DRAFT ENVIRONMENTAL ASSESSMENT

CATS CENTER CITY STREETCAR



Charlotte Area Transit System
600 E. Fourth Street
Charlotte, NC 28202

May 2007

Revision 4

CENTER CITY STREET CAR CORRIDOR

May 2007
Revision 4

Prepared for:

Charlotte Area Transit System
600 East Fourth Street
Charlotte, NC 28202

Prepared by:

URS Corporation - North Carolina

CENTER CITY STREET CAR CORRIDOR

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Summary of Changes to the Environmental Assessment
Revision 4

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PREFACE

P.1 PROPOSED PROJECT

The proposed Center City Streetcar Corridor Project is located in the planning jurisdiction of the City of Charlotte, Mecklenburg County, North Carolina. The study area extends from Rosa Parks Place near the interchange between Beatties Ford Road and Interstate 85 to Eastland Mall via Beatties Ford Road, Trade Street, Elizabeth Avenue, Hawthorne Lane and Central Avenue. The alignment is approximately 10 miles long and serves the Center City area of Charlotte.

The Charlotte Area Transit System (CATS) proposes to enhance transit service in the corridor study area through the implementation of a fixed guideway transit system. The purpose of the project is to:

- Enhance and optimize service on the system's three most productive bus routes;
- Connect the existing Charlotte Transportation Center (CTC) with the planned Gateway Transit Center;
- Increase the viability of the five regional rapid transit corridors by providing circulation at their hub in Center City; and
- Support the City's economic development and redevelopment goals.

P.2 PURPOSE OF THE DRAFT ENVIRONMENTAL ASSESSMENT

The purpose of this Draft Environmental Assessment (EA) is to provide environmental information to public officials and citizens, and to provide an opportunity for participation and comment, before decisions are made and before actions are taken on the Center City Streetcar Project (40 CFR Part 1500.1(a)). This EA contains information decision-makers will use to evaluate the effects of the proposed project on the human and natural environment relative to a no-build alternative and an alternative consisting of lower cost transportation investments.

This document was prepared in accordance with the requirements of the National Environmental Policy Act (NEPA), as amended, and the North Carolina Environmental Policy Act of 1971 (NCEPA). This document conforms to the Council on Environmental Quality (CEQ) regulations that provide direction regarding implementation of the procedural provisions of NEPA (40 CFR Parts 1500-1508, 1978), and the joint Federal Highway Administration (FHWA)/Federal Transit Administration (FTA) regulations on *Environmental Impact and Related Procedures* (23 CFR Part 771). FTA regulations reference the FHWA regulations in 40 CFR Part 622 Section 101.

The EA will be circulated for review by interested parties, including citizens, community groups, officials and public agencies, for a period of at least 45 days. Public meetings and workshops will be held to encourage comments on the document.

The Metropolitan Transit Commission selected a locally preferred alternative for the Center City Streetcar Corridor Project on July 26, 2006 as an agenda item at a regularly scheduled meeting. A Final Environmental Assessment will be prepared to document the selection of the preferred alternative, any updates to the preferred alternative since the Draft EA, potential mitigation measures for adverse impacts, and responses to comments received on the project.

Finally, the lead federal agency, the Federal Transit Administration (FTA), will prepare a Record of Decision (ROD) identifying the selected alternative. The ROD will explain the reasons for the project decision, summarize any mitigation measure that will be

incorporated in the project, respond to comments received on the EA, and document any approval required under Section 4(f) of the US Department of Transportation Act. The ROD completes the environmental documentation process under the NEPA.

Formal approval from FTA is required to advance the project into subsequent project development steps, final design, and construction.

P.3 PLANNING BACKGROUND AND DECISION MAKING HISTORY

The *Centers and Corridors Plan 1994* recommended modifying the region's growth patterns by concentrating development and redevelopment in five radial corridors extending from Center City Charlotte. The goal was to focus growth in order to make the best use of existing and future infrastructure investments and transportation systems.

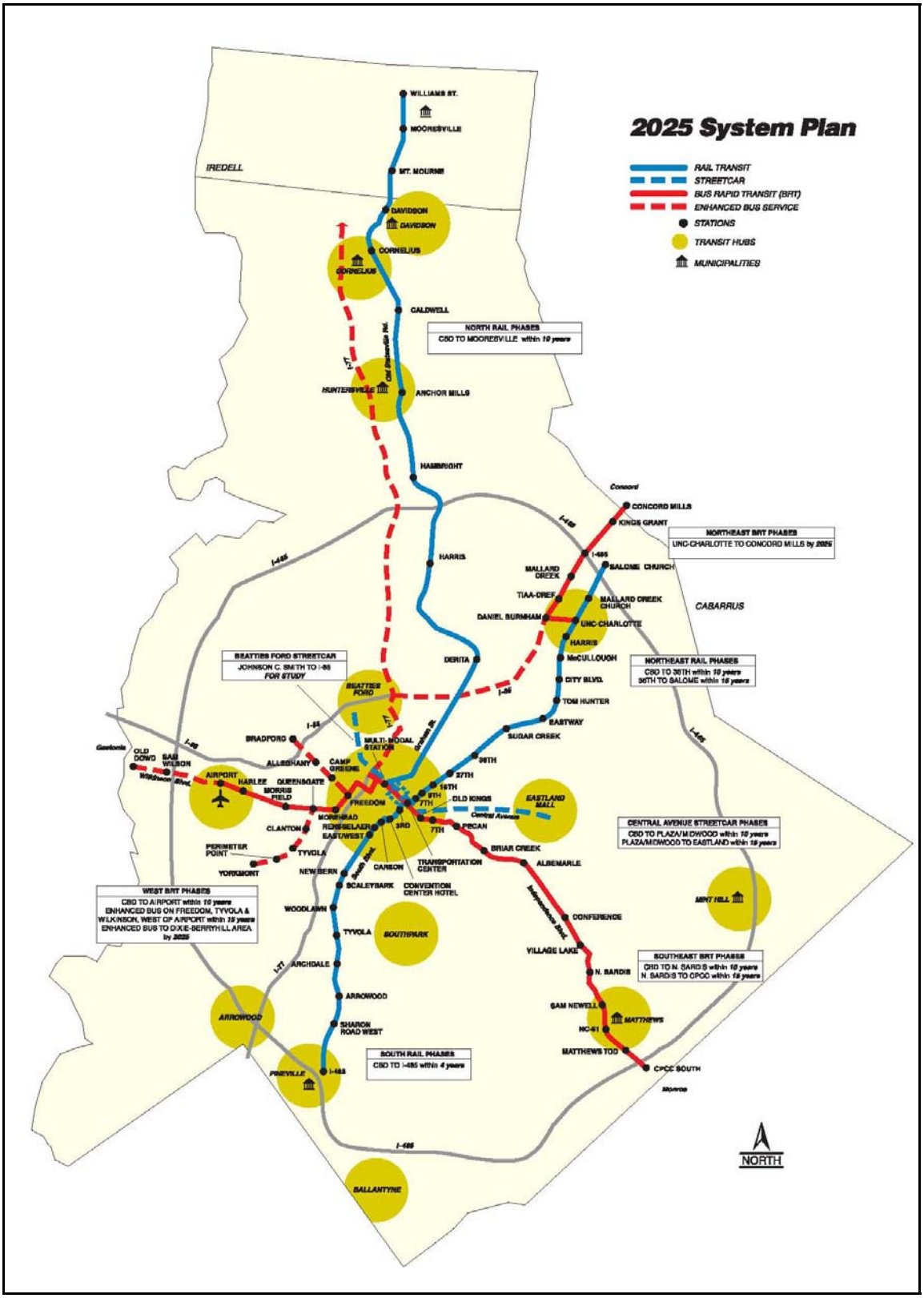
Following an intensive planning process, the *2025 Integrated Transit/Land Use Plan* was completed in October 1998. The plan proposed a rapid transit system as a means of supporting land use initiatives to attain the *Centers and Corridors* vision established in 1994 and to maximize infrastructure investment. The plan identifies five major transportation and development corridors (North, Northeast, South, Southeast, and West) that extend out from the Center City to the Mecklenburg County border and beyond.

In November 1998, the citizens of Mecklenburg County approved the levy of a one-half cent sales tax to be used to finance public transportation systems. In February 1999, Mecklenburg County, the City of Charlotte, and the Towns of Cornelius, Davidson, Huntersville, Matthews, Mint Hill, and Pineville entered into a Transit Governance Inter-local Agreement to plan, finance, and implement a regional transit system, now known as the Charlotte Area Transit System. This agreement also mandated the establishment of a policy board, the Metropolitan Transit Commission (MTC).

During 1999, CATS prepared a Major Investment Study (MIS) for the South Corridor. Based on stakeholder and public comment and the results summarized in the MIS, the MTC identified light rail transit as the Locally Preferred Alternative (LPA) for the South Corridor. An EIS was prepared and operations on Charlotte's first light rail line are expected to begin in 2007.

In 2000, CATS began the Major Investment Studies for the other four corridors. Upon completion of the Major Investment Studies, the *2025 Transit Corridor System Plan* was adopted by the Metropolitan Transit Commission (MTC) in November 2002 and by the Mecklenburg-Union Metropolitan Planning Organization (MUMPO) in January 2003. The Plan consists of rapid transit improvements in five corridors (South, Southeast, Northeast, North, and West), a series of improvements in Center City Charlotte, including the Streetcar Corridor and bus service, and facility improvements throughout the region. **Figure P-1** shows the System Plan.

Figure P-1: System Plan



Source: CATS website – www.ridertransit.org

The Locally Preferred Alternative for the Center City Streetcar Corridor, adopted as part of the *2025 Transit Corridor System Plan*, was an in-street fixed guideway rail system designed to connect the two transit centers in Center City and then extend the system along the alignments of CATS two most productive bus routes which serve Beatties Ford Road and Central Avenue.

In 2004, a Memorandum of Understanding (MOU) was signed by the Charlotte Area Transit System and the Federal Transit Administration on "Addressing FTA's New Starts and NEPA Requirements for Charlotte's 2025 Transit System Plan". The MOU details the process by which CATS should address NEPA, FTA New Starts, and metropolitan planning requirements for the Transit Corridor System Plan.

P.4 PUBLIC AND AGENCY OUTREACH ACTIVITIES

A comprehensive public involvement plan was developed for the Center City Streetcar Corridor project to serve as a guide for informing, notifying, and soliciting participation in the development of the streetcar project. The Streetcar Corridor public involvement program has provided, and will continue to provide, stakeholders the opportunity to stay informed and to participate throughout the environmental documentation process for the project.

A comprehensive outreach program was developed to encourage the participation of the public, elected officials, and interested governmental agencies in the decision-making process. Outreach activities included the following:

- Sub-Area Advisory Committee Meetings – Advisory committees are comprised of neighborhood leaders, developers, major employers and other interested citizens specific to the three sub-areas on the corridor – Trade Street, Beatties Ford Road and Central Avenue;
- Public meetings and open houses;
- Agency coordination meetings including Bi-weekly working sessions with CDOT, Planning Commission, Charlotte Engineering & Property Management the Charlotte Economic Development Department; Charlotte-Mecklenburg Utilities, and NCDOT;
- Quarterly updates with FTA;
- Presentations to neighborhood and business associations;
- Quarterly newsletters directly mailed to over 1,100 persons in the corridor database;
- Project information on CATS website; and
- Media relations and press releases.

To date, the conceptual design and environmental assessment of the project has included five rounds of public meetings that have been well-attended. Public input up to this point in the project development process indicates strong support for and consensus around project goals and concepts. Public and agency outreach activities are described in more detail in Chapter 6.

CHAPTER 1 PURPOSE AND NEED

This chapter summarizes the need for transportation improvements in the proposed Charlotte Center City Streetcar Project corridor and outlines the purpose and need for the project. It contains an overview of the corridor, the transportation facilities and services in the corridor and the specific transportation problems to be addressed.

1.1 PROJECT DESCRIPTION

1.1.1 Overview

The geographic location of the project is shown in Figure 1-1. This section describes the streetcar corridor in both a regional and corridor-level context.

Regional Context

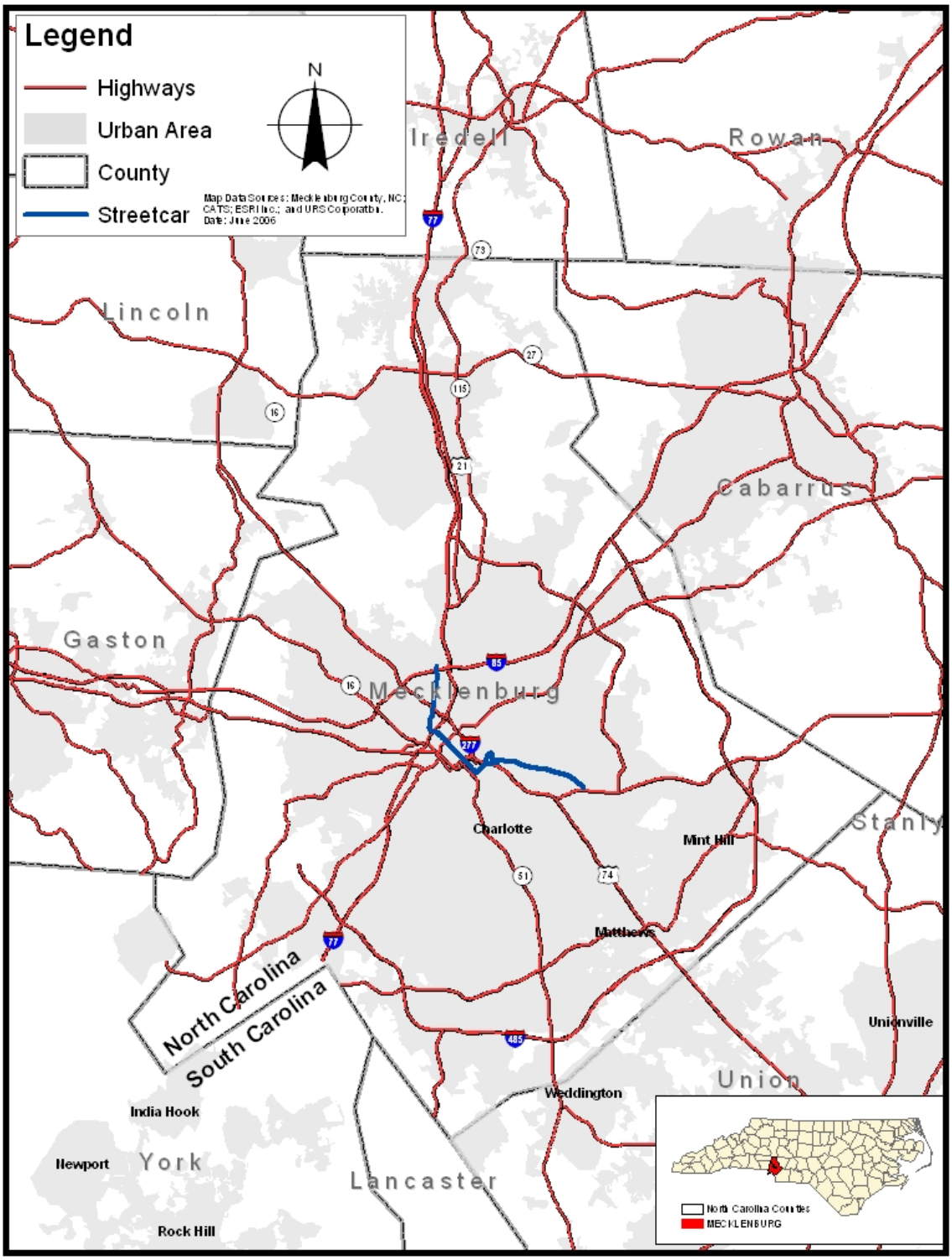
The project is located entirely within the City of Charlotte in Mecklenburg County, North Carolina. The City of Charlotte is located in the Charlotte-Gastonia-Concord, North Carolina-South Carolina Metropolitan Statistical Area (MSA).

Corridor Context

The northern extent of the project corridor begins at the intersection of North Hoskins Road and Beatties Ford Road, approximately 1/5th of a mile north of I-85 and adjacent to the Mecklenburg County Health Department and Stewart Creek Business NW Park. From the intersection of North Hoskins and Beatties Ford Roads, the corridor follows Beatties Ford Road south to Trade Street. The corridor then follows Trade Street east to Elizabeth Avenue and along Elizabeth Avenue to Presbyterian Hospital. In the vicinity of Presbyterian Hospital, the corridor extends northeast from Elizabeth Avenue, along Hawthorne Lane to Central Avenue. The alignment is then proposed to extend north of Central Avenue where it crosses underneath the CSX rail line and then turns southeast into a privately-owned parcel (Barnhardt Manufacturing) across to Clement Avenue. The alignment then follows Clement Avenue back to Central Avenue. The corridor extends along Central Avenue east to Eastland Mall.

From its endpoints, the streetcar extends 9.93 miles. The Central Avenue segment is 3.2 miles from Eastland Mall to The Plaza. The Plaza to JC Smith University along Hawthorne and Trade Street is 4.99 miles in length, while the Beatties Ford Road segment from French Street to Rosa Parks is 1.74 miles.

Figure 1-1: Geographic Location



1.1.2 Study Area

A base study area was developed to frame all specific demographic, socioeconomic, land use, and environmental data for identification of potential effects of the project. The methods used to identify the study area included consideration of the project's purpose and need and the service area of the proposed transportation improvement, as well as appropriate units for the collection and analysis of data.

For data collection purposes, the study area was delineated using the traffic analysis zones (TAZs) that compose an approximate half-mile buffer of the project corridor. The study area is shown in Figure 1-2. Throughout this environmental assessment, detailed information pertaining to the characteristics of the human and natural environment in the study area is provided. This information creates a baseline from which potential project impacts are identified.

The study area was divided into three sub-areas for more detailed study. For data collection purposes, the sub-areas are based on geographic boundaries rather than phases of the project. The sub-areas are the Beatties Ford Road sub-area, the Center City sub-area and the Central Avenue sub-area.

Beatties Ford Road Sub-Area

The Beatties Ford Road sub-area extends from near Johnson C. Smith University northward to 1/2 mile beyond I-85. For the purposes of defining travel demand later in the document, the sub-area is further divided into a Johnson C. Smith University Area and a Rosa Parks area.

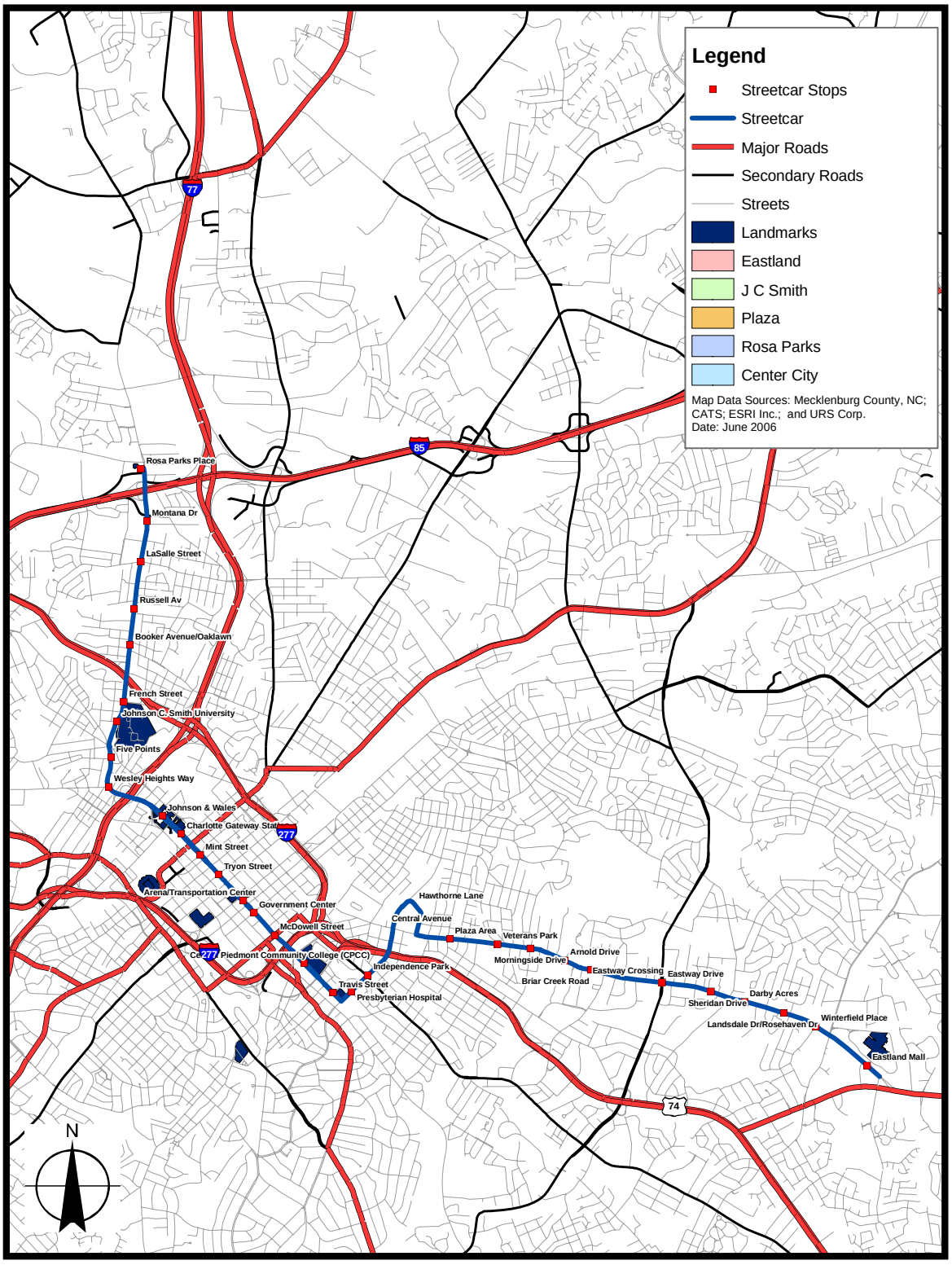
Center City Sub-Area

The Center City sub-area includes the Trade Street and Elizabeth Avenue corridors. The sub-area encompasses the Central Business District (CBD) and the four Center City wards. The Trade Street Corridor portion of the sub-area extends from Johnson C. Smith University, southeast to the eastern portion of the I-77/I-277 loop. The Elizabeth Avenue portion of the sub-area extends from East Trade Street and the I-77/I-277 loop southeast to Presbyterian Hospital and northeast along Hawthorne Lane to Central Avenue.

Central Avenue Sub-Area

The Central Avenue sub-area extends from near the intersection of Hawthorne Lane and Central Avenue to ½ mile beyond Eastland Mall. For the purposes of defining travel demand later in the document, the sub-area is further divided into a Plaza Area and an Eastland Mall area.

Figure 1-2: Study Corridor with Sub-Areas



1.1.3 Population and Employment

In this section population, housing and employment in the study area and surrounding geographies are discussed. Additional information is presented in Chapter 3 of this document.

Population and Housing

Population and housing are addressed together in this section as there is a strong correlation between population growth and household growth. Changes in population and housing when considered jointly relate to the change in density as well as growth, which is an important factor for transit propensity. Data is presented at the regional and county levels, and for the sub-areas that compromise the study area. In general, areas that are expected to grow in population are also expected to grow in the number of households.

Region and County Level

The City of Charlotte is located in the Charlotte-Gastonia-Concord, North Carolina-South Carolina Metropolitan Statistical Area (MSA), which has a year 2005 population of 1.5 million, and is ranked the 37th largest MSA in the country.[1] The MSA includes the North Carolina Counties of Anson, Cabarrus, Gaston, Mecklenburg and Union and the South Carolina County of York. Past growth trends and future population projections for the MSA and constituent counties are shown in Table 1-1. As shown in the table, Mecklenburg County is the most populous county in the MSA.

Table 1-1: Charlotte MSA Population Trends and Projections 1990 – 2030

MSA	1990	2000	2010	2020	2030
North Carolina					
Anson	23,474	25,275	26,273	27,597	28,650
Cabarrus	98,935	131,063	169,586	210,390	254,852
Gaston	174,769	190,304	200,543	212,937	223,762
Mecklenburg	511,211	693,454	867,451	1,059,519	1,227,928
Union	84,210	123,677	176,684	240,370	323,377
South Carolina					
York	131,497	164,614	198,730	229,470	261,330
MSA Total	1,024,096	1,330,398	1,663,703	2,013,256	2,382,774

Source: North Carolina State Demographics, South Carolina Budget and Control Board, Office of Research and Statistics; MUMPO, "2030 Long Range Transportation Plan"

The percent changes in the Charlotte MSA population projections between 1990 and 2030 are shown in Table 1-2. Between 2000 and 2030 a net population gain of 1,052,376 is projected for the MSA. The counties projected to experience the most rapid population growth over this 30 year period are Union, with an 161 percent increase, (an additional 199,700 people); Cabarrus, with a 94 percent increase (an additional 123,789 people); and Mecklenburg, also with a 77 percent increase (an additional 534,474 people). According to the *Corridor Systems Plan*, Mecklenburg County grew at a substantially more rapid pace than neighboring counties in the past two decades. According to the plan, "…while other regions have experienced substantial decentralization, Mecklenburg County has captured a greater share of growth than its region."[2]

Table 1-2: Percent Change in Charlotte MSA Population Projections 1990 – 2030

MSA	1990-2000 (10 years)	2000-2030 (30 years)
Anson	7.7%	13.4%
Cabarrus	32.5%	94.4%
Gaston	8.9%	17.6%
Mecklenburg	36.0%	77.1%
Union	47.0%	161.5%
York	25.2%	58.8%
MSA Total	29.9%	79.1%

Source: North Carolina State Demographics, South Carolina Budget and Control Board, Office of Research and Statistics

Study Area Level

In 2003, Charlotte was estimated to have 584,658 residents, making it the 21st largest city in the country. Charlotte is expected to continue growing as the state's population increases and its local economy expands. Current and projected population growth for the study area is compared to regional data in Table 1-1. As described in Section 1.1.2, the study area extends approximately one-half mile on either side of the preferred alignment and represents the maximum distance that most pedestrians would likely walk to access the streetcar transit services.

Year 2000 study area population was 57,078, or approximately eight percent of the total county population. Between 2000 and 2030, total population is expected to grow by about 77 percent, to 101,242. Through 2030, the study area is projected to increase in population at the same rate as Mecklenburg County and at a faster rate than the MSA as a whole.

Table 1-3: Study Area Population Projections

Geographic Area	Year 2000	Year 2030	Percent Change
Study Area	57,078	101,242	77
Mecklenburg County	693,454	1,227,928	77
Charlotte MSA	1,438,867	2,382,774	66

Source: North Carolina State Demographics, South Carolina Budget and Control Board, Office of Research and Statistics, TAZ Data Charlotte-DOT (2006).

In 2000, the number of households in the study area was 23,218. Between 2000 and 2030, the number of households is projected to grow by 96 percent, to a total of 45,582.

Sub-Area Level

Beatties Ford Road Sub-Area

In 2000, the Beatties Ford Road sub-area had a population of 11,521 and 4,511 households. The central third of this sub-area is primarily zoned residential (R-5) and overall contains the highest population density and concentration of households in the sub-area. Beatties Ford is projected to grow by 49 percent over the next 30 years. Most

of the population growth in the Beatties Ford Road sub-area is projected to be concentrated in the northern section.

Center City Sub-Area

In 2000, the Center City sub-area had a population of 21,618 and 8,959 households. The population of the Center City sub-area is expected to grow by 169 percent in the next 30 years. By 2020, the Center City sub-area will likely surpass the populations of the two other sub-areas.

Central Avenue Sub-Area

In 2000, the Central Avenue sub-area had the greatest population (23,939) and the highest number of households (9,748) of the three sub-areas. Most of the population and households are concentrated along Central Avenue. Zoning in this area is mostly residential with a narrow strip of commercial along Central Avenue.

Although the Central Avenue sub-area had the highest population and household count in 2000, population growth in this sub-area over the next 30 years is projected to be just 8 percent and household growth 7 percent. Despite the small percent of growth, the actual growth in population is expected to be approximately 1,900. Population and household growth in the Central Avenue sub-area is projected to be evenly distributed throughout the sub-area.

Employment

Region and County Level

According to the *Corridor System Plan* (2002), consistent and increased employment growth in Mecklenburg County has been possible because of industry diversity, economic strength in key areas such as financial services, the attraction and retention of upper-income households, and an integrated city and county planning framework.[3] Information pertaining to expected changes in employment for the study area is provided in this section.

The MUMPO area includes Mecklenburg County and portions of Union County. Future employment projections for the MUMPO area and constituent counties are shown in Table 1-4. As shown in the table, Mecklenburg County has the highest share of the region's employment. Between 2000 and 2030, Mecklenburg County is expected to add over 400,000 jobs, growing 79 percent. Union County is anticipated to add 82,000 jobs, growing over 185 percent.

Table 1-4: MUMPO Region Employment Projections

AREA	2000	2010	2020	2030	Growth 2000-30	
Mecklenburg Co.	529,672	627,809	782,328	948,291	418,619	79.0%
Union Co.	44,390	61,653	92,522	126,794	82,404	185.6%
MUMPO	568,883	683,498	865,851	1,060,798	491,915	86.5%

Source: MUMPO, "2030 Long Range Transportation Plan"

Study Area Overview

In 2000 there were approximately 95,000 jobs in the study area. The largest employment center within the Charlotte region is the Charlotte CBD. The Center City sub-area encompasses the CBD employment center and accounts for approximately 87

percent of study area jobs followed by 8 percent in the Central Avenue sub-area and 5 percent in the Beatties Ford Road sub-area[4].

Total employment in the study area is expected to increase by nearly 59 percent to 151,650 between 2000 and 2030, for an actual gain of 55,976 employees. Eighty-six percent of jobs are expected to be concentrated in the Center City sub-area, followed by 9 percent in the Central Avenue sub-area and 5 percent in the Beatties Ford Road sub-area[5].

Employment, Housing and Population Summary

In the *Third Ward Neighborhood Vision Plan*, a comparison of mode of transportation to work and travel time to work for Center City Charlotte and citywide Charlotte was made using US Census data. The data used in the comparison is depicted in Table 1-5.

Table 1-5: Mode and Time of Travel to Work

Indicator	Center City Residents	Citywide Residents
Transportation to Work	20% bike or walk	<3% bike or walk
Travel Time to Work	80% spend less than 25 minutes	Average is 25 minutes

Source: "Third Ward Neighborhood Vision Plan." Adopted in 2003. Available: http://www.charmeck.org/Departments/Planning/Area+Planning/Plans/home.htm.

Another comparison of demographics showed that over two-thirds of Center City's working population works in Center City. The data demonstrates that one factor influencing growth in Center City is the desire to live in close proximity to work. According to the vision plan, "these demographics suggest that future residential growth in Center City is highly dependent on Center City job growth. Today, there are approximately 55,000 jobs and 7,000 residents in Center City – a ratio of eight jobs for every one resident. Given the strong link between living and working in Center City, there are two factors that could contribute to a substantial increase in Center City's residential population: 1) more sources of employment come to Center City; and/or 2) a percentage of people choose to move to Center City for lifestyle reasons, as opposed to their proximity to employment."[6] This data demonstrates the positive correlation among population, housing and employment growth in the study area.

1.1.4 Land Use Overview

Beatties Ford Road Sub-Area

The predominant land use in the sub-area is single family residential with large scattered tracts of public/institutional. Land use immediately adjacent to Beatties Ford Road primarily consists of neighborhood/convenience oriented commercial interspersed with pockets of residential, public/institutional, and industrial. Major activity centers include Johnson C. Smith University, a commercial area near LaSalle Street, the Beatties Ford Road Branch of the Charlotte Mecklenburg Public Library System located just south of I-85, a community transit center located at the Northwest Mecklenburg County Health Department building, which is located just north of the I-85 interchange.

Center City Sub-Area

Land use within the sub-area is predominantly commercial and office with pockets of multi-family residential, single-family residential, vacant, public/institutional, parks and open space and industrial land uses. The sub-area encompasses Charlotte's Central

Business District, is the region's major employment center, contains the government offices for the City of Charlotte and Mecklenburg County, and is also home to national corporations such as Bank of America, Wachovia Corporation, and Duke Energy Corporation. Center City offers many cultural attractions, sporting events and entertainment venues that include a new arena to house the NBA expansion team, the Charlotte Bobcats, the Bank of America Stadium that houses the Carolina Panthers, the Charlotte Convention Center, Presbyterian Hospital, new mixed-use development projects such as Gateway Village, as well as Central Piedmont Community College (CPCC), and Johnson & Wales University. The Elizabeth Avenue/Hawthorne Lane and Trade Street segments are described below.

Trade Street

Starting at the southeast end of Trade Street and heading northwest, main features include a government/institutional office area; Gateway Village, which consists of the Johnson & Wales campus, office and some multi-family uses; and the Johnson C. Smith University area, which consists of light industrial and commercial uses.[7]

Elizabeth Avenue/Hawthorne Lane

Land use immediately adjacent to Elizabeth Avenue primarily consists of commercial and office with pockets of multi-family residential, vacant, and public/institutional. Central Piedmont Community College (CPCC) is a major activity center within this corridor, occupying multiple blocks both north and south of Elizabeth Avenue. Conversely, Hawthorne Lane is predominantly residential with some small retail and restaurants at the intersection of 7th Street.

Central Avenue Sub-Area

The predominant land use in the sub-area is single family residential with large scattered tracts of commercial, multi-family residential and public/institutional. Land use immediately adjacent to Hawthorne Lane/Central Avenue primarily consists of commercial interspersed with pockets of residential, public/institutional, industrial and office.

Major activity centers are located at Presbyterian Hospital, the Central Avenue/The Plaza Intersection, Central Avenue/Eastway Drive Intersection, Central Avenue/Sharon Amity Road Intersection, and the Eastland Mall. There is a community transit center located at Eastland Mall.

1.1.5 Travel Demand Patterns

The Charlotte streetcar travel demand area is drawn into the following districts: Rosa Parks, Johnson C. Smith University, Center City, Kenilworth, Plaza/Hawthorne, and Eastland. The Rosa Parks district is comprised of 15 TAZs. It lies on the westerly limits of the streetcar alignment along Beatties Ford. The Johnson C. Smith University district also runs along the Beatties Ford, in the vicinity of Johnson C. Smith University. It consists of eight TAZs. The Center City district consists of 45 TAZs; since, it is in a densely employment and population area. This district runs along Trade Street to Elizabeth Avenue. The Plaza/Hawthorne district moves the length of Hawthorne Lane through Plaza area to a small segment of Central Avenue. This district is made of 13 TAZs. The Eastland district also runs along Central Avenue until, reaching the vicinity of Eastland mall. It is composed of 13 TAZs.

Origins and destinations person trips were examined for the base year of 2003 and horizon year of 2030, using the Metrolina travel demand model outputs[8]. Person trip data from the model were aggregated into travel sub-districts. The streetcar study area was divided into six districts, while the rest of the Region was broken down into nineteen districts that correspond to the five regional transit corridors and other contiguous geographic areas. These person trip tables are aggregated from three trip purposes data sets:

- HBW Home-based work trips
- HBO Home based other trips
- NHB Non-home based trips

Center City Charlotte remains and will continue to be a primary destination for trips within the Region. In 2003, nearly 400,000 of 5.6 million daily trips began or ended within the Interstate 277 loop. By 2030 650,000 of the 9.6 million daily trips will begin or end within the interstate loop. These daily trips to Center City are anticipated to increase 63 percent by adding approximately 250,000 trips. Most of these trips are home-based work trips and result from the commutes of 114,000 employees projected for the Center City Area.

For the study area that extends to Rosa Parks Place and Beatties Ford Road from Eastland Mall, there were 318,000 or 5.6 percent of total regional daily trips in 2003. By 2030, there will be over 500,000 trips projected increasing the importance of offering streetcar services in the corridor. The streetcar corridor also shows significant connectivity to the five regional transportation corridors outlined in the 2030 Corridor System Plan. Table 1-6 lists the top ten zones for each sub-area in terms of trip exchange. Each column shows the number of trips between a specific sub-area within the Study Area and other areas with the region, which correspond to the map shown in Figure 1-2.

The Center City Zone appears on each of the sub-area lists and is in the top five for each. The travel patterns indicate that there is a significant travel flow from the Center City area and the regional high speed transit corridors. Nearly every corridor doubled its daily trips into the Center City zone. In 2030, these travel patterns account for more than 63% (375,756) of the trips going to and from the Study Area.

The analysis shows that the streetcar serves a growing sector of travel patterns in the region. Center City will continue to realize growth in both population and employment and as the transit system matures, the streetcar's role as a circulator at the hub of the regional corridors in Center City will continue to increase in importance. Over half of all trips that either begin or end in Center City have segments that could be served by the streetcar corridor. In other words, travel patterns for the 2030 network show that the streetcar is an option for at least a segment of travel for over half of all trips to or from Center City.

Table 1-6: Top Ten Daily Travel Patterns per Sub-Area

	To Center City			To Rosa Parks		
2030 Rank		2003	2030		2003	2030
1st	Center City	35,746	76,639	No. Corridor	3,069	5,920
2nd	So. Corridor	13,416	24,549	NE Corridor	3,142	5,198
3rd	So. Meck.	14,594	24,498	Center City	3,457	5,159
4th	SE Corridor	13,200	21,448	West Corridor	2,084	3,221
5th	NE Corridor	10,325	20,220	NW Meck.	1,403	3,082
6th	West Corridor	9,768	19,922	So. Corridor	2,163	2,607
7th	Kenilworth	10,043	15,520	SE Corridor	1,593	1,956
8th	No. Corridor	6,947	14,821	So. Meck.	1,701	1,909
9th	East Meck.	5,244	9,985	Cabarrus	787	1,663
10th	NW Meck.	3,757	8,789	Rosa Parks	654	1,461
Within Study Corridor	*Plaza*	*3,135*	*6,284*	*Plaza*	*418*	*604*
	Eastland	*2,961*	*4,469*	*JC Smith*	*242*	*435*
	Rosa Parks	*1,623*	*2,964*	*Eastland*	*379*	*429*
	J C Smith	*1,017*	*2,337*			
	To Plaza			To Eastland Mall		
2030 Rank		2003	2030		2003	2030
1st	SE Corridor	11,048	12,704	Center City	5,317	6,287
2nd	East Meck.	7,263	10,818	SE Corridor	4,567	4,797
3rd	Plaza	3,778	10,067	NE Corridor	3,396	4,261
4th	Center City	7,647	9,666	So. Meck.	3,991	4,233
5th	So. Meck.	8,910	9,620	East Meck.	2,410	2,902
6th	NE Corridor	6,581	8,781	Kenilworth	2,458	2,311
7th	So. Corridor	3,505	3,901	So. Corridor	2,135	2,242
8th	Kenilworth	3,505	3,298	Eastland	1,553	2,160
9th	West Corridor	2,347	2,899	Plaza	1,356	1,813
10th	No. Corridor	2,188	2,765	West Corridor	1,540	1,792
Within Study Corridor	*Eastland*	*1,619*	*1,734*	*Rosa Parks*	*309*	*346*
	Rosa Parks	*429*	*494*	*JC Smith*	*196*	*248*
	J C Smith	*272*	*367*			
	To JC Smith					
2030 Rank		2003	2030			
1st	Center City	3,030	4,216			
2nd	NE Corridor	1,909	2,640			
3rd	No. Corridor	1,566	2,449			
4th	So. Corridor	2,131	2,430			
5th	West Corridor	1,642	2,271			
6th	So. Meck.	2,131	1,862			
7th	SE Corridor	1,542	1,727			
8th	NW Meck.	849	1,551			
9th	Kenilworth	1,203	1,155			
10th	East Meck.	645	860			
Within Study Corridor	*JC Smith*	*275*	*786*			
	Plaza	*374*	*528*			
	Rosa Parks	*331*	*486*			
	Eastland	*338*	*352*			

1.2 TRANSPORTATION FACILITIES AND SERVICES IN THE CORRIDOR

1.2.1 Existing Roadway Facilities

Interstate-77 is a six to eight lane controlled access freeway that runs north-south through Charlotte. I-77 has an interchange with Trade Street, exit 10, which provides direct connection to the Center City area on the east and to Johnson C. Smith and the Beatties Ford Road area on the west. I-277 is considered Charlotte's downtown beltway. It is approximately 5 miles in length and makes a 270 degree loop around the Center City sub-area. I-277 connects with I-77 on the south at exit 9 and on the north side at exit 11.

