanced in Raleigh by investing in bicycle and pedestrian networks and amenities.



25 percent of all trips are made within a mile of the home, 40 percent of all trips are within two miles of the home, and 50 percent of the working population commutes five miles or less to work. The construction of a comprehensive citywide bicycle and pedestrian network, support facilities such as convenient and secure bicycle parking, and an educated driving and bicycling public will facilitate increased bicycling and walking. The existing and planned bicycle and pedestrian facilities are displayed in **Map T-3**.

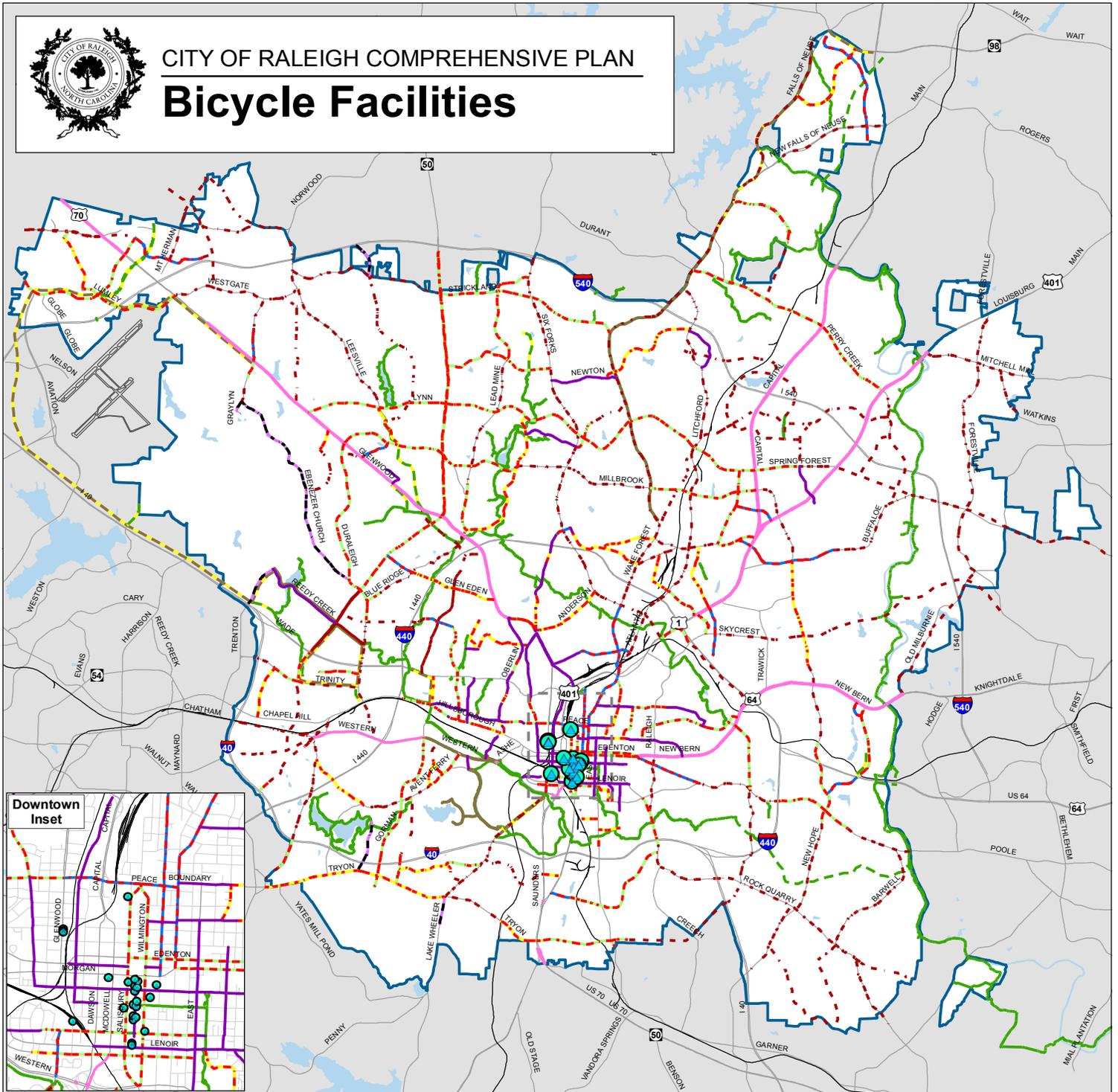


Policies in this section support the goal of providing Raleigh with a safe, walkable, and bikeable environment through a continuous pedestrian and bicycle network. Residents will be encouraged to integrate bicycling and walking into their daily activities to promote a healthier lifestyle and improve energy conservation. According to the 2001 Nationwide Personal Transportation Survey,



# CITY OF RALEIGH COMPREHENSIVE PLAN

## Bicycle Facilities



MAP T-3

### Bicycle Network

- Sharrow, Stripe
- Wide Lane, Restripe
- Bicycle Lane, Road Diet
- Bicycle Lane, Stripe
- Bicycle Lane, Restripe
- Bicycle Lane, New Construction
- Paved Shoulder, New Construction
- Bicycle Lane, Existing

### Greenways & Sidepaths

- Sidepath, Existing
- Sidepath, Proposed
- Greenway, Existing
- Greenway, Proposed

- Existing Bicycle Racks
- Rec. Bicycle Stations (Transit Hubs)
- Raleigh Jurisdictional Limit



0 0.5 1 2 Miles

Map created 10/2/2013 by the City of Raleigh Department of City Planning



### Policy T 5.1

#### Enhancing Bike/Pedestrian Circulation

Enhance pedestrian and bicycle circulation, access, and safety along corridors, downtown, in activity and employment centers, at densely developed areas and transit stations, and near schools, libraries, and parks. (4, 5, 6)

travel free of major barriers and impediments such as cul-de-sacs and large parking lots. (5, 6)

### Policy T 5.5

#### Sidewalk Requirements

New subdivisions and developments should provide sidewalks on both sides of the street. (5, 6)

### Policy T 5.2

#### Incorporating Bicycle and Pedestrian Improvements

All new developments, roadway reconstruction projects, and roadway resurfacing projects in the City of Raleigh's jurisdiction should include appropriate bicycle facilities as indicated in the Recommended Bicycle Network of the 2008 City of Raleigh Bicycle Transportation Plan. (3, 4, 5, 6)

### Policy T 5.6

#### Bridges, Underpasses, and Interchanges

Pedestrians and bicyclists shall be accommodated on roadway bridges, underpasses, and interchanges (except on roadways where they are prohibited by law). Bicycle lanes and wide sidewalks should be included on all new bridges and underpasses (requires NCDOT coordination on state-maintained roads). (1, 3)

### Policy T 5.3

#### Bicycle and Pedestrian Mobility

Maintain and construct safe and convenient pedestrian and bicycle facilities that are universally accessible, adequately illuminated, and properly designed to reduce conflicts among motor vehicles, bicycles, and pedestrians. (1, 3, 5, 6)

### Policy T 5.7

#### Capital Area Greenway

Treat the Capital Area Greenway Trail system as part of the City's transportation network for bicycles and pedestrians and plan connections to the system accordingly. (4, 5, 6)

### Policy T 5.4

#### Pedestrian and Bicycle Network Connectivity

Continuous pedestrian and bicycle networks should be provided within and between existing and new developments to facilitate safe and convenient pedestrian and bicycle

### Policy T 5.8

#### Workplace Bicycle Facilities

Encourage bicycle facilities, such as secured bicycle racks, personal lockers, and showers for new and existing office developments to encourage bicycling as an alternative mode for work commutes. (5, 6)

### Policy T 5.9

#### Pedestrian Networks

New subdivisions and large-scale developments should include safe pedestrian walkways or multi-use paths that provide direct links between roadways and major destinations such as transit stops, schools, parks, and shopping centers. (5, 6)