Trade Street is a four-lane arterial that begins at Johnson C. Smith University on the west and ends at McDowell Street on the eastern side. Trade Street becomes Elizabeth Avenue from McDowell Street to Presbyterian Hospital at Hawthorne Lane. Trade Street/Elizabeth Avenue is classified as a major thoroughfare in the Mecklenburg-Union Metropolitan Planning Organization (MUMPO) Thoroughfare Plan. Portions of Trade Street between Johnson and Wales Way to Poplar Street have landscaped medians.

Hawthorne Lane and Central Avenue are both four lane arterials that are classified as major thoroughfares. Hawthorne Lane from the Presbyterian Hospital to Central Avenue is primarily a residential area. There is a bridge overpass on Hawthorne Lane that grade separates Hawthorne Lane and Independence Boulevard. Central Avenue runs through the Plaza-Midwood neighborhood and extends eastward past the Eastland Mall and ends at the intersection with Albemarle Road. The section of Central Avenue from Eastway Drive to Eastland Mall has dedicated bicycle lanes on both sides of the road and for portions of this section there are landscaped medians.

Beatties Ford Road is a four lane arterial that is also classified as a major thoroughfare. Beatties Ford Road begins at Johnson C. Smith University and extends northward over I-85 and ends in Huntersville, NC at the intersection with NC 73. There are interchanges located at the overpass with I-85 and at Brookshire Freeway, which is a limited access extension of the northern portion of I-277.

1.2.2 Existing Transit Services

Existing service is provided by the Charlotte Area Transit System (CATS), which operates local, express bus, vanpool, paratransit, and community shuttle services for the City of Charlotte, Mecklenburg County, and surrounding counties. Currently, thirty local routes use the Trade Street/Elizabeth Avenue corridor for some or all of their Center City routing into the Charlotte Transportation Center (CTC). Ten of those routes use Trade Street and serve most of the stops from the Gateway Village or the CPCC/Elizabeth Avenue area to the CTC. See Figure 1-3 for a map of CATS bus routes. Routes 7 and 9 serve Trade Street from Rozelles Ferry to Kings Drive both terminating at the CTC. Four routes serve Trade Street and Elizabeth Avenue from the CTC to Hawthorne Lane. Route 39 serves Hawthorne Lane from Elizabeth Avenue to Central Avenue.

Three routes operate along the Beatties Ford Road and Central Avenue corridors from the CTC. Routes 9 and 39 operate along the Central Avenue corridor from Hawthorne and Central to Eastland Mall, with the 39 leaving the corridor at Eastway Drive. Route 9 continues on east of Eastland Mall to Albemarle Road. Route 7 operates along the Beatties Ford corridor from the CTC, passing the potential end of line area of I-85 and Beatties Ford.

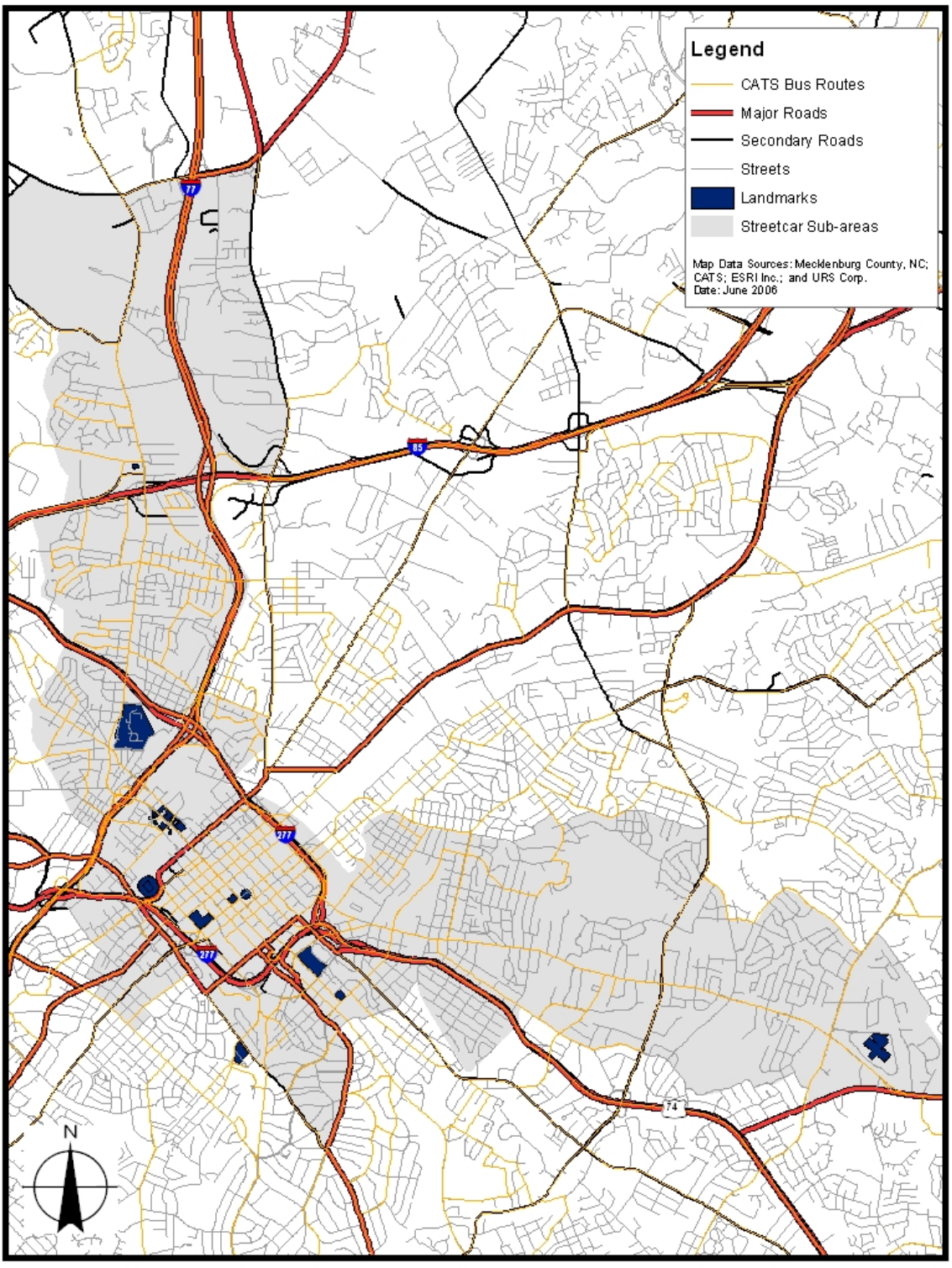
Between the Plaza-Midwood area to the CTC, Route 9 continues on Central Avenue to Kings Drive and the right on Elizabeth Avenue, while Route 39 follows an alignment similar to the streetcar. This route uses Hawthorne Lane to Elizabeth Avenue.

The proposed Charlotte Gateway Station, located at Graham, 4th and West Trade streets in Center City, will be the southern terminus for the North Corridor Commuter Rail Project. The new station will provide seamless integration of various rapid transit modes, including commuter rail, Amtrak, Greyhound, Center City Streetcar and Southeast/West Corridor rapid transit.

The Gold Rush Circulator Service is a free shuttle service that operates in the Center City Charlotte Area. It connects business, cultural and residential areas together using three routes that traverse through the area. The Orange and Red Lines utilize Tryon and Trade Streets, respectively as the main routes, with Blue Route following a circular alignment around Center City using Seventh, Third, McDowell and Stonewall Streets. The routes generally operate between 7 a.m. and 6 p.m. except for the Red Line which operates until 10 or 11 PM depending on day of the week.

The CTC is located on Trade Street and is bounded by Fourth, College, Trade, and Brevard Streets, immediately across the street from the Charlotte Bobcats Arena. This is the main transfer hub for CATS local and express bus routes. Currently, the facility is fully utilized to the point that CATS has been forced to establish additional bays at the curbside on Brevard and Fourth Streets. The center was used as a transfer point for the Charlotte Trolley line that has suspended service during Light Rail construction on the South Line. The CTC will facilitate transfers from the bus service to and from the light rail, once implementation of the South Line is complete.

Figure 1-3: CATS Bus Routes



1.2.3 Bicycle and Pedestrian Facilities

The City of Charlotte's *Centers and Corridors Strategy and Transportation Action Plan* recognizes the city transportation system needs to be more diversified. These documents acknowledge that bicycle and pedestrian modes need to be upgraded and accommodated. Foot and bicycle travel are an important component of the transportation system and there are a number of facilities designed for these types of travel in the study area.

Pedestrian

Sidewalks are located throughout the entire corridor of the study area, and an extensive and sometimes very wide network of sidewalks exists in the Center City area. The *Center City Transportation Plan* calls for widening of sidewalks, where possible, to 18-22 feet within Center City. Some parts of the streetcar corridor are also inside of Pedestrian Overlay Districts. This includes Center City, West Trade Street and Elizabeth Avenue. The *Elizabeth Land Use and Pedscape Plan*, along with the *West End Land Use and Pedscape Plan* identifies building setbacks, sidewalk, parking, and tree requirements that encourage pedestrian mobility. The *Center City 2010 Vision Plan* also addresses the need for pedestrian and bicycle enhancements along Trade Street.

The Gateway area probably presents the most significant investment in pedestrian circulation and safety. Trade Street has a planted median along the Gateway segment of its alignment and the only pedestrian specific signal on Trade Street. Brick pavers and stamped asphalt have been installed to encourage motorists to slow down while in the area and sidewalks are at their widest along the corridor.

Beatties Ford Road has relatively standard sidewalks for most of its alignment within the study area. The one exception would the area around Johnson C. Smith University where the sidewalks have been recently widened and resurfaced with brick pavers. An under-utilized pedestrian bridge spans Beatties Ford Road in front of the university. All signalized intersections are equipped with pedestrian phases with the exception of the intersection on either side of the I-85 overpass.

A streetscape plan for Elizabeth Avenue is currently in final design that targets better pedestrian flow and allows for more substantial transit stops. The project also entails pre-installation of rails for eventual streetcar service on the corridor.

The Plaza is another area with good pedestrian facilities allowing circulation throughout. There is a high incidence of pedestrian travel especially to the shopping areas on Central Avenue between Pecan Avenue and The Plaza. There are very good connections to residential areas one and two blocks off of the alignment.

Bicycle

Bicyclists share the roadway with the vehicular traffic for the majority of the corridor. The section of Central Avenue from Eastway Drive to Sharon Amity Road currently has dedicated bicycle lanes on both sides of the road. The 1999 *Charlotte-Mecklenburg Bicycle Plan* recommends widening the outside lanes on Beatties Ford Road from Rozelles Ferry Road to I-85 to accommodate cyclists. This plan also states the need to make transit stations, transit corridors, and routes leading to the stations bicycle accessible. It also recommends that transit stations provide bicycle racks and that the vehicles themselves accommodate bicycles. In the *Transportation Action Plan*, adopted May 2006, it is recommended that the city's bicycle plan be updated every five years.

There are no bicycle facilities on the remaining segments of the streetcar alignment. However, construction is pending for a streetscape project on Elizabeth Avenue that includes bike lanes.

Connections to Pedestrian/Bicycle Routes

The 1999 *Bicycle Master Plan* will be updated soon, adding new bike lanes and bike routes across the City and within the study area. Charlotte is currently in the process of completing a connectivity study and a Comprehensive Pedestrian Plan that will give pedestrians more access to the Center City Streetcar Corridor.

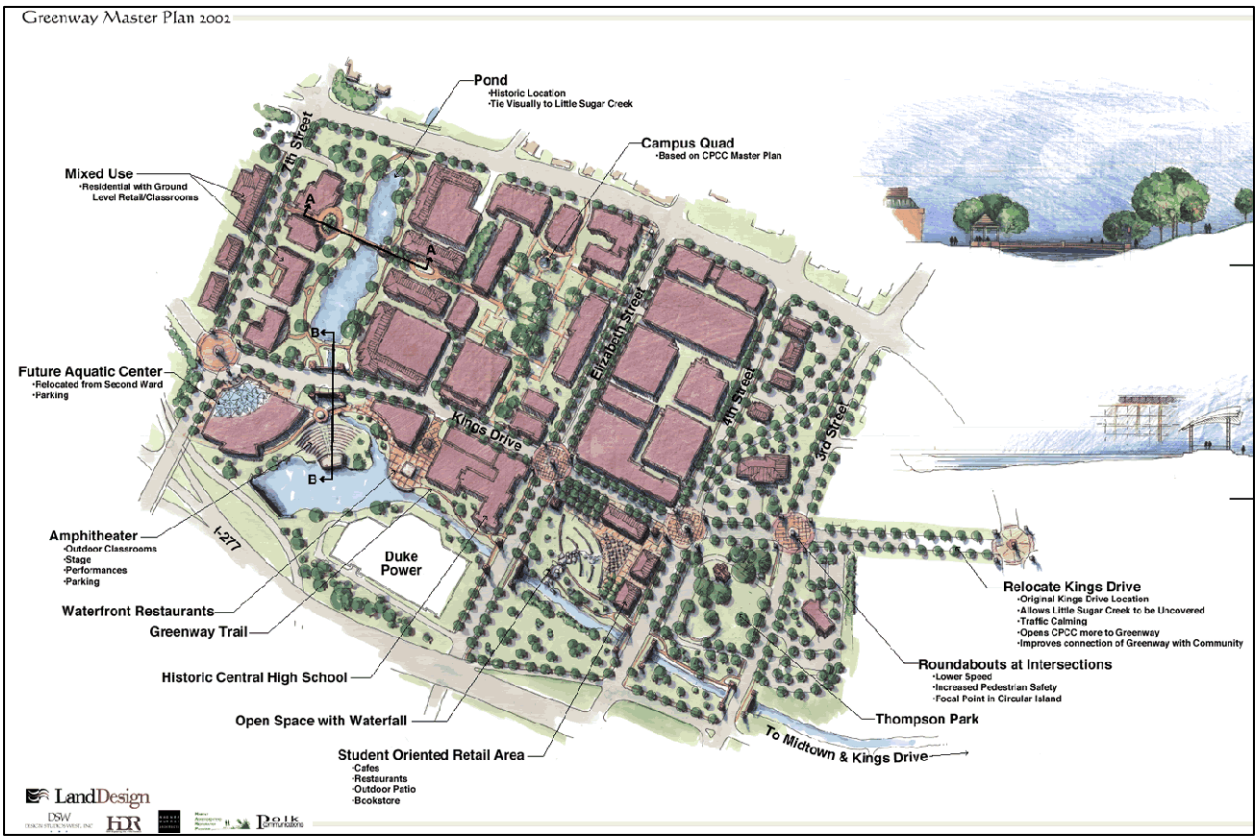
Mecklenburg County Parks and Recreation is currently designing a network of greenways that will extend the pedestrians' and bikers' reach in the city, and several existing and proposed greenways cross or run near the subject alignment. The Little Sugar Creek Greenway will cross Elizabeth Avenue near Kings Drive.

The Briar Creek Greenway presently runs from the north and stops at Central Avenue. It will eventually cross at Central Avenue with a mid-block crossing or an underpass if the present bridge over the creek is replaced. A spur will connect with the new Morningside development near Veterans Park on the southern side of Central Ave.

The Irwin Creek Greenway presently crosses under Trade Street adjacent to the access and ramp roads connecting I-77 with Trade Street and 5th Street.

The figure below shows an illustration of the proposed Little Sugar Creek Greenway that will cross the Streetcar alignment on Elizabeth Avenue and Kings Street.

Figure 1-4: Little Sugar Creek Greenway



1.2.4 Railways

Three existing rail lines cross through the streetcar corridor. One of those is owned by the City while the other two are used for freight and passenger rail services. The line owned by the City operates the Charlotte Trolley will operate daily service from the South End to 11th Street in Center City Charlotte (This service has been suspended during construction of the LYNX Blue Line LRT). This elevated crossing passes the corridor at Trade Street adjacent the Charlotte Transportation Center. One rail line used for freight services crosses over Trade Street near the proposed Charlotte Gateway Station, this line is operated by Norfolk Southern Railroad. When the center is completed, it will be terminus for the North Corridor Commuter Rail line. The final rail line that operates in the area is CSX Transportation, there is an at-grade rail crossing located on Central Avenue near Pecan Street.

1.3 PERFORMANCE OF THE TRANSPORTATION SYSTEM

1.3.1 Highway Performance

This section describes the existing and future no build highway and roadway system in the study area and presents areas with problematic levels of service on the major roadway segments and intersections in the corridor. Refer to the *Center City Streetcar Travel Analysis Report* for more in-depth traffic analysis and data.

Existing Arterial Capacity Analysis

To evaluate the capacity conditions of the existing roadway network in the study area, twenty-seven arterial segments were analyzed. Study area roads were analyzed with the following typical sections:

- Beatties Ford Road was analyzed with four through lanes from Rosa Parks Place to the Brookshire Freeway southbound ramps/French Street and three through lanes (two lanes northbound and one lane southbound) from the Brookshire Freeway southbound ramps/French Street to Dixon Street. Between Dixon Street and Rozelles Ferry Road, Beatties Ford Road widens to four through lanes.
- Trade Street was analyzed with four through lanes from Rozelles Ferry Road to Johnson and Wales Way.
- Trade Street between Johnson Wales Way and McDowell Street and Elizabeth Avenue between McDowell Street and Hawthorne Lane were analyzed separately.
- Hawthorne Lane between Elizabeth Avenue and Central Avenue was analyzed with four through lanes.
- Central Avenue between Hawthorne Lane and Reddman Road was analyzed with four through lanes.

The analysis shows that for the 2004 existing conditions, the traffic demand on Beatties Ford Road, Trade Street, and Hawthorne Lane are well below the routes' capacities. Roadway segments and intersections are rated for a level of service based on volume to capacity and delay. Level of Service (LOS) range from A to F and are explained further in the traffic analysis technical memorandum for the project. Traffic demand is approaching or currently exceeds roadway capacity on Central Avenue at the following sections:

- Central Avenue between Morningside Drive and Briar Creek Road (LOS E at 33,200 vehicles per day);

- Central Avenue between Briar Creek Road and Eastway Drive (LOS E at 34,500 vehicles per day);
- Central Avenue between Norland Drive and Rosehaven Drive (LOS F at 36,800 vehicles per day); and,
- Central Avenue between Rosehaven Drive and Sharon Amity Road (LOS F at 36,800 vehicles per day).

On the section of Trade Street within the I-277 loop and the section of Elizabeth Avenue from McDowell Street to Hawthorne Lane automobile traffic is more free-flowing. The grid type street network with the Center City makes traffic movement more efficient. The *Center City Streetcar Travel Analysis Report* and Chapter four of this study have further details.

Existing Intersection Capacity Analysis

Since the capacity of a roadway is usually limited by the capacity of its intersections, the 2004 existing traffic flow conditions were analyzed for 24 intersections along the project corridor.

Under the 2004 existing conditions, 22 signalized intersections and two unsignalized intersection are analyzed. Of the 22 signalized intersections, traffic flows with minimal congestion (v/c ratio less than 0.85) at 19 intersections; traffic flows with moderate congestion (v/c ratio between 0.85 and 0.94) at two intersections; traffic flows with severe congestion (v/c ratio 0.95 or greater) at one intersection (Central Avenue at Sharon Amity Road) where overall intersection operations in the evening peak hour yield Level of Service E. Because this intersection has a v/c ratio greater than 0.95, an Intersection Capacity Utilization (ICU) analysis was performed. The ICU analysis indicates that with a v/c ratio of 0.99, the duration of the PM peak period at this intersection is 75 minutes.

The unsignalized intersection of Beatties Ford Road and Rosa Parks Place operates at Level of Service E in the morning peak hour. The intersection capacity analysis further indicates that the eastbound right-turning traffic flows at Level of Service D or better throughout the day. The eastbound left-turning traffic exceeds the capacity limits (Level of Service F) during the AM and PM peak hours of the day. However, during the field visit for the data collection, it was observed that there are sufficient breaks in traffic flow on Beatties Ford Road due to the signals located on either side of Rosa Parks Place and traffic was able to exit from Rosa Parks Place without excessive delays.

At the unsignalized intersection of Trade Street and the I-77 southbound ramps, traffic on the cross street experiences long delays and subsequently yields an overall Level of Service F during the PM peak hour. The intersection should be monitored to determine whether a traffic signal is needed based on the warrants provided in the *Manual on Uniform Traffic Control Devices* (MUTCD).

2030 No Build Arterial Capacity Analysis

For the 2030 No Build Alternative arterial capacity analysis, the study area roads were analyzed with the same typical sections as under 2004 Existing Conditions with one exception. The exception is the section of Hawthorne Lane between 7th Street and Central Avenue is analyzed with two through lanes and a center left-turn lane since the City of Charlotte is planning to convert Hawthorne Lane from its existing four lane configuration. The 2030 No Build Alternative AADT and peak hour traffic volumes were estimated using the methodology described in the *Center City Streetcar Travel Analysis Report*.

The 2030 No Build Alternative arterial capacity analysis indicates that several sections of Beatties Ford Road, Trade Street and Central Avenue would be congested and would fail to serve the future traffic demand by the year 2030. On Beatties Ford Road, traffic demand would exceed the route's capacity in the vicinity of I-85 and Gilbert Street. On Trade Street, demand would exceed capacity in the vicinity of the I-77 ramps. On Central Avenue, traffic volumes would exceed the mainline capacity on most of the route with the exception of the segments between The Plaza and Morningside Drive and in the vicinity of Eastland Mall between Sharon Amity Road and Reddman Road. Traffic demand on Hawthorne Lane is well below the roadway's capacity under the 2030 No Build Alternative.

2030 No Build Intersection Capacity Analysis

To determine the 2030 No Build Alternative traffic flow conditions at the study area intersections, capacity analyses were performed for all the 24 intersections along the study corridor. The following improvements are included in the 2030 No Build Alternative intersection capacity analysis:

Trade Street/Beatties Ford Road at Rozelles Ferry Road: The City of Charlotte plans to implement a road diet program for Rozelles Ferry Road west of its intersection with Trade Street/Beatties Ford Road. Under this plan, the eastbound Rozelles Ferry Road approach would have one through lane, an exclusive left-turn lane and an exclusive right-turn lane. The westbound 5th Street approach would have one through lane and an exclusive right-turn lane. The westbound left-turn movement is prohibited, as under 2004 Existing Conditions.

Elizabeth Avenue/Hawthorne Lane: The City of Charlotte proposes improvements to this intersection as part of Elizabeth Avenue Business Corridor Project. With these improvements, eastbound Elizabeth Avenue would have one through lane shared with left-turning movements and an exclusive right-turn lane. The westbound Presbyterian Hospital entrance would have one through lane shared with both left and right-turning movements. The exclusive left-turn lanes on these two approaches would be removed. There would be no changes for the northbound and southbound Hawthorne Lane approaches.

Hawthorne Lane/7th Street: The City of Charlotte proposes improvements to this intersection as part of the Hawthorne Lane road diet program between 7th Street and Central Avenue. With these improvements, northbound Hawthorne Lane would have one exclusive left-turn lane and one through lane shared with right-turning movements. Southbound Hawthorne Lane would have one exclusive left-turn lane and one through lane shared with right-turning movements. There would be no changes for the eastbound and westbound 7th Street approaches.

I-77 southbound ramps at Trade Street: Under 2004 Existing Conditions, traffic on the I-77 southbound exit ramp is controlled by a stop sign and has long delays during the PM peak hour. The Metrolina Regional Transportation Model projected that the traffic on Trade Street in this area would grow at a rate of 3.0% per year for the next 25 years. With this growth, under the 2030 No Build Alternative, this intersection should be monitored to determine whether a traffic signal is needed based on the warrants provided in the Manual on Uniform Traffic Control Devices (MUTCD). For the analysis purposes, this intersection is treated as a signalized intersection under 2030 No Build and Build Alternatives.

The analysis of 2030 No Build Alternative traffic flow conditions along the Center City Streetcar Corridor indicates that congestion at intersections would increase in the 2030 No Build Alternative compared to the 2004 Existing Conditions. Of the 23 signalized intersections analyzed, traffic will flow with minimal congestion (v/c ratio 0.85 or lower) at ten intersections, with moderate congestion (v/c ratios between 0.85 and 0.95) at five intersections, and with severe congestion (v/c ratios 0.95 or greater) at eight intersections.

At the unsignalized intersection of Beatties Ford Road and Rosa Parks Place, the intersection capacity analysis indicates that the eastbound left and right turning movements and the northbound left-turning movement would either exceed or approach the capacity limits (Level of Service E or F) during the AM peak hour. During the PM peak hour, the northbound left-turning traffic and eastbound right-turning traffic would function at Level of Service C, a good rate of traffic flow. The eastbound left-turning traffic would function at Level of Service F during the PM peak hour. Under the 2030 No Build Alternative, this intersection should be monitored to determine whether a traffic signal would be warranted in the future. The intersection of Beatties Ford Road and Rozelles Ferry / 5th Street will operate at LOS E in the PM peak hour under the future no build scenario. The intersections of Central Avenue at Eastway Drive and Central Avenue at Sharon Amity Road also will yield unacceptable Levels of Service (LOS E and LOS F) during both peak hours in the future no build scenario.

2030 Build Capacity Analysis

In the build network, adding streetcar service will have little or no effect on traffic operations except at the intersection of Hawthorne Lane and Elizabeth Avenue and the segment of Beatties Ford Road between the Brookshire Freeway and Rozelles Ferry Road.

The Hawthorne Lane/Elizabeth Avenue intersection will be altered as a result of the streetcar implementation. The southbound approach will be reduced from two through lanes to one through lane and a left turn only lane (into Presbyterian Hospital). The proposed street cross section of Hawthorne Lane (two travel lanes and a left-turn lane) is essentially to be extended south of 7th Street to Elizabeth Avenue to accommodate the streetcar rail alignment.

In the 2030 Build, the southbound approach drops from LOS C to LOS D with the reduction in lanes. This degradation of service has been incorporated into the localized air quality analysis, however, it is expected that much of the traffic at that location will find alternative routes. The City will monitor the location on an ongoing basis.

The segment of Beatties Ford Road between Brookshire Freeway and Rozelles Ferry Road will be converted from three travel lanes (2SB, 1NB) to two travel lanes. This will also cause a modest degradation in service for the southbound direction. However, there is an alternative route via limited access highways (Brookshire Freeway and I-77) that will have the available capacity to accommodate motorists who may want to avoid the area. This segment will also be monitored over time.

More information about traffic impacts is outlined in Chapter 4.

1.3.2 Existing Transit Service Performance

There are thirty bus routes that serve the CTC transfer facility on Trade Street and ten of these routes serve significant portions of the streetcar corridor. The aggregate number of daily boardings for all of these routes on the Trade Street corridor currently exceeds

16,700. These are trips currently on the bus system that could be served by a higher capacity technology. Table 1-7 shows these routes and their contribution toward total ridership in the system.

Table 1-7: Current Ridership Central/Trade/Beatties Ford Road

Daily	Inbound Boardings	Outbound Alightings	Total Ridership (2005 Data)
Route 1	96	114	210
Route 7	*1,452*	*1,534*	*2,986*
Route 8	103	79	182
Route 9	*2,652*	*2,613*	*5,265*
Route 10	13	21	34
Route 17	192	276	468
Route 20	183	52	235
Route 27	37	53	90
Route 39	208	264	472
GR Red Line	*3,424*	*3,423*	*6,847*
		Total	16,789

The table was compiled only using trips that begin and end on the streetcar's proposed alignment to aggregate existing trip patterns that could be served using a higher capacity form of transit. The routes that are italicized would be replaced by the new service while the other routes could be adjusted to serve new areas or to a new alignment with a shorter travel time to CTC.

The 2030 No Build Model projects a 28.2% increase in ridership on these routes by the horizon year, translating into approximately 21,500 trips. None of these routes are experiencing major schedule adherence issues but several trips per day are exceeding system standards in terms of volume over capacity.

Currently, Route 9 and the Gold Rush Red Route experience multiple trips where passenger volume exceeds 120% of the seated capacity throughout the day, but predominantly during midday and peak hour services. If the existing midday and peak hour volumes are increased by the percentage increase in daily ridership shown in the 2030 No Build Model then the occurrences of standing loads will increase considerably on Route 9 and the Gold Rush Red Line. The peak volume for each of these routes is shown in Table 1-8.

Table 1-8: Peak Volumes for Routes Directly Serving the Study Corridor

	Existing Peak Volumes		2030 No Build Peak Volumes		120% Seated Capacity on Existing Equipment
Route	**Midday**	**Peak Hour**	**Midday**	**Peak Hour**	
7	30	35	32	39	48
9	50	54	57	61	48
Red Line	29	40	42	67	28

1.3.3 Potential Transit Markets

Work Trips

Center City has the largest concentration of jobs in the Charlotte Metropolitan Area and one of primary transit markets is home-based work commutes, which constitute 15% of all trips on a daily basis. The project alignment serves a significant travel shed of work commuters destined for Center City employment. The travel shed corresponds to trip patterns between Center City and the sub-areas depicted in Figure 1-2. The table below shows the number of daily work trips to and from Beatties Ford Road and Central Avenue into Center City.

Table 1-9: Daily Work Trips within the Study Area

Origin	Rosa Parks	JC Smith	Center City	Plaza	Eastland Mall	Total Work Trips
Rosa Parks	137	56	1,346	77	61	**1,677**
JC Smith	54	69	1,018	65	51	**1,257**
Center City	270	315	12,304	558	483	**13,930**
Plaza	72	69	2,749	699	227	**3,816**
Eastland	43	42	1,654	197	268	**2,204**
Total Work Trips	**576**	**551**	**19,071**	**1,596**	**1,090**	**22,884**

Like the streetcar corridor, the five regional transit corridors are also serving home based work trips in and out of the Center City area. However, to maximize the work commute on the regional corridors it will be important that transit is available in Center City for midday trips for employees. In fact, the regional travel demand model shows that daily non-home based (NHB) trips in the Center City Area total 79,089, or more than 85% of all trips that start or end in the Center City area. More employees will be willing to use transit to get to work, since many of these midday trips could be served by the streetcar.

Environmental Justice Populations

The project corridor also has a large concentration of low-income and minority residents. These populations tend to have higher transit propensity than higher income

populations. Table 1-10 shows the percentage of low income population for the project corridor, the City of Charlotte and Mecklenburg County. Table 1-11 shows the percentage of minority population for the project corridor, the City of Charlotte and Mecklenburg County.

Individuals are considered low-income if they reside in households (4 person households) with less than $43,350 income annually. The "Below Poverty and Very Poor" categories have household incomes of $27,100 and $16,250 annually. **NOTE: The population figures in each column are subsets of the next category, i.e. the very poor population is included in the Below Poverty category.**

Table 1-10: Low Income Population

Area	Persons	Below Moderate	Below Poverty	Very Poor	Percentage of Total Population
Study Area (½ Mile Buffer of Alignment)	41,487	25,348	15,287	8,571	61.1%
City of Charlotte	542,131	214,736	115,965	57,811	39.6%
Mecklenburg County	695,454	249,428	131,449	64,932	35.9%

Source: US Department of Housing and Urban Development, 2006 – ST3 Sampling

Table 1-11: Minority Populations

Area	Persons	Black	Other Minority	Percentage of Total Population
Study Area (½ Mile Buffer of Alignment)	41,487	22,620	8,586	75.2%
City of Charlotte	542,131	175,563	68,067	44.9%
Mecklenburg County	695,454	191,352	78,823	38.8%

Source: US Department of Housing and Urban Development, 2006 – ST1

Special Trip Generators

The project alignment connects a number of areas with a high propensity for transit suggesting that a latent transit market exists. Existing ridership volumes on the bus routes indicate that transit is a viable option in the corridor and future enhancements to service are warranted and will be utilized. The neighborhoods are some of the most densely populated areas in Charlotte and there are many significant trips generators.

1. Johnson C. Smith University, Johnson & Wales University and the Central Piedmont Community College all have campuses along the project corridor.

These are major educational institutions that also have a reciprocal agreement that allows students at each institution to take classes at the other schools.

2. Presbyterian Hospital is a primary health care facility and a major employer with a campus of buildings all within walking distance of Hawthorne Lane. If transferring from the South Line or a local route at the CTC, Presbyterian Hospital can be reached within five minutes via the streetcar.
3. Charlotte Bobcat Arena/Bank of America Stadium/Blumenthal Center for the Arts are three entertainment facilities in Center City that host sporting events, concerts and the performing arts on a regular basis. These special events attract hundreds of thousands of patrons every year.
4. There are numerous areas along the alignment where new developments are eminent or planned for the near future. New residential and mixed use developments at Morningside Drive, Central Avenue at Hawthorne Lane (Grubb-Barnhardt, Richey Lamar Street), Elizabeth Avenue (Grubb), Epicenter and two additional high rise residential facilities on Trade Street, Gateway developments, Wesley Heights and Beatties Ford will all intensify the land uses along the alignment and generate new transit ridership.
5. The Government Center is a major employment and activity center on East Trade Street and into the Second Ward of Center City.

1.4 TRANSPORTATION PROBLEM AND NEEDS

The proposed action is in response to a growing need for improved mass transit within the existing study area. The need for the proposed action stems from rapid population and employment growth, planned development activities, diverse demographic character, numerous activity centers within the project corridor and the need to improve air quality in the Charlotte-Mecklenburg region. The following describes the purpose and need that will be met by the proposed action.

1.4.1 Project Purpose

The proposed action is to construct, operate, and maintain a streetcar system in Charlotte's Center City. The purpose of the project is to:

- Improve the availability and reliability of transit service in the corridor,
- Improve regional transit connectivity in the corridor,
- Connect the corridor's major activity centers via a high capacity transit system,
- Increase transit ridership in a high demand corridor,
- Support planned development and redevelopment in the Charlotte urban area,
- Enhance the region's economic potential through increased mobility,
- Reduce short inner-city auto trips, parking demand and vehicle emissions, and to
- Provide expanded transportation choices.

1.4.2 Summary of Problems and Needs

1.4.2.1 Improve Transit Service in the Highest Demand Corridor

The corridor has the highest combined boardings of any corridor in the system. Routes 1, 7, 9, 39 and Gold Rush Red Line all have their highest volumes on Trade Street, Elizabeth Avenue or Central Avenue.

Route 9 currently averages two trips inbound and 2-3 trips outbound with volumes that exceed the CATS loading threshold of 120% seated capacity. Per CATS service standards, Route 9 will need five minute frequencies within the next 5 years.

Peak volumes for the Route 9 occur in the midday and PM peak hours and usually occur near CPCC at Kings Drive and Elizabeth Avenue.

One of the highest volume stops for Route 9 is at Eastland Mall, where boardings are expected to increase as the neighborhood routes in that area are expanded and the transit center is established there.

The Gold Rush Red Line operates on Trade Street at 6 minute frequency during the peak and routinely experiences crush loads and passenger "leave behinds", especially during the AM peak.

The Route 7 does not currently have capacity issues but is expected to require an increase in peak hour frequencies within the next five years.

One of the highest volume stops for Route 7 is at Rosa Parks Place, where boardings are expected to increase as the neighborhood routes in that area are expanded and the transit center is established there.

The number of buses serving the CTC has increased beyond the capacity of the facility. A number of routes are now required to serve the CTC at curbside bays on Brevard and 4th Street. Increases in frequencies on Route 7 and 9 and other routes may require additional bays at the CTC.

The Route 39 highest volume stop occurs at Eastway Rd and Central Avenue. Route 1 has its highest volume stop at Rozelles Ferry and West Trade Street.

1.4.2.2 Enhance Mobility

The project is needed to enhance mobility in the project corridor. As the focal point of employment and transportation within the region, Charlotte's Center City must have a modern transit system to support its growing mobility needs. The Project is part of a system plan with five major transportation corridors emanating out from Center City. The major transportation corridors are the focus of future development and redevelopment. According to the *Corridor System Plan*, "The Center City improvements are designed not only to serve travel within the CBD, but also to provide and enhance transit connectivity between the corridors. These improvements will benefit the entire region by enabling the individual corridors and local services to function as an integrated system."[9] The Project would establish an east-west transit spine that links all five rapid transit corridors in downtown Charlotte.

The streetcar would also provide easy movement between the new Rosa Parks Place Community Transit Center at the northwest terminus of the project, the existing Transportation Center and proposed Charlotte Gateway Station in Center City, and the Eastland Community Transit Center area at the eastern terminus of the project. Enhanced mobility provided through the efficiency and convenience of the streetcar and accessibility to key destinations will also enhance the walkability of Center City. According to the *Corridor System Plan*, "Operation of the streetcar along Trade Street would further enhance this street as a pedestrian/transit way.[10] The streetcar project would provide a new and unique mode of transportation, facilitating travel and improving transit access for residents and businesses throughout the project corridor.

The project would also enhance mobility in neighborhoods of diverse income and racial composition. Demographic analyses of the project corridor, as explained in further detail

in Section 5.4 of the Environmental Assessment, indicate that several existing single-family and multi-family neighborhoods throughout the corridor are comprised of low-income and minority households. The Project will enhance the quality of transit service to these neighborhoods thereby improving mobility among transit dependent populations, linking them to employment, education, medical services, and other modes of transportation. An analysis of corridor demographics shows that the one half-mile streetcar rider capture area would provide access to high-quality transit service for an additional 6,900 low income and 14,700 minority individuals[11] when compared to the one quarter-mile bus rider capture area.

1.4.2.3 Serve Projected Population and Employment Growth

The project is needed to provide improved transit service that will keep pace with projected population and employment growth. As one of the fastest growing cities in the United States, the population and employment rates within Charlotte are projected to continue the rapid growth trend experienced throughout the 1990s and will increase substantially over the next twenty years. Much of the projected growth in population and employment will be experienced in the Center City sub-area where population and employment are expected to increase by 169 and 56 percent, respectively, by 2030. Population and employment within the overall project study area is expected to increase by 77 and 59 percent, respectively, by 2030.

The increased interest in living in an urban setting and the desire to live close to work has created a growing demand for residential development in the project corridor. Numerous development activities are planned or are under construction within the project vicinity. The proposed streetcar would provide existing and future residents with an efficient and attractive transit option for traveling to and from work and between other destinations proximal to CATS' transit system.

1.4.2.4 Improve Connectivity between Activity Centers

The project is needed to improve connectivity between activity centers along the project corridor. The Project would provide high-quality transit service connecting key destinations along the proposed alignment. The project would link regional institutions, major event venues, transportation hubs and residential areas. Additionally, the system would directly serve the largest employment center in the region. Major activity centers within the corridor include Johnson C. Smith University, Johnson & Wales University, Government Center, the Transportation Center, Charlotte Bobcats Arena, the Square, Central Campus of Central Piedmont Community College, Presbyterian Hospital, the Plaza, and Eastland Mall. Shopping, medical offices and services, and key offices for federal, state, and regional agencies and community services are also located along the proposed alignment.

The streetcar would directly serve the educational institutions of Johnson C. Smith University, Johnson & Whales University, and the Central Campus of the Central Piedmont Community College. Johnson C. Smith University is a historically African-American university that enrolls approximately 1,500 students per year with a large portion of the student body living on campus. Johnson and Wales University enrolls approximately 2,100 students annually with approximately 750 students living on Campus. Central Campus of the Central Piedmont Community College enrolls between 16,000 and 17,000 students annually, all of which live off campus and commute to the college. The Central Campus hosts special events such as art exhibits, theatrical performances and conferences. The three institutions have recently agreed to allow student reciprocal access to classes on each of the campuses. Such an agreement

increases the need for reliable transportation between campuses all of which are directly situated along the subject alignment. Students of these institutions would greatly benefit from enhanced mobility with the project corridor.