### Policy T 5.10

#### Building Orientation

All primary building entrances should front onto a publicly accessible, and easily discernible, and ADA-compliant walkway that leads directly from the street to the front door to improve pedestrian access. (4, 5, 6)

### Policy T 5.11

#### New Bike Routes

Convert underused right-of-way along travel lanes and railroad corridors to bikeways or widen outside lanes wherever possible and desirable. (3, 4, 5)

### Policy T 5.12

#### Safe Routes to School

Support infrastructure and programs that encourage children to walk and bicycle safely to school. Coordinate with Wake County Public School System and NCDOT Bike/Pedestrian Division to identify projects eligible for "Safe Routes to Schools" funding. (1, 5, 6)



### Policy T 5.13

#### Pedestrian Infrastructure

Ensure that streets in areas with high levels of pedestrian activity (e.g., employment centers, residential areas, mixed-use areas, schools) support pedestrian travel by providing such elements as frequent and safe pedestrian crossings, large medians for pedestrian refuges,



bicycle lanes, frontage roads with on-street parking, and/or grade separated crossings. (1, 4, 5, 6)

### Policy T 5.14

#### Rails to Trails

Encourage the development of greenway trails along existing rail corridors. (3, 4, 5, 6)



### Action T 5.3

Reserved

### Action T 5.4

Reserved

### Action T 5.5

#### Trail and Path Width

Develop and maintain greenway trails and multi-use paths to be no less than ten feet wide as identified in the 2008 City of Raleigh Bicycle Transportation Plan and current AASHTO standards.

### Action T 5.1

Reserved

### Action T 5.6

#### Bicycle Plan Implementation

Maintain and implement the Comprehensive Bicycle Transportation Plan.

### Action T 5.2

Reserved

**Action T 5.7**

**Reserved**

**Action T 5.8**

**Reserved**

**Action T 5.9**

**Personal Motorized Modes**

Consider how and to what extent personal motorized modes of travel, including Segways and other emerging Personal Accessibility Vehicles (PAVs), might safely be accommodated within the pedestrian and bicycle network

**Action T 5.10**

**Pedestrian Crossing Standards**

Establish standards for maximum distances between pedestrian crossings that are also associated with roadway classification to enhance walking and transit use.

**Action T 5.11**

**Crosswalk Safety**

Widen crosswalks and install durable painted crosswalks and/or other investments to increase pedestrian safety and visibility at crossings.

**Action T 5.12**

**Reserved**

**Action T 5.13**

**Reserved**



### Action T 5.14

#### Railroad Greenway Trails

Partner with railroad entities to locate additional greenway trails along existing rail lines.

### Policy T 6.2

#### Transit Station Parking

Establish transit station area parking program and management strategies for proposed and planned transit stations. (3, 4)

## B.6 Parking Management

While Raleigh currently has parking standards, there is a need to modify and enforce these standards to optimize supply. In some instances there is an overabundance of parking supply, incentivizing Single Occupancy Vehicle (SOV) travel. By managing and pricing the parking supply, the City can encourage transit, bicycling, and walking as means of travel. This also results in positive effects to air quality and reduces overall congestion on the roadway network.

Policies in this section focus on providing sufficient parking for businesses, while protecting adjacent land uses and the environment. Reduced parking requirements will be provided where appropriate to promote walkable communities and alternative modes of transportation. On-street parking use and shared parking will be maximized through the use of parking management tools.

### Policy T 6.3

#### Parking as a Buffer

Encourage the location of on-street parking and drop-off areas adjacent to sidewalks as a buffer to vehicular traffic, and for customer convenience, and maximizing on-street parking turnover. Parking between sidewalk areas and building fronts should be minimized. (4, 6)

### Policy T 6.4

#### Shared Parking

Strongly encourage shared-use car parking for land uses where peak parking demand occurs at different times of the day, reducing the total number of spaces required. (3, 4)

### Policy T 6.1

#### Surface Parking Alternatives

Reduce the amount of land devoted to parking through measures such as development of parking structures and underground parking, the application of shared parking for mixed-use developments, flexible ordinance requirements, maximum parking standards, and the implementation of Transportation Demand Management plans to reduce parking needs. (3, 4)

#### Shared Parking

Shared parking is the use of a parking space to serve two or more individual land uses without conflict or encroachment. The ability to share parking spaces is the result of two conditions: (1) variations in the accumulation of vehicles by hour; by day; or by season at the individual land uses; and (2) relationships among the land uses that result in visiting multiple land uses on the same auto trip. (*Shared Parking*, Urban Land Institute, 2005)

### Policy T 6.5

#### Minimum Parking Standards

Reduce the minimum parking standards over time and as appropriate to promote walkable neighborhoods and to increase use of transit and bicycles. (3, 5)

### Policy T 6.6

#### Parking Connectivity

Promote parking and development that encourage multiple destinations within an area to be connected by pedestrian trips. (3, 4, 5)

### Policy T 6.7

#### Parking Demand Management

Discourage single occupant vehicle trips through parking supply and pricing controls in areas where supply is limited and alternative transportation modes are available. (3, 4)

### Policy T 6.8

#### Parking Lot Design

Parking areas should be designed to minimize conflicts with pedestrians. (3, 4)  
*See also M.2 'Transportation' in Element M: 'Downtown Raleigh'.*



### Policy T 6.9

#### Green Parking Facilities

Reduce stormwater runoff generated by parking facilities by promoting an increase in the use of tree planting and landscaping, green roofs for parking decks, and permeable materials for parking lots, driveways, and walkways. (3, 4, 5)

### Action T 6.1

#### Reserved



### Action T 6.2

#### Shopping Center Park and Ride

Require shopping centers on existing or planned transit routes that provide 400 or more parking spaces to designate at least 5 percent of the required spaces as “Park and Ride” spaces. In addition, amend the parking design standards in the Street Design Manual to encourage these spaces to be contiguous and located near the transit facility. *See also B.5 ‘Public Transportation’.*

### Action T 6.4

Reserved

### Action T 6.5

Reserved

### Action T 6.3

Reserved

## B.7 Transportation Safety Improvements

While it is important to provide a multi-modal transportation system that efficiently moves users to their destinations, it is more important that the users arrive to their destinations safely. Reducing the conflict points between modes, such as vehicles with bicycles and pedestrians, can greatly enhance safety.

Traffic calming is another way to enhance safety and is a common desire in many neighborhoods and communities. As traffic levels increase on major streets, drivers will use alternative routes to make their trips. This additional through traffic, which is typically generalized as traveling above posted speeds, is undesirable in residential areas.

Policies in this section support the provision of a safe multi-modal transportation network for all users. Policies include consideration of traffic calming, bicycle and pedestrian crossings, and crash analysis.

**Policy T 7.1**

**Safety Improvements**

Work with all parties necessary to improve the multi-modal transportation system so that safe routes for motorists, transit riders, bicycles, and pedestrians are provided. (5, 6)

**Policy T 7.2**

**Traffic Calming**

Incorporate traffic calming techniques and treatments into the design of new or retrofitted local and neighborhood streets, as well as within school, park, and pedestrian-oriented business areas, to emphasize lower auto speeds, encourage bicycling and walking, and provide pedestrians with a convenient, well-marked, and safe means to cross streets. (3, 5, 6)

**Policy T 7.3**

**Transportation Safety Data**

Maintain data necessary to assess roadway safety performance and support enforcement and education. Data may include traffic volume data for major roadway network facilities, geographically referenced crash report data, and digital crash report archives for injury crashes. (5, 6)

**Policy T 7.4**

**Road Capacity and Safety**

Evaluate and document the safety impacts of proposed roadway capacity projects including impacts to bicycle and pedestrian safety. (6)

**Policy T 7.5**

**Reducing Cut-Through Traffic**

Work with the community on an individual-project basis to identify feasible solutions to lessen the impacts of major street improvements on local streets. (5)

**Action T 7.1**

**Street Lighting**

Add street lights where necessary to critical intersections, bus shelter stops, and neighborhood dark spots and maintain existing street lights to enhance safety. Remove lights where they are unnecessary for safety and where a reduction in lighting would be an environmental enhancement.