Two other educational institutions, the University of North Carolina – Charlotte Uptown Campus and Kings College are also within walking distance of the alignment.

The Charlotte Bobcats Arena, located across the street from the Transportation Center, would be a well-used stop for the Center City streetcar. The arena is home to the National Basketball Association (NBA) Charlotte Bobcats and the East Coast Hockey League Charlotte Checkers. In addition to professional basketball and hockey, the arena also hosts other special events such as NCAA basketball conference tournaments, the circus, horse shows, and concerts.

In addition, by extending the streetcar outside of the I-77/I-277 loop, enhanced connectivity to Center City Charlotte would be provided to neighborhoods including Seversville, Biddleville, McCrory Heights, Washington Heights, Lincoln Heights, University Park Plaza Midwood and Elizabeth.[12]

1.4.2.5 Serve Existing and Planned Development

The project is needed to serve existing and planned development within the streetcar corridor. According to the *Corridor System Plan*, "The primary purpose of the public transit system is to support the region's land use vision."[13] The City of Charlotte is growing in population and is proactively working to implement transit improvements that will support livable urban communities by promoting economic development, increased development density, and mixed income residential development. The project would provide mobility enhancement to diverse residential areas and housing types. The project would serve existing single-family and multi-family neighborhoods throughout the corridor as well as promote pedestrian and transit-oriented residential infill development characterized as multi-family, mixed-use development with new urbanism design elements. Such elements include streetscape scale, construction and features that serve pedestrians by providing them with distinctive and human-scale spaces. Nearly sixty development projects are planned or under construction within the project study area. These developments and others developments planned for the corridor support the streetcar project by increasing pedestrian-oriented activity throughout the corridor, which will promote transit and result in increased use of the system. Likewise, the streetcar would support the development activities by enhancing mobility and providing high-quality transit service to developing and redeveloping areas of Charlotte.

1.4.2.6 Encourage and/or Accelerate New Development

Beatties Ford Road and Central Avenue illustrate substantial development interest and potential over the next few years. Current redevelopment trends demonstrate high-density projects with a mix of commercial and residential uses, particularly on parcels fronting the corridor. These development opportunities become more attractive and could potential be accelerated by the implementation of the streetcar. The following section shows the potential development for each of the outer segments of the streetcar.

Beatties Ford Road

This corridor has over 228 acres of land that could be redeveloped. This includes projects currently planned or under construction, primarily concentrated in the area south of the Brookshire Freeway, in and around the Wesley Heights neighborhood. A majority

of these projects are residential, with a mix of single-family, townhouses and multifamily products, as listed below:

- Mosaic mixed-use development (at West Trade Street near Brunns Avenue)
- Walnut Hill (multi-family development in the Wesley Heights neighborhood)
- Woodvale Place (single-family units in the Wesley Heights/ Seversville area)
- Seversville Redevelopment (at South Brunns and Sumter Avenue)
- Wesley View (townhouses in Wesley Heights)
- Johnson C. Smith Residence Halls (near French Street)
- Nia Point (multifamily apartments in Washington Heights)
- University Park (Office condominiums near LaSalle Street)
- Friendship Village mixed-use development north of I-85

Potential development along the corridor is concentrated in the short and mid-term, replacing older and partially vacant retail out-parcels or older housing. This development could add over 1,800 residential units and over 800,000 square feet of commercial development over the next 25 years. The numbers include about 1,200 residential units that are already planned or under construction. Development trends for mixed-used will continue along the Beatties Ford frontage with infill opportunities for lower density residential in the surrounding neighborhoods.

Central Avenue

The Central Avenue corridor, starting at Hawthorne Lane and extending to Eastland Mall on the east is also experiencing significant development activity. Key projects are tabulated below. Overall, these planned projects will add around 1,000 residential units, mostly multifamily, to the Central Avenue corridor.

- Conformity Corp development (residential on Hawthorne Lane)
- Faison development (multifamily residential near Sunnyside)
- Piedmont Courts (multifamily residential at 10th Street and Seigle Avenue)
- Development at Autoverks site (residential off Commonwealth Avenue)
- Central 27 (condominiums on Central Avenue)
- Morningside residential redevelopment (over 1,000 units off Iris Drive)
- Mixed-use at Clement Avenue and Hawthorne Lane

In addition to these ongoing projects, there are several potential opportunities for redevelopment along the corridor, constituting almost 400 acres. These include short-term opportunities such as the redevelopment of underutilized parking lots on the Eastland Mall periphery and longer term projects for the densification of shopping centers such as Eastway Crossing and Eastway Square. Several smaller infill opportunities are scattered within neighborhoods and would be appropriate for single-family or townhouse development.

Based on the study assumptions, new development could add over 3,700 residential units, including development currently underway. Over one million square feet of new retail would include a variety of products –store-front retail near the Plaza, new shopping centers (built as part of mixed-use developments) and neighborhood oriented retail at the streetcar stops. Additionally, about 650,000 square feet of office and industrial development is anticipated based on the study assumptions. Industrial usage is assumed to be the redevelopment of existing warehouse sites near East 10th Street and Central Avenue. Potential institutional expansions are assumed at the vacant sites adjoining Eastway Middle School and Winterfield Elementary Schools.

The development in the study area translates into an overall investment exceeding $1.4 billion based on unit costs per square foot assumptions established by the Charlotte-Mecklenburg Economic Development Office. Table 1-12 illustrates the total investment by segment, see the *Center City Streetcar Development Study* (October 2006) for further details.

Table 1-12: Estimated Investment for Study Area Development

Segment	Residential	Commercial	Institutional	Total
Beatties Ford Road	$340.2	$94.0	$0	$434.2
Central Avenue	$766.8	$209.5	$8.6	$984.9
Total	$1,107.0	$303.5	$8.6	$1,419.1*

* Dollars in millions – based on $100-200 per sq. ft.

1.4.2.7 Improve Air Quality

The project is needed to improve air quality in the region. The proposed project, in combination with other proposed transit improvements in the region, would reduce vehicle emissions by reducing vehicle miles traveled (VMT) through increased transit efficiency (i.e., reduction in bus VMT), reduction of short inner-city automobile trips, and reducing inner city parking demand. Reduction in vehicle emissions would contribute to the efforts set forth by the Mecklenburg County Air Quality program to improve air quality in the county and region and goals set forth in the *Corridor System Plan* to promote Charlotte-Mecklenburg's air quality.[14]

CATS Routes 7, 9 and the Red Line are operated with 1,139,900 vehicle miles traveled annually.

Automobiles and other motor vehicles represent a major source of air pollution in the region. Minimizing the growth in travel by single-occupant automobiles will be an important factor in achieving the regional air quality goals. The proposed project would provide a critical link in the regional network of high capacity transit services, increasing the opportunities for non-automotive travel. As a result, the Center City Streetcar is expected to have positive regional air quality impacts.

The net reductions in regional VMT for the Build Alternative was derived from the regional travel demand model. Comparing the highway network assignments of the No-Build and Build Alternatives provided an estimate of the reduction in regional VMT due to mode shift. The resulting net VMT reductions were used as the basis of the regional air quality analysis.

Year 2030 emission rates for CO and NOX were estimated using the EPA MOBILE6.2 model with selected parameters adjusted to reflect assumed conditions in the study area. Mobile emission rates were obtained from the North Carolina Department of Environment and Natural Resources, Division of Air Quality.

Table 1-13 summarizes the results of the Year 2030 regional air quality analysis for the No-Build and Build Alternatives. The analysis shows the net reduction in regional VMT for the Build Alternative relative to the No-Build Alternatives, along with the estimated pollutant emission factors and the corresponding differences in regional emissions.

Table 1-13: Year 2030 Regional Air Quality Impact Analysis and Results

Project Alternative	Daily VMT Reduction[1] (veh-mi)	Carbon Monoxide (CO)		Nitrogen Oxides (NO_x)	
		Emission Factor (g/veh-mi)	Emission Reduction (kg/day)	Emission Factor (g/veh-mi)	Emission Reduction (kg/day)
No-Build	0.00	7.3	0.00	0.7	0.00
TSM[2]	-	7.3	-	0.7	-
Build	119,603	7.3	873.10	0.7	83.72

Source: URS Corp., October 2006
Notes: 1. Net reduction in VMT relative to the No-Build Alternative.

As the results in Table 1-13 indicate, the Build Alternative is expected to reduce the amount of regional vehicular travel relative to the TSM and No-Build Alternatives. A net reduction in VMT would result in lower emissions of CO, the ozone precursor (NOX) and greenhouse gases. Based upon this analysis the Build Alternative would not have an adverse effect on the regional air quality. Furthermore, by providing an alternative to single-occupant vehicle travel, implementation of the Build Alternative would support the attainment and maintenance of air quality standards in the region.

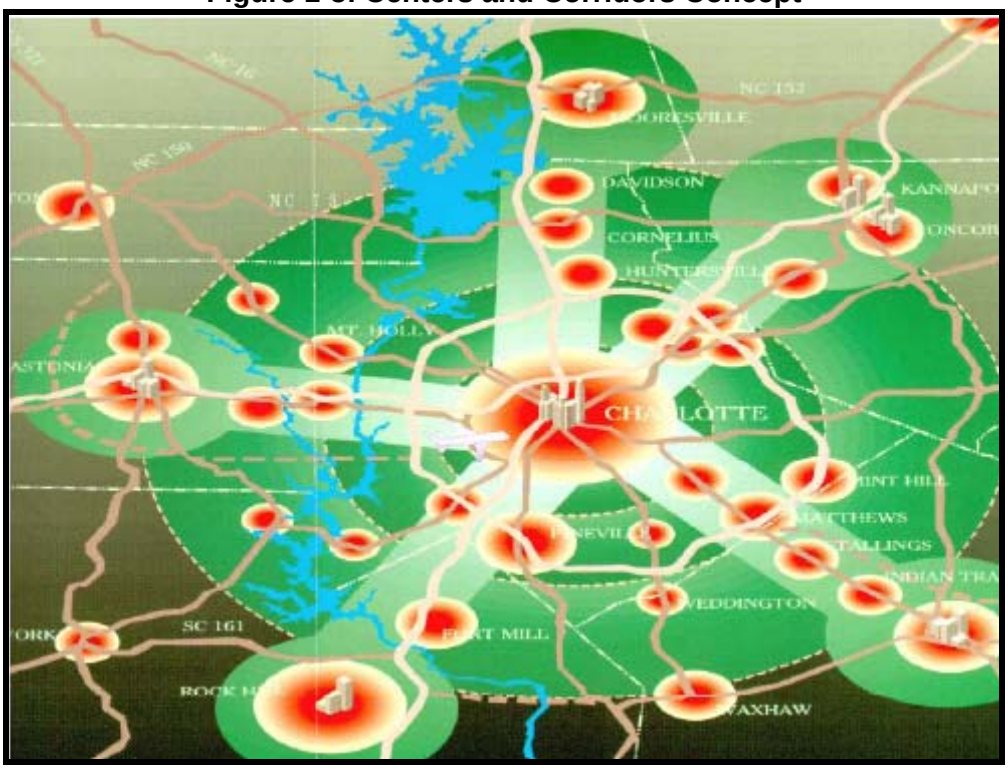
1.4.3 Goals and Objectives

The following plans have been developed to support the integration between land use and transit in the Charlotte-Mecklenburg region.

1.4.3.1 Centers and Corridors Concept Plan

The Centers and Corridors Plan was adopted by the Charlotte City Council and the Mecklenburg County Board of Commissioners in 1994. The focus of this plan was to concentrate new growth and redevelopment around the five corridors that extend from the Center City area as well as a number of key nodes or “centers,” as a means of managing growth and reducing sprawl in Mecklenburg County and the greater region. The goals for the development of a transit system to support the centers and corridors land use vision included sustaining economic growth and vitality, expanding to a regional system, concentrating development in Center City and along corridors and at key economic centers, and combining rapid transit with enhancement of the overall transit system. This would in turn support future transit improvements and transit-orientated development. A map of the centers and corridors concept is shown in Figure 1-5.

Figure 1-5: Centers and Corridors Concept



Source: Charlotte Area Transit System. "Corridor System Plan." September 2002.

1.4.3.2 2025 Integrated Transit/Land Use Plan

The *2025 Integrated Transit/Land Use Plan*, which was completed in October 1998, built upon the Centers and Corridors Concept Plan. The Plan provided a direct connection between transit and land use decisions and promoted growth in the five major transit corridors. The plan also discussed transit technologies for each of the five corridors, as well as improvements to the existing bus services. Goals include linking the wedges to the corridors by a feeder bus system so that every part of the Charlotte-Mecklenburg area has access to transit, combining transit solutions with road improvements, and involving citizens extensively in the system development process. This plan was very crucial in the Mecklenburg County voters' approval of the ½ cent sales tax for transit in 1998.[15]

1.4.3.3 2030 Long Range Transportation Plan

Policies, programs and projects to be implemented in the region encompassed by Mecklenburg and Union counties between 2005 and 2030 are described in the *2030 Long Range Transportation Plan* (2030 LRTP).

Goals for the transportation system outlined in the 2030 LRTP are to:

- Provide a safe and efficient transportation system;
- Improve the quality of life for residents of the Mecklenburg-Union metropolitan planning organization (MUMPO);
- Provide a transportation system that affords the public with mobility choices including walking, bicycling, and transit options;

- Provide a transportation system that is sensitive to significant features of the natural and human environment; and
- Provide equitable transportation options to low income and minority neighborhoods.

The specific objectives relating to public transportation, as outlined in the 2030 LRTP, are to:

- Promote a safe, efficient, and diverse public transportation system that is accessible to various segments of the population;
- Operate safe and efficient scheduled transit services that minimize travel times and distances;
- Implement land use strategies that maximize the potential for transit patronage and coverage;
- Develop land use and density criteria for transit centers and corridors;
- Establish programs and incentives that encourage ridesharing and/or eliminate barriers thereto;
- Serve the elderly and transportation disadvantaged populations with convenient transportation to needed services;
- Increase transit patronage as a percentage of total trips;
- Maximize transit's coverage area to the extent feasible;
- Facilitate coordination between transportation modes with the establishment of intermodal facilities; and,
- Reserve designated rail and transit corridors for future needs.

Some of the objectives relating to the environment should particularly be considered in the preparation of the environmental assessment for each project; include:

- Develop a transportation system that preserves and enhances the natural and built environments,
- Develop transportation systems and programs that maintain or improve air quality,
- Plan transportation facilities that protect cultural and historic resources,
- Design attractive transportation systems that reinforce community standards of appearance, and
- Plan transportation facilities that minimize neighborhood disruption and related impacts.

Improving accessibility and mobility is cited as one of the most important objectives of MUMPO. Some of the methods by which this objective is achieved are:

- Integrating land use and transportation planning,
- Providing the necessary resources to enhance the existing transportation system,
- Expanding the existing transit system, and
- Implementing fixed route mass transit options.[16]

1.4.3.4 Center City 2010 Vision Plan

In May of 2000 the Charlotte City Council and Mecklenburg County Board of Commissioners adopted the *Center City 2010 Vision Plan.* The purpose of the plan is to provide direction for future urban design and development in Center City. The vision developed in the planning process is, "To create a livable and memorable Center City of distinct neighborhoods connected by unique infrastructure." Some of the actions recommended in the plan for Center City are to:

- Create an area that serves as the symbolic focus of Charlotte and Mecklenburg County,
- Encourage centralized density that discourages decentralized sprawl and development of rural land, and
- Focus the urban density required to function as a central node for transit destinations and connections.

Among the guiding principles described in the plan are that Charlotte should have a nationally recognized rapid transit and trolley system, that high quality design should be used in transit and other infrastructure and architectural elements, and it should be connected. In order to include connections to neighborhoods outside of the I-277 loop, enhanced transit options and pedestrian and bicycle paths should be emphasized.[17] Key points in the vision for the transit system included providing a viable transit alternative to vehicles, increasing transit ridership, establishing efficient points of transfer, and studying alternatives for an east-west transit corridor.

1.4.3.5 2025 Corridor System Plan

The *2025 Corridor System Plan* was developed in 2002 by CATS and the Charlotte Mecklenburg Planning Commission. This plan built upon the *Centers and Corridors Concept Plan* and the *2025 Integrated Transit/Land Use Plan*. The Plan ties together recommended improvements in the five transit corridors and Center City as an integrated system to support the land use objectives and address mobility needs within available financial resources. The key principles of the *2002 Corridor System Plan* include land use, mobility, environment, finance, and system development. According to the plan, Transit Oriented Development (TOD) around transit stations will help sustain economic growth and vitality within close proximity to the stations while contributing to the enrichment of the Center City and key activity centers."[18] The components of the plan in Center City, including the streetcar, fulfill system principles by integrating corridor components together as a system, promoting inter-corridor travel, and providing circulation and distribution throughout Center City as well as adjoining communities and institutions. The components also facilitate access and mobility in Center City.[19] The components also facilitate access and mobility in Center City. The *Corridor System Plan* is shown in Figure 1-5.

A brief summary of the plan from the CATS *Corridor System Plan* document is provided below.

South Corridor

Light rail transit (LRT) will be implemented from Seventh Street in Center City along the former freight right-of-way. Opening day is scheduled for Fall 2007.

North Corridor

The North Corridor extends from Mooresville in Iredell County to Center City in Charlotte. Two rapid transit components will be used in the corridor; commuter rail

serving the eastern portion of the corridor, and enhanced bus serving the western portion.

Northeast Corridor

The Northeast Corridor (Blue Line Extension) extends from 9th Street in Center City through the North Davidson (NoDa) and University areas to I-485 north of UNC Charlotte. The service will operate generally within the existing railroad right of way from Center City to NoDa and then remain within the North Tryon Street (US 29) right of way from Sugar Creek north to I-485.

Southeast Corridor

The southeast corridor extends from the Mecklenburg County border with Union County into Charlotte's Center City. Both BRT and streetcar services are recommended to serve this corridor.

West Corridor

The West Corridor extends from the Catawba River to Center City. The recommendation for West Corridor includes BRT and enhanced bus service.

Center City

Recommendations for transit in Center City include the streetcar project, the Charlotte Transportation Center, the West Trade Multi-Modal Station, and a north-south LRT spine.

1.4.3.6 Center City Transportation Plan

The Center City Transportation Plan is a strategy to encourage everyone to become a pedestrian in downtown Charlotte. The focus of this study is the area encompassed by the I-77/I-277 loop, as well as connections to adjacent areas. The objective of the plan is to "plan transportation strategies to maximize economic development opportunities in the Center City and, by extension, the Charlotte region." According to the plan, "The combination of all major destinations being within a five minute walk from transit, all drivers able to take a short drive on Center City streets to a convenient parking location, and each of them able to walk or use transit between Center City destinations rather than driving because of the pedestrian-friendly environment. It is the strategic framework upon which the Center City Transportation Plan proposals have been built.[20]

1.4.3.7 The City of Charlotte Transportation Action Plan

The *City of Charlotte Transportation Action Plan* is a document that strategizes in making Charlotte into "a premier city in the country for integrating land use and transportation choices." It is a comprehensive multimodal transportation plan that identifies, plans, implements and monitors the transportation system to ensure that that vision of the Center and Corridors study are accomplished. A primary goal for the transportation action plan is for all Charlotte's street to be appropriately designed to enhance and protect its residents' quality of life.

[1] http://www.charlottechamber.com/content.cfm?category_level_id=134&channel_id=47&content_id=187&CFID=1151281&CFTOKEN=74573428

[2] Charlotte Area Transit System. *Corridor System Plan*. 18 September 2002.

[3] Charlotte Area Transit System. *Corridor System Plan*. 18 September 2002.

[4] TAZ Data Charlotte DOT, 2006.

[5] TAZ Data Charlotte DOT, 2006.

[6] "Third Ward Neighborhood Vision Plan." Adopted 2003. Available: http://www.charmeck.org/Departments/Planning/Area+Planning/Plans/home.htm

[7] "Charlotte Streetcar Trade Street Background Review, Draft Report." Prepared for Charlotte Area Transit System. Prepared by URS Corporation. January 2005.

[8] The Metrolina model has 2,999 TAZs, including the external stations. The model's matrices have nearly 9 million records each. Hence, a more manageable geography and matrices were devised for the streetcar analyses.

[9] Charlotte Area Transit System. "Corridor System Plan." 18 September 2002.

[10] Charlotte Area Transit System. "Corridor System Plan." 18 September 2002.

[11] US Census, 2000.

[12] Charlotte Area Transit System. "Corridor System Plan." 18 September 2002.

[13] Charlotte Area Transit System. "Corridor System Plan." 18 September 2002.

[14] Charlotte Area Transit System. "Corridor System Plan." 18 September 2002.

[15] Charlotte Area Transit System. *Corridor System Plan*. 18 September 2002.

[16] Mecklenburg-Union Metropolitan Planning Organization. "2025 Long Range Transportation Plan." Adopted 3 April 2002. Available: http://www.charmeck.org/departments/transportation/roads/2025.htm.

[17] City of Charlotte, Mecklenburg County and Charlotte Center City Partners. "Center City 2010 Vision Plan." Adopted May 8 and 9, 2000 by the Charlotte City Council and Mecklenburg County Board of Commissioners.

[18] Charlotte Area Transit System. *Corridor System Plan*. 18 September 2002.

[19] Charlotte Area Transit System. *Corridor System Plan*. 18 September 2002.

[20] "Center City Transportation Plan" April 2006.

CHAPTER 2 ALTERNATIVES CONSIDERED

2.1 SCREENING AND SELECTION PROCESS

CATS completed Major Investment Studies (MIS) for the five transit corridors (North, South, Northeast, Southeast, and West). The South Corridor Light Rail Project is currently in construction with November 2007 as the date scheduled to begin operations. The other four corridors are completing DEIS phase. Coordination between all of these projects with the Center City Streetcar will be directed by CATS.

2.2 DEFINITION OF ALTERNATIVES

The alternatives under consideration for the Center City Streetcar Corridor Project are summarized in the table below.

Table 2-1: Summary of Alternatives

Alternatives	Source			Advanced to EA
	2025 Corridor System Plan	NEPA Required	Added by Public/Agency	
Future No-Action		✓		✓
Baseline/TSM		✓		✓
Streetcar Alignment 1 (Central Av/Hawthorne/Trade/ Beatties Ford Rd – Median Running on Trade Street)	✓			✓
Center City Alt. Align. A (Trade St. Curbside Running)			✓	
Alternatives B through F are curbside running.				
Center City Alt. Align. B (3rd and 4th Street Couplet)			✓	
Center City Alt. Align. C (4th and 5th Street Couplet)			✓	
Center City Alt. Align. D (Trade and 4th Street Couplet)			✓	
Center City Alt. Align. E (Trade and 5th Street Couplet)			✓	
Center City Alt. Align. F (5th and 6th Street Couplet)			✓	

2.2.1 Future No-Action Alternative

The No-Action Alternative includes transit services, highway and multi-modal facilities that are likely to exist in 2030. These include:

- The existing highway network;
- Multi-modal improvements that NCDOT has scheduled in the State Transportation Improvement Program (STIP) for implementation between 2006 and 2012 as adopted by the North Carolina Board of Transportation (BOT) and the

Mecklenburg-Union Metropolitan Planning Organization (MUMPO) on July 7, 2005 and September 21, 2005 respectively;

- Existing transit routes and schedules currently operated by CATS;
- The South Corridor Light Rail line scheduled to be completed in 2007;
- Other new bus services to which CATS has committed, including expansion of bus services in the other rapid transit corridors;
- New bus services to serve areas that will be developed by 2030; and,
- Routine replacement of existing facilities and equipment at the end of their useful life.

The No-Action Alternative provides the underlying foundation for comparing the travel benefits and environmental impacts of the other alternatives. It also is an alternative itself. While the No-Action Alternative may avoid some of the environmental impacts associated with the Build alternatives, it may also not provide the travel and land use benefits of the build alternatives.

Multi-modal Improvements

Multi-modal improvements listed in the 2006-2012 Transportation Improvement Program that are located in the study area are described in Table 2-2.[1]

Table 2-2: Multi-modal projects in the 2006-2012 STIP

TIP Number*	Description	Status
U-209B	US-74 (Independence Blvd) from NC 24-27 (Albemarle Rd) to Idlewild Rd. Widen to multi-lanes w/ HOV lanes, interchg w/ Sharon Amity Rd and Idlewild Rd and safety improvements. 1.4 mi.	Planning/Design – in progress Mitigation – FFY 11 ROW – FFY 09 Construction – FFY 12+
U-3850	I-277 (John Belk Freeway). Add westbound lane through I-77 interchange. 0.5 mile.	Planning/Design – by city Construction – FFY 11
U-4441	Bicycle/Pedestrian connections to trail system. Study to identify neighborhood connections for non-motorized transportation.	In progress
U-4442	North-South corridor transitway project study to review area's land use patterns to concentrate development within major travel corridors to enhance high capacity transit service.	In progress
U-4912	Elizabeth Avenue redevelopment project.	Planning only.
FS-0510A	I-77 from 5th Street in Charlotte to NC 73 (Sam Furr Road). Add HOV lanes. 14.4 miles.	Feasibility study in progress.
E-4714	Irwin Creek bikeway from Irwin Av Elem. School to Cedar Yard (near Bank of America Stadium).	Construction – FFY 06
E-4715	Little Sugar Creek Greenway from Cordelia Park to Baxter Street.	Construction – FFY 06
P-4403	I-77 - Charlotte North transit study (passenger rail).	In progress – work to be completed by City of Charlotte.

* TIP Number is the project reference number the 2006-2012 MUMPO Regional Transportation Improvement Program.

Bus Transit Improvements with the No-Action Alternative

In November 2002, the Metropolitan Transit Commission (MTC) approved a 2025 Transit System Plan which consists of multiple rapid transit improvements in five corridors, a

series of improvements in Center City Charlotte, and bus service and facility improvements throughout the rest of the region. The transit component of the No-Action Alternative includes both bus transit service expansion and transit facilities. Transit services under the No-Action Alternative represent an expansion of existing bus services in all corridors of the 2025 Transit System Plan except for the South Corridor where LRT service would be in operation.

These proposed transit services are listed in Table 2-3.

Table 2-3: Bus Service for the No-Action Alternative

Routes	Alignment	Frequency (minutes)			Type
		Peak	Midday	Night	
7 – Beatties Ford	Trade/Beatties Ford to Beatties Ford Transfer Center	10	15	30	Local
7 – Beatties Ford-Sunset	Trade/Beatties Ford onto Sunset to Statesville Rd	30	30	30	Local
9 – Central-Lawyers	CTC to Eastland and Idlewild via Central	10	15	15	Local
9 – Central-Lawyers/I-485	CTC to Eastland & I-485 via Central & Lawyers	30	30	30	Local
17- Commonwealth	CTC to 7th, Central, Pecan, Commonwealth, Woodland, Eastway, Central, Albemarle, Sharon Amity, and Independence out to Sardis North	30	30	30	Local
39- Eastway/UNCC	Trade, Elizabeth, Hawthorne, Central, and Eastway out towards UNCC	30	30	45	Local

2.2.2 Future Baseline/Transportation System Management (TSM) Alternative

The TSM Alternative is a lower capital cost approach for addressing the need for transit improvements in the Center City Corridor. Under this alternative, it is assumed that the implementation of the highway and transit improvements associated with the No-Action Alternative, along with expansion of transit service to 2030 to provide for growth in regional population and employment would be implemented. It is also assumed that bus service improvements associated with the TSM alternatives for the other corridors and light rail transit (LRT) operations in the South Corridor would be implemented. The TSM Alternative for the Center City Corridor provides the baseline for evaluating the cost-effectiveness of the Build Alternative. Transit improvements under the TSM Alternative include both transit services and transit facilities.

As shown in Table 2-4, Beatties Ford Road and Central Avenue will be served by two separate routes that have different termini. Service on CATS Routes 7-Beatties Ford and 9-Central-Lawyers is envisioned to be provided with articulated buses on 10 minute frequencies that are supplemented by two routes that extend further but operate at a frequency of 30 minutes. Combined, the routes effectively create 7.5 minute frequencies on the alignment corresponding with the Build Alternatives. This configuration of routes is consistent with the system-wide TSM Alternative that is used in all of CATS planning activities.

It should be noted that service levels on Route 9 are expected to increase to 5 minute frequencies in the next three to five years due to overloads on the route. Optimized levels of service resulting from the travel demand modeling runs are not currently yielding those levels of ridership for the horizon years. Since internal analyses are indicating significant growth, a higher level of service may be required in the streetcar corridor than the 7.5 minute frequencies tested in both the TSM and Build Alternatives.

From a traffic operations perspective, the 2030 TSM Alternative is expected to perform similarly to the 2030 Build Alternative, assuming that the Streetcar will have only negligible effects on vehicular traffic.

Table 2-4: Bus Services in the Central Corridor for TSM Alternative

Routes	Alignment	Frequency (minutes)			Type
		Peak Frequency	Midday Frequency	Night Frequency	
7 – Beatties Ford	Trade/Beatties Ford to Beatties Ford Transfer Center	10	15	15	Local
7 – Beatties Ford-Sunset	Trade/Beatties Ford onto Sunset to Statesville Rd	30	30	30	Local
9 – Central-Lawyers	CTC to Eastland and Idlewild via Central	10	15	15	Local
9 – Central-Lawyers-I485	CTC to Eastland and I-485 via Central & Lawyers	30	30	30	Local
17- Commonwealth	CTC to 7th, Central, Pecan, Commonwealth, Woodland, Eastway, Central, Albemarle, Sharon Amity, and Independence out to Sardis North	30	30	30	Local
39- Eastway/UNCC	Trade, Elizabeth, Hawthorne, Central, and Eastway out towards UNCC	30	30	45	Local
105 – Central/Beatties Skip Stop Service	Beatties Transfer Center to Eastland Transfer Center	7.5	15	15	Skip-Stop

2.2.3 Build Alternatives

The Center City Streetcar project is a key recommendation of the 2025 Corridor System Plan. The Center City Streetcar is conceived as a "Portland" type streetcar system utilizing modern vehicle technology based on the European "tram". This type of vehicle is smaller and more lightweight than traditional light rail transit vehicles, and is capable of operating within shared traffic lanes. The Center City Streetcar is an important component of CATS' overall system plan, providing a critical link between other major transit corridors while also enhancing service currently provided on heavily-used bus routes. The Center City Streetcar system is illustrated in Figure P-1.

The proposed alignment extends from Rosa Parks Place along Beatties Ford Road to Trade Street to Elizabeth Avenue to Central Avenue and terminating at Eastland Mall.

Beatties Ford Road Segment

The Beatties Ford Road Corridor extends from Dixon Street on the campus of Johnson C. Smith University northward, just beyond I-85, to the Northwest Mecklenburg County Health Department located between Rosa Parks Place and North Hoskins Road. Stop locations have been identified at cross streets: Montana Drive; LaSalle Street; Russell Avenue; Booker Avenue/Oaklawn; French Street; and Rosa Parks Place.

Trade Street Segment

The Trade Street Corridor extends from just north of the I-77/I-277 loop near Johnson C. Smith University southward along Trade Street through Center City to Elizabeth Avenue. The corridor continues along Elizabeth Avenue to where Trade Street intersects Hawthorne Lane near Presbyterian Hospital. Stop locations have been identified at: Johnson C. Smith University; Five Points; Wesley Heights Way; Johnson & Wales University; Charlotte Gateway Station; Mint Street; Tryon Street; Charlotte Bobcat Arena/CTC; Government Center; McDowell Street; Central Piedmont Community College; Travis Avenue; and Presbyterian Hospital.

Figure 2-1: Build Alternative



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A series of alternatives was defined using several streets in Center City that run parallel to Trade Street. Because all of the candidate streets (except Trade Street) operate one-way, several "couplet" options were developed, in which eastbound streetcars would operate on a different street than westbound streetcars. The Trade Street portion of Alignment 1 is comprised of median-running bi-directional service on Trade Street. Additional alternative alignments in Center City include the following:

- Trade Street (bi-directional / curb-running);
- Third Street / Fourth Street couplet (curbside running);
- Fourth Street / Fifth Street couplet (curbside running);
- Fourth Street / Trade Street couplet (curbside running);
- Trade Street / Fifth Street couplet (curbside running); and
- Fifth Street / Sixth Street couplet (curbside running).

Central Avenue Segment

The Central Avenue Corridor extends from Presbyterian Hospital along Hawthorne Lane to a site north of Central Avenue where the alignment passes under the CSX railroad. The alignment then turns east and transitions back to Central where it proceeds to Eastland Mall. Stop locations have been identified at: Independence Park; Hawthorne/Central, Hawthorne Lane; the Plaza; Veterans Park; Morningside Drive; Arnold Drive; Briar Creek Road; Eastway Crossing; Eastway Drive; Sheridan Drive; Darby Acres; Landsdale/Rosehaven Drive; and Eastland Mall.

Table 2-5: Bus Service for the Build Alternative

Build Alternative Routes	Frequency (minutes)			Type
	Peak	Midday	Night	
Streetcar	***7.5***	***10***	***15***	***Fixed Guideway***
7 – Beatties Ford	***30***	***30***	***30***	***Local Bus***
9 – Central-Lawyers-I-485	***30***	***30***	***30***	***Local Bus***
39 – UNCC-Southpark	***30***	***30***	***30***	***Local Bus***
17 – Commonwealth	***30***	***30***	***30***	***Local Bus***

2.3 CAPITAL COSTS

The project capital cost estimate was prepared in four steps. In the first step, the defined alignment was broken down into logical geographical limits or line segments for estimating purposes using a typical "node" type naming convention. The concept engineering drawings applicable to each line segment was used to define the nature of the work and facilitate a "take-off" or measurement of the work to establish quantities. Where actual quantities were measurable, length of track, item counts, pipe lengths etc., the US Standard Units of measure were used as appropriate (i.e. CY for Cubic Yard, FT for Feet, LS for Lump Sum, etc.). Where insufficient detail existed to estimate quantities with certainty, a conceptual design or cross-section was developed as the basis for the estimation of quantities.

The second step was the selective application of initial cost data to the quantities established in step one and to develop unit cost and lump sum cost items in current year dollars. These items were organized into a "Bid Item Tabulation" format.

The third step was the consolidation of these items into the major project cost elements. Descriptions of the work, quantities, unit costs, Engineering and Administration, and

Contingency were itemized and calculated in this portion of the estimate, in current year dollars (2006). The major cost elements were summarized and costs calculated in this step of the process.

The final step, step four, required the input of the resultant estimate cost data from step three into the new FTA standard cost categories (SCC) format guideline workbook. When the project estimate, project schedule (developed elsewhere) and the escalation rate (assume 3.5 percent until CATS and FTA agree on a rate) were input to the FTA workbook, the year of expenditure (YOE) estimated costs are automatically calculated in the FTA workbook. This required close coordination of URS and CATS to insure that this document accurately reflects the project sponsors reporting requirements.

A similar procedure was followed to estimate capital costs for the TSM alternative so that preliminary cost effectiveness criteria could be calculated for the Build Alternative. Four primary capital cost items are associated with the TSM: a fleet of articulated buses; upgrades to a maintenance facility to accommodate the new vehicles; enhancements to bus stops and a short bus-only road between Clement Avenue and Hawthorne Lane. Contingency costs were also included in the TSM capital cost estimate.

2.3.1 Current Year Dollars

The capital costs for the Center City Streetcar Project were estimated in current US Dollars. It is expected that costs will be in year 2006 dollars (2006$). Escalation to Year of construction will be calculated in the FTA “New Starts” workbook.

2.3.2 Contractor’s Margins And Insurance

An allowance for the contractor’s margins (profit, overhead etc.) was incorporated into the unit prices used to prepare the cost estimate as well as insurance costs.

2.3.3 Project Cost Elements

The major project cost elements used to assemble the cost estimate are described below:

- Civil Construction (includes track construction)
- Insurance (Included in Civil Construction)
- Utilities (included in Civil Construction)
- Track Materials Procurement (Included in Civil Construction)
- Structures
- Stops
- Park & Rides
- Operations Facility (all yard elements included)
- Traction Power System
- Signal System
- Communications and Central Control
- Fare Collection
- Engineering & Administration
- Contingency
- Right-of-Way
- Vehicles

These elements were used as required in the estimate development. A summary of the capital costs for the streetcar facility are shown in Table 2-6.

Table 2-6: Capital Cost Summary for the Center City Streetcar Alternatives (2006 Dollars)

Build Alternative by Segment	*Length*	Stations	Vehicles	Estimated Cost
Rosa Parks to Brookshire	*1.7 Miles*	*5*	*4*	*$47.1 M*
Brookshire to Plaza (incl. Maintenance Facility)	*4.9 Miles*	*18*	*7*	*$129.9 M*
Plaza to Eastland Mall	*3.3 Miles*	*11*	*5*	*$74.5 M*
Total	***9.9 Miles***	***34***	***16***	***251.5 M***
	Bus Road	***Stations***	***Vehicles***	
TSM Alternative (incl. Maintenance Facility)	***.15 Miles***	***34***	***21***	***$41.7 M***

2.4 OPERATING AND MAINTENANCE COSTS

2.4.1 Methodology

The Streetcar Operating & Maintenance Cost estimate methodology is based on the LRT cost methodology developed for CATS with some modifications. These modifications are predicated upon the idea that streetcar operations relate more closely to bus operations in most areas with the exception of propulsion power, operator wages and fringes and insurance costs. The formulae shown in Table 2-7 outline how the different categories of expense are estimated given the level of service provided by the streetcar system. The methodology and formulae are described in greater detail in the *CATS Center City Streetcar Corridor System Cost Estimation Methodology*.

Table 2-7: Cost Estimate Formulae

Cost Category	Formula
Vehicle Operations Labor	
Operator Wages and Fringes	Vehicle Hours (Revenue + Deadhead) x $34.61
Other Wages and Fringes	Peak Vehicles x $23,339.55
Services	Peak Vehicles x $30,903.03
General Administration	
Wages and Fringes	Peak Vehicles x $18,843.08
Services	Peak Vehicles x $20,396.04
Propulsion Power	Vehicle Miles x 5.7 kWh/Veh. Mi. x $0.055/kWh
Vehicle Maintenance	
Labor	Fleet Vehicles x 0.5 Mechanics per vehicle x $100,000
Service	Peak Vehicles x $48,000
Materials and Supplies	Fleet Vehicles x $14,875
Non-Vehicle Maintenance: Labor and Materials	Directional Route Miles x $51,528.36
Casualty & Liability	Vehicle Hours x $8.533
Taxes and Miscellaneous	0.02 x Total of all above costs

2.4.2 Operations and Maintenance Costs

The total annual costs were calculated using the methodology set forth in Section 2.4.1. If the streetcar were to have 7.5 minute peak headways, the total annual costs for operations and maintenance for the entire streetcar alignment from Rosa Parks Community Transfer Center to Eastland Mall Community Transfer Center would be $6,928,132. Ten minute peak headways would decrease this annual cost by approximately 16 percent.

Seven-and-a-half minute peak headways for the Johnson C Smith University to Presbyterian Hospital segment would cost $3,042,329 annually. Ten minute peak headways will decrease this cost by approximately 24 percent. Seven-and-a-half minute peak headways for the Johnson C Smith University to Plaza-Midwood phase would cost $3,760,527. Ten minute peak headways will decrease this cost by approximately 19 percent. Seven-and-a-half minute peak headways for the Rosa Parks to Plaza-Midwood phase would cost $4,893,359. Ten minute peak headways will decrease this cost by approximately 14 percent. Seven-and-a-half minute peak headways for the Johnson C Smith University to Eastland Mall phase would cost $5,802,433. Ten minute peak headways will decrease this cost by approximately 18 percent. The project Operations Plan summarizes the detailed operations and maintenance costs for the varying operating scenarios.