**Action T 7.2**

**Crash Analysis**

Review locations with high vehicular crashes involving pedestrians and bicyclists to identify needed improvements.



## B.8 Commercial Truck and Rail Freight

The movement of freight, both by train and by truck, is an important part of Raleigh’s economy. There are numerous at-grade railroad crossings that could pose potential traffic and safety concerns as traffic increases on both the railroad and the roadway. Although some businesses are located along railroads and utilize trains for the movement of freight, a majority of freight operations involve trucks. The existing freight routes are displayed in **Map T-4**.

Policies in this section support the safe and efficient movement of goods via rail, truck, and air transportation modes. Policies also seek to reduce the impacts of rail and truck operations on adjacent neighborhoods and sensitive land uses.

### Policy T 8.1

#### Truck Routes

Promote the safe and efficient movement of truck traffic in and around the City through designated truck routes and alternate truck routes for heavily-traveled corridors. (1, 3)

### Policy T 8.2

#### Grade Separations

Outside of the downtown street grid, seek additional opportunities to provide grade-separated street connections across the City’s passenger and freight rail corridors, and look to grade separate existing crossings where feasible and desirable. (3, 5)

### Policy T 8.3

#### Intermodal Transfer of Goods

Support infrastructure improvements and the use of emerging technologies that facilitate the clearance, timely movement, and security of trade, including facilities for the efficient intermodal transfer of goods between truck, rail, and air transportation modes. (3)

### Action T 8.1

#### Railroad Crossing Safety

Monitor traffic and safety conditions for at-grade railroad crossings as freight traffic increases to determine the need for grade separations.

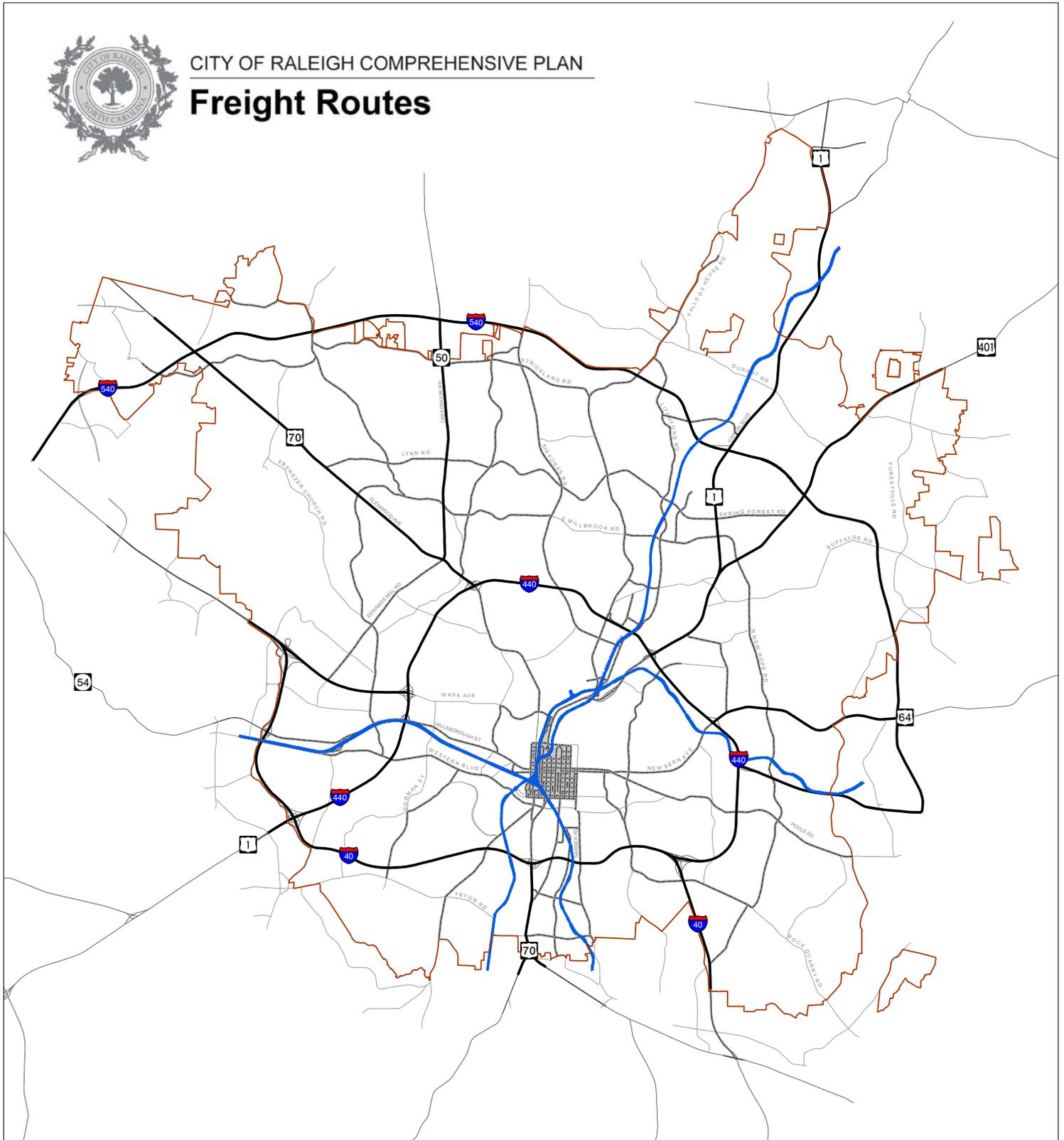
### Action T 8.2

#### Improving Freight Movement

Identify and correct roadway design and operational deficiencies that affect the safe and efficient movement of freight on designated freight routes while maintaining the health and safety of residents.



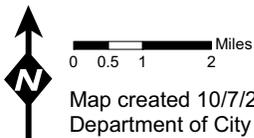
# Freight Routes



MAP T-4

-  Rail Corridors
-  Through Truck Routes
-  Local Truck Routes
-  Local Truck Areas

-  ETJ
-  Highway
-  Major Streets



Map created 10/7/2009 by the City of Raleigh  
Department of City Planning & GIS Division



## B.9 Future Street Improvements

### Policy T 9.1

#### Future Interchange Locations

Ensure that development projects adjacent to future interchange locations as shown on Map T-5 do not compromise the future ability to construct the proposed interchange or grade separation (3, 4).

The following tables list identified improvements to major streets necessary to bring these streets up to the City's guidelines for cross section, create new points of connection, and to ensure adequate vehicular capacity into the future. The tables address two types of improvements. New Location projects, listed in **Table T-2**, involve the extension of existing roadways and the creation of new connections. These correspond to the dashed lines on **Map T-1: Street Plan**.

*See also B.2 'Roadway System and Transportation Demand Management'.*

**Table T-2 New Location Projects**

Street Name	Segment Description	Proposed Future Cross-Section
ACC Boulevard	Existing ACC Boulevard to Leesville-Westgate Connector	3 lanes
Auburn-Knightdale Road	Bethlehem Road to existing Auburn-Knightdale Road	4-lane divided
Aviation Parkway	Brier Creek Parkway to Wake County line	Freeway
Barwell Road	Pearl Road to Auburn Church Road	3 lanes
Beckom Drive	Spring Forest Road Ext to Perry Creek Road Ext	3 lanes
Brier Creek Parkway	TW Alexander Parkway Ext to Andrews Chapel Road	4-lane divided
Capital Boulevard	Realign U.S. 1 from south of Durant Road to Thorton Road	Freeway
Carpenter Pond Road	Hickory Grove Church Road to Wake County line	4-lane divided
Carpenter Pond Road	West of Olive Branch Road to existing Carpenter Pond Road	4-lane divided
Crabtree Valley Avenue	Blue Ridge Road to Glenwood Avenue	4-lane divided