The hourly rate is determined by dividing the cost by the number of vehicle hours. The hourly rate for the Full-Build scenario is $99.00 for an operating schedule with 7.5 minute peak headways, and $93.00 for an operating schedule with 10 minute peak headways. The phased options range from $89.00 per hour to $102.00 per hour. The hourly rate increases as more vehicles and personnel are needed to serve higher operating frequencies or to run longer track lengths. The TSM Alternative would have similar operating characteristics, but a slightly lower unit cost for operating and maintenance expenses associated with operating articulated buses. At ten minute peak frequencies, both build alternatives represent a cost savings over the No Build (5 minute peak frequencies) with higher capacity.

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[1] North Carolina Department of Transportation. 2006 – 2012 State Transportation Improvement Program. Available: http://www.ncdot.org/planning/development/TIP/TIP/. Accessed: 2 May 2006.

CHAPTER 3 AFFECTED ENVIRONMENT AND CONSEQUENCES

3.1 OVERVIEW OF IMPACTS

3.1.1 Overview of Short-Term Impacts

Any major construction project, public or private, will inconvenience or disturb the residents, businesses, and business customers adjacent to that construction project. Particular temporary effects during construction may include:

- Traffic congestion and detours,
- Interrupted access to businesses,
- Disruption of utility services,
- Presence of construction workers and materials,
- Noise and vibrations from construction equipment and vehicles,
- Airborne dust, and
- Removal of or damage to vegetation (e.g., trees, shrubs, grass).

Without proper planning and implementation of controls, these construction-related effects could have adverse affects on the comfort of residents and employees and inconvenience or disrupt the flow of customers, employees, and materials/supplies to and from businesses within the project area. Construction impact controls will be integrated into the project's contract specifications, which will contain construction phasing and traffic control plans.

The project would be constructed at-grade within existing street rights-of-way. Traffic and pedestrian control and coordination of construction would follow CATS and local jurisdictional guidelines. Since construction is for non-exclusive right-of-way, the pace of construction at intersections would be slowed because cross streets would remain open. At certain intersections it may be feasible to detour traffic and close the intersection during construction. Residential, business, and building access would be maintained continuously. Typical roadway construction traffic control methods would be used including signage and barricades. Existing utilities would be identified, prioritized, protected, or adjusted/relocated. Temporary signalization adjustment would be required when construction occurs at intersections. In some areas, existing streetscape and/or landscape would likely be temporarily removed. Construction equipment would generally be limited to the project right-of-way or an adjacent travel lane. Construction staging areas would be located on the right-of-way or on off-site locations when available. Staging areas would be temporary.

Implementation of the project would require improvements in the corridor that may result in impacts as construction proceeds. Each phase of construction would proceed in block-by-block stages with efforts concentrated in small, localized areas. This style of construction has proven effective on other transit projects in minimizing construction impacts. Discussion of the permits and approvals needed is presented below.

The permits and approvals shown in Table 3-1 would be required to implement the Build Alternative Streetcar project. Environmental clearances would be secured through coordination with the appropriate state or federal agency during the PE/FEIS phase of the project. Project development approvals, where necessary, would be identified and would be obtained from state or local agencies at appropriate times as project implementation proceeds.

Table 3-1: Permits and Approvals Required for Project Implementation

Regulatory Program or Proposed Action	Agency	Agency Responsibility MOS/Build Alternative[a]
Air Quality Permit	Mecklenburg County	P
Grading and Drainage Permit	Mecklenburg County, NCDENR, NCDOT	P/A
Concurrence on Effects on Cultural Resources	SHPO	A
Construction Permits	Municipalities	P
National Pollution Discharge Elimination System	NCDENR	A

[a]P = Permit A = Approval C = Coordination
Source: URS, March 2004.

Development of a project in an urban environment can have a variety of impacts during the construction period, depending on the size and scope of the project. Although they are short term in nature, construction impacts may be disturbing or disruptive to the use of or access to a community facility as well as to the ability of community services to fulfill their functions. The construction period will require up to 24 months. Construction would take place primarily during the weekday, although some activities may take place at night or on weekends. Potential construction period impacts of the project are addressed in the short-term impacts and benefits portions the following sections throughout this Chapter.

3.1.2 Overview of Long-term Impacts

Long-term alteration of the behavior and functioning of the affected environment caused by project encroachment can be characterized as effects to the human, physical and natural environments. The likely long-term effects (positive and negative) of the Center City Streetcar project on the affected environment were evaluated and are documented in the following subsections of this chapter. Overall, adverse effects of the project on the surrounding environment are generally not significant. The positive effects of the project outweigh any potentially adverse effects. The relative significance of adverse project effects for both the build and no-build alternatives are summarized in Table 3-2. In presentations to the public, a more detailed table of information was used to also illustrate benefits. This table is included in Appendix C.

Table 3-2: Summary of Effect

Impact Category	Impacts: No-Build and TSM Alternative	Impacts: Build Alternative
Population, Land Use, and Development	Generally not significant	Generally not significant
Displacements	No effect	Generally not significant
Neighborhoods and Community Features	Generally not significant	Generally not significant
Visual and Aesthetic	No effect	Generally not significant
Air Quality	Generally not significant	Generally not significant
Noise and Vibration	No effect	Generally not significant
Ecosystems	No effect	Generally not significant
Water Resources	No effect	Generally not significant
Energy	Generally not significant	Generally not significant
Historic, Archaeological, and Cultural Impacts	No effect	Generally not significant
Parklands	No effect	Generally not significant
Economic Impacts	Generally not significant	Generally not significant
Secondary and Cumulative Effects	Generally not significant	Generally not significant
Hazardous Materials	No effect	Generally not significant

Source: URS, January, 2007.

3.2 POPULATION, LAND USE AND DEVELOPMENT

Since changes in population and housing are related to land use and development, they are discussed together in this section.

3.2.1 Legal and Regulatory Framework

3.2.1.1 Land Use Controls, Policies and Guidelines

In this section brief summaries of policies pertaining specifically to land use rather than land use and transit are provided. Those policies pertaining to both land use and transit that were presented in Section 1 and are not reiterated here are the *Centers and Corridors Concept Plan, 2025 Integrated Transit/Land Use Plan*, *2025 Corridor System Plan*, and *Center City 2010 Vision Plan*.

Planning for Our Future

The centers and corridors concept was reinforced in the 2015 Plan: "Planning for Our Future," which was adopted by city and county elected officials in November of 1997. In this document the desired future for the Charlotte-Mecklenburg area is outlined. The focus is on mixed-use pedestrian-oriented development at urban-level intensities. The importance of strong community design in the transformation of Charlotte-Mecklenburg into a more urban community is also highlighted in this policy.

Smart Growth Principles

In 2001, City Council adopted "Smart Growth Principles" to help assure a livable community in the future. The eight guiding principles are to:

- Maintain land use planning capacity,
- Sustain effective land use decisions,
- Strengthen community through healthy neighborhoods,

- Build a competitive economic edge,
- Design for livability,
- Safeguard the environment,
- Expand transportation choices, and
- Use public investment as a catalyst.

General Development Policies

The recently updated *General Development Policies* (GDP) provide planning principles for the Charlotte-Mecklenburg area and are the basis for development of area-specific plans. The policy update process began with four priority areas. City Council adopted one policy area (Transit Station Area Principles) in November, 2001. Three others were adopted in November of 2003.

The GDP highlight community-wide issues, goals, objectives, policies and strategies. More specifically, these GDP seek to provide guidance for the location, intensity and form of future development and redevelopment throughout the community.

Transit-supportive development principles within the GDP provide direction for developing and redeveloping property around transit stations in a way that makes it convenient for many people to use transit. In transit-supportive development the focus is on creating compact neighborhoods with housing, jobs, shopping, community services, and recreational opportunities all within easy walking distance (i.e., within ½ mile) of a transit station. The intent is to create well-designed, very livable communities where people can get from home to such places as the office, grocery store, day care center, restaurant, dry cleaner, library or park without using a car.

Transit-supportive development policies provide direction for developing and redeveloping property around rapid transit stations in a way that makes it convenient for many people to use transit. Such policies focus on land use, mobility and community design.

Area Plans

Area plans have been developed for specific portions of the study area. Since the boundaries of the geographic area subject to a plan may not correspond with the sub-area boundaries established for this EA, a map showing the planning area of each area plan is included as Figure 3-1. The planning area for the Eastside Strategy Plan is not shown, as it consists of several road corridors rather than an area.

Figure 3-1: Applicability of Area Plans

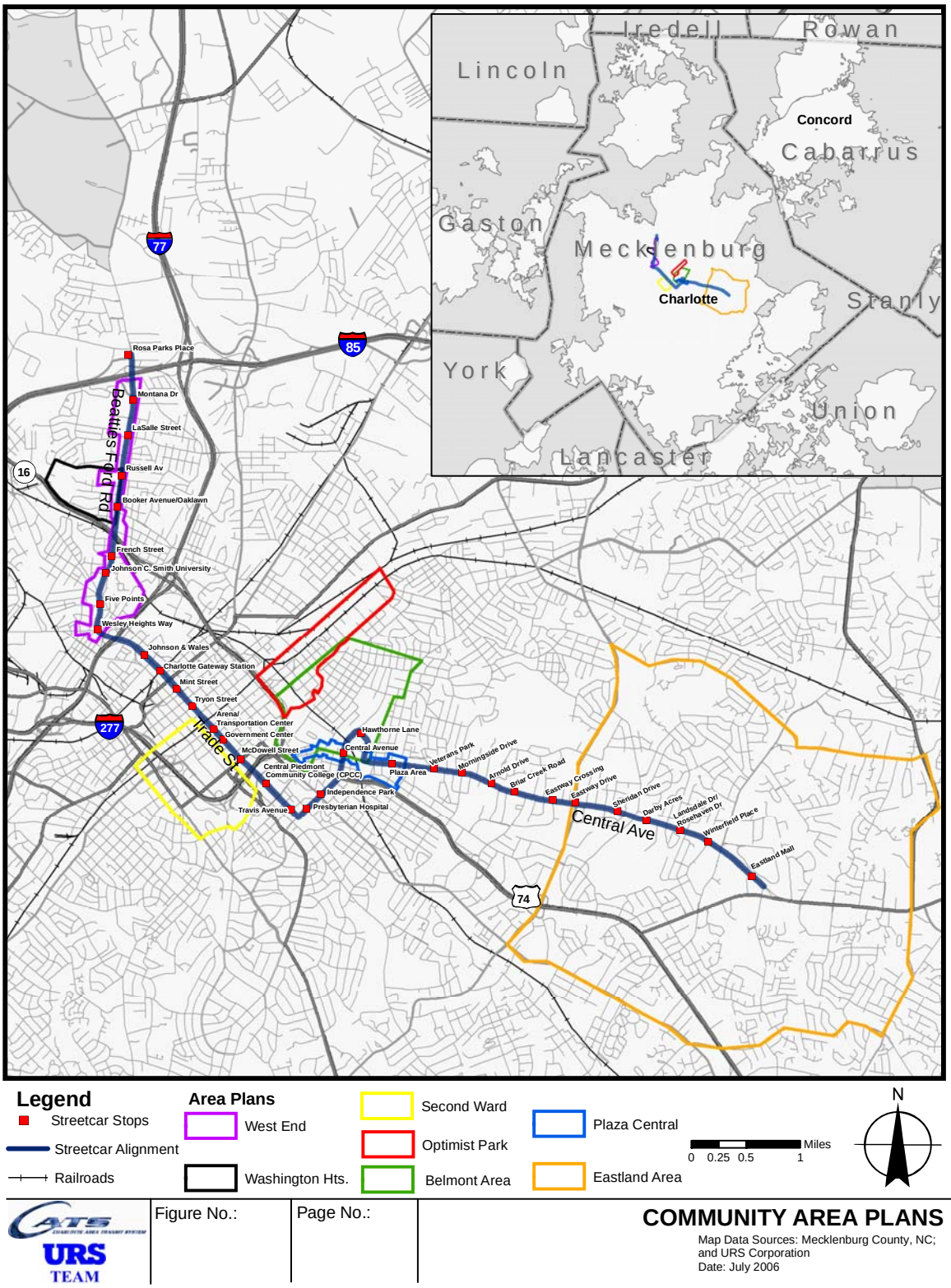


	Figure No.:	Page No.:	COMMUNITY AREA PLANS
CATS / URS TEAM			Map Data Sources: Mecklenburg County, NC; and URS Corporation Date: July 2006

Second Ward Neighborhood Master Plan

The *Second Ward Neighborhood Master Plan* was created to focus and refine the vision established in the *Center City 2010 Vision Plan*. As described in the master plan, the Second Ward was once a vibrant African-American urban community known as 'Brooklyn,' that has been transformed into a low-density, nine-to-five, office district. Included among the goals established for the Second Ward are the creation of a diverse residential population, a livable 18-hour urban neighborhood, and the provision of a safe and secure pedestrian-friendly environment. According to the master plan, "As the Center City wards continue to develop and draw residents to the Center City area, the wards must be better connected to one another and to the adjacent neighborhoods outside the I-277 loop. The Second Ward's proximity to the stable and desirable communities of Dilworth, Midtown, and Elizabeth will reinforce the vision of an urban residential district. Improved pedestrian and transit connectivity will help weave the Second Ward into the fabric of the Center City neighborhoods and the region.[1] Specific recommendations include the development of a substantial residential population, a diversity of land uses, and open spaces. Access to future transit is described as critical to the success of a new urban residential community. Some transportation and parking recommendations outlined in the master plan were to create an intricate pattern of streets reminiscent of the Brooklyn neighborhood, advocate and support alternative transportation modes, provide on-street parking where possible, and provide enhanced pedestrian and bicycle amenities.

Plaza-Central Pedscape Plan

The *Plaza-Central Pedscape Plan* was adopted in 2003 with the purpose of defining a pedestrian-oriented future for the Plaza-Central district and describing how the vision can be achieved. The Plaza-Central district encompasses all of the parcels fronting Central Avenue from the intersection with Independence Boulevard to Nandina Street. Other parcels within walking distance that are zoned for business, office, or mixed-use as well as an area currently zoned as industrial adjacent to Central Avenue are also included. Current land uses in the district include commercial, some office and institutional, and scattered residential.

The Plaza-Central district originally developed along streetcar lines but eventually became automobile-centered. According to the pedscape plan, "…revival in Charlotte's Center City and the emergence of a strong residential market at the City core has reenergized many of the old neighborhoods close by. Neighborhoods such as Plaza Midwood and adjoining Commonwealth-Morningside have continued revitalization and emerged as safe, attractive, and sought-after residential areas." The Plaza-Central district is the commercial area adjacent to and serving these neighborhoods. While the east end of the district generally has a complete network of streets allowing for multiple means of pedestrian access, the continuity of the grid-system street network is severed west of the CSX Railroad tracks.

According to the pedscape plan, the overall vision for the district is the creation of a vibrant mixed use district primarily serving surrounding neighborhoods and the realization of a historic way of living while protecting special aspects of the area. Included among elements articulated in the vision for the corridor are a range of transportation choices such as streetcar stops and a rapid transit station. It is expected that trees and pedestrian activity will define the corridor along with outdoor commercial activity and pedestrian-oriented building types that will honor the history of the area.[2]

West End Land Use and Pedscape Plan, Adopted 2006

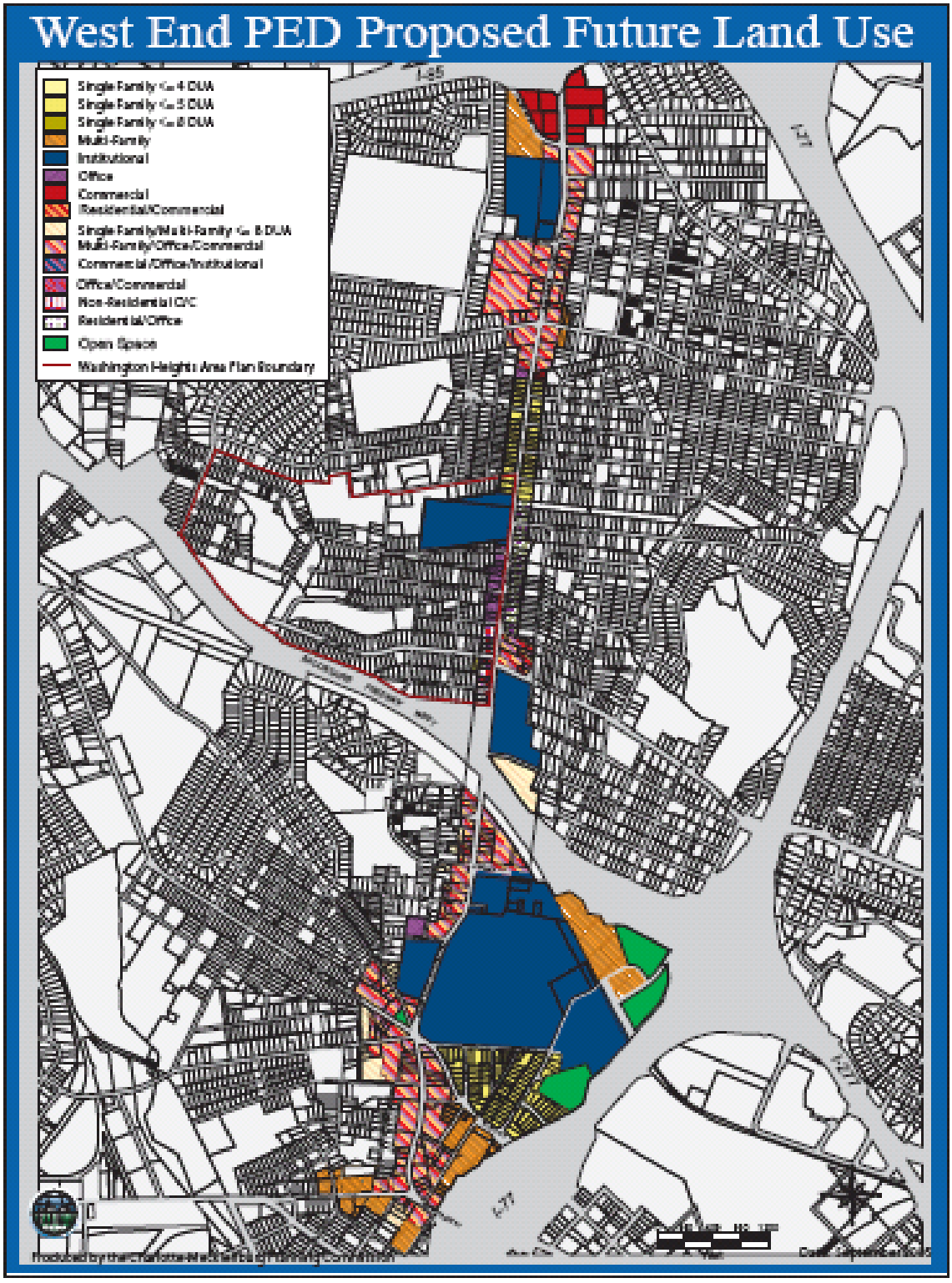
Similar to the pedscape plan for the Plaza-Central district, the purpose of the *West End Land Use and Pedscape Plan* is to define the vision and land use policy for West End and how it will be achieved. All parcels fronting West Trade Street, West 5th Street and Beatties Ford Road from I-77 to I-85, as well as areas along adjacent streets zoned for nonresidential use are included in this area plan. The area is divided into five districts: (1) I-77 to Five Points/Rozelles Ferry Road, (2) Five Points/Rozelles Ferry Road to the Brookshire Freeway, (3) Brookshire Freeway to Russell Street, (4) Russell Street to LaSalle Street, and (5) LaSalle Street to I-85. West End is described as having a unique combination of historic landmarks, commercial nodes, schools, parks, and residential areas including a locally registered historic community. The area also has convenient access to Center City, major highways, and heavily used transit routes. Needs in the area include development of vacant property and reuse of buildings. The key concepts in the vision for West End are: use of land use policies and zoning to drive the vision, protection of the historic character, better use of property, and the development of the district from I-77 to Five Points/Rozelles Ferry Road into an urban/cultural/arts destination.

The Plan identified several mid-block and intersection pedestrian crossing of concern. Several of these crossing correspond to streetcar stops including.

- Five Points intersection – daunting because of a wide crossing dimension;
- French Street and Beatties Ford Road – the crosswalk is marked and crossing distances are manageable;
- Oaklawn/Booker Avenue and Beatties Ford Road – recent alignment has shortened crossing distances. Decorative pedestrian lighting and improved wheelchair ramps have been added; and
- LaSalle Street and Beatties Ford Road – is the busiest intersection in the area and could benefit from minor improvements but is relatively easy to cross.

Detailed recommendations for land use, design, and street layers are provided in the pedscape plan, including the incorporation of the streetcar. The proposed future land use map for West End is shown in Figure 3-2.[3]

Figure 3-2: West End Proposed Future Land Use



Eastside Strategy Plan and Eastland Area Plan, Adopted 2001

The Eastside encompasses 44 square miles from Eastway Drive to the west, The Plaza/Plaza Road Extension to the north, Monroe Road to the south and the Charlotte City limits to the east. The portion of the area from Eastway Drive to just beyond Eastland Mall on Central Avenue falls within the study area. The Eastside is characterized as ethnically diverse with attractive and affordable neighborhoods, but also has some challenges. Challenges include a large amount of apartment and strip development, aging commercial areas, limited employment opportunities, an automobile-oriented transportation system, and some community appearance issues. One particular challenge is the reliance on automobiles for mobility. According to the plan, sidewalks exist along many of the corridors in the area but there are a number of roads that are unsafe for pedestrians and bicyclists. Intersections along Central Avenue are cited as one of the areas that are particularly dangerous. It is also indicated that, while a fairly good public transportation system is available for mobility between the Eastside and Center City, services providing lateral movement around Eastside are lacking. A new sidewalk with planting strips and decorative pedestrian lights on both sides of Central Avenue from Morningside Drive to Sharon Amity Road, as well as the addition of bike lanes and a center turn lane or median on Central Avenue from Eastway Drive to Sharon Amity Road has been constructed as a result of the plan. A study of the Eastland Mall area is also underway to identify streetscape projects in that area.

The vision for the Eastside is a place where people:

- Have a wide variety of desirable and affordable housing options available to them;
- Are able to live in close proximity to where they work and shop;
- Can safely and easily walk, bicycle, drive, or ride transit to get to destinations throughout the area;
- Find excellent public schools and a host of educational opportunities; and,
- Appreciate the area's safe and beautifully landscaped streets.

One of the goals set to achieve this vision is to ensure that roads, sidewalks, bikeways, and public transit are in place to allow people to move about safely and with ease. According to the plan, the Central Avenue bus route, CATS Route 9, which provides frequent service to Eastland Mall, is one of the most successful transit routes in the City of Charlotte. There are sidewalks along most of the Central Avenue corridor, but not on the frontage of Eastland Mall where there is substantial pedestrian traffic. Specific recommendations in the plan related to transit are to improve service along the corridor and link to planned rapid transit routes, with a particular consideration of circumferential routes.

In the plan, Eastland Mall is identified as a potential revitalization/redevelopment opportunity as a 'town center'. According to the plan, "Eastland Mall and the surrounding area provides an opportunity for redevelopment leading to the creation of an attractive pedestrian-oriented 'town center' environment. Development of such a center could breathe new life in this Eastside area that is beginning to age and show signs of decline."[4] In the *Eastland Area Plan*, this recommendation is explained in further detail. Recommendations for specific uses to incorporate in the town center include retail, entertainment, office uses, urban housing, a town square or village green, civic uses, and a community transit center.

An international district is also recommended in the *Eastland Area Plan*. The international district would extend along Central Avenue from Kilborne Drive to Sharon Amity Road and would expand upon the naturally emerging international district in this area.[5]

Optimist Park Neighborhood Plan, Adopted 2002

The boundaries of the Optimist Park neighborhood are Matheson Avenue, Brookshire Freeway, Little Sugar Creek, and the Norfolk-Southern Intermodal Rail Yard. It is located across I-277 from the First Ward and was originally developed as a streetcar suburb. The purpose of the neighborhood plan is to "…address the livability and long term viability of Optimist Park by developing strategies to address the neighborhood's physical, social, and economic conditions." Issues identified in the development of the plan are public safety, lack of homeownership, eroding residential fabric, aging industrial uses, and needed infrastructure improvements. The neighborhood has experienced a decline in population, with a decrease of 24 percent between 1990 and 2000. In 2000, almost 70 percent of the population was African-American, and there were nearly as many female heads of households with children as married households with children. Drug trafficking is cited as a community concern and is especially prevalent at the intersections of Parkwood Avenue and 18th Street, 17th and Caldwell, and Matheson Avenue and Brevard Street. The closest streetcar stops to these areas are at 10th and Church and at Otts Street. Among the strengths of the area listed in the plan are the relationship of Optimist Park to Center City and First Ward, and the location within the Northeast Transit Corridor.

The vision for the neighborhood, as established in the plan, is for well-maintained historic houses and new residential development that compliments the historic architecture; a mix of housing types and small businesses; an active neighborhood association, churches, schools, and facilities; and beautiful street and greenway amenities that provide links to all parts of the community. Among the recommendations related to transportation and infrastructure are to provide pedestrian linkages to transit stations and ensure that current and future transit services meet the needs of area residents, employers, and employees. In this area, the traffic volume and the speed at which cars travel along neighborhood streets are considered a problem.[6]

Third Ward Neighborhood Vision Plan, Adopted 2003

The *Third Ward Neighborhood Vision Plan* applies to an area bound by Morehead, Cedar, 5th and Tryon streets. The main landmark within the ward is Bank of America Stadium, the home of the National Football League's Carolina Panthers. A key aim of the plan is to lure development back into vacant land in the Third Ward. Assets of the Third Ward, as described in the plan, are its direct access to I-77, park connections, new investments in Gateway Village and at Fifth and Poplar, historical features such as Latta Arcade, stable neighborhoods, consolidated ownership of parcels, and a short walking distance to the intersection of Trade and Tryon streets. Opportunities identified in the plan include new institutions such as Johnson and Wales University, the multimodal station, the potential streetcar, and "Green Street" (pedestrian/bicycle-friendly street) plans for Poplar and Second streets. Principles for the area outlined in the plan include the use of mixed-use neighborhoods, capitalization of Trade and Tryon's identity, balanced street design where pedestrian safety and comfort are emphasized, connecting east and west sides of Third Ward, tying Third Ward with green streets and parks, and taking advantage of transit corridors for mixed use development.

A main emphasis in the plan is for a new park called "New West Park." Three locations and three park designs are proposed in the plan; county-owned land centered around the Virginia Paper building and bisected by Third Street, a location on Trade Street, or a location on Tryon Street.

Specific street recommendations are also included in the plan. It is indicated that transit (a streetcar) along Trade Street could emphasize the use of Third/Fourth and Fifth/Sixth streets as major thoroughfare couplets and as one-way 'workhorse streets', stressing the importance of promoting pedestrian safety and comfort along and across the intersections. Also, according to the plan, "…the pedestrian realm along Trade Street should reflect the significance of Trade Street to Charlotte's history- a grand civic streetscape, made with high quality materials and detailing. Efforts should be sought to retain the landscape median that exists in the Third Ward portion of Trade Street." The design of two streets, Graham and Church, which are also potential locations of streetcar stops, were identified as pedestrian problem-areas. In the plan, it is recommended that street widths be kept to a minimum, wide traffic lanes reduced to the minimum feasible width, curbs realigned to be continuous along the length of the road, and on-street parking promoted.[7]

Belmont Area Revitalization Plan, Adopted 2003

The *Belmont Area Revitalization Plan* pertains to the land area bound by Catawba Avenue on the north, the Plaza to Belvedere Avenue to Thomas Avenue on the east, Central Avenue and Tenth Street on the south, Brookshire Freeway on the southwest, and North Davidson Street on the west. This area incorporates part of but extends beyond the project corridor. According to the plan, the vision for the Belmont area is that "Belmont will be a family-oriented community, diverse in age, culture, and income, that promotes public safety, economic and community development, affordable housing and community pride – a place to live, work and play." Challenges faced in the area include a perception of high crime and disinvestment, a need for major repair of over 25 percent of the homes, a high percentage of renter-occupied homes, and low household incomes.

A goal for the area related to traffic and transportation is to create a more pedestrian-friendly community and allow for an easier flow of vehicle traffic. Specific recommendations include: providing more traffic signals at major pedestrian crossings; exploring traffic calming; and exploring additional connections for buses and other transit modes, particularly in the interior of the Belmont neighborhood. In the plan, a series of 16 housing and economic development projects are suggested to meet transportation-related and other goals for the area. Specific recommendations that pertain to the Belmont area and are within the study area include a neighborhood scale mixed-use project at Seigle and Belmont and additional retail development along Central Avenue. According to the plan, the retail along Central Avenue is likely to be neighborhood-oriented retail and some small-scale dining and entertainment.

Washington Heights Neighborhood Plan, Adopted 2002

The *Washington Heights Neighborhood Plan* pertains to the area bound by the Brookshire Freeway to the south, Beatties Ford Road to the east, Estelle Street to the north, and LaSalle Street to the west. According to the Plan, Historic Washington Heights has a strong sense of pride and place, formed by its tree-lined streets, distinctive architecture, proximity to the City's commercial and cultural heart, and history as a walkable urban neighborhood. The vision for historic Washington Heights is to develop and maintain an attractive, historic neighborhood that has a variety of stable housing opportunities and sage, pedestrian friendly streets that provide access to jobs,

parking, transit, schools, businesses and other resources. In accordance with this vision, the Plan provides recommendations for addressing land use and urban design; infrastructure; economic development; public recreation and open space; and education.

Among the goals related to transportation, the Plan calls to: 1) improve pedestrian, bicycle and vehicular circulation and safety; 2) identify infrastructure needs and improvements; 3) improve traffic flow and the pedestrian realm on Beatties Ford Road; and, 4) ensure that current and future transit needs are considered.

3.2.1.2 Zoning

Zoning varies widely within the Center City Streetcar corridor. Zoning districts include high density, transit-supportive districts to lower density residential districts with more of a suburban character. Transit-supportive districts found in the Center City Streetcar corridor are described below. Existing zoning in the area around the streetcar corridor was presented in detail in the document, *Charlotte Streetcar Trade Street Background Review, Draft Report*.[8]

Uptown Mixed-use District (UMUD)

The Uptown Mixed-use District (UMUD) is the most intense of Charlotte's zoning districts and applies primarily to the Center City area. The main purpose of this district is "to strengthen the high density core of the central city." This district has no maximum Floor Area Ratio (FAR) or height, allows a range of transit-supportive uses, and has resulted in the construction of numerous mid-rise and high-rise structures.

Mixed-use Development District (MUDD)

The Mixed-use Development District (MUDD) is another transit-supportive district that is similar to UMUD. As with UMUD, the MUDD district has no FAR limitation and permits a range of transit-oriented uses. Building heights are limited to 120 feet.

Pedestrian Overlay District (PED)

The Pedestrian Overlay District (PED) is designed to allow a mixture of transit-supportive uses developed in a pedestrian-friendly manner. The development standards for this district allow a substantial increase over the amount of development that is feasible under the more suburban zoning districts. For example, there is no maximum FAR for this district and, under certain conditions, building heights can be up to 100 feet.

Transit-Oriented Development District (TOD)/ Urban Design Principles

The Transit-Oriented Development districts (TOD) are a compact mix of residential, office, retail and civic uses in a pedestrian-friendly setting, typically within one half-mile of a station and representing a ten-minute walk. There are six Transit Oriented Development zoning districts: (1) Residentially Oriented (TOD-R), (2) Employment Oriented (TOD-E), (3) Mixed-Use Oriented (TOD-M), (4) Residentially Oriented – Optional (TOD-RO), (5) Employment Oriented – Optional (TOD-EO), and (6) Mixed-Use Oriented – Optional (TOD-MO).

The following five Urban Principles from the *Trade Street Vision Plan* (2006) form the foundation for the urban design of the Center City Streetcar and facilitate TOD in the corridor. Formed after extensive consideration and discussion during the project development process, the principles and based both generally upon successful experiences in other cities with fixed-guideway transit systems and specifically upon streetcars.

- Contextual Response – Respond to the character of the station area.
- System-wide Design – Create visual and functional continuity thought a system wide design.
- Transit as Community Amenity – Encourage transit infrastructure and station areas as a community amenity.
- Alignment and Integration – Minimize physical disruption to the environment of the proposed alignment.
- Public Art – Identify opportunities for public art integration.

Urban design principles for the Center City Streetcar corridor ensure that each transit station is successfully integrated with its surrounding neighborhoods. Integral to the development of the Center City Streetcar corridor is the TOD district zoning classification for the area immediately adjacent to each station.

3.2.2 Method

In the Population, Land Use and Development section, the existing population and land uses in the project corridor are evaluated, expectations for the future are presented and potential impacts associated with the project are assessed. Population and housing data at the region, study area and sub-area levels presented in Section 1.1.3 is summarized in this section. Further detail is provided at the TAZ level. Other aspects of the population that will aid in determining the impact of the project on specific populations, such as low-income, minority and those residing in zero-car households is assessed in Section 5.4. Current and projected demographic data at the TAZ level was provided by CATS.

In the discussion of land use and development, the information provided includes a description of the corridor sub-areas, a discussion of the current and planned development projects for each sub-area, and an analysis that identifies the land available for immediate development and what sites are likely candidates for redevelopment in the future. Descriptions of existing land uses were derived from field visits as well as plans and documents provided by the City of Charlotte and Mecklenburg County. Information available in the report, *Charlotte Streetcar Trade Street Background Review, 2005* lent to the inclusion of more detail for the Center City sub-area compared to the others.

3.2.3 Existing Conditions and Resources

3.2.3.1 Population

Current and Projected Population

Current and projected population for Mecklenburg County, the study area and sub-areas was presented in Section 1.1.4.1, and is summarized in Table 3-3. Expected population growth at the TAZ level is shown in Figure 3-3. The Center City sub-area is expected to become the most populous sub-area with the highest change in population growth (169 percent) in the study area by 2030. The Central Avenue sub-area, on the other hand, is expected to grow at a much slower rate (8 percent). As shown in Table 3-4, relatively high absolute and percent increases in population are expected in the northern portion of the Beatties Ford Road sub-area, beyond I-85.

Table 3-3: Summary of Population Growth by Geography

Geographic Area	Year 2000	Year 2030	Percent Change
Mecklenburg County	693,454	1,227,928	92
Study Area	57,078	101,242	77
Beatties Ford Road Sub-Area	11,521	17,173	49
Center City Sub-Area	21,618	58,172	169
Central Avenue Sub-Area	23,939	25,897	8

Source: Derived using data from the Mecklenburg-Union Metropolitan Planning Organization.

Population Density

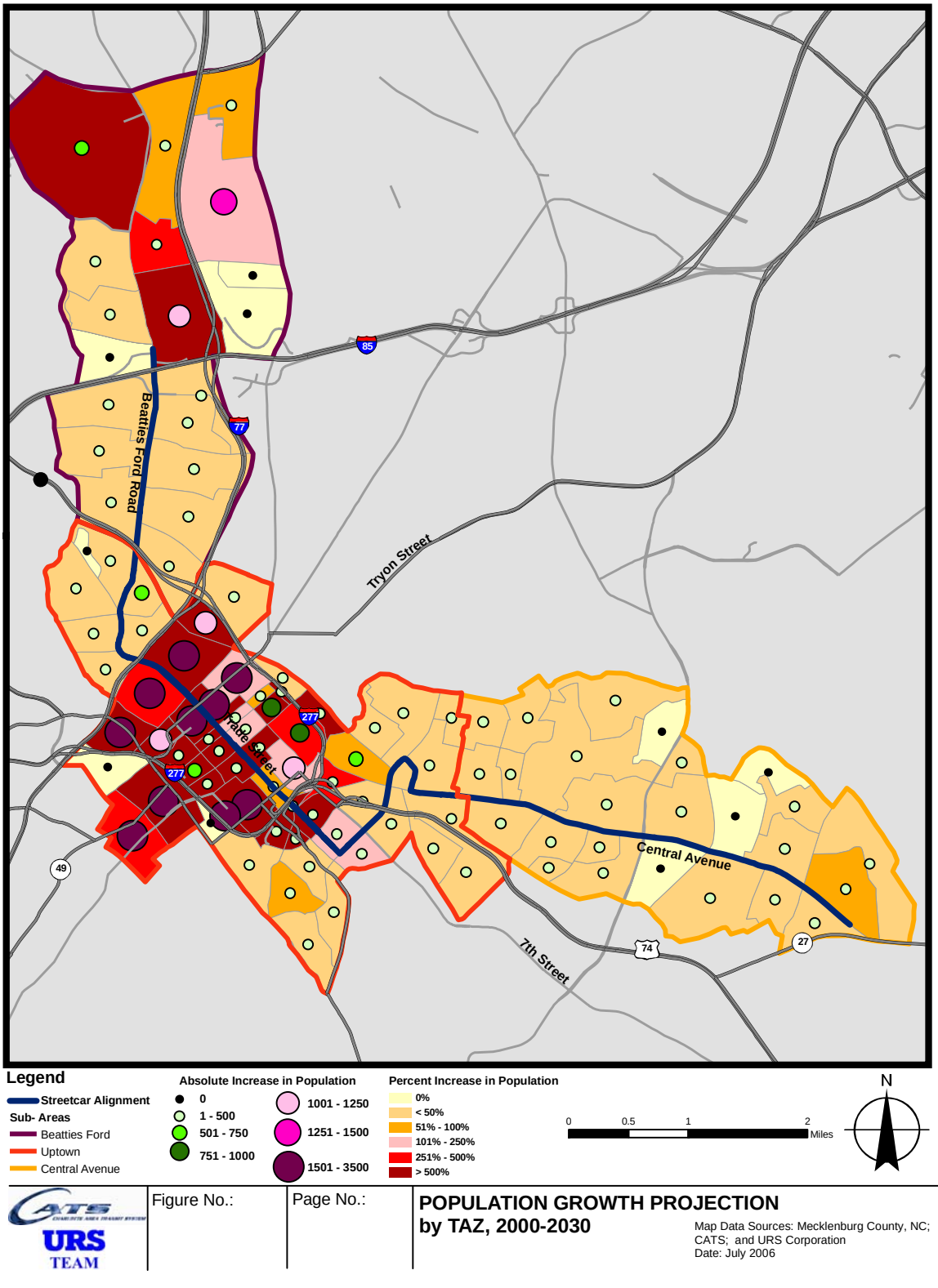
Current and projected population densities for Mecklenburg County, the study area and sub-areas are shown in Table 3-4. As shown in the data, the Central Avenue sub-area is currently home to the most people per square mile. While the density in the Central Avenue Sub-Area is expected to increase by only 11 percent, density in the Center City sub-area is expected to increase by 169 percent. In 2030, the population density (people per square mile) is expected to far exceed that of the other two sub-areas and the region as a whole. Overall, the study area is expected to be denser than the City of Charlotte and Mecklenburg County as a whole.

Table 3-4: Population Density by Geography

Geographic Area	Year 2000 (people/square mile)	Year 2030 (people/square mile)	Percent Change
Mecklenburg County	1,273	2,248	77
City of Charlotte	2,245	3,155	41
Study Area	2,980	5,285	77
Beatties Ford Road Sub-Area	1,708	2,547	49
Center City Sub-Area	3,132	8,429	169
Central Avenue Sub-Area	4,245	4,701	11

Source: Derived using data from the Mecklenburg-Union Metropolitan Planning Organization.

Figure 3-3: Population Growth Projections by TAZ



3.2.3.2 Land Use and Development

Corridor Description

Beatties Ford Road Sub-area

Predominant land uses in this sub-area are single family residential (see Figure 3-4) and large scattered tracts of public/institutional. Land use immediately adjacent to Beatties Ford Road primarily consists of neighborhood/convenience oriented commercial (see Figure 3-5) interspersed with pockets of residential, public/institutional, and industrial.

Figure 3-4: Examples of Residential Land Use



Figure 3-5: Examples of Neighborhood-Oriented Commercial Land Use



The Beatties Ford Road sub-area, in almost its entirety, is the subject of the *West End Land Use and Pedscape Plan.* In the plan, land uses in the area are summarized according to the percentage of total land area dedicated to a specific use. This summary is reproduced as Table 3-5. The summary reiterates that institutional and residential uses account for the bulk of the land area in the Beatties Ford Road sub-area and also highlights that there are vacant parcels available.

Table 3-5: Land Uses in the West End Portion of the Beatties Ford Road Sub-area

Land Use	Percentage of Total Land Area
Institutional	34
Vacant	20
Single-family Residential	14
Commercial	10
Warehouse/ Distribution	8
Office	6
Multi-family Residential	4
Park/ Open Space	4
Total	100

Source: Charlotte-Mecklenburg Planning Commission. *DRAFT West End Land Use and Pedscape Plan*. [9] September 2005. Available: http://www.charmeck.org/Departments/Planning/Area+Planning/Plans/home.htm.

Major activity centers include a community transit center located at the Northwest Mecklenburg County Health Department building just north of the I-85 interchange and the Beatties Ford Road Branch of the Charlotte Mecklenburg Public Library System, located just south of I-85. Further details regarding land uses are provided according to three of the five districts in the *West End Land Use and Pedscape Plan* (two are part of the Center City sub-area and are described in the next section): (1) the commercial/civic district, (2) the residential district, and (3) the historic district. The commercial/civic district extends from LaSalle Street to I-85. The Plan states, "A majority of the [commercial/civic] district is commercial, developed in a sprawling pattern with an abundance of parking that dominates the streetscape." The residential district extends from Russell Avenue to LaSalle Street. The historic district encompasses non-residential uses fronting the corridor, including the Vest Water Treatment Plant and the Excelsior Club. [9]

Center City Sub-area

Land use within the sub-area is predominantly commercial and office with pockets of multi-family residential, single-family residential, vacant, public/institutional, parks and open space and industrial land uses. The sub-area encompasses Charlotte's CBD, is the region's major employment center, contains the government offices for the City of Charlotte and Mecklenburg County, and is also home to national corporations such as Bank of America, Wachovia Corporation, and Duke Energy Corporation. Center City offers many cultural attractions, sporting events and entertainment venues that include a new arena to house the National Basketball Association's Charlotte Bobcats; the Carolina Panther's Bank of America Stadium; the Charlotte Convention Center; Presbyterian Hospital; new mixed-use development projects such as Gateway Village; as well as Central Piedmont Community College (CPCC) and Johnson & Wales University. The portions of the Center City sub-area along Beatties Ford Road, Trade Street, Elizabeth Avenue, and Hawthorne Lane are described below.

Beatties Ford Road

The northeast portion of the sub-area is covered by the *West End Land Use and Pedscape Plan*. The two districts from the plan relevant to the Center City sub-area are the university district and the urban/cultural arts district. The university district begins at Five Points and extends to NC 16. The Johnson C. Smith University is the main feature of this district. The Grand Theater building, located in this district at the corner of

Beatties Ford Road and Mill Road, is currently vacant but has potential to become a place of destination. The urban/cultural arts district begins at I-77 and ends at Five Points. It is dominated by vacant lots and an abundance of non-residential uses that are not considered "neighborhood-serving retail."[10]

Trade Street

Starting at the northwest end of Trade Street and heading southeast, main features include the Johnson C. Smith University area (see Figure 3-6), which includes light industrial and commercial uses; Gateway Village (see Figure 3-7), which consists of the Johnson & Wales campus, offices and some multi-family use; and a government/institutional office area (see Figure 3-8).[11]

Figure 3-6: Examples of Land Use near Johnson C. Smith University at the Northwest end of Trade Street



Figure 3-7: Views of Gateway Plaza



Figure 3-8: Views of the Government Center



The Trade Street portion of the Center City sub-area encompasses the four wards defined by Trade and Tryon streets and the I-77/I-277 loop. Starting in the Northeast quadrant and moving clockwise, the wards are First Ward, Second Ward, Third Ward and Fourth Ward.

First Ward

The First Ward and the Belmont Community are largely made up of residential land uses. Land uses include the Piedmont Courts, a large multifamily subsidized housing site, which is currently being redeveloped, commercial and industrial uses, and single family housing.

Figure 3-9: Development in the First Ward



Second Ward

Land uses in this ward include the Charlotte-Mecklenburg Government Center, a number of hotels and commercial developments. Second Ward is also home to the Charlotte Convention Center and the future NASCAR Hall of Fame.

Third Ward

The Bank of America Stadium, home to the National Football League's (NFL's) Carolina Panthers, is located in the Third Ward. Land use in this ward also includes a mix of institutional, multifamily residential and commercial uses. Other notable land uses

include the Johnson & Wales University, several mixed use condominium developments such as Gateway Village, and several businesses and commercial venues.

Figure 3-10: Development in the Third Ward



Fourth Ward

The Fourth Ward is primarily residential with a mix of historic single family homes and modern mixed use developments. Land use in this ward is primarily comprised of a mix of multifamily and single family residential with some neighborhood/convenience oriented commercial, institutional and parklands. New condos are being constructed at the intersection of North Church Street and West 10th Street.

Figure 3-11: Development in the Fourth Ward



Elizabeth Avenue

Land use immediately adjacent to Elizabeth Avenue primarily consists of commercial and office uses with pockets of multi-family residential, vacant, and public/institutional uses including Presbyterian Hospital (see Figure 3-12). Central Piedmont Community College (CPCC) is a major activity center within this portion of the sub-area, occupying multiple blocks both north and south of Elizabeth Avenue (see Figure 3-13).

Figure 3-12: Presbyterian Hospital



Figure 3-13: Views around CPCC on Elizabeth Avenue



Central Avenue Sub-area

Major activity centers in the Central Avenue Sub-area are located at the Central Avenue/The Plaza intersection, Central Avenue/Eastway Drive intersection, Central Avenue/Sharon Amity Road intersection, and the Eastland Mall. The southeast terminus

of the corridor is at Eastland Mall, which is also the location of a community transit center. The predominant land use in the sub-area is single family residential with large scattered tracts of commercial, multi-family residential and public/institutional. Land use immediately adjacent to the corridor primarily consists of commercial interspersed with pockets of residential, public/institutional, industrial and office uses. Examples of the predominant land use types are shown in Figure 3-14 (Commercial), Figure 3-15 (Institutional) and Figure 3-16 (Residential).

Figure 3-14: Variety in Commercial Development in the Central Avenue Sub-area



Figure 3-15: Public Land Uses in the Central Avenue Sub-area



Figure 3-16: Residential Areas in the Central Avenue Sub-area



Land use in a portion of the Central Avenue sub-area is addressed in further detail in the *Belmont Area Revitalization Plan* (see Figure 3-1 for the geographic area addressed). Belmont itself is considered a residential neighborhood and Table 3-6 includes the breakdown of land uses in the area. The neighborhood has a substantial number of vacant parcels, thought to encourage unlawful activity.[12]

Table 3-6: Breakdown of Land Uses in Belmont Portion of Central Avenue Sub-area

Land Use	Percent of Land Area
Single Family	34
Vacant	14
Multi-family	12
Industrial	10
Institutional	8
Commercial	6
Warehouse	6
Open Space	5
Office	2
Parking	2
Total	100

Source: Charlotte-Mecklenburg Planning Commission. *Belmont Area Revitalization Plan, Volume I: Concept Plan*. Adopted 12 May 2003 by Charlotte City Council.

The portion of the Central Avenue sub-area from Eastway Drive to Eastland Mall is the subject of the *Eastland Area Plan* (see Figure 3-1 for the subject area). According to the plan, about 70 percent of the land in this portion of the Central Avenue sub-area is occupied by neighborhoods consisting of residences, parks and greenways, schools and religious institutions. The Eastland Mall consists of four department stores, specialty shops, a food court, movie theater and indoor ice skating rink. Other retail development consists of numerous strip malls, fast food restaurants, convenience stores and gas stations. This development is concentrated along main corridors including Central Avenue. Several small shopping areas along Central Avenue cater to the area's growing international population. Office development is limited and is concentrated along Central Avenue from Sharon Amity Road toward Eastland Mall. Most of the multi-family housing

is also concentrated along Central Avenue.[13] Land uses along Central Avenue from Eastway Drive to Sharon Amity Road are summarized in the plan and reproduced in Table 3-7.[14]

Table 3-7: Land Use along Central Avenue in the Eastland Area

Land Use Category	Percent of Area
Single Family	32
Commercial	25
Multi-Family	22
Office	8
Institutional	6
Vacant	4
Warehouse/Distribution	3
Total	100

Source: *Eastside Strategy Plan, Volume I: Concept Plan*. Adopted 2001, Charlotte-Mecklenburg Planning Commission. Available: http://www.charmeck.org/Departments/Planning/Area+Planning/Plans/home.htm.

Development Activity

The development climate in Charlotte has been positive throughout recent years. In particular, Center City has thrived as the home to several large financial institutions. The corporate presence coupled by capital investments and planning by city officials has led to a vibrant downtown that has had several large-scale projects come to fruition in recent years. Additionally, as growth has pushed outward from Center City, adjacent areas have also experienced an increase in development pressure and growth.

Strengths supporting development and challenges to development in Center City were highlighted in the *Center City 2010 Vision Plan*. According to the plan, strengths include the corporate presence and involvement in downtown, reemerging residential communities, community interest in Center City, and the city's regional focus. Challenges Center City faces are the lack of financing opportunities to spur development, the tendency to use suburban patterns for urban development, and the need for a variety of housing types and costs.[15] A snapshot of development trends in Center City provided by the Center City Partners was that, in 2005 there were "…more than 40 development projects announced, breaking ground, undergoing renovation or reaching completion." According to the source, "These projects represent an investment of over $1.6 billion of development activity, encompassing more than 6 million square feet of office, residential, retail, entertainment and institutional space in Center City."[16]

In the following sections, major development projects within and in close proximity to the study area are highlighted and areas that have potential for future development and redevelopment are identified. Development projects are summarized in Table 3-8. Potential areas for development or redevelopment along Beatties Ford Road and Central Avenue are further described in the *Development Study: Center City Streetcar*. (June 2006)[17]

Table 3-8 - Development Projects in the Proximity of the Study Area

Sub-area	Name	Type	Location	Status
Beatties Ford Road	CMPD Metro Division Station	Police station/mixed use.	Location between Beatties Ford Road, Oaklawn Avenue and Keller Avenue to be announced.	Begin construction in 2007/2008.
Beatties Ford Road	Nia Point	Multi-family (apartments). Hope VI project (mid $600s), tax credits (mid $200s). 81 units on 6 to 7 acres at about 11 dua.	Washington Heights.	Complete construction in 10/2006.
Beatties Ford Road	University Park Office Condos	Offices on .32 acre.	Beatties Ford Road – eight parcels south of LaSalle Street.	Begin construction in spring 2006.
Beatties Ford Road	Mixed use development	Mixed/ multi-use development.	Two blocks in the northeast area along Beatties Ford Road between I-85 and B Avenue.	To be announced.
Beatties Ford Road/Center City	Multi-family project	Multi-family/ residence hall (Johnson C. Smith University). 12 to 24 units on .47 acres at 25- 53 dua.	Southeast corner of Beatties Ford Road and French Street.	Begin construction around 2007.
Center City	Wesley Heights	Neighborhood bond project Curbs, gutters, storm drainage, sidewalks	Just outside of downtown, to the north of I-277 and adjacent to the Third Ward	
Center City	Mosaic	Mixed-use. Over 300 residential units. 20,000 – 30,000 square feet commercial/office space.	West Trade Street between I-77 and Bruns Avenue.	Begin construction 2008 – 2009.
Center City	Walnut Hill	Multi-family priced from $150,000. 20.5 acres with 20 dwelling units per acre (dua). 40 units.	Wesley Heights (located just outside of the downtown, to the north of I-277 and adjacent to the Third Ward).	Under construction.
Center City	Woodvale Place	Five single family units located on 0.75 acres at a density of 7.5 dua. Priced from $175,000.	Southeast corner of the intersection of Woodvale Place and Westbrook Drive (in the Wesley Heights/ Seversville area).	Begin construction Spring 2006.
Center City	Seversville Redevelopment	25-30 multi-family units on 1.27 acres at 22 dua.	Southeastern corner of South Bruns Avenue and Sumter Avenue.	Begin construction in 2007.
Center City	Wesley View	Multi-family (townhome condominium).	Wesley Heights neighborhood at 117 and 127 South Summit Avenue.	Est. completion in winter 2006.

Table 3-8 - Development Projects in the Proximity of the Study Area (Cont.)

Sub-area	Name	Type	Location	Status
Center City	Gateway Village	Brownfield redevelopment Mixed use, 1.5 million square feet.	Trade Street	Complete
Center City	West Park	Recreation/ Open space	Third Ward. 2nd, Graham, Mint, and Fourth. 8 acres.	Complete in 2008.
Center City		Recreation Potential baseball park	Third Ward, Second Ward or Memorial Stadium near CPCC	TBD
Center City	EpiCentre	Mixed use Entertainment complex, condominiums	Trade and College streets. Second Ward.	TBD
Center City	Charlotte Sports and Entertainment Arena	Recreation Charlotte Bobcats and Charlotte Checkers	Trade and Fifth streets along the LRT/trolley corridor. First ward.	Completed October 2005
Center City	ImaginON Children's Learning Center	Recreation	Sixth and Brevard streets. First ward.	Completed
Center City	Courthouse/ parking lot	Government/ Retail/ Transportation	Fourth and McDowell streets. Second ward.	Parking lot – Dec. 2005 Courthouse –January 2007
Center City	Elizabeth Avenue	Mixed use redevelopment. Entertainment, retail, office	Elizabeth Avenue between Kings Drive and Hawthorne Lane.	10-year project. Completion in 2010-2012.
Center City	The Vue	Residential/Retail Condominiums-411 units, 50 stories	West Fifth and Pine.	Complete in 2008.
Center City	Avenue	Residential. Condominiums – 386 units, 36 stories	West Fifth at North Church. Fourth Ward.	Complete in early 2007.
Center City	TradeMark	Residential. Condominiums – 100 units, 28 stories	South Poplar at West Trade. Third Ward.	Complete in 2006.
Center City	The Park	Residential. Condominiums – 107 units, 21 stories	Third and North Caldwell	Completed early 2007

Table 3-8 - Development Projects in the Proximity of the Study Area (Cont.)

Sub-area	Name	Type	Location	Status
Center City	Courtside	Residential. Condominiums – 107 units, 17 stories	North Caldwell and Sixth. Next to Bobcats arena.	Complete early 2006
Center City	230 S. Tryon	Residential. Condominiums – 110 units, 13 stories	Tryon and Third	Complete summer 2006
Center City	Two Wachovia project	Building Renovation. Mixed use.	East Third and South Tryon	Complete in 2006
Center City	First Ward	HUD HOPE VI grant – mixed use revitalization		
Center City	8th Square	Residential. Condominiums – 16 units	East 8th Street, 1-acre lot. First ward.	Construction start fall 2005, complete fall 2006
Center City	Court 6	Residential. Condominiums – 80 units, four floors	North Davidson and East 6th streets. Two blocks from Bobcat arena. First ward.	Complete 1st quarter 2006
Center City	First Ward Urban Village	25+ acres Mixed use – open space, office, parking, cultural, office, retail, multi-family	First ward	Planning stages
Center City	M Street	Residential. Condominium	North McDowell at East 7th	Complete first quarter 2006
Center City	Ritz-Carlton Hotel	Hotel	East Trade Street at North College	2008
Center City	The Renwick	Hotel 85 units, 4 floors	700 block of East 7th Street	Complete fall of 2006
Center City	UNCC academic building	Institutional	North Brevard Street at East 9th Street	Complete 2009
Center City	Cameron Brown Building	Office. Renovated space.	East 3rd Street at South McDowell Street	TBD

Table 3-8 - Development Projects in the Proximity of the Study Area (Cont.)

Sub-area	Name	Type	Location	Status
Center City	NASCAR Hall of Fame/ Convention Center Ballroom	Entertainment, Museum	East Stonewall between Brevard and Caldwell	2009
Center City	Metro School	Institutional.	Second and Davidson. Second Ward.	Complete 2006
Center City	1st Row Warehouse	Residential. Condominium	West 1st Street at Elliott Street. Third Ward.	Complete September 2006
Center City	Charlotte Gateway Station	Transportation/ Mixed use	Graham between Fourth and Trade. Third Ward.	Complete in 2009
Center City	Johnson & Wales University Business School	Institutional/ Office	West Trade Street at Norfolk Southern RR. Third Ward.	Complete in September 2007
Center City	Wachovia Mixed-Use Project	Mixed Use. Residential, office, museum, retail	South Tryon at West 1st Street. Third Ward.	Complete in 2008.
Center City	200 W. 10th	Residential. Condominium	West 10th Street at North Church Street. Fourth Ward.	TBD.
Center City	217 N. Graham	Retail/office	North Graham Street at West Sixth Street. Fourth Ward.	TBD.
Center City	The Citadin at Fourth Ward Square.	Residential/ retail. Up to six condominium buildings.	North Graham Street at West 8th Street. Fourth Ward.	Complete July 2006.
Center City	City View Towers.	Residential Apartments	North Graham at West 5th Street. Fourth Ward.	Complete Fall 2005.
Center City	Fourth Ward Corners	Retail/office	North Graham at West Sixth Street. Fourth Ward.	Complete 2005.
Center City	The Garrison at Graham	Residential	North Graham at West 10th Street. Fourth Ward.	Fall 2006.
Center City	North Carolina Music Factory	Entertainment/ Retail	Hamilton Street at Seaboard Street. Fourth Ward.	Mid 2007

Table 3-8 - Development Projects in the Proximity of the Study Area (Cont.)

Sub-area	Name	Type	Location	Status
Center City (Elizabeth Avenue)	Grubb Properties	Mixed use, 800 residences, 350k sf office, 275k sf retail	Fourth, Fifth, Independence, Hawthorne Lane	Initiated
Center City (Elizabeth Avenue)	Midtown Square Redevelopment	Mixed use, 206 residences, 165k sf office, 572k sf retail	Independence Blvd/ South Kings Drive/ Baxter Street	2007 - 2008
Center City (Elizabeth Avenue/ Hawthorne Lane)	Central Piedmont Community College Redevelopment	Institutional Expansion project.	East Seventh and North King	
Center City (Hawthorne Lane)	Monte Ritchey	Residential, 135 units	Hawthorne / Sunnyside	
Center City (Hawthorne Lane)	Faison	Residential, 132 units	Hawthorne / Sunnyside	
Center City (Hawthorne Lane)	Piedmont Courts	Residential, 254 units	10th/Siegle	
Center City/Central (Elizabeth Avenue/ Central Avenue)	Little Sugar Creek Greenway	Recreation	Cordelia Park north of Center City to North Carolina/South Carolina state line	TBD
Center City (Central Avenue)	Autoverks	Residential, 20 units	Central Avenue / Commonwealth Avenue	
Central Avenue	Plaza Midwood	Neighborhood bond project Curbs, gutters, storm drainage, sidewalks		
Central Avenue	Tuscan Central 27	Residential, 24 units	Central Avenue	
Central Avenue	Morningside	Residential, 1000 units	Iris Drive	

Sources:
Development Report. Charlotte Center City Partners. Available: http://www.charlottecentercity.org/home.cfm
Living Here 2005. Charlotte Observer. Posted September 17, 2005. Available: http://www.charlotte.com/mld/charlotte
Personal communication. John Howard, Charlotte Mecklenburg Planning Commission and Jerry Roberson, AICP, Charlotte Area Transit System. March 2006.
dua – Dwelling Unit per Acre

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Beatties Ford Road Sub-area

In the Beatties Ford Road sub-area, a portion of the streetcar corridor is routed through an established neighborhood with few vacant parcels available for new development. The largest tracts of undeveloped land are near the project terminus, adjacent to I-85. This area is part of the Friendship Village Mixed Use Area. The remaining vacant parcels are scattered along the corridor and are smaller lots, consistent with low-density residential neighborhoods.

Other parcels along this corridor have existing uses in place, but have been determined to be underutilized based on the surrounding land uses. An example of an underutilized land use would be a single family home located on the corner of a high volume intersection. Several parcels to the south of I-85 along the corridor have been identified as being underutilized based on their current use, the surrounding uses, and future land use plans. These areas are potential sites for redevelopment.

Several projects ranging from a Hope VI multi-family housing project to mixed use and office projects are scattered around the corridor and are listed in Table 3-8.

Center City Sub-area

The Center City sub-area encompasses the most dense and heavily developed area in Charlotte. Recent activities and current development plans underway for projects in the area are highlighted in this section and are summarized in Table 3-8.

As part of the 2000 Neighborhood Bond Project; $1,000,000 was approved for improvements to the Wesley Heights Neighborhood. The neighborhood is located just outside of the downtown, to the north of I-277 and adjacent to the Third Ward. The proposed improvements include the installation of curbs and gutters, sidewalks, and improvement of storm drainage. The goal of the project is to help stabilize and strengthen the neighborhood.

Gateway Village is a multi-use brownfield development project of 1.5 million square feet. The village is called a “technology center” and incorporates 900,000 square feet of office space; 100,000 square feet of retail; and 800 residential units with 5,300 parking spaces. Development occurred in two phases. Partners in the project, Bank of America, were the first to occupy the development in 2000.[18]

Figure 3-17: Recent Development of Gateway Village



Source: The source of the picture on the right is: http://www.gatewayvillage.com/gateway/slideshow.asp.

The Johnson & Wales Campus, part of the Gateway Village, includes a 145,000 square foot academic facility, an 800-resident dormitory, and an apartment building with 200 four-bedroom units. Future plans call for an additional building to accommodate academic administration.

The existing Federal Courthouse, located at the corner of Trade Street and Mint Street will be vacated by the federal courts that are relocating to a new facility. The City of Charlotte, which currently owns the building, has an agreement that will transfer ownership to Queens University for academic uses once the federal courts vacate the building.

A new multi-modal station, called the Charlotte Gateway Station, has been proposed along Trade Street and the North Commuter Rail Line. This facility is designed to serve local, regional, state, and interstate needs. It will incorporate all modes of land-based passenger transportation including Amtrak, commuter rail, intercity bus, taxi service, express bus, CATS Gold Rush service, local bus and the proposed streetcar.

Within the Third Ward, Charlotte and Mecklenburg County are considering plans for a new park as a part of the Third Ward Plan. The park is to be constructed with the intent of serving the residents and employees of the Third Ward.

Charlotte and the Charlotte Knights (a minor league baseball team) are in talks to locate a new baseball park in downtown Charlotte. Possible sites include the Third Ward, Second Ward, and Memorial Stadium near the Central Piedmont Community College.

At Trade Street and College Street, the Old Convention Center has been razed. Plans for the site are to construct a 3.2 acre multi-use development. The development, called the Epicenter, will include a 267,000 square foot entertainment complex, a 53-story condominium tower and a new Ritz-Carlton Hotel. Retail tenants include Fox Sports Grill, Prime Steakhouse, a coffee and wine bar and a pub.[19]

Figure 3-18: The EpiCentre at Trade and College Streets



The source of the picture on the left is The Ghazi Company. Available: http://www.theghazicompany.com

The recently completed Charlotte Sports and Entertainment Arena (Figure 3-19) was constructed between Trade and Fifth Streets along the LRT/Trolley Corridor. The approximately 750,000 square feet of space is home to the Charlotte Bobcats (NBA) and Charlotte Checkers and includes seating for roughly 20,000. In addition to the arena, the building includes several retail outlets.

Figure 3-19: Charlotte Sports and Entertainment Arena



Source: Left – Soul of America. Available: http://www.soulofamerica.com/cityfldr/charlotte13.html
Right – Munzo Contracting. Available: http://www.munozcontracting.com/index.htm

The ImaginOn Children's Learning Center (Figure 3-20) was recently constructed between 6th and 7th Street. The facility is a cultural center geared towards children and young adults. The space includes two theatres/performance spaces, interactive exhibits, library space, classrooms, and meeting spaces in over 106,000 square feet.

Figure 3-20: ImaginOn Joe and Joan Martin Children's Learning Center



Source: Charlotte Center City Partners. ImaginOn: Joe and Joan Martin Children's Learning Center. Available: http://www.charlottecentercity.org/files/pdf/062905_734_0030228.pdf?CFID=338312&CFTOKEN=12130029

Mecklenburg County recently opened a new courthouse at Fourth and McDowell Streets. The 568,000 square foot eleven-story building consists of 34 court rooms and facilities for the agencies of the criminal justice system. Adjacent to the facility is an eight level garage with accommodations for 1,100 to 1,200 vehicles. The parking structure consists of 12,000 square feet of retail space and an outdoor plaza.

Along Elizabeth Avenue, a redevelopment project will create a pedestrian-friendly environment with a mix of retail, office and residential uses that support the City of Charlotte's policies for land use density along transit corridors. The $240 million ten-year redevelopment plan is a collaborative effort between Grubb Properties, Presbyterian Hospital and Central Piedmont Community College and encompasses a six-block area between the two institutions. The project is envisioned to contain 340,000-square-feet of Class A office space, ultimately more than 800 residential addresses in a range of market types and more than 250,000-square-feet of retail including a high-end grocer, boutiques, service-oriented shops, a 150-plus room hotel, an eight screen movie theater and about 25 restaurants. The first building completed and the site plan for the project are shown in Figure 3-21. Current and future tenants of the project include Whole Foods Market and Eastern Federal Theaters.

Figure 3-21: Example of Development and Site Plan for Elizabeth Avenue Project

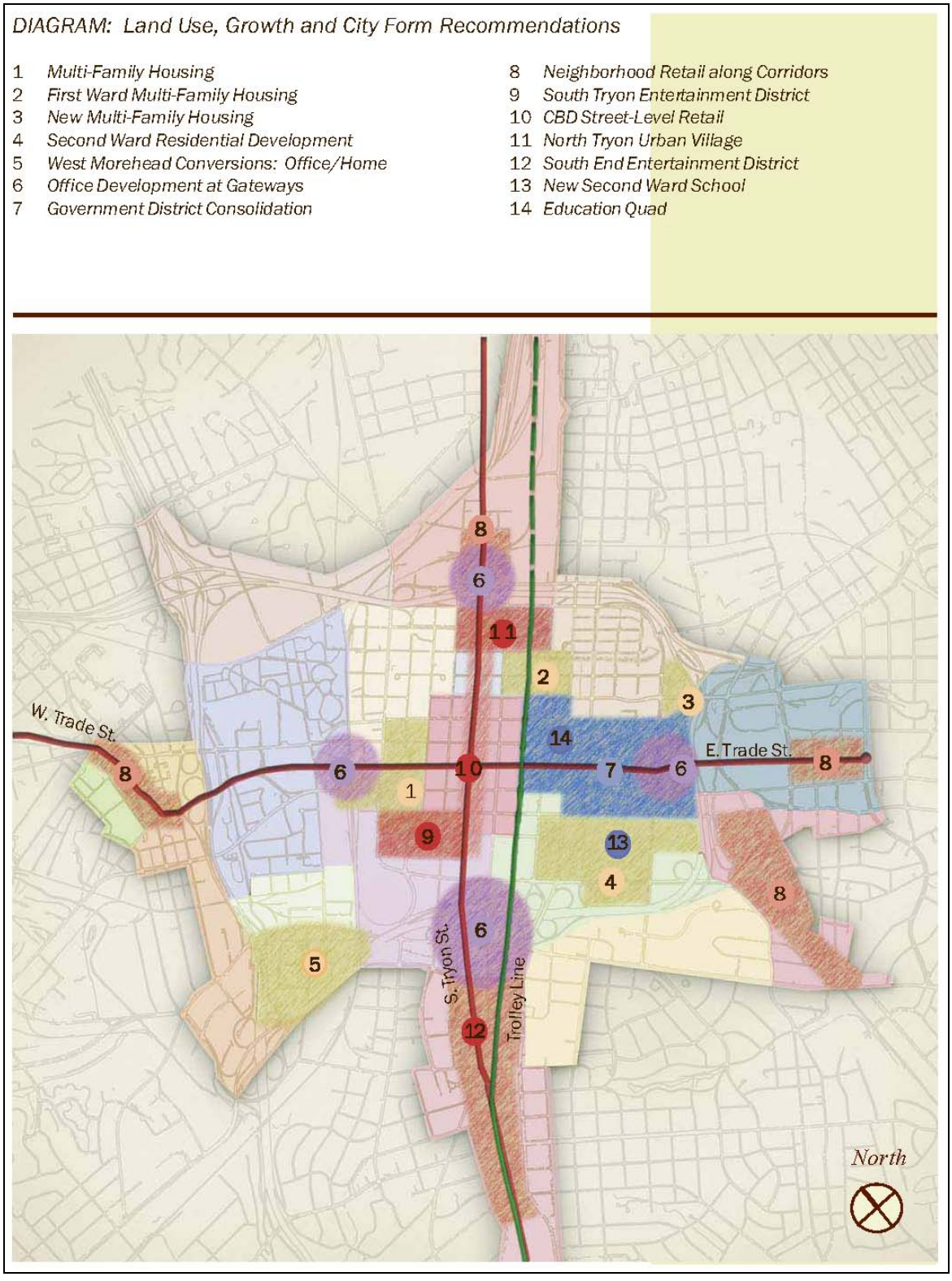


Source: Grubb Properties. *Elizabeth Avenue*. Available: http://www.grubbproperties.com/retail/index.cfm?show=gallery&pid=44&sid=28.
Charlotte Center City Partners. *Elizabeth Avenue Redevelopment*. Available: http://www.charlottecentercity.org/files/pdf/063005_390_0040269.pdf?CFID=338312&CFTOKEN=12130029

The section of the corridor along Hawthorne Lane, between Elizabeth Avenue and Central Avenue, is a densely developed residential area with scattered institutional uses. There are no vacant parcels available for short term development projects. A few parcels, adjacent to I-277, have been identified as being underutilized. These parcels have the potential to be redeveloped in the future with more intense land uses that will be more appropriate based on the surrounding context of development and infrastructure.

Recommendations for the direction of future development in the Center City sub-area were provided in a diagram the *Center City 2010 Vision Plan* and are reproduced as Figure 3-22.

Figure 3-22: Land Use, Growth and City Form Recommendations from *Center City 2010 Vision Plan*



Central Avenue Sub-area

Along Central Avenue, the overall land use pattern is a mix of commercial, office/institutional, and residential. There are approximately a dozen sites where parcels are either vacant or are for sale, indicating they are available for development in the short-term. The majority of the parcels along the corridor have been identified as being potential targets for redevelopment in the mid- to long-term time frame. As the area is built out, pressure will increase for more intense land uses along this corridor. From an economic perspective, it will be more viable for the land to be used more efficiently and at greater densities.

Charlotte recently approved $3.7 million in bonds for neighborhood improvements to the Plaza Midwood area along Central Avenue. This plan includes the installation of curbs and gutters, sidewalks, and improved stormwater drainage. The objective of the project is to stabilize and strengthen the community. Other development projects are summarized in Table 3-8 and more information about the development in the corridor is described in Section 1.4.2.

3.2.4 Environmental Impacts and Benefits

3.2.4.1 Short-term Impacts and Benefits

In this section the short-term impacts of the project alternatives on land use and development along the corridor are discussed. Short-term impacts are typically associated with the construction phase of a project.

It is not likely that any of the alternatives would have a short-term impact on population changes or development. While construction activities associated with the Build-Alternative could cause some short-term inconveniences, it is not likely to have an impact on population or development. Currently-slated development project are likely to be built under each alternative.

3.2.4.2 Long-term Impacts and Benefits

In the following section the impacts of the project alternatives on existing and future land use within the study area are discussed.

No-Build Alternative and TSM Alternatives

The current trend of increased development and population growth in the study area is not expected to change under the No-Build or TSM Alternatives. However, development is not likely to be as concentrated as with the Build Alternative. Additionally, an increase in parking amenities in the study area will likely be needed since, as development continues there will still be a continued reliance on automobiles. Opportunities for transit-oriented development associated with the Build Alternative will not be available. This type of development would not be consistent with the *2025 Integrated Transit and Land Use Plan*, the *Centers and Corridors Plan*, or other land use plans and area plans described in Section 3.2.1.1. Generally, these plans focused on increasing the density and livability of the study area, in part, through a decreased need for automobile use. A common goal stemming from the *Centers and Corridors Plan* is also to concentrate growth in five transportation-oriented centers and corridors.

Build Alternative

In order to determine the potential impact of the streetcar on population and development in the study area, it is best to turn to a case study of the results of a streetcar already implemented in another city. Five years after the opening of the

streetcar in Portland, Oregon the effects of the streetcar on growth and development were assessed. According to the assessment, "Since 1997 when the original streetcar alignment was identified, properties along its length have experienced significant changes: Over $2.28 billion has been invested within two blocks of the streetcar alignment; 7,248 new housing units and 4.6 million square feet of office, institutional, retail and hotel construction have been constructed within two blocks of the alignment; 55 percent of all CBD development since 1997 has occurred within 1-block of the streetcar and properties located closest to the streetcar line more closely approach the zoned density potential than properties situated farther away; developers are building new residential buildings with significantly lower parking ratios than anywhere else in the region."[20]

Based on the results of the implementation of the Portland streetcar, and based on current development trends of growth and major projects in the Center City sub-area; it can be expected that the Center City Streetcar would have a substantive positive impact of concentrating development around the streetcar alignment. The impact of the Center City Streetcar project considered cumulatively with the implementation of transit projects in the four other corridors will be higher density development in the Charlotte area. It is likely that this development would be dense, would have a variety of uses, and would be pedestrian oriented. It is likely that the highest concentration of development would occur in the Center City sub-area, but the Beatties Ford Road and Central Avenue sub-areas could also expect an increase in the density and quality of development surrounding the streetcar alignment. This outcome would be consistent with both the *Centers and Corridors Plan* and the *2025 Integrated Transit and Land Use Plan*.

3.2.5 Mitigation

The mitigation for any residential or business relocations associated with the project are described in Section 3.3, Displacements. The section of either the No-Build Alternative or TSM Alternative will not require a mitigation plan. The negative consequences of both alternatives do not require mitigation. Additionally, no mitigation would be necessary under the Build-Alternative as only positive impacts are expected.

3.3 DISPLACEMENTS

3.3.1 Legal and Regulatory Framework

3.3.1.1 Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 as Amended

In Title II of the subject act, a policy is established for the uniform treatment of individuals that need to be relocated because of a Federal or Federally funded program or project. The primary purpose of Title II, as described in the act, "…is to ensure that such persons shall not suffer disproportionate injuries as a result of programs and projects designed for the benefit of the public as a whole and to minimize the hardship of displacement on such persons." In the Title procedures for managing relocations and provisions for funding assistance are described for moving and related expenses, replacement housing, planning and preliminary expenses and other administrative processes. In Title III of the act, a policy for the administrative procedures and provisions for the acquisition of real property are established.[21]

3.3.1.2 North Carolina General Statues Chapter 40A – Eminent Domain

In this statute, condemnation procedures are established for North Carolina. Both public and private parties with the right to condemn are listed, as well as the types of purposes for which property may be condemned.[22]

3.3.1.3 City of Charlotte Municipal Code – Article V, Eminent Domain

In this code, procedures for implementing Chapter 40A of the North Carolina General Statues in the City of Charlotte are established.[23]

3.3.2 Method

The project alignment was evaluated for its potential to displace residents and businesses as a result of property acquisitions for project right-of-way.

3.3.3 Existing Conditions and Resources

The project is located entirely within the urbanized area of the City of Charlotte. The project alignment is generally located within existing publicly-owned transportation corridor rights-of-way.

3.3.4 Environmental Impacts and Benefits

3.3.4.1 Short-term Impacts and Benefits

No-Build and TSM Alternatives

No residences or businesses would be displaced under either the No-Build or TSM alternatives. No short-term impacts are expected.

Build Alternative

No residences or businesses would be displaced under the Build Alternative. Acquisition of small slivers of privately owned property would be necessary at 12 locations along the project alignment.

3.3.4.2 Long-term Impacts and Benefits

No-Build and TSM Alternatives

No residences or businesses would be displaced under either the No-Build or TSM alternatives. No long-term impacts are expected.

Build Alternative

The partial takings expected are not substantial enough to affect the existing use of the properties in the long-term.

3.3.5 Mitigation

CATS will adhere to the requirements pertaining to land acquisition for projects funded by the Federal Transit Administration (FTA) as prescribed in Volume 49 Code of Federal Regulations (CFR) Part 24, Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally Assisted Programs, the North Carolina General Statutes Chapter 40A Eminent Domain, and 136 Roads and Highways, and the Municipal Code of the City of Charlotte Article V, Section 7.81. These regulations implement and supplement applicable provisions governing federally funded land acquisition and relocation assistance contained in the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.

Part 49 of CFR contains regulations relating to the necessity for, and means of preparation for: (1) the appraisal and acquisition of real property; (2) relocation services; (3) moving, relocation and replacement housing payments; and (4) other expense payments when land acquisition and/or relocation is involved. All relocation mitigation would follow the state and local guidelines for compliance with the Uniform Relocation Assistance and Real Property Acquisition Act.