Road Name	Segment Description	Ultimate Future Cross-Section
Creech Road	Sanderford Road to Wilmington Road	2-lane divided
Dunn Road	Falls River Avenue to Durant Road	3 lanes
Edwards Mill Road	Chapel Hill Road to Western Boulevard	4-lane divided
Edwards Mill Road	Western Boulevard Ext to existing Edwards Mill Road	4-lane divided
Globe Road	East of Page Road to Durham County	6-lane divided
Greshams Lake Road	Reba Drive to Capital Boulevard	2-lane divided
Highwoods Boulevard	Realign Highwoods Boulevard to Westinghouse Boulevard	4-lane divided
Hodge Road	Auburn-Knightdale Road to existing Hodge Road	4-lane divided
Hodge Road	Knightdale Boulevard to Old Milburnie Road	4-lane divided
Lake Boone Trail	Atrium Drive to Edwards Mill Road	4-lane divided
Leesville-Westgate Connector	Westgate Road to Leesville Road	4-lane divided
Louisbury Road	Mitchell Mill Road to existing Louisbury Road	3 lanes
Morgan Street Extension	Existing Morgan Street to Ashe Avenue	2 lanes
New Leesville Boulevard	Existing New Leesville Boulevard to Carpenter Pond Road and Realign intersection of Carpenter Pond Road and Shady Grove Road	4-lane divided
New Pearl Road	Pearl Road to Wall Store Road	3 lanes
Old Milburnie Road	Forestville Road to existing Old Milburnie Road	3 lanes
Page Road	Glenwood Avenue to east of Aviation Parkway Ext	4-lane divided