3.4 NEIGHBORHOODS AND COMMUNITY FEATURES

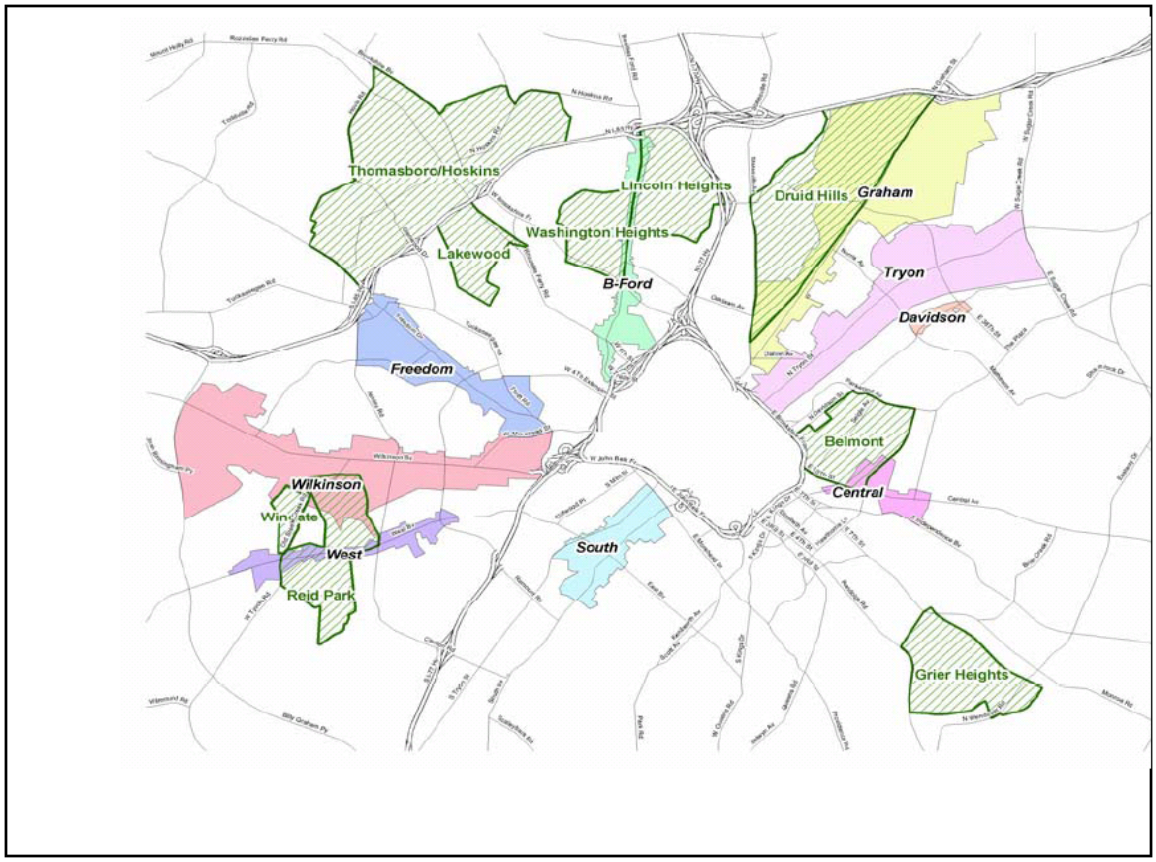
3.4.1 Legal and Regulatory Framework

Charlotte recognizes neighborhoods as identified by the *Charlotte Neighborhood and Quality of Life Study 2004*. The city tracks statistical information and rates the quality of life for each neighborhood. Additionally, the city encourages neighborhoods to be active and to organize themselves. Charlotte's Department of Neighborhood Development has created a model vision for neighborhood capacity that includes the following indicators of success:

- Neighborhood residents know each other;
- Organizations are established with a clear vision and mission;
- Organizations are able to identify and solve neighborhood problems;
- Neighborhood leaders are politically active and astute;
- Access to and opportunities for leadership training are utilized throughout the neighborhood;
- Openness to culturally, ethnically, and economically diverse backgrounds;
- Partnerships are established with the city and county government as well as private and non-profit organizations; and
- Broad participation from all segments of the neighborhood is encouraged.[24]

The City of Charlotte and Mecklenburg County created a strategy to address affordable housing, community and economic development needs identified in the *Charlotte Neighborhood Quality of Life Study 2004* and documented it in *City of Charlotte and Charlotte-Mecklenburg Regional Housing Consortium Five-Year Consolidated Plan and FY2006 Annual Action Plan.* Guiding principles of the strategy include: (1) targeting investments in low wealth and distressed areas of the community; (2) de-concentrating poverty; (3) leveraging federal, state, and local government resources; and (4) planning and creating partnerships and other collaborative relationships. According to the strategy, nine neighborhoods in Charlotte's urban core have been the target for revitalization. A map of the targeted areas is shown in Figure 3-23. Three of these neighborhoods, Belmont, Lincoln Heights, and Washington Heights, fall within the project study area. It is indicated that these neighborhoods will continue to be targeted over the next five years. One aspect of the strategy related to transportation infrastructure is the need to improve the living environment/quality of life in low-income neighborhoods. Common needs among these neighborhoods include infrastructure improvements and greater access to public transportation.[25]

Figure 3-23: Targeted Neighborhoods and Corridors



Source: *City of Charlotte and Charlotte-Mecklenburg Regional Housing Consortium Five-Year Consolidated Plan* and *FY2006 Annual Action Plan*. June 2005.

Additionally, the Charlotte-Mecklenburg Planning Commission has adopted area plans that typically address land use, zoning, transportation, environment, infrastructure, revitalization, community appearance, and public safety. The most recent area plans are discussed in more detail in Section 3.2.1. Area plans that cover portions of the project corridor are:

- Briar Creek/Woodland/Merry Oaks Small Area Plan, 1998
- Center City 2010 Vision Plan, 2000
- Cherry Small Area Plan, 1993
- First Ward Master Plan, 1997
- Second Ward Neighborhood Master Plan, 2002
- Third Ward Future Concept Plan, 1997
- Third Ward Vision Plan, 2003
- Washington Heights Neighborhood Concept Plan, 2002
- Wesley Heights, 1999
- Elizabeth Avenue Land Use and Pedscape Plan, draft form
- Plaza Central Pedscape Plan, 2003

3.4.2 Method

Information on identifying and describing corridor neighborhoods was taken from the *Charlotte Neighborhood Quality of Life Study, 2004* that was completed in 2004 for the City of Charlotte

Neighborhood Development Department and the Charlotte-Mecklenburg Planning Commission by the Metropolitan Studies Group at the University of North Carolina at Charlotte.[26] Additional information was obtained from site visits and discussions with community members.

The Metropolitan Studies Group developed the neighborhood boundaries for the *Charlotte Neighborhood Quality of Life Study* in conjunction with the Charlotte-Mecklenburg Planning Commission. They were delineated based on location, census boundaries, physical features, and town limits. There were two phases to the neighborhood identification process. The first phase was initially conducted in 1993 and identified neighborhoods as Cities within a City (CWAC), which only identified neighborhoods in the inner core of the city. In 2000, this process was expanded to include the entire city and those areas just outside the immediate city limits that are likely to become part of Charlotte in the near future. These neighborhoods were delineated using a similar method as the CWAC. However, they were named as Neighborhood Statistical Areas (NSA). The neighborhoods along the corridor include both CWAC and NSA defined neighborhoods.

3.4.3 Existing Conditions and Resources

3.4.3.1 Neighborhoods

The *Charlotte Neighborhood Quality of Life Study, 2004* was used to develop an understanding of the existing characteristics and conditions of the neighborhoods. This report provides a detailed profile of the physical, social, economic, and crime dimensions of each neighborhood located along the corridor. The study evaluated Charlotte's neighborhoods based on these criteria and assigned an overall quality of life index rating using the following three indices:

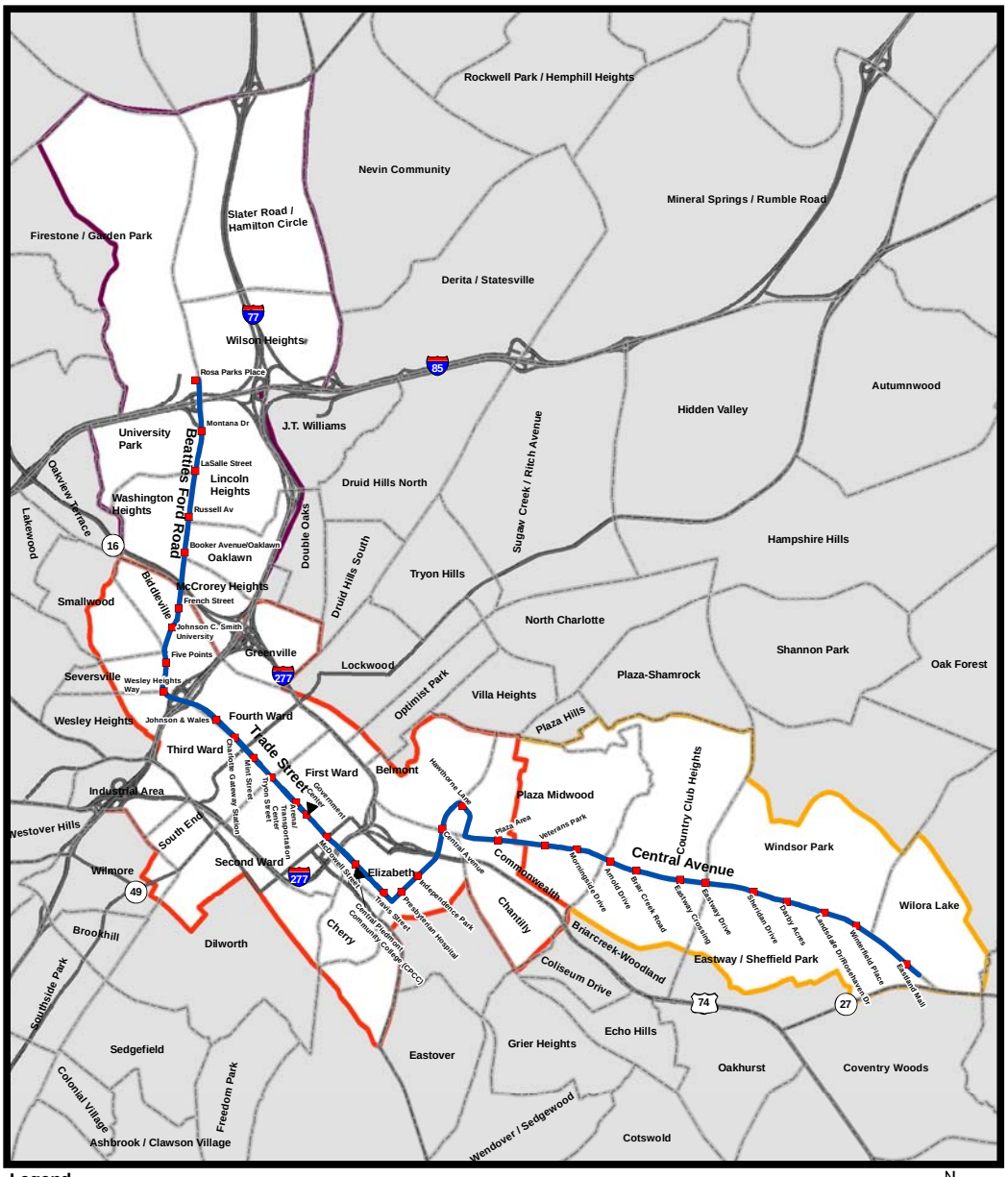
- **Stable** - neighborhoods identified as having few social problems, low rates of crime, few physical needs, sound housing, and high levels of economic vitality;
- **Threatened** - neighborhoods that scored relatively high on most of the dimensions but may have a significant problem in one or more areas. These neighborhoods are characterized by moderate levels of physical decline, average crime rates, moderate levels of social needs, and modest level of income change; and,
- **Fragile** - neighborhoods that scored low to moderate on all four dimensions and characteristic of lower quality of life and at risk on multiple dimensions. These neighborhoods are characterized by high rates of physical deterioration, high crime, high levels of social needs, and low rates of income change (even declines).

Table 3-9 presents the results of the *Charlotte Neighborhood Quality of Life Study* as it relates to the defined neighborhoods located along the corridor. The neighborhoods are presented in geographic order from northwest to southeast. Figure 3-24 shows the location of the neighborhood boundaries within the study area.

Table 3-9: Summary of Quality of Life Index for the Study Area

Neighborhood	Social (Public Assisted School Performance Indicators)	Crime (Rates)	Physical (Appearance, Substandard Housing, Homeowners)	Economic (Income Growth)	Overall Quality of Life
Firestone/ Garden Park	Threatened	Stable	Stable	Fragile	Threatened
Slater Road/ Hamilton Circle	Stable	Stable	Threatened	Threatened	Threatened
Wilson Heights	Stable	Fragile	Fragile	Stable	Threatened
University Park	Fragile	Fragile	Stable	Fragile	Fragile
Lincoln Heights	Fragile	Threatened	Threatened	Threatened	Fragile
Washington Heights	Fragile	Threatened	Fragile	Fragile	Fragile
Oaklawn Park	Fragile	Threatened	Threatened	Threatened	Fragile
McCrorey Heights	Fragile	Threatened	Threatened	Threatened	Threatened
Smallwood	Fragile	Threatened	Fragile	Threatened	Fragile
Biddleville	Threatened	Stable	Threatened	Threatened	Threatened
Greenville	Stable	Stable	Stable	Threatened	Stable
Seversville	Threatened	Threatened	Stable	Stable	Threatened
Wesley Heights	Threatened	Threatened	Stable	Stable	Stable
Third Ward	Stable	Threatened	Stable	Stable	Stable
Fourth Ward	Threatened	Threatened	Stable	Stable	Stable
First Ward	Stable	Fragile	Stable	Stable	Stable
Second Ward	Not addressed in the *Charlotte Neighborhood Quality of Life Study*				
South End	Not addressed in the *Charlotte Neighborhood Quality of Life Study*				
Cherry	Threatened	Fragile	Stable	Stable	Threatened
Elizabeth	Stable	Threatened	Stable	Stable	Stable
Belmont	Threatened	Fragile	Threatened	Stable	Threatened
Plaza Midwood	Stable	Stable	Stable	Stable	Stable
Commonwealth	Threatened	Fragile	Stable	Stable	Stable
Chantilly	Threatened	Stable	Stable	Stable	Stable
Country Club Heights	Threatened	Stable	Stable	Threatened	Stable
Briarcreek/ Woodland	Threatened	Fragile	Stable	Stable	Threatened
Windsor Park	Threatened	Stable	Stable	Threatened	Stable
Eastway/ Sheffield Park	Threatened	Threatened	Stable	Threatened	Threatened
Wilora Lake	Threatened	Threatened	Stable	Threatened	Threatened

Figure 3-24: Neighborhood Boundaries



Beatties Ford Road Sub-Area

Firestone/Garden Park

The Firestone/Garden Park neighborhood is located at the northern end of the corridor, just north of I-85. It is bounded by Sunset Road to the north, Beatties Ford Road to the east, I-85 to the south, Auten Road to southwest, and Peachtree Road to the northwest. The predominant land use in the Firestone/Garden Park neighborhood is single family residential with a few clusters of multi-family units. The exception is along I-85 where there is a mix of office, commercial, and light industrial land uses. The profile of the area indicates that the median household income is below the citywide average. The average house value is roughly half the citywide average. From a social perspective the area has a higher than average percent of residents over 64 and of adolescent parents. On an economic perspective, the neighborhood has a high number of residents on food stamps and a low income growth rate. Crime rates for the community were lower than city wide averages in all categories. The overall quality of life index of the neighborhood is threatened.

Slater Road/Hamilton Circle

The Slater Road/Hamilton Circle neighborhood is also located at the northern end of the corridor, between Beatties Ford Road, Sunset Road, Statesville Road and Cindy Lane. The median household income and average house value are below the city averages, and the unemployment index is high. Social and crime rate statistics for the neighborhood are comparable to those of the city as a whole. Measures of the physical characteristics of the neighborhood fall below that of the city, with 36.3 percent of persons having access to public transportation (compared to 58.8 percent city-wide) and 6.2 percent having access to basic retail (compared to 18.5 percent city-wide). The overall quality of life index of the neighborhood is rated as threatened.

Wilson Heights

The Wilson Heights neighborhood is located in the northern section of the corridor and is bisected by I-77. The neighborhood is bounded by Cindy Lane to the north, Statesville Road to the east, I-85 to the south, and Beatties Ford Road to the west. The Wilson Heights neighborhood contains a mix of land uses that include single family housing, commercial, and open space. The parcels adjacent to the project corridor and I-85 are commercial land uses. The median household income and average house value are less than citywide numbers. The social and economic dimensions of the community are rated as stable. From a physical perspective, the neighborhood has a higher percent of substandard housing than the city as a whole and a lower percent of homeowners. The crime rates for the neighborhood are higher than citywide averages. The overall quality of life index of the neighborhood was rated as threatened.

University Park

The University Park neighborhood is adjacent to the northern section of the project corridor along Beatties Ford Road. The neighborhood is bounded by I-85 to the north, Beatties Ford Road to the east, LaSalle Street to the south, and the Oakview Terrace Neighborhood to the west. The dominant land use for the neighborhood is single family residential. There is also a school located within the neighborhood. The physical dimension of the neighborhood is rated as stable. From a social perspective, compared to citywide percentages, the neighborhood has nearly four times the percentage of residents over 64 and three times the percentage of adolescent parents. The crime rate for the neighborhood is also higher than the city rates. The overall quality of life index for the neighborhood is rated as fragile.

Lincoln Heights

The Lincoln Heights neighborhood is bordered by I-85 to the north, I-77 to the east, Russell Avenue to the south, and Beatties Ford Road to the west. Single family residential is the predominant land use in the neighborhood with a few scattered low density commercial sites immediately along the project corridor. The social dimension of the neighborhood is rated as fragile because of a large percentage of elderly residents and a large number of adolescent parents compared to citywide averages. From a physical perspective there are a low number of homeowners in the neighborhood and the average house value is far less than the average home value across the city. The crime rates are higher than citywide statistics. Economically, the neighborhood has a large percentage of residents on food stamps compared to the city as a whole. The overall quality of life index for the neighborhood is rated as fragile.

Washington Heights

The Washington Heights neighborhood is bounded by LaSalle Street to the north, Beatties Ford to the east, Brookshire Boulevard to the south, and the Oakview Terrace Neighborhood to the west. The neighborhood is mostly comprised of single family residential. In addition, there are also education facilities, parks/open space, and a small commercial center. From a social perspective the neighborhood has a high school dropout rate three times that of the city. Physically, the neighborhood has a high percentage of substandard housing and a low percentage of homeowners. From an economic standpoint, the neighborhood has a high rate of unemployment and a low income growth rate. The crime rate for the neighborhood is higher than the citywide crime rate. The overall quality of life index for the neighborhood is fragile.

Oaklawn Park

The Oaklawn Park neighborhood is bordered by Russell Avenue to the north, I-77 to the east, Oaklawn Avenue to the south, and Beatties Ford Road to the west. The land use in the neighborhood is mostly single family residential with a few scattered multi-family housing sites and an education facility. In addition, there are some scattered commercial sites along the major roadways. The social dimension of the neighborhood is fragile. There is a low percent of students passing competency exams and a high percentage of adolescent pregnancies. Crime rates are higher than citywide averages. From a physical perspective there are a high number of substandard housing units. Economically, the average house value is substantially lower than the citywide average. In addition, income growth for the neighborhood is lower than the income growth rate of the city. The overall quality of life index for the neighborhood is fragile.

McCrorey Heights

The McCrorey Heights neighborhood borders the project corridor near I-77. The neighborhood is bounded by Oaklawn Avenue to the northeast, I-77 to the southeast, the Biddleville neighborhood to the southwest, and Beatties Ford Road to the northwest. The McCrorey Heights neighborhood has single family residential and industrial land uses. The industrial land uses are located immediately along the project on the west side of the neighborhood. From a social perspective, the neighborhood has a large senior citizen population and a high number of births to adolescent parents. The crime rate for the neighborhood is slightly above the citywide crime rate. The physical needs of the neighborhood are few. Economically, the neighborhood has a low median household income, low average home value, and a high unemployment rate. The overall quality of life index for the neighborhood is rated as threatened.

Center City Sub-Area

Smallwood

The Smallwood neighborhood is located to the east of the corridor and is bounded by West Trade Street to the northeast, State Street to the south, and Parkway Avenue and Norwood Drive to the northeast. The neighborhood has a mix of land uses that include single family and multi-family residential, industrial, and open space. The social dimension of the neighborhood shows that there is a higher than average drop out rate compared to the city as a whole. There are also a high number of adolescent parents. From a physical standpoint there is a substantial amount of substandard housing and a low number of homeowners. Economically, the median household income of the neighborhood is nearly half that of the citywide median household income. The crime rate is higher than city averages; in particular the violent crime rate is more than double that of the entire city. The overall quality of life index for the neighborhood is rated as fragile.

Biddleville

The Biddleville neighborhood is bisected by the corridor. It is bounded by Brookshire Boulevard to the northeast, I-77 to the southeast, and West Trade Street to the southwest. This neighborhood contains a mix of land uses including single family residential and educational facilities. The Johnson C. Smith University is located in Biddleville. The profile of the area indicated few social or physical needs. From an economic standpoint the income growth for the area is lower than that of the community as a whole. Additionally, the average house value is significantly lower than the citywide average house value. The crime rate of the neighborhood is comparable to that of the entire city. The overall quality of life index for the neighborhood is rated as threatened.

Greenville

The Greenville neighborhood is located around the interchange of I-77 and Brookshire Freeway and is bordered by I-77, Oaklawn Avenue, Statesville Avenue and Seaboard Street. The median household income and average house value are both lower for the neighborhood than the city as a whole. The unemployment index is also high. The overall quality of life index of the neighborhood is rated as stable.

Seversville

The Seversville neighborhood is bordered by State Street to the north, West Trade Street to the east, Tuckaseegee Road to the south, and Berryhill Road to the west. The neighborhood contains a mix of land uses that includes single family housing, multi-family housing, industrial, and open space. From a social perspective, the neighborhood has a high drop out rate, a low percentage of students passing competency exams, and a high number of adolescent parents. The neighborhood also has a high number of violent crimes. From a physical standpoint the neighborhood is stable. Economically, the neighborhood has a percentage of individuals receiving food stamps and a low income growth rate. However, the percent change in house value is significantly higher than community wide averages. The overall quality of life index for the neighborhood is threatened.

Wesley Heights

The Wesley Heights neighborhood is located just outside of Center City Charlotte along the I-77 corridor. The neighborhood is bounded by Tuckaseegee Road to the north, I-77 to the east, Freedom Drive to the south, and Berryhill Road to the west. The land uses in the neighborhood include single family residential, multi-family residential, industrial, and scattered commercial. The profile of the area indicated few social needs or physical needs. The violent crime rate for the neighborhood was higher that the citywide violent crime rate. From an economic standpoint the neighborhood has experienced a high increase in house value compared to that of the city. However, actual income growth for neighborhood residents is significantly lower than the income growth of the city as a whole. The overall quality of life index for the neighborhood is stable.

Third Ward

The Third Ward neighborhood is located within Center City Charlotte and the I-77/I-277 Loop. It is bounded by Trade Street to the northeast, Tryon Street to the southeast, the I-277 to the southwest, and I-77 to the northwest. The neighborhood has a mix of dense development and surface lots associated with the Carolina Panthers stadium. The land uses in the neighborhood are mixed and include single family residential, multi-family residential, office, commercial, retail, university, and open space. The profile of the area indicated that the social, physical, and economic dimensions of the study area were stable. There is a higher than average percentage of adolescent parents living in the neighborhood. The overall quality of life index for the neighborhood is stable; however, the crime rate for the neighborhood is higher than the citywide averages.

Fourth Ward

The Fourth Ward neighborhood is located within interstate loop in Center City Charlotte. It is bounded by Brookshire Freeway to the northeast, North Tryon Street to the southeast, West Trade Street to the southwest, and North Smith Street to the northwest. This neighborhood contains single family and multi-family residential land uses. There are also a few commercial land uses and a church. The profile of the area indicates low social needs and stress, low incidents of crime, and few physical needs. The overall quality of life index rated this area as stable.

First Ward

The First Ward neighborhood is located in Center City Charlotte and is bordered by Brookshire Freeway to the east, East Trade Street to the southwest, and North Tyron to the northwest. The land uses in this neighborhood are single family residential, multi-family residential, public housing, government facilities, and commercial. The social and physical indicators are stable. From an economic standpoint, there are a high number of individuals receiving food stamps, but income growth is higher than the citywide average. In addition, the percent change in house value for residents in the neighborhood are significantly higher than citywide figures. The overall quality of life index rating for the neighborhood is stable.

Cherry

The Cherry neighborhood is located to the southeast of the interstate loop and of the corridor. It is bordered by East 4th Street to the northeast, Queens Road to the southeast, Henley Place to the south, and South King Street to the west. The neighborhood land uses are single family and multi-family residential, commercial, and office. The social dimension of the neighborhood is relatively stable, with the exception of a high number of adolescent parents. The crime rate for juvenile arrests is six times the citywide average. The physical aspects are stable. From an economic standpoint,

the neighborhood has a lower income growth rate than the rest of the city, but has a higher percent increase in house value. The overall quality of life index for the neighborhood is threatened.

Elizabeth

The Elizabeth neighborhood (also referred to as Colonial Heights) is bisected by the project corridor. The neighborhood is bound by East 10th Street and Central Avenue to the north and east. Randolph Road, Providence Road, and East 4th Street form the southwest boundary. The Belk Freeway borders the northwest corner of the neighborhood. The neighborhood contains a mix of land uses that include single family and multi-family residential throughout, and then educational, office/institutional, and commercial along the section near Elizabeth Avenue. The land uses along Elizabeth Avenue are heavily influenced by the Central Piedmont Community College and the Presbyterian Hospital. The social and physical characteristics of the neighborhood are stable. The median house value is substantially higher than the citywide average. Property crime rates are higher than the citywide averages. The neighborhood is also economically stable and has experienced a higher than average percent increase in property value than the rest of the city. The overall quality of life index for the neighborhood is stable.

Belmont

The Belmont neighborhood is located to the north of the project corridor. It is bordered by Parkwood Avenue to the northeast, Hawthorne Lane to the southeast, East 10th Street to the southwest, and North Alexander Street to the northwest. The land uses in the neighborhood are mixed and contain single family and multi-family residential, office, industrial, commercial, and education facilities. The social indicators for the neighborhood show that the high school drop out rate is higher than the citywide rate and that there are a high number of adolescent parents. The violent crime rate and juvenile arrest rate are both higher than citywide averages. Physically, the neighborhood has a low number of homeowners. Economically, the neighborhood has a higher increase in income growth and change in housing value than the citywide averages. The overall quality of life index for the neighborhood is threatened.

Commonwealth

The Commonwealth neighborhood is located along the project corridor. It is bound by Central Avenue to the north, the Briar creek neighborhood to the southeast, and Independence Boulevard to the southwest. The land uses in the neighborhood consist of single family and multi-family housing with a few scattered commercial and office/institutional facilities located along Central Avenue. The social indicators for the neighborhood show that the number of adolescent parents is higher than the citywide percentage. The violent crime and property crime rates are significantly higher than the citywide statistics. The physical needs and economic conditions of the neighborhood are both stable. The overall quality of life index for the neighborhood is stable.

Chantilly

The Chantilly neighborhood is bordered by Independence Boulevard to the northeast, the Coliseum Drive neighborhood to the southeast, and the Elizabeth neighborhood to the southwest. The neighborhood is predominately single family residential with a few instances of multi-family housing. The social dimension of the neighborhood shows that the high school drop out rate is higher than the citywide rate. The crime rate for the neighborhood is lower than the citywide crime rate. The physical indicators and the

economic conditions of the neighborhood are stable. The overall quality of life index of the neighborhood is stable.

Central Avenue Sub-Area

Plaza Midwood

The Plaza Midwood neighborhood is bound by Mecklenburg Avenue to the north, the Country Club neighborhood to the east, Central Avenue to the south, and Hawthorne Lane to the west. The neighborhood is predominately single family residential. However, there are commercial and light industrial land uses found along Central Avenue. The social and physical needs of the neighborhood are relatively low. In addition, the neighborhood has a low crime rate. From an economic perspective, the neighborhood has a low income growth rate, but the percent change in house values has increased at a much faster rate than the city as a whole. The overall quality of life index for the neighborhood is stable.

Country Club Heights

The Country Club Heights neighborhood is located along the project corridor. It is bound by Hilliard Drive to the north, Eastway Drive to the east, Central Avenue to the south, and the Plaza Midwood neighborhood to the west. The land uses in the neighborhood are characterized as single family residential. Notable features include a school, park and the Charlotte Country Club. The social dimension of the neighborhood shows a high percent of adolescent parents compared to citywide statistics. The crime rate in the neighborhood is comparable to the citywide crime rate. The physical needs of the neighborhood are low. Economically, the neighborhood has a lower income growth rate than the citywide growth rate. The overall quality of life index of the neighborhood is stable.

Briarcreek-Woodland

The Briarcreek-Woodland neighborhood is bordered by Central Avenue to the north, Eastway Drive to the east, Independence Boulevard to the south, and the Commonwealth neighborhood to the west. The land uses consist of single family and multi-family housing with scattered offices and businesses. From a social perspective, the neighborhood has a low percent of children passing competency exams. The violent crime rate is higher than the citywide rate. The physical needs of the community are low. The economic conditions are stable. The overall quality of life index of the neighborhood is threatened.

Windsor Park

The Windsor Park neighborhood is bounded by Shamrock Drive to the north, Sharon Amity Road to the east, Central Avenue to the south, and Eastway Drive to west. The dominant land use of the neighborhood is single family residential with scattered multi-family units. In addition, there are a few commercial and office sites located along Central Avenue. The social dimension of the neighborhood shows a large percentage of residents who are over 64. Crime rates for the neighborhood are lower or the same as citywide statistics. The physical needs of the neighborhood are low. The economic conditions are stable. The overall quality of life index for the neighborhood is stable.

Eastway/Sheffield Park

The Eastway/Sheffield Park neighborhood is located at the southern terminus of the project corridor. It is bordered by Central Avenue to the north, Albemarle Road to the southeast, Independence Boulevard to the southwest, and Eastway Drive to the west. The neighborhood contains a mix of single family and multi-family residential,

commercial, public facilities, and open space. The social dimension of the neighborhood shows that the high school drop out rate is higher than the citywide drop out rate. The crime rates are higher in the neighborhood than citywide crime rates. The physical indicators for the neighborhood show that there is a high number of substandard housing and a low percentage of homeowners. Economically, the neighborhood has experienced a lower income growth rate and a lower percent change in house value than the city as a whole. The overall quality of life index for the neighborhood is threatened.

Wilora Lake

The Wilora Lake neighborhood is at the southern terminus of the project corridor. It is bordered by Hickory Grove Road on the east, Central Avenue in the south, and Sharon Amity Road in the west. The neighborhood contains a large amount of single family residential land uses. However, the Eastland Mall and neighboring commercial developments along Central Avenue are the dominant land use in this neighborhood. Social indicators show that there is a higher than average number of elderly residents living in the neighborhood. In addition, the high school drop out rate is higher than the citywide drop out rate. There is also a higher juvenile arrest rate in the neighborhood compared to the city as a whole. The physical needs of the neighborhood are low. The economic indicators show a lower than average income growth rate and a lower percent change in house value than the city as a whole. The overall quality of life index for the neighborhood is threatened.

3.4.3.2 Community and Social Service Providers

Community facilities and resources provide basic needs and services to the surrounding neighborhoods. They include schools, churches and religious centers, libraries, hospitals, parks, greenways, recreation centers, and emergency services (fire stations, police stations). These facilities and services shape the quality of life and help foster a sense of community identity. The number of community facilities and resources corresponds to the density of development. For example, the more densely populated portions typically have more services and resources located in proximity to or within neighborhoods. As population density decreases, fewer community facilities are present.

Community facilities and potential impacts of the project on community facilities are discussed in this section. Impacts are anticipated to be primarily positive due to the fact that many community facilities will be within an easy walk of a station. Community facilities are listed in Table 3-10 and shown Figure 3-25, with the exception of parklands, in Figure 3-25. A discussion of existing parklands, greenways, and recreation centers is included in Section 3.12.

Table 3-10: Community Facilities

Schools	
University Park Elementary	2400 Hildebrand Street
Lincoln Heights Elementary	1900 Newcastle Street
Oaklawn/Brunswick Avenue Elementary	1810 Oaklawn Avenue
First Ward Elementary	715 N. Caldwell
Winterfield Elementary	3100 Winterfield Place
Merry Oaks Elementary	3508 Draper Avenue
Irwin Avenue Elementary	329 N. Irwin Avenue
Elizabeth Traditional Elementary	1601 Park Drive
Piedmont/Hawthorne Middle School	1241 E. 10th Street
Eastway Middle School	500 Bilmark Drive
West Charlotte High School	2219 Senior Drive
Midwood High School/Tate Teenage Parents	1817 Central Avenue
Northwest School Of The Arts	1415 Beatties Ford Road
Metro School	700 E. Second Street
Central Piedmont Community College – City View Center	1609 Alleghany Street
Central Piedmont Community College – Central Campus	1201 Elizabeth Avenue
Dudley's Beauty College	1950 John Macdonald Avenue
Johnson C. Smith University	100 Beatties Ford Road
Johnson & Wales University	901 W. Trade Street
King's College	322 Lamar Avenue
Southeastern College Of Beauty	1535 Elizabeth Avenue
Teach South Central Center	500 W. Trade Street
Churches	
New Emmanuel Congregational Church	PO Box 16502
Apostolic Church of God of America	200a Honeys Building
Clement Memorial A M E Zion Church	312 N. Davidson Street
First Baptist Church of Charlotte	301 S. Davidson Street
First United Presbyterian of Charlotte	201 E. 7th Street
Greater Mount Moriah Primitive Baptist Church	747 W. Trade Street
St. Peters Protestant Episcopal Church	115 W. 7th Street
Caldwell Memorial Pres Church	1615 E. 5th Street
Faith Presbyterian Church	1805 E. 7th Street
Hawthorne Lane Methodist Church	501 Hawthorne Lane
St Martins Episcopal Church	1500 E. 7th Street
Commonwealth Baptist Church	1451 Briar Creek Road
Eastway Baptist Church	2749 Eastway Drive
Emmanuel Pentecostal Church	1201 Pegram Street
First Assembly of God of Charlotte	2633 Eastway Drive

Table 3-10: Community Facilities (Cont.)

Churches (continued)	
Memorial United Methodist Church	4012 Central Avenue
Seigle Avenue Church of God	1620 Seigle Avenue
St Andrews Protestant Episcopal	3601 Central Avenue
Third Presbyterian Church	4019 Central Avenue
Jerusalem Pentecostal Holiness Church	421 E. 18th Street
Little Church on Moravian Lane	528 Moravian Lane
Bethel A M E Church of Charlotte	201 Grandin Road
Clinton Chapel Amez Church	1901 Rozelles Ferry Road
New Jerusalem Trinity Church	2526 Old Steele Creek Road
St Peters Baptist Church	2315 Roslyn Avenue
Jerusalem Holy Pentecostal Church of Apostolic	3814 Crestridge Drive
Apostolic & New Testament Church of God	B Avenue East
Friendship Primitive Baptist Church	2015 Kennesaw Drive
Macedonia Baptist Church of Charlotte	1300 Hateras Avenue
Memorial Presbyterian Church	2600 Beatties Ford Road
Pentecostal Temple Jesus Christ Holiness	1914 Renner Street
Prince of Peace Lutheran Church	3001 Martin Luther King
University Park Baptist Church	2348 Keller Avenue
Wilson Heights Church of God	2137 B Avenue
Victory Christian Center Inc	7224 Old Pineville Road
Smallwood Presbyterian Church	PO Box 16117
Progressive Church of Our Christ The Lord	237 N. Graham Street
St Peters Catholic Church	501 S. Tryon Street
Grace A M E Zion Church	219 S. Brevard Street
Little Rock AME Zion Church	403 N. Myers Street
Trinity Episcopal School	750 E. 9th Street
Galilean Baptist Church	1220 E. 10th Street
St Johns Baptist Church	300 Hawthorne Lane
New Hope Missionary Baptist Church	1303 Hawthorne Lane
Green Memorial Baptist Church	1324 The Plaza
Calvary Christian Church of The Apostolic Faith	2429 E. Independence Boulevard
True Holiness Church of Jesus Christ	1801 Griers Grove Road Apt E
New Bethlehem Baptist Church	2001 Cummings Avenue
Tabernacle Baptist Church	1135 Redbud Street
Muhammad Mosques of The Islam	1230 Beatties Ford Road
Gethsemane A M E Zion Church	314 Cemetery Avenue
Greater Fellowship Missionary Baptist Church	PO Box 18645
First Methodist Church	PO Box 31603
Cannon E C Crusade Inc	PO Box 31773

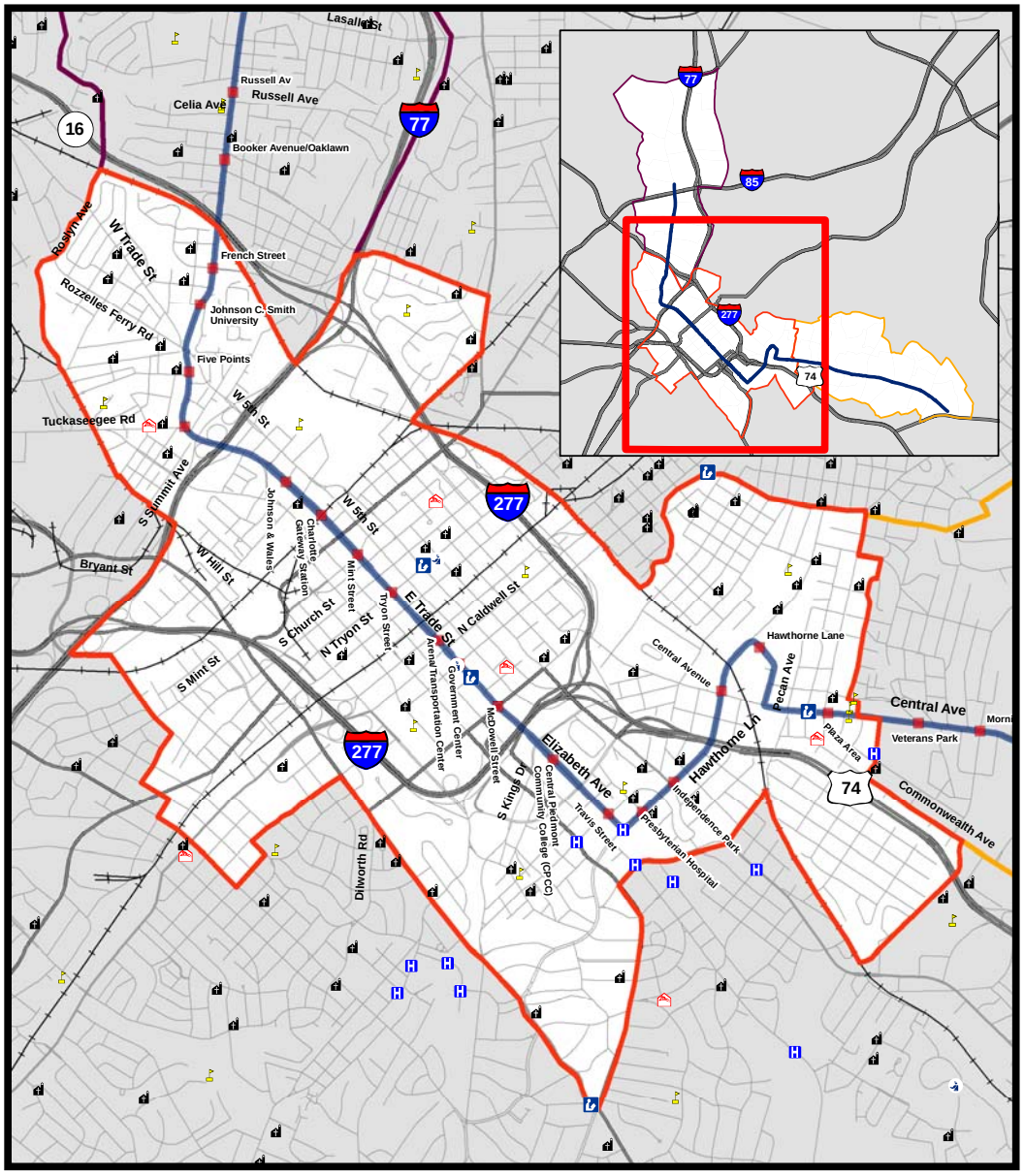
Table 3-10: Community Facilities (Cont.)

Police Stations	
Charlie-2	3024 Eastway Drive
David-2	601 E. Trade Street
David-1	119 E. 7th Street
Fire/Medic Stations	
Fire Station 1	221 N. Myers Street
Fire Station 4	525 N. Church Street
Fire Station 5	224 Tuckaseegee Road
Fire Station 8	1201 The Plaza
Fire Station 18	2337 Keller Avenue
Hospitals	
US Army Hospital	1330 Westover Street
Presbyterian Hospital	200 Hawthorne Lane
Presbyterian Specialty Hospital	1600 E. Third Street
Presbyterian Orthopedic Hospital	1901 Randolph Road
Libraries	
Main Library	310 N. Tryon Street
Beatties Ford Road Branch	2412 Beatties Ford Road
Law & Government Library	700 E. Trade Street
North Branch	2324 LaSalle Street
Plaza Midwood Branch	1623 Central Avenue
Parks, Greenways, and Recreation Centers	
Alexander Park	739 E. 12th Street
Aquatic Center	800 E. 2nd Street
Biddleville Park	500 Andrill Terrace
Chantilly Park	222 Wyanoke Avenue
Colonial Park	219 Providence Road
Evergreen Nature Preserve	No Address
Five Points Park	200 French Street
Fourth Ward Park	301 N. Poplar Street
Frazier Park	1200 W. 4th Street Ext
First Ward Center	610 E. 7th Street
First Ward Park	301 N. McDowell Street
Grady Cole Center	310 N. Kings Drive
Hawthorne Center	345 Hawthorne Lane
Independence Park	300 Hawthorne Lane
Irwin Center	329 N. Irwin Avenue
Johnson C. Smith University Track	100 Beatties Ford Road
Kilborne District Park	2600 Kilborne Drive
L.C. Coleman Park	1501 McDonald Street

Table 3-10: Community Facilities (Cont.)

Parks, Greenways, and Recreation Centers (continued)	
Lincoln Heights Park	No Address
Little Peoples Park	1120 Harrill Street
Memorial Stadium	310 N. Kings Drive
Merry Oaks Center	No Address
Ninth Street Park	417 W. 9th Street
Phillip O. Berry Recreation Center	440 Tuckaseegee Road
Progress Park	1301 Parkwood Avenue
Staff Annex	1418 Armory Drive
Staff Office	1900 Park Drive
St Mary's Chapel	1129 E. 3rd Street
St Paul's Ray of Hope Center	1401 Allen Street
Thompson Park	1129 E. 3rd Street
Third Ward Park	1001 W. 4th Street
Veterans Park	2136 Central Avenue
Waddell Street Park	1505 Waddell Street
West Charlotte Center	2401 Kendall Drive
West Charlotte Park	2401 Kendall Drive
Ray's Splash Planet	215 N. Sycamore Street
Charlotte Country Club	2465 Mecklenburg Avenue
Center City Branch – YMCA	301 S. College Street

Figure 3-25: Community Facilities in the Study Area (Center City)



Legend

- Streetcar Stops
- Streetcar Alignment

Sub-Areas

- Beatties Ford
- Uptown
- Central Avenue

Community Facilities

- Schools
- Library
- Church
- Fire Stations
- Police Stations
- Hospitals

0 0.25 0.5 1 Miles

N

URS TEAM

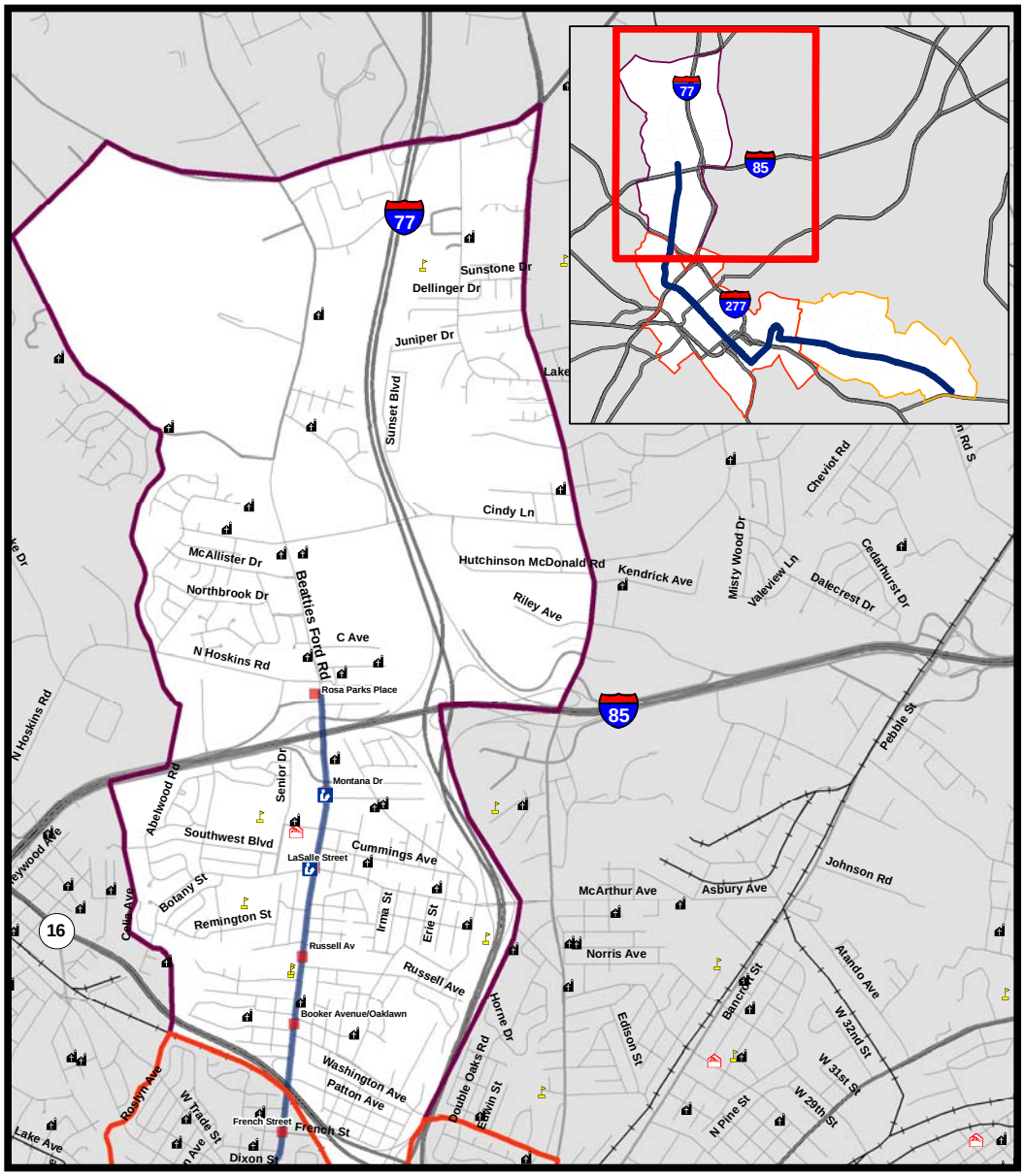
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UPTOWN COMMUNITY FACILITIES

Map Data Sources: Mecklenburg County, NC; and URS Corporation
Date: July 2006

Figure 3-26: **Community Facilities in the Study Area (Beatties Ford Road)**



Legend

Streetcar Stops

Streetcar Alignment

Sub-Areas

Beatties Ford

Uptown

Central Avenue

Community Facilities

Schools

Library

Church

Fire Stations

Police Stations

Hospitals

0 0.25 0.5 1 Miles

N

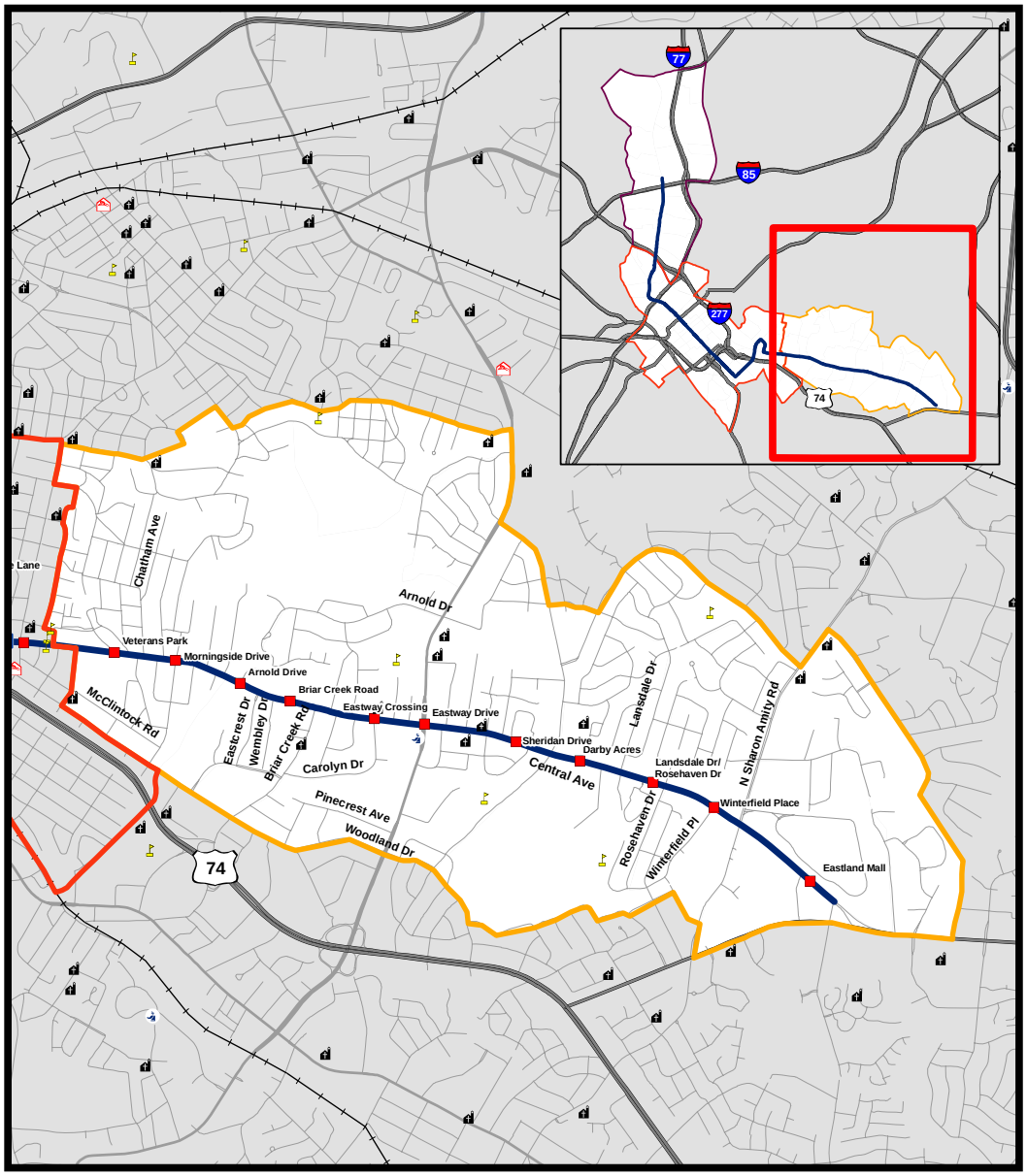
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BEATTIES FORD COMMUNITY FACILITIES

Map Data Sources: Mecklenburg County, NC; and URS Corporation
Date: July 2006

Figure 3-27: Community Facilities in the Study Area (Central Avenue)



URS TEAM	Figure No.:	Page No.:	**CENTRAL AVENUE COMMUNITY FACILITIES** Map Data Sources: Mecklenburg County, NC; and URS Corporation Date: July 2006

3.4.4 Environmental Impacts and Benefits

In the following sections, potential impacts on residential neighborhoods and community facilities in the study area are addressed. The types of impacts assessed include:

- Disruption of community cohesion and the physical division of a neighborhood,
- Reduction of access to neighborhoods and community facilities,
- Alteration of neighborhood character,
- Interruption of service areas to community facilities, and
- Enhancement of mobility and connectivity.

3.4.4.1 Short-Term Impacts and Benefits

No-Build and TSM Alternatives

The No-Build and TSM alternatives would have no short-term impacts or benefits to neighborhoods or community services. Under these alternatives, no disruption would occur from streetcar construction.

Build Alternative

Neighborhoods

Short-term impacts to neighborhoods would result from construction of the project. Impacts would generally consist of temporary alteration of neighborhood access, traffic detours, and increased day-time disturbance from construction activities. While every effort will be made to maintain existing access routes and travel patterns, at times temporary alteration may be necessary. Short-term impacts from project construction are not anticipated to be substantially adverse. Potential negative effects would be minimized by implementing a rolling construction method that would affect small segments of the project corridor at one time rather than constructing the project all at once and having widespread project effects. This method would limit the duration of construction activity at any one location, thereby minimizing disturbance of neighborhoods.

Overall, neighborhoods along the project corridor would not likely experience short-term benefits from construction of the project.

Community Services

The short-term impacts to community services would be similar to those described for neighborhoods. Access to community facilities and services would be maintained throughout the construction process; however, access routes could be temporarily altered during construction. Some delays in emergency response times could be experienced from temporary changes in travel patterns. With implementation of the rolling construction method described above, any delays in emergency response would be temporary and are not likely to be substantial.

Overall, community services would not likely experience short-term benefits from construction of the project.

3.4.4.2 Long-term Impacts and Benefits

No-Build and TSM Alternatives

Neighborhoods

Over the long-term, neighborhoods along the project corridor would generally not experience adverse impacts to community cohesion, access, or alteration of character from either the No-Build or TSM alternatives. While bus service headways would be decreased to match demand in the future, no substantial long-term benefits are anticipated from either alternative.

Community Services

Community service facilities and access to these services would not be adversely affected by the No-Build or TSM alternatives. While bus service headways would be decreased to match demand, provision of and access to community services would generally remain unchanged from the existing condition. No substantial long-term benefits are anticipated from either alternative.

Build Alternative

Neighborhoods

Over the long-term, neighborhoods along the project corridor would generally not experience direct adverse impacts to community cohesion, access, or alteration of character from the streetcar project. Long-term benefits associated with this alternative include provision of a state-of-the-industry alternative mode of transportation and enhanced transit service to neighborhoods along the project corridor. As indicated in Table 3-9, many of these neighborhoods have a low, or degraded, overall quality of life index. Provision of a modernized, high-quality transit system would enhance transportation between neighborhoods, educational facilities, and employment centers.

The streetcar project would support transit oriented development and redevelopment activities within the project corridor. Transit-oriented development results in pedestrian friendly neighborhoods and land uses that encourage the use of neighborhood businesses. This type of interactive neighborhood, as opposed to vehicle oriented communities, encourages neighbors to interact with each other and build stronger ties to the community. They can also contribute to the ability for residents to live closer to where they work. Results of a research study on walkable neighborhoods found that, "residents living in walkable, mixed-use neighborhoods are more likely to know their neighbors, to participate politically, to trust others, and to be involved socially."[27]

Community cohesion could be impacted by an influx of new residents that will bring about socioeconomic changes to the neighborhoods. The ability of newcomers to neighborhoods to mesh and build ties with the "old timers" could be difficult because these groups may have different life experiences and expectations for the community.

Other development activities within the project area combined with the streetcar project could have cumulative effects on neighborhoods and communities within the project corridor. A combined induced effect of these development activities could be an increased demand for property proximal to the central business district. The increased demand, in turn, could create a rise in property values which could create a change in the character of the neighborhood. Increases in rents and property taxes could push vulnerable elements of the population (e.g., low-income residents, students, and seniors on fixed incomes) out of the study area. The cumulative impact of this would be a loss of

a sense of community among existing residents who have historical ties to the neighborhoods along the corridor. On the other hand, the potential effect of increased property values can also be considered as a beneficial secondary or cumulative effect that could improve the overall quality of life index of certain neighborhoods along the study corridor. Additionally, the City of Charlotte's Neighborhood Development Housing Services provides a variety of programs that help residents deal with affordable housing issues. These services include financing for affordable housing, housing subsidies, counseling programs, and administering federal and local funding programs related to affordable housing.

Community Services

Community service facilities and access to these services would not be adversely affected by the streetcar project. Long-term benefits associated with the streetcar project include provision of a state-of-the-industry alternative mode of transportation and enhanced access to community services located throughout the project corridor.

Adverse secondary and cumulative effects on community facilities and services within the study area are unlikely. Likely secondary affects are increased patronage of services induced from improved access to community resources throughout the study corridor.

3.4.5 Mitigation

3.4.5.1 No-Build or TSM Alternatives

No impacts would occur to neighborhoods or community services and mitigation is not required.

3.4.5.2 Build Alternative

The impacts anticipated from the streetcar project on neighborhoods and community services do not warrant a need for mitigation. Potential short-term impacts would be minimized through implementation of a rolling construction method that would affect small segments of the project corridor at one time rather than constructing the project all at once and having widespread project effects.

3.5 VISUAL AND AESTHETIC

Transportation improvement projects can have varying degrees of visual and aesthetic impacts on the surrounding environment. In this chapter the visual and aesthetic characteristics of the Center City Streetcar Corridor and the visual and aesthetic effects of each alternative are discussed.

3.5.1 Legal and Regulatory Framework

The legal and regulatory framework for considering visual and aesthetics is based on policy and regulations outlined in the Department of Transportation Act of 1966; the Historic Preservation Act of 1966, Section 106; and the National Environmental Policy Act of 1969. These regulations each have broad guidelines that include the consideration of visual and aesthetic impacts to projects that are either federal projects or those that use federal funds.

3.5.1.1 Department of Transportation Act of 1966, Section 4(f)

(a) It is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites.

(b) The Secretary of Transportation shall cooperate and consult with the Secretaries of the Interior, Housing and Urban Development, and Agriculture, and with the States, in developing transportation plans and programs that include measures to maintain or enhance the natural beauty of lands crossed by transportation activities or facilities.

(c) The Secretary may approve a transportation program or project (other than any project for a park road or parkway under Section 204 of Title 23 USDOT) requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or land of an historic site of national, State, or local significance (as determined by the Federal, State, or local officials having jurisdiction over the park, area, refuge, or site) only if—

(1) there is no prudent and feasible alternative to using that land; and

(2) the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.[28]

3.5.1.2 Historic Preservation Act of 1966, Section 106

The head of any Federal agency having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking in any State and the head of any Federal department or independent agency having authority to license any undertaking shall, prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license, as the case may be, take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register. The head of any such Federal agency shall afford the Advisory Council on Historic Preservation established under Title II of this Act a reasonable opportunity to comment with regard to such undertaking.[29]

3.5.1.3 National Environmental Policy Act of 1969, Title I

The purposes of this Act are: To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.[30]

3.5.2 Method

The visual and aesthetic analysis follows the method outlined by the US Department of Transportation and Federal Highway Administration Office of Environmental Policy in the report, *Visual Impact Assessment of Highway Projects*.[31] The five steps in the assessment process are (1) identification of components of the project that may have a significant effect on project appearances, (2) description of the visual environment of the project, (3) identification of significant visual resources, (4) determination of the response and values of viewers, and (5) summarization of major visual effects and how to manage those impacts.

A general overview of the visual environment of the study area is provided in Section 3.5.3, Existing Conditions and Resources. The visual impacts associated with the No-Build Alternative, the Transportation Systems Management (TSM) Alternative, and the Build Alternative are described in Section 3.5.4. The mitigation needed for the identified environmental impacts is described in Section 3.5.5, Mitigation.

3.5.3 Existing Conditions and Resources

In order to form a baseline to assess the potential impacts of each alternative, a field survey was conducted to document the aesthetic and visual qualities near and along the streetcar alignment. Visual qualities are described in this section for visual districts, or portions of the sub-area generally identified using cross-streets. Descriptions are provided beginning in the northern extent of the Beatties Ford Road sub-area and moving south.

3.5.3.1 Visual Districts

Beatties Ford Road Sub-area

Griers Grove Road/Cindy Lane to Interstate 85

North of Interstate 85, the commercial buildings are scattered. There are also a few scattered single-family homes and some open space. There are quite a few trees, although they seem to occur naturally and are not planted in an orderly fashion, with the exception of a planted median after Hoskins Road. The road seems expansive in this area. A large church and a construction site for a new large church stand out.



Beatties Ford Road near I-85 and Cindy Lane

Interstate 85 to Keller Avenue

Around I-85, the main visual feature is the road itself. Beatties Ford Road widens and there are views of exit and entrance ramps. Passing over the I-85 there are views of the interstate itself. Commercial buildings are replaced by trees surrounding the interchange.



I-85 at Beatties Ford Rd

Keller Avenue to St. Luke Street

Beyond St. Luke Street there is a transition area that causes the utilities to stand out. Approaching LaSalle Street, there is a heavy concentration of billboards and commercial buildings, mostly single-story in strip developments. A large church with a tall steeple and surrounding black iron fence is also a visual feature.



Beatties Ford Road at Keller Avenue and St. Luke Street

St. Luke Street to St. Paul Street

In this area, single-family residences front the road, which is four lanes without a median. Utilities are above ground.



Beatties Ford Road near St. Paul Street

St. Paul Street to Renner Street

There are single-family houses converted to commercial use in this area. Several buildings are surrounded by chain link fence. There is a fair amount of trees and the Northwest School of the Arts, a large, multi-story brick and glass building stands out as a visual feature.



Beatties Ford Road near Renner Street

Renner Street to Brookshire Freeway

The road is wider and there is no median in this area. There is a large green open space and tall black iron gate surrounding the sprawling cement building that is the Vest Water Treatment Plant. While the area has a low density, there are a few scattered commercial buildings.



Beatties Ford Road near Brookshire Freeway (Vest Water Works)

Center City Sub-area

Brookshire Freeway to 5th Street/Rozelles Ferry Road

Johnson C. Smith University is located near Dixon Street. The views are described further under the following section, but generally there are plenty of shade trees, multi-story red brick college buildings, unique lighting, a pedestrian bridge and black iron fencing. The road is four lanes with no median. Approaching Brookshire Freeway, a water tower is the main visual feature. There are a few one-story commercial buildings. There are open parcels, but it appears that some will be developed soon. Passing over Brookshire Freeway there is a view of the expansive road below, railroad tracks and trees.



Beatties Ford Road between Brookshire Freeway and Johnson C Smith University

5th Street/Rozelles Ferry Road to Bruns Avenue

Near the intersection of 5th Street and Trade Street, the entrance to Johnson C. Smith University is the dominating feature. The area surrounding the university is characterized by an arched stone entryway, well-manicured landscaping, detailed brick-work in the sidewalk, and a black iron gate with coordinated street lighting. Other visual features in the area are a pedestrian bridge near the university and a small greenspace with a colorful raised flower-bed, mature trees and sidewalks. These features stand out from the surrounding area; which is characterized by more narrow sidewalks, low-rise buildings and standard street lighting. Heading away from 5th Street toward Bruns Avenue, there is the first glimpse of high-rises in the skyline. There are some overgrown grassy areas and buildings are somewhat dilapidated and sparse, but there are also some signs of redevelopment. This stretch of Trade Street is four-lanes with no median. There are some street trees, sidewalks on both sides of the road, and above-ground utilities.



Beatties Ford Road near Johnson C Smith University

Bruns Avenue to Wesley Heights Way

While landscaping is not organized, this stretch of Trade Street is characterized by a fair scattering of mature trees. There are several gas stations and some low-end commercial buildings as well as expansive surface parking lots. There are also stretches of chain-link fence, giving the area a general look as if it is in need of care. Toward Wesley Heights Way, several low-rise buildings are occupied by industrial uses such as auto service shops. This stretch of Trade Street has sidewalks, is four lanes with no median and utilities are above-ground.



Trade Street near Wesley Heights Way

Wesley Heights Way to Frazier Avenue

The first good view of high-rises in the skyline is afforded at Wesley Heights Way. This area is characterized by commercial uses such as gas stations and fast food restaurants in low-rise buildings in the foreground with mature trees in the background. Features include a view of high-rises in the skyline and two small stone towers marking the entryway to the West End historic district and neighborhood. This stretch of Trade Street is four lanes or four lanes with a center turn lane in some places. There are sidewalks, there is no median, and utilities are above-ground.



Trade Street near Frazier Avenue

Frazier Avenue to Interstate 77 to Johnson and Wales Way

In this area there is a transition to slightly increased density of buildings and a feeling as though one is entering the city. Near I-77, views are auto-centered with ramps for I-77 and the I-77 overpass. There are low-rise buildings with light-industrial uses transitioning to a close-view of mid-rises. While there is no median and no landscaped barrier between the road and sidewalks, there are some landscaped areas surrounding the interchange. This stretch of Trade Street is four lanes with a center turn lane. Approaching Johnson and Wales Way there are mid-rises and a view of high-rises. While there are fewer trees, they are more orderly. Trade Street is five lanes and six lanes in some places with no median, creating a view of an expansive roadway. There are sidewalks with street trees between the sidewalk and the street.



Trade Street at I-77

Johnson and Wales Way to Irwin Avenue to Cedar Street

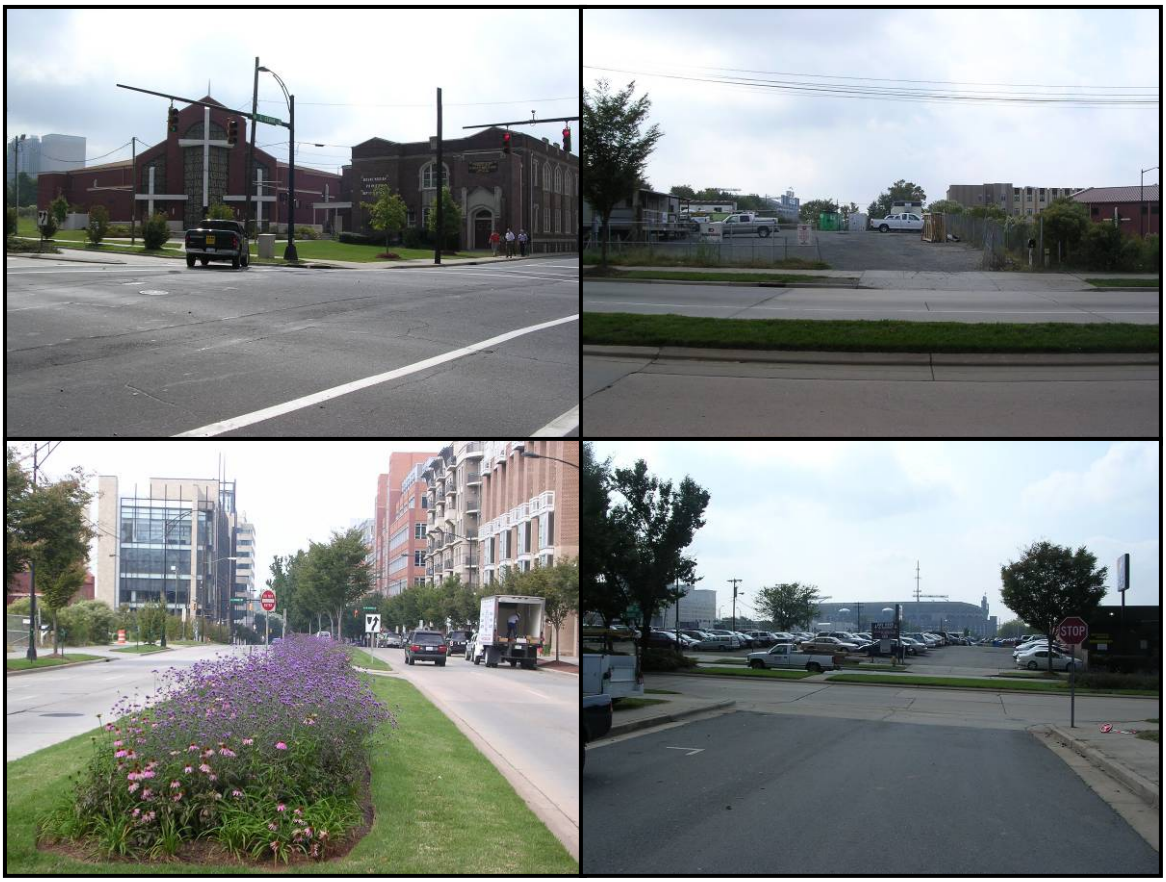
This area is the entry into the city, which is clearly indicated by “Welcome to Uptown” signs. There is a view of mid-rises transitioning to high-rises. There is a well-defined streetscape and pedscape with a landscaped median with flowers and trees, and a landscaped buffer with street trees and unique street lighting between the road and the sidewalk. Sidewalks are wide with some detailed brick work. There is homogeneity among buildings that are part of Gateway Village and Johnson and Wales University. The buildings are mostly cement and glass with some interesting detail work around doors and windows, as well as some coordinated awnings. While buildings are densely spaced, there is a greenspace between two buildings with a terraced flower garden, water feature and benches. Utilities are buried so they do not interfere with the orderly view. Trade Street is four lanes, but there is on-street parking. Combined with the density and height of buildings, landscaping and trees, the area has an enclosed urban feel.



Trade Street at Gateway

Cedar Street to Graham Street

This area is somewhat less orderly and homogenous. Utilities are above-ground and are standard in nature with large telephone style poles. A large church surrounded by open space as well as surface parking lots provide a less dense, more open feel. Street trees are more mature and there is a median with plantings but there is no detailed brick work to provide added interest in the streetscape. There are some sidewalk cafes, a view of the overpass and high-rises, as well as a view of the Bank of America football stadium down Graham Street. Some of the buildings are older and appear to be in need of, or are undergoing, repair. There is also a standalone concentration of new commercial development, including a restaurant with a rooftop patio.



Trade Street between Cedar Street and Graham Street

Graham Street to Pine Street to Church Street

In this area there is a transition back into mid-rises and government buildings and eventually into some high-rise buildings. There are barriers on the street in front of government buildings. Landscaping is well-manicured and there is public art in planted medians. Utilities are underground, but lighting is standard. There is an overpass bridge for a railroad crossing.



Trade Street between Graham Street and Church Street

Church Street to Tryon Street

Several features give this area a homogenous aesthetic. Awnings are used on several buildings, giving a street-level appeal to the high-rises. There is use of brick inlays in sidewalks and flower boxes around street trees. Matching black traffic signals, unique black street lighting and black iron trash receptacles give the area a coordinated look.



Trade Street near Tryon Street

Tryon Street to College Street

The distinct feature in this section is public art – several large statues dot the area. Other features are several enclosed pedestrian bridges and a terraced water feature. There is a continuation of detailed brick work in sidewalks, and use of coordinated black traffic signals and street lighting, blending this section with the area from Church Street to Tryon Street. While there is no planted median, planted flower beds surround street trees. There are also several benches.



Trade Street near Tryon Street

College Street to Brevard Street

In this area sidewalks are wide, there are street trees, benches and overhead enclosed pedestrian bridges. Lighting is standard but utilities are underground. Features include the NBA sports arena, the Blue Line (LRT) overpass, and the colorful multi-modal center. Construction has begun on the new Epicenter, a large mixed use high-rise development that includes condominiums, a Ritz-Carlton Hotel and retail.



Trade Street near the Charlotte Transit Center

Brevard Street to McDowell Street

The combination of mid- to low-rise buildings and fewer street trees in this area, lends to a less enclosed feeling. While the building density decreases in this area, there are several construction projects underway. Some public art projects, the old Charlotte City Hall and the old Mecklenburg county courthouse stand out as visual features.



Trade Street near the Arena and Government Center

McDowell Street to Kings Street to Independence Boulevard

In the northwestern-most section of this area there is a sense of exiting downtown. There is some open space that is NCDOT property, the overpass dominates the view, there are no medians, no on-street parking and above-ground utilities.

Where Trade Street becomes Elizabeth Avenue there are several low-rise community college buildings. The area appears to be in transition as there are signs of construction everywhere, including unfinished buildings, temporary fencing, and scaffolding. Utilities are above-ground and appear to be disproportionately massive. There is no median and no street trees, but there is some greenspace. There are some mature trees and raised-bed landscaping around some buildings, but overall the area appears to be disorganized. Pedestrian activity and a view of high-rises in the skyline are other visual features of this area.



Elizabeth Avenue near Kings Drive

Independence Boulevard to Hawthorne Lane

There is an increase in the amount of trees in this area. The red-brick building of Presbyterian Hospital and surrounding landscaping are the dominating features.



Elizabeth Avenue near Presbyterian Hospital

Along Hawthorne Lane

At Hawthorne Lane and Elizabeth Avenue, the large red brick buildings of the Presbyterian Hospital complex dominate the viewshed. The area is surrounded by large shade trees. Utilities are above ground and the road is four lanes with no median. Moving toward Central Avenue, the greenspace of Independence Park is the visual feature. Past the park there are mostly one and two story buildings in a low-density pattern. There are some surface parking lots. There is an absence of billboards, and, while there a few commercial signs, they are discrete. Approaching Central Avenue, the I-74 overpass is the dominating visual feature. Buildings transition into low-rise, multi-family housing.



Hawthorne Lane near Presbyterian Hospital

Central Avenue Sub-area

Pecan Avenue to Nandina Street

Between Pecan Avenue and Thomas Avenue on Central Avenue there is some brick-work in the sidewalks. There is a row of commercial store fronts and a mix of unique and standard lighting. There is some public artwork at the intersection of Central and Thomas avenues. Toward The Plaza, there is a continuation of some of the unique features of the previous block, but buildings become more disjointed. In the vicinity of Nandina Street, the brick and glass multi-story building of the public library stands out as a visual feature. While utilities are still above ground, an increase in street trees and unique lighting masks them from view.



Central Avenue at Plaza

Nandina Street to Masonic Drive

In this area there are scattered, disjointed buildings for commercial use. There is an increase in surface parking lots and there is less landscaping. Sidewalks are cement, without brick detail. Overall there is a less organized appearance. Veteran's Park is a visual feature in the vicinity of Landis Avenue.



Central Avenue near Masonic Drive

Masonic Drive to Cyrus Drive

Between Masonic and Cyrus drives, there is a decrease in commercial buildings and billboards, which are replaced by multi-family housing removed from the road-fronting parcels. While above-ground utilities still stand out in the view, there is an increase in trees and landscaping. There is a raised median and there are street trees between the road and sidewalk. In several areas there is a brick retaining wall between the sidewalk and fronting properties.



Central Avenue between Masonic Drive and Cyrus Drive

Cyrus Drive to Medallion Drive

Between Cyrus and Eastway Drives on this portion of Central Avenue, there is an increase in commercial buildings with businesses fronting the road. There are fewer street trees and above-ground utilities dominate the view. Beyond Eastway Drive there is a return to residential buildings. There is no barrier between the sidewalk and road but there is a raised grassy median. There is an increase in the number of trees, but they are not planted in an orderly fashion.



Central Avenue between Cyrus Drive and Medallion Drive

Medallion Drive to North Sharon Amity Road

Strip commercial establishments dominate this area. There are very few trees around the street. Near North Sharon Amity Road, the six-lane portion of Central Avenue and sprawling boxes of Eastland Mall dominate the viewshed.



Central Avenue near Eastland Mall

3.5.3.2 Visually Sensitive Resources

There are historic resources in the vicinity of the streetcar. These resources and potential visual impacts to these resources are addressed in Section 3.11, Historic, Archaeological, and Cultural Impacts. Other visually sensitive resources are concentrated in the Center City sub-area and include the area near Johnson C. Smith University; the area surrounding Gateway Village between Cedar Street and Graham Street; public art in planted medians between Graham Street and Church Street; coordinated signals, lighting and other street furniture between Church and Tryon streets; and public art between Tryon Street and College Street. The greenspace of Independence Park along Hawthorne Lane in the Central Avenue sub-area is another visually sensitive resource.

3.5.4 Environmental Impacts and Benefits

3.5.4.1 Long-term Impacts and Benefits

No-Build and TSM Alternatives

If the No-Build or the TSM Alternative were selected, the existing conditions described in the previous section would remain and there would be no long-term impact.

Build Alternative

In the following sections, the potential visual impacts that would occur as a result of building and operating the Build Alternative are analyzed. In general, the Center City Streetcar is expected to have a minimal impact on visual and aesthetic quality within the study area. All visual impacts are expected to be concentrated around the alignment, which is within existing road right-of-way through an urban area. In general, views within the right-of-way consist of the roadway itself, utility poles and wires, traffic signals and signage, commercial signage, mixed vehicle traffic flow and adjacent land uses including high-rise buildings, low-rise buildings, residences, vacant areas, parking lots and parkland and some public art.

The specific impacts associated with the overhead catenary system, platforms, vehicle maintenance facility and substations at the corridor level are described in the remainder of this section.

Overhead Catenary System

The streetcar would be electrically powered by an overhead catenary system (OCS) that requires the placement of poles along the streetcar alignment to support overhead wires. Depending on its design and the surroundings, an OCS can have an intrusive impact to the surrounding visual environment. The presence of these wires and poles would have less of a visual impact in areas where utilities are above-ground. In areas where utilities are buried, such as between Johnson and Wales Way to Cedar Street and from Graham Street to Pine Street to Church Street in the Center City sub-area, the OCS would be a more noticeable change. The OCS will also have less of a visual impact in areas where there are surrounding high-rise buildings that are proportional to the height of the poles and wires, such as in the Center City sub-area. Most of the visually sensitive resources are concentrated in this sub-area and the high-rises will minimize the visual impact of the OCS. In portions of the Beatties Ford Road and Central Avenue sub-areas where buildings are less dense and not as high, the OCS will stand out. Several examples of OCS are shown in Figure 3-28. Methods that can be used to mitigate the negative visual impact of the OCS are described in Section 3.5.5.

Figure 3-28: Examples of Overhead Catenary Systems



Platforms

Two concepts have been designed for platforms, or streetcar stops. The side platform would be 60 feet long and 12 feet wide. The design of a typical side platform is shown in Figure 3-29. The median platform would be between 60 to 110 feet long and between 12 and 24 feet wide. The design of a typical center platform is shown in Figure 3-30. Streetcar platforms appear similar to bus stops and generally fit into the urban and transportation oriented land uses surrounding the streetcar alignment. While platforms will change the visual environment along the streetcar alignment, they are not expected to have a substantial negative impact.

Figure 3-29: Typical Side Platform

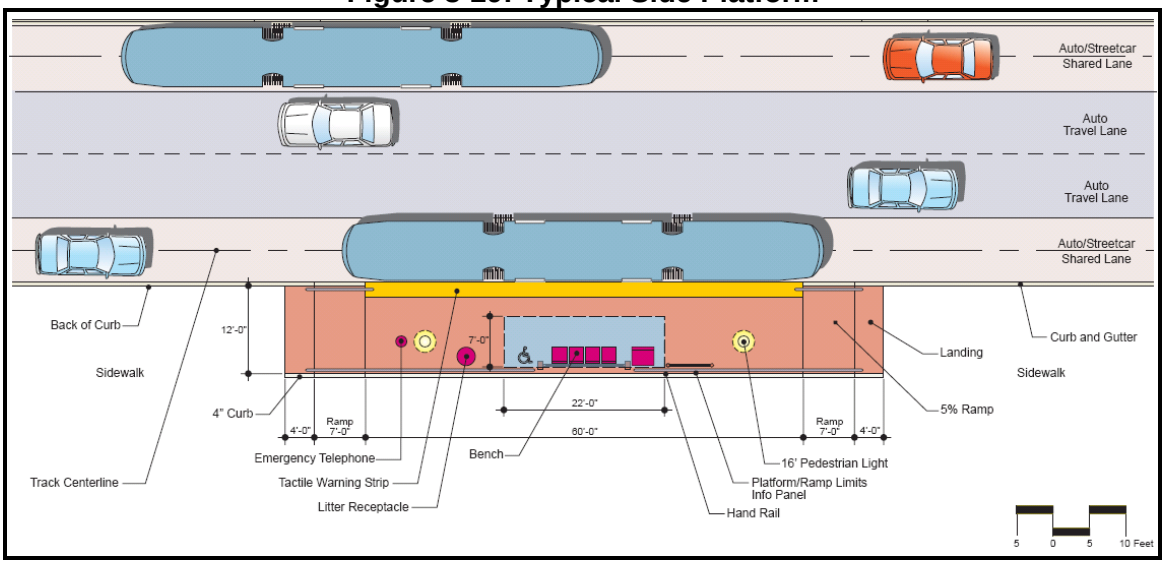
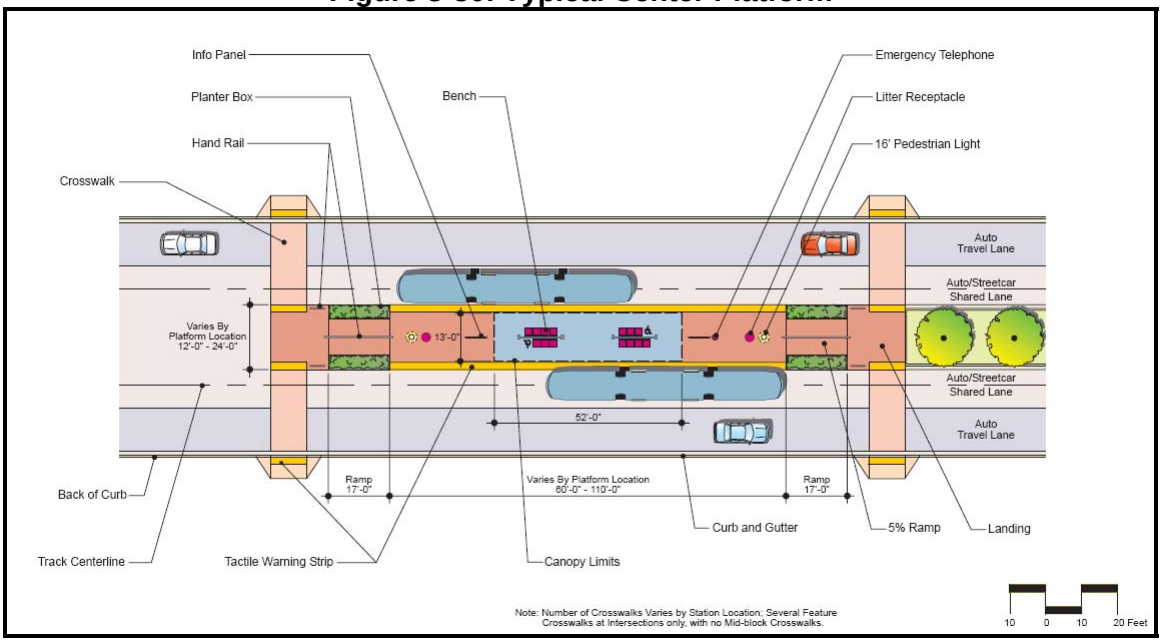


Figure 3-30: Typical Center Platform



Vehicle Maintenance Facility

Two potential sites have been identified for the vehicle maintenance facility (VMF). One site would be located on the border of the Beatties Ford Road and Center City sub-areas, between Beatties Ford Road, French Street and the CSX Railroad (see Figure 3-31). An alternative second site would be located on the border of the Center City and Central Avenue sub-areas between Hawthorne Lane, Clement Avenue, just north of the CSX Railroad on the Barnhardt Manufacturing facility (see Figure 3-32).