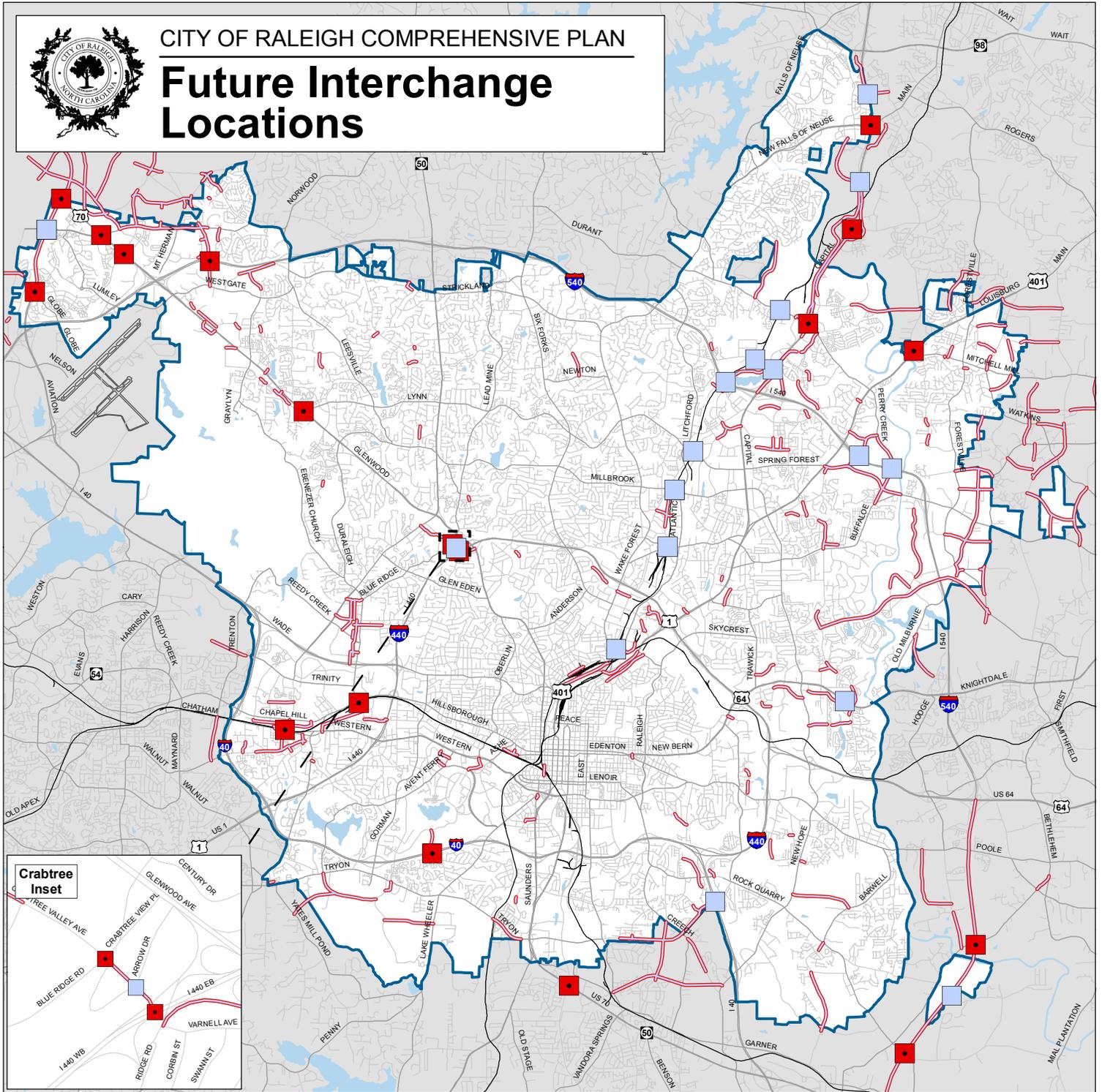
Road Name	Segment Description	Ultimate Future Cross-Section
Pearl Road/Barwell Road Realignment	Realign Pearl Road at Barwell Road intersection	3 lanes
Perry Creek Road	Fox Road to Buffalo Road	4-lane divided
Poyner Road	Burcliff Place to Longhill Lane	2 lanes
Rogers Lane	New Bern Avenue to existing Rogers Lane	4-lane divided
Shady Grove Road Realignment	North of N. Exeter Way to existing Shady Grove Road	4-lane divided
Six Forks Road	East of Atlantic Avenue to Capital Boulevard	4-lane divided
Skycrest Drive	Southall Road to Forestville Road	4-lane divided
Southall Road	Rogers Lane to Raleigh Beach Road	4-lane divided
Southall Road	Skycrest Drive to existing Southall Road	3-lane divided
Southall Road	Groundwater Place to Hedingham Boulevard	4-lane divided
Spring Forest Road	Louisburg Road to Buffalo Road	4-lane divided
Sumner Boulevard	Old Wake Forest Road to Capital Boulevard	5 lanes
Sumner Boulevard	Ruritana Street to Gresham Lake Road	3 lanes
Sunnybrook Road	Creech Road to existing Sunnybrook Road	4-lane divided
Triangle Town Boulevard	I-540 to Capital Boulevard	4-lane divided
Tryon Road	Cyrus Street to Sanderford Road	4-lane divided
TW Alexander Drive	Brier Creek Parkway to Leesville Road	4-lane divided

Road Name	Segment Description	Ultimate Future Cross-Section
TW Alexander Drive	Glenwood Avenue to Brier Creek Parkway	4-lane divided
Watkins Road	Mitchell Mill Road to Louisbury Road	3 lanes
Western Boulevard	Jones Franklin Road to existing Western Boulevard	4-lane divided
Whitaker Mill Road	Atlantic Avenue to Six Forks Road	3 lanes



# CITY OF RALEIGH COMPREHENSIVE PLAN

## Future Interchange Locations



MAP T-5

- Proposed Interchange
- Proposed Grade Separation
- Proposed Streets & Future Alignments

▭ Raleigh Jurisdictional Limit



0 0.5 1 2 Miles

Map created 10/11/2013 by the City of Raleigh  
Department of City Planning