Figure 3-31: Beatties Ford Road Vehicle Maintenance Facility



Views around the Beatties Ford Road site (Figure 3-31) are mainly of vacant, commercial, and office land uses. However, there are also residential land uses adjacent to this site. The site is currently being used as a pipe storage facility by the Charlotte/Mecklenburg Utilities Department. The transition to the industrial, clad-brick building and tracks associated with the VMF, as well as lighting associated with a 24-hour-per-day operation would present a minimal negative visual impact to these residences because of the significant grade change between the VMF and the adjacent land uses. The zoning of the parcels composing the site are for general industrial and general business uses, would be consistent with the intended use.

Views around the Barnhardt Manufacturing facility (Figure 3-32) are mainly of industrial, commercial and vacant land uses, which are consistent with the clad brick, industrial building and tracks associated with the VMF. However, there are some single-family residential parcels adjacent to this site that would have a view of the VMF and lighting associated with 24 hour-per-day operations at the VMF. While the VMF would cause a minimal negative visual impact to the adjacent homes; the current land use is for a warehouse and zoning is industrial, which is consistent with the VMF.

Figure 3-32: Barnhardt Manufacturing Facility Vehicle Maintenance Facility



Substations

Approximately seventeen electric traction power substations (TPSS) would be located along the alignment to provide electricity to the system. Substations house electric equipment and basically consist of a metal box, with approximate dimensions of 11 feet wide by 20 feet long, by 12 feet tall. Siting of the substations depends on many factors, but can be somewhat flexible to avoid and minimize impacts to visually sensitive resources. In general, substations will present a minimal visual impact to the surrounding environment, as they are generally consistent with the surrounding urban and transportation land uses. Visual impacts, however, are a primary concern regarding effects to historic and cultural resources and are discussed in further detail in Section 3.11, Historic, Archaeological, and Cultural Impacts. Where possible substation will be hidden or disguised from view. Mitigation measures described in Section 3.5.5 will help to minimize the potential for negative impacts.

3.5.4.2 Short-term Impacts and Benefits

In the short-term, construction of the OCS, platforms, VMF and substations associated with the streetcar would disrupt the views surrounding the streetcar alignment and the VMF site. The impact would mainly be a disorderly appearance associated with construction equipment and torn up roads and some sidewalk area to build the streetcar. Impacts would be confined to the immediate construction area, which would take place in phases.

3.5.4.3 Long-term Impacts and Benefits

Altered views associated with the streetcar itself, will be confined to the streetcar corridor. It is expected that the streetcar will support an increase in the density of

development in the study area. Increased density of development would result in a view of more buildings, signs, and lighting associated with urban areas. This is consistent with plans for the study area and is not considered a negative impact.

3.5.5 Mitigation

3.5.5.1 No-Build and TSM Alternatives

No mitigation is warranted if the No-Build Alternative or the TSM Alternative is selected.

3.5.5.2 Build Alternative

The following section contains measures to mitigate the potential visual impacts that will occur as a result of implementing the Build Alternative.

Mitigation of Short-term Impacts

The area affected by construction activities would be contained and minimized to the degree possible relative to the safe and practical requirements of the construction process. Construction easements on parcels outside the right-of-way, where required, would be managed to minimize potential visual impacts. Following construction, ground cover, landscaping, or related materials would be utilized, as appropriate, to restore or enhance areas to pre-construction conditions or better.

Mitigation of Long-term Impacts

Overhead Catenary System

The most substantial visual impact associated with the Build Alternative will most likely be associated with the poles and overhead wires that are part of the OCS. In an effort to minimize the visual impact of the OCS, several methods recommended in the FTA-sponsored report, *Reducing the Impact of Overhead Catenary Systems* will be used.[32] Efforts will be made to minimize the number of poles and hardware required to support the overhead system. Joint poles (i.e., poles that are used both for the OCS and street lighting or traffic signals) will be used where possible. Use of materials for poles that blend into the surrounding visual environment will be considered where possible, but wood poles will not be used.

Platforms

The platforms associated with the project will be similar to those used for buses and will not present a substantial visual impact. In order to integrate the platform with the surrounding visual environment and to add an element of visual interest to each platform, an artist will be chosen by CATS Arts in Transit program to integrate public art into each stop. Landscaping will be used and street furniture will be chosen to ensure platforms are visually compatible with the surrounding environment. Streetcar stop Workshops will be held during final design to elicit input from residents and businesses on the visual design of platforms.

Vehicle Maintenance Facility

While the VMF will consist of a building and tracks and will be highly visible, it will be consistent with the industrial land uses at both candidate sites.

Substations

Visual and aesthetic impacts will be taken into consideration in the siting of the substations. Efforts will be made to located substations out of view where possible or to blend them into the existing visual environment through landscaping and architectural

treatments. These measures will be used to mask the substations where visual effects are a concern.

3.6 AIR QUALITY

This section documents the potential air quality impacts associated with the No-Build and Build Alternatives with regard to national and state ambient air quality standards. The purpose of the analysis is to estimate the future air quality conditions in the study area without and with the project alternatives, to identify potential effects on regional and local air quality and mitigation measures, and to address conformity with regional air quality implementation plans.

3.6.1 Legal and Regulatory Framework

3.6.1.1 Clean Air Act

The Clean Air Act includes a provision to ensure that transportation projects conform to a state's plan for meeting federal air quality standards. The transportation conformity regulations first issued in 1993 provide a detailed process for transportation agencies to demonstrate and ensure that air pollutant emissions from transportation sources are consistent with air quality goals. Transportation projects funded or approved by the Federal Transit Administration (FTA) that are in areas that do not meet air quality standards are subject to conformity requirements.

Federal criteria that determine if a proposed transportation project in a non-attainment area conforms to the applicable State Implementation Plan (SIP) are as follows:

- The project must not cause or contribute to any new violation of any National Ambient Air Quality Standard in the project vicinity;
- The project must not increase the frequency or severity of any existing violation of any National Ambient Air Quality Standard in the project vicinity; and
- The project must not delay timely attainment of any National Ambient Air Quality Standard or any required interim emission reductions or other milestones.

Mecklenburg County does not meet air quality standards for eight-hour ozone and is designated as a maintenance area (meaning it previously did not meet standards) for carbon monoxide. According to guidance issued by the Federal Highway Administration (FHWA), "A conformity determination is a demonstration that the emissions from travel on an area's transportation system are consistent with goals for air quality found in the SIP." Projects must be listed in a transportation plan that has undergone a conformity determination by FHWA and FTA. Additional analysis may be necessary for certain areas, such as maintenance areas for carbon monoxide.[33]

3.6.1.2 Local Plans and Goals

According to the 2030 LRTP, "Ensuring that transportation sources contribute to attainment of clean air in the Mecklenburg-Union urban area and surrounding counties is one of the highest goals of MUMPO." Mecklenburg County is currently designated as a maintenance area for ozone and carbon monoxide, and compliance with ozone standards is considered a particular challenge. According to the plan, major commitments to improve air quality include the construction of major rapid transit projects, extensive expansion of local and express transit services, the construction of managed lanes, and continued integration of land use and transportation planning.[34] The importance of transit is also stressed in the *Center City 2010 Vision Plan*. According to the plan, "Transit is a major tool because of the emissions generated by each vehicle. One bus can remove up to 40 automobiles from the streets. One train may

remove more than 150 vehicles. Although these shifts do not come easily because of the convenience of the single occupant vehicle, transportation policy must continue to support aggressive transit initiatives."[35] National and North Carolina air quality standards are listed in Table 3-11.

Table 3-11: State and National Ambient Air Quality Standards

Pollutant	Averaging Period	North Carolina Standards	National Standards	
		Primary	Primary	Secondary
Carbon Monoxide (CO)	**8 hour**	10 mg/m^3 (9 ppm)	10 mg/m^3 (9 ppm)	**-**
	1 hour	40 mg/m^3 (35 ppm)	40 mg/m^3 (35 ppm)	**-**
Inhalable Particulates (PM_{10})	**24 hour**	150 µg/m3	150 µg/m3	Same as primary
Inhalable Particulates ($PM_{2.5}$)	**Annual geometric mean**	15 µg/m3	15 µg/m3	Same as primary
	24 hour	65 µg/m3	35 µg/m3	Same as primary
Ozone (O_3)	**1 hour**	0.08 ppm (160 g/m3)	0.12 ppm (235 g/m3)	Same as primary
	8-hour	N.A.	0.08 ppm (235 g/m3)	Same as primary

Source: Mecklenburg County Air Pollution Control Ordinance: November 15, 2005

3.6.2 Method for Regional Air Quality

For the purposes of this analysis, air quality impacts are defined as the incremental change in Year 2030 regional emissions of CO and NOX under the Build Alternative relative to the No-Build Alternative. Furthermore, relative differences in regional pollutant levels among the alternatives are attributed entirely to changes in daily vehicular emissions. Differences in vehicular emissions are a direct function of the change in daily vehicle-miles traveled (VMT) and pollutant emission rates.

Specific steps in the air quality analysis include the following:

- Identify the impact of the project alternatives on the Year 2030 regional VMT.
- Estimate Year 2030 average pollutant emission rates for CO and NOX.
- Determine the relative regional pollutant emissions for each alternative by applying the emission rates to the corresponding changes in regional VMT.
- Compare the relative pollutant emissions to identify potential regional air quality impacts.

3.6.3 Environmental Impacts and Benefits

The net reductions in regional VMT for the Build Alternative was derived from ridership forecasts based on ridership results from Spring 2006. Comparing the highway network assignments of the No-Build and Build Alternatives provided an estimate of the reduction in regional VMT due to mode shift. The resulting net VMT reductions were used as the basis of the regional air quality analysis.

Year 2030 emission rates for CO and NOX were estimated using the EPA MOBILE6.2 model with selected parameters adjusted to reflect assumed conditions in the study area. Mobile emission rates were obtained from the North Carolina Department of Environment and Natural Resources, Division of Air Quality.

Table 3-12 summarizes the results of the Year 2030 regional air quality analysis for the No-Build and Build Alternatives. The project includes a TSM alternative; however, at the time of this analysis, the TSM alternative was being revised. The analysis shows the net reduction in regional VMT for the Build Alternative relative to the No-Build Alternatives, along with the estimated pollutant emission factors and the corresponding differences in regional emissions.

Table 3-12: 2030 Regional Air Quality Impact Analysis and Results

Project Alternative	Daily VMT Reduction[1] (veh-mi)	Carbon Monoxide (CO)		Nitrogen Oxides (NOx)	
		Emission Factor (g/veh-mi)	Emission Reduction (kg/day)	Emission Factor (g/veh-mi)	Emission Reduction (kg/day)
No-Build	0.00	7.3	0.00	0.7	0.00
TSM[2]	-	7.3	-	0.7	-
Build	119,603	7.3	873.10	0.7	83.72

Source: URS Corp., October 2006
Notes: 1. Net reduction in VMT relative to the No-Build Alternative.
2. TSM Alternative VMT assessment not available during analysis.

3.6.4 Mitigation

As the results in Table 3-12 indicate, the Build Alternative is expected to reduce the amount of regional vehicular travel relative to the TSM and No-Build Alternatives. A net reduction in VMT would result in lower emissions of CO, the ozone precursor (NOX) and greenhouse gases. Based upon this analysis the Build Alternative would not have an adverse effect on the regional air quality. Furthermore, by providing an alternative to single-occupant vehicle travel, implementation of the Build Alternative would support the attainment and maintenance of air quality standards in the region.

3.6.5 Method for Microscale Air Quality

Vehicular traffic is the most significant source of CO emissions in the region. Because CO emissions dissipate rapidly with increasing distance from the source, the highest concentrations are likely to occur in the vicinity of congested roadway intersections or other locations where motor vehicles tend to idle for a period of time. The local air quality analysis consists of a microscale “hot spot” investigation for potential violations of the ambient air quality standards for CO.

The methodology for identifying potential local air quality impacts follows the EPA-recommended procedure for CO microscale impact analysis. The general evaluation procedure, outlined in the *Guideline for Modeling Carbon Monoxide from Roadway Intersections* (EPA, 1992), includes a multiple intersection screening process, followed by microscale CO analysis with the CAL3QHC line-source dispersion model.

The multiple intersection screening analysis is used to identify study area locations requiring further analysis for CO hot spots. The intersection screening process includes the following steps:

- Identify and rank the top 12 signalized intersections in the study area with LOS D, E, or F by peak hour traffic volumes that are affected by the proposed project.
- From those 12 intersections, select the three highest volume locations and the three highest delay locations for further analysis. The total may be less than six if one or more study area intersections meet both selection criteria.

The selected intersections then are evaluated for each alternative using a microscale analysis procedure. The procedure is used to estimate maximum 1-hour and 8-hour CO concentrations in the vicinity of each intersection for comparison with the NAAQS. It is assumed that if microscale analysis does not identify significant local air quality impacts at the selected intersections, then impacts would be unlikely at any other study area location.

The microscale air quality analysis procedure includes the following steps:

- Assemble the required data for the analysis, including meteorological conditions, site characteristics, traffic parameters, and emission variables.
- Estimate the future background CO concentration based on monitoring data and the expected change in regional emissions.
- Identify receptor locations near the intersection for simulation of future ambient CO concentrations.
- Compute the worst-case 1-hour CO concentration using CAL3QHC.
- Estimate the worst-case 8-hour CO concentration by applying a suitable persistence factor to the computed 1-hour concentration. The use of a persistence factor is intended to reflect the relationship between 1-hour and 8-hour traffic and meteorological conditions.
- Compare the results with the ambient air quality standards to identify adverse impacts, including new or aggravated violations.

3.6.6 Environmental Impacts and Benefits

Based on the traffic analysis conducted for the Center City Streetcar Project, the Build Alternative would affect traffic operations at one signalized intersection. The intersection data is listed in Table 3-13.

Table 3-13: Intersection Screening Results

Project Study Area Intersections by Volume	Year 2030 PM Peak Hour Traffic					
	Volume [a]		Delay [b]		LOS [c]	
	No Build	Build	No Build	Build	No Build	Build
Hawthorne Lane & Elizabeth Avenue	2,120	2,120	19.0	37.3	B	D

Source: URS Corp., October 2006
Notes: [a] Year 2030 combined intersection approach volume, in vehicles per hour.
[b] Total delay in seconds per rider in 2030.
[c] Estimated intersection level-of-service based on average delay in 2030.

The microscale modeling process requires a number of parameters and assumptions. The model inputs listed below are consistent with current EPA recommendations, and are intended to represent reasonable worst-case scenarios at the selected intersection.

- Meteorological Characteristics
  - Averaging Time: 60 minutes
  - Surface Roughness: 108 cm
  - Settling Velocity: 0 cm/sec
  - Deposition Velocity: 0 cm/sec
  - Wind Speed: 1.0 m/sec
  - Stability Class: D
  - Mixing Height: 1,000 meters
- Traffic Characteristics
  - Lane configuration, link volume, signal cycle length, red time, and lost time were taken from the Travel Analysis Report, April 2006.
- Site Characteristics
  - Intersection layouts and roadway link coordinates were determined the City of Charlotte design drawings for the future (No-Build) intersection improvements.
- Emission Characteristics
  - Running emission rates at 25 mph and idle emission rates at 2.5 mph were generated with MOBILE6.2, obtained from the North Carolina Department of Environment and Natural Resources, Division of Air Quality. The average free flow speed was assumed to be 25 mph on all roadway links.
  - The EPA-recommended default persistence factor for urban areas of 0.7 was used to estimate 8-hour CO concentrations.

The Year 2030 background CO concentration was estimated using a 2005 monitored level, and factoring to the Year 2030 using the following steps:

Change in Average CO Emission Rates

Average CO emission rates in the region are expected to decrease because of emission controls and turnover in the vehicle fleet. The change in average CO emission rates will tend to decrease background CO concentrations. Average CO emission rates for Year 2005 and Year 2030 were generated using MOBILE6.2, with an average speed of 25 mph. The ratio of the Year 2030 rate to the Year 2005 rate was used to adjust the background CO level.

Change in Annual Traffic Growth

As travel in the region increases, it will tend to increase background CO levels. Based on the EPA Non Attainment Area database, vehicle miles traveled in the Mecklenburg County is expected to grow by 47.3 percent between 2007 and 2030. The resulting value was used to adjust the background CO level.

The computation of the Year 2030 background CO levels is summarized in Table 3-14.

Table 3-14: Year 2030 Background CO Level Computation

Factors	Garinger High School	
	1-hour	8-hour
Monitored Background CO Level for 2006	2.3*	1.3
MOBILE6.2 Emission Factor for 2005	16.0	16.0
MOBILE6.2 Emission Factor for 2030	7.3	7.3
Adjustment for Emission Reduction (2005 to 2030)	0.46	0.46
Adjustment for Traffic Growth per year (2005 to 2030)	1.47	1.47
Estimated CO Level for 2030	1.55	0.87

[1]Source: URS Corp October 2006
Notes: * 2006 air monitoring did not monitor 1-hour levels. As such, a conservative multiplier of 1.8 was applied to the 8 – hour average to determine 1-hour.

Receptors at each intersection were defined where the public is likely to have access and potential long-term exposure to the ambient CO concentrations.

The sidewalk averaging method, recommended by the U.S. EPA, was used for the micro-scale intersections. In this method, the receptors are located along each sidewalk or side of the intersecting streets at approximately 10 meters and 50 meters from the edge of the intersecting roadway. The CO concentration at each of the receptors was modeled. The highest or worst case, average CO concentrations for each receptor site was then calculated. The sidewalk averaging method results in higher predicted CO concentrations than would be expected at nearby receptors. CO concentrations diminish rapidly at greater distances from the sidewalks.

After all the necessary parameters and assumptions had been defined for the selected intersections, the CAL3QHC model was run for the No Build and Build Alternatives. The results of the CO microscale modeling are summarized in Table 3-15. The table shows the highest predicted 1-hour and 8-hour CO concentrations under each of the project alternatives.

Table 3-15: Year 2021 Maximum Predicted CO Concentrations

Intersection	Averaging Period	Maximum Concentration (ppm)	Maximum Concentration (ppm)
		No Build Alternative	Build Alternative
Hawthorne Lane & Elizabeth Avenue	1-hour 8-hour	2.05 1.22	2.05 1.22

Source: URS Corp., October 2006
Notes: 1 hour calculation = Cal3qhc output + background.
8-hour calculation = (Cal3qhc output X 0.7) + background
The applicable ambient CO standards for the 1-hour and 8-hour averaging periods are 35 ppm and 9 ppm, respectively.

3.6.7 Mitigation

As the results in Table 3-15 indicate, no violations of the current CO standards are projected for the project alternatives. There is no difference in emissions output between the No Build and Build Alternatives. This study identified no adverse regional or local air quality impacts associated with the proposed Build Alternative, therefore, no specific mitigation plan is recommended.

3.6.8 Conformity

Because the proposed project is located in a non-attainment area for Ozone, federal and state air quality regulations require that a project-level conformity analysis be conducted. A conformity analysis is used to determine if a transportation activity (plan, program, or project) conforms to the purpose of the State Implementation Plan (SIP) of achieving and maintaining the applicable air quality standards. As indicated previously, the criteria for conformity specify that a transportation activity cannot:

- Cause or contribute to any new violation of the federal air quality standards;
- Increase the frequency or severity of any existing violation of the standards; or
- Delay timely attainment of the standards.

3.7 NOISE AND VIBRATION

3.7.1 Noise

3.7.1.1 Legal and Regulatory Framework

City of Charlotte Noise Ordinance

The City Code of Charlotte, Chapter 15 Offenses and Miscellaneous Provision, Article III Noise, establishes local noise ordinances for sounds impacting residential life, amplified sound, animals, motor vehicles, and permits and enforcement. The following sections apply to the construction and operation of the streetcar project:

Sec. 15-68. Sounds impacting residential life.

(a) It shall be unlawful to carry on the following activities in any residentially zoned area of the city or within three hundred (300) feet of any residentially occupied structure in any zone of the city:

(1) Operate a front-end loader for refuse collection between the hours of 9:00 p.m. and 7:00 a.m.

(2) Operate construction machinery between the hours of 9:00 p.m. and 7:00 a.m.

(3) Operate garage machinery between the hours of 9:00 p.m. and 7:00 a.m.

(4) Operate lawn mowers and other domestic tools out-of-doors between 9:00 p.m. and 7:00 a.m.

(5) Any mechanical noise which registers more than sixty (60) db(A) at the nearest complainant's property line will be probable cause for a violation.

(b) This section shall not apply to operations which are carried on in such a manner or in such a location as not to create sounds exceeding sixty (60) db(A) and shall not apply to emergency operations designed to protect the public health and safety.

Federal Transit Administration Guidelines

The Federal Transit Administration's (FTA) *Transit Noise and Vibration Impact Assessment, April 1995,* (FTA Guidance Manual) guidelines were followed to conduct the noise screening and detailed assessments. The following sections describe noise and the effects of noise on surrounding land uses, as defined in the FTA guidance.

"Noise" is defined as "unwanted sound." Sounds are described as noise if they interfere with an activity or disturb the person hearing them. Sound is measured in a logarithmic unit called a decibel (dB). Since the human ear is more sensitive to middle and high-frequency sounds than it is to low frequency sounds, sound levels are weighted to reflect human perceptions more closely. These "A-weighted" sounds are measured using the decibel unit dBA. Noise that is transmitted through the air is referred to as "airborne noise." Likewise, noise that is transmitted through the ground is referred to as "ground-borne noise". Ground-borne noise is discussed in Section 3.7.2.

Sound levels fluctuate with time depending on the sources of the sound audible at a specific location. In addition, the degree of annoyance associated with certain sounds can vary by time of day, depending on other ambient sounds affecting the listener and the activities of the listener. Because the time-varying fluctuations in sound levels at a fixed location can be quite complex, they typically are reported using statistical or mathematical descriptors that are a function of sound intensity and time. A commonly used descriptor of noise is the L_{eq}, which represents the equivalent of a steady, unvarying level over a defined period of time containing the same level of sound energy as the time varying noise environment. In areas where sleep activity takes place, the $L_{dn,}$ which measures an average "day-night" sound, is the most commonly used measure. The L_{dn} is a 24-hour L_{eq} average calculated from hourly L_{eq} measurements, with a 10 dBA added to nighttime levels to account for heightened noise-sensitivity at night.

Transit Noise

Transit noise not only includes noise from moving vehicles, but also supporting services such as maintenance facilities. The perceptible transit noise generated from the proposed streetcar system includes: (1) streetcar operations, and (2) a Vehicle Maintenance Facility (VMF) location. Table 3-16 identifies some of the most common noises generated from streetcar operations. The intensity of the noise event varies due to a number of factors. Examples include the distance of the receiver from the tracks or the station locations, presence of intervening terrain or buildings, and specific train related parameters such as vehicle speed, vehicle length, vehicle equipment (i.e. air conditioning systems) and the type and condition of the running surfaces (i.e. rails and wheels). In addition, the guideway structure can also radiate noise as it vibrates in

response to dynamic loading of the vehicle. Stationary vehicles generate noise as well. Auxiliary equipment, such as cooling fans, radiator fans, and air-conditioning pumps, often continue to run after vehicles have stopped. Because many of these conditions concerning receiver location and streetcar vehicle operation vary throughout the corridor, the noise impacts can be expected to vary.

Table 3-16: Sources of Transit Noise for Streetcar

Transit Component	Source of Noise	Comments
Streetcar Vehicle in motion	Wheel rolling on rail	Increases with speed. Depends upon condition of wheels and rails. Can be controlled by regular system maintenance.
	Vehicle propulsion system	Increases somewhat while accelerating and at higher speeds. Can be controlled by vehicle procurement specification. Force ventilated system generally quieter than self-ventilated system when operating on embedded track.
	Auxiliary equipment for vehicle and ventilation	Usually not significant source of noise. Can be controlled by vehicle procurement specification.
	Wheel Squeal	Can occur on tight curves of less than 1000 feet radii. Can be controlled by wheel and rail treatments.
	Special trackwork	Impact noises are when wheels encounter discontinuity in tracks such as rail joints, turnouts, or switches used at crossovers.
	Brakes	Occasional squeal when stopping.
	Horns and whistles	Used infrequently as warning device for pedestrians and at intersections.
	Bells	Used sometimes as warning device at grade crossings and stations.
Streetcar Vehicle stopped	Auxiliary equipment for vehicle and ventilation	Dominant source for stationary vehicle. Controlled by vehicle procurement specification.
Traction power substation	Transformers	Usually not significant source of noise for Streetcar.

Noise Impact Criteria

FTA's noise impact criteria, shown in Table 3-17, are based on comparing the existing noise levels to future project-related noise levels. The criteria are defined by two curves, which designate different levels of project noise which result in "no impact", "impact", and "severe impact" conditions. According to the FTA Guidance Manual, mitigation should be considered if the project falls within an "impact" range and should be implemented if the project would result in a severe impact. The basis of noise impact criteria is the percentage of people that would be highly annoyed by measured noise levels in their living environment. As a result, criteria reflect a range of annoyance associated with different human activities that occur in such areas as homes, businesses, and parks.

Criteria are applied to three categories of land use with varying degrees of sensitivity to noise. Generally, in evaluating the potential for a noise impact from a proposed project, the Leq is established for the peak traffic hour when noise levels are expected to be the highest. Where there is nighttime occupancy of noise sensitive buildings such as residences, hotels and hospitals, the "Day-Night" sound level (Ldn) is more appropriate for assessing noise impacts than the peak hour Leq.

The noise criteria and descriptors used in impact analysis depend on whether the land use is designated within Category 1, 2 or 3. A description of the categories of noise-sensitive land uses for which those noise criteria apply is presented in the remainder of this section.

Category 1

This category includes buildings and parks where quiet is an essential element in their intended purpose. Land uses include open space set aside for serenity and quiet (i.e., wilderness areas) and areas for outdoor concert pavilions.

Category 2

This category includes residences and buildings where people normally sleep. Land uses include homes, hospitals, nursing homes and hotels where nighttime sensitivity to noise is assumed to be of utmost importance.

Category 3

This category includes institutional land uses with primary daytime and evening use. Land uses include schools, libraries, places of worship, museums, historically significant sites, and active parks where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. For Category 3 uses, however, the entire use may not be designated as a sensitive receptor; rather, only those areas typically used for quiet activities are designated as sensitive receptor areas. Buildings with interior spaces where quiet is important, such as medical offices and conference rooms, recording studios and concert halls are also included in this category.

The criteria do not apply to most commercial and industrial uses because these activities generally are compatible with higher noise levels. They do apply to business uses that depend on quiet as an important part of operations, such as sound and motion picture recording studios.

Table 3-17: Noise Levels Defining Impact for Transit Projects

Existing Ambient Noise Level L_{eq} or L_{dn} (dBA)	PROJECT NOISE IMPACT LEVELS L_{eq} or L_{dn} (dBA)					
	Category 1 or 2 Sites			Category 3 Sites		
	No Impact	Impact	Severe Impact	No Impact	Impact	Severe Impact
<43	<(Amb.+10)	Ambient + 10 to 15	>(Amb.+15)	<(Amb.+15)	Ambient + 15 to 20	>(Amb.+20)
43	<52	52-58	>58	<57	57-63	>63
44	<52	52-58	>58	<57	57-63	>63
45	<52	52-58	>58	<57	57-63	>63
46	<53	53-59	>59	<58	58-64	>64
47	<53	53-59	>59	<58	58-64	>64
48	<53	53-59	>59	<58	58-64	>64
49	<54	54-59	>59	<59	59-64	>64
50	<54	54-59	>59	<59	59-64	>64
51	<54	54-60	>60	<59	59-65	>65
52	<55	55-60	>60	<60	60-65	>65
53	<55	55-60	>60	<60	60-65	>65
54	<55	55-61	>61	<60	60-66	>66
55	<56	56-61	>61	<61	61-66	>66
56	<56	56-62	>62	<61	61-67	>67
57	<57	57-62	>62	<62	62-67	>67
58	<57	57-62	>62	<62	62-67	>67
59	<58	58-63	>63	<63	63-68	>68
60	<58	58-63	>63	<63	63-68	>68
61	<59	59-64	>64	<64	64-69	>69
62	<59	59-64	>64	<64	64-69	>69
63	<60	60-65	>65	<65	65-70	>70
64	<61	61-65	>65	<66	66-70	>70
65	<61	61-66	>66	<66	66-71	>71
66	<62	62-67	>67	<67	67-72	>72
67	<63	63-67	>67	<68	68-72	>72
68	<63	63-68	>68	<68	68-73	>73
69	<64	64-69	>69	<69	69-74	>74
70	<65	65-69	>69	<70	70-74	>74
71	<66	66-70	>70	<71	71-75	>75
72	<66	66-71	>71	<71	71-76	>76
73	<66	66-71	>71	<71	71-76	>76
74	<66	66-72	>72	<71	71-77	>77
75	<66	66-73	>73	<71	71-78	>78
76	<66	66-74	>74	<71	71-79	>79
77	<66	66-74	>74	<71	71-79	>79
>77	<66	66-75	>75	<71	71-80	>80

Note: Ldn is used for land uses where nighttime sensitivity is a factor.
Leq is used during the noisiest transit-related hour for land use involving only daytime activities.
Source: *FTA Transit Noise & Vibration Impact Assessment*, U.S. DOT, April 1995

3.7.2 Ground-Borne Noise and Vibration

Transit systems can sometimes create ground-borne noise and vibration impacts. In contrast to airborne noise, ground-borne vibration is not a common environmental issue. "Ground-borne vibration" is the transmission of energy through the earth. It is also quantified using a decibel unit of measure. However, noise and vibration decibels are unrelated. Ground-borne vibration, if strong enough to be perceptible, is sensed as motion of the floors or walls inside a building. The low-pitched, rumbling noise that can result from ground-borne vibration is called "ground-borne noise" and can only occur inside a building. Ground-borne noise impacts usually occur for subway (underground) transit operations or in situations where the affected building is specially designed and constructed to be isolated from the exterior ambient noise environment such as a concert hall or recording studio.

The vertical motion due to ground-borne vibration is described in terms of vibration velocity levels, measured in vibration decibels (VdB), dB re (relative to) 10-6 in/sec (2.6 x 10-8 m/sec). Like sound, vibration is expressed in decibels and identified with the abbreviation of VdB. The threshold of human perception for vibration is on the order of 60 to 70 VdB. Ground-borne noise, the noise within a building produced by external vibration, is measured in dBA.

Problems with ground-borne noise and vibration from streetcar operations are highly dependent on local geology and structural details of associated buildings. When streetcar vehicle speeds are moderate, less than 30 mph, vibration impacts are usually limited to buildings within 50 feet of the streetcar. When vehicle speeds are higher, the zone of ground-borne noise and vibration impacts may extend further. The Center City Streetcar is expected to operate at 30-35 miles per hour or less. A significant percentage of complaints about both ground-borne vibration and noise can be attributed to the proximity of switches, rough or corrugated track or wheel flats.

The effects of various levels of ground-borne vibration differ among vibration sensitive activities. The land uses that are most sensitive to vibration include those which conduct precision research and manufacturing, hospitals with highly sensitive equipment and university research operations. Residential land uses and buildings where people sleep, like hotels and hospitals, are also a concern, more than schools and other institutions.

3.7.2.1 Applicable Legal Authority

The Federal Transit Administration's (FTA) Transit Noise and Vibration Impact Assessment, April 1995, guidelines were followed to conduct the vibration screening assessments. The following sections describe ground-borne noise and vibration and their effects on surrounding land uses, as defined in the FTA guidance.

In its guidance manual, the FTA developed criteria for assessing vibration impacts related to rail transit projects. The criteria are based on community reaction to transit-related vibration and the potential for adverse effects on vibration-sensitive activities and processes. The criteria identify intensities of ground-borne vibration and noise that may be considered significant and, thus, require consideration of mitigation and abatement measures.

Some land use activities are more sensitive to vibration than others. For example, certain research and fabrication facilities, TV and recording studios and concert halls are more vibration-sensitive than residences and buildings where people normally sleep, which are more sensitive than institutional land uses with primarily daytime use. At those locations where vibration sensitive equipment is used, such as hospital and medical

facilities and high tech manufacturing and testing sites, there may be the potential for additional or more severe ground vibration impacts from transit operations.

The FTA assigns sensitive land uses to the following three categories:

Vibration Category 1: High Sensitivity - Buildings where low ambient vibration is essential for the interior operations in the building. Vibration levels may be below the level of human perception.

Vibration Category 2: Residential - Residences and buildings where people normally sleep. This includes private dwellings, hospitals and hotels where nighttime sensitivity is assumed to be of utmost importance. It also includes some special uses such as auditoriums or theaters.

Vibration Category 3: Institutional - Land uses with primarily daytime use including schools, churches, other institutions and quiet offices that do not have vibration-sensitive equipment.

Table 3-18 contains the FTA criteria used for this project. Where vibration is intermittent (e.g., a transit train pass-by) human annoyance from ground vibration and noise is dependent on the number of vibration events that occur during a typical 24-hour period. The FTA Guidance Manual presents two categories of criteria for infrequent and frequent events, respectively. “Frequent events” is defined as more than 70 vibration events per day. The FTA impact criteria for “Frequent events” are 65 VdB, 72 VdB and 75 VdB for land use categories 1, 2 and 3, respectively.

Table 3-18: Criteria for Impact for Human Annoyance and Interference to Use of Vibration-Sensitive Equipment

Land Use Category	Category Comment	Ground-borne Vibration (VdB re 1 micro in/sec)		Ground-borne Noise (dBA re 20 micro Pa)	
		Events*			
		Frequent	Infrequent	Frequent	Infrequent
1	Low interior ambient is essential	65	65	n/a	n/a
2	Residential & sleep	72	80	35	43
3	Institutional & daytime	75	83	40	48
4	Concert hall, TV/Recording Studio **	65	65	25	25
5	Auditorium **	72	80	30	38
6	Theatre **	72	80	35	43

Source: FTA Transit Noise and Vibration Impact Assessment, 1995
Notes: * Frequent is defined as greater than or equal to 70 events per day
** See section 12.2.2 of FTA Manual regarding potential for structural damage to fragile structures if operational during transit events

3.7.2.2 Impact Evaluation Procedure

Vibration impacts for this project were determined using a two tiered approach: the Vibration Screening Procedure and the General Vibration Assessment.

Vibration Screening Procedure

Ground vibration is generated by the wheel/rail interface and is influenced by wheel/rail roughness, transit vehicle suspension, train speed, track construction, location of switches and crossovers and the geologic strata underlying the track. The vibration levels likely to be generated by the project are based on data contained in the FTA Guidance Manual, Figure 10-1, *Generalized Ground Surface Vibration Curves.* Vibration from a passing streetcar moves through the geologic strata into building foundations, causing the building to vibrate. The main concerns are annoyance to building occupants and interference with vibration-sensitive operations/equipment. Any damage to buildings from the streetcar from ground vibration, including cosmetic damage to buildings, is highly unlikely.

The FTA vibration propagation data provide an estimate of vibration levels as a function of distance from the tracks. The FTA screening procedure distance criteria are shown in Table 3-19 No adjustments were utilized in the screening procedure. The screening criteria are very conservative and will be used to identify land uses that will not be impacted and should be removed from further analysis.

Table 3-19: Distance Criteria for Vibration Screening Procedure

Type of Project	Critical Distance from Track to Structure for Land Use		
	Category 1	Category 2	Category 3
Streetcar Rail Transit	Within 450 feet	Within 150 feet	Within 100 feet

Source: FTA Transit Noise and Vibration Impact Assessment, 1995

For potentially affected sensitive land uses located within the screening procedure criteria distance, FTA's more detailed, second tier General Vibration Assessment will be performed. In this analysis, adjustments to the impact criteria (level vs. distance) are used to account for vehicle speed, soil type, building/foundation type and track characteristics. Further adjustments of the criteria distances may be made based on proposed vibration abatement or mitigation measures.

Vibration General Assessment

The general assessment procedure is intended to provide more specific estimates of potential vibration impacts at sensitive locations by incorporating project-specific information. The basic approach for the general assessment is to define a base curve that relates overall ground-borne vibration to distance from the source, then apply adjustments to the curve to account for other factors such as vehicle speed and track conditions. Using the base curve, the ground-borne vibration and noise due to the project are then estimated for sensitive land use locations in the corridor. After the forecasts are developed for each location, they are compared to the existing vibration levels and the applicable criteria to evaluate the level of impact. Due to the significant number of receptors in this corridor, the General Assessment has been separated into two stages of analysis. In the first stage, the base curve provided in the FTA Guidance Manual was used with no adjustments used to lower vibration levels. In the second stage, the receptors that are identified as potential impacts are reevaluated with adjustments specific to each receptor.

Stage 1 General Assessment

The base curve provided in the FTA Guidance Manual was used to determine if nearby sensitive areas have the potential to be impacted by the Build Alternative. To provide the most conservative estimate of impacts, no adjustments were made to the base curve during the general assessment. As defined by the base curve, a potential for vibration impact could occur within 125 feet for Category 1 land uses, 60 feet for Category 2 land uses, and 38 feet for Category 3 land uses.

Stage 2 General Assessment

The second stage of the General Assessment procedure is intended to provide more specific estimates of vibration impacts at sensitive locations by incorporating more detailed project and receptor specific adjustments such as soil type, building/foundation type, train characteristics and track characteristics. The adjustments are discussed in the following sections.

Average Daily Train Trips

The number of average daily train trips, computed from the operating plan results in an average of 196 trips per day, including both directions of travel. Because this figure is more than 70 trips per day, the analysis assumes the impact criteria for “frequent” events, as defined in Table 3-18.

Speed

FTA guidelines call for an adjustment of 6 VdB per doubling (or halving) of speed relative to 50 mph for transit trains. The speeds used in the vibration analysis are consistent with the operating plan – average vehicle speeds of 13 mph with a maximum speed of 25 mph. Near proposed station stops, an acceleration and deceleration rate of 3 mph per second was used to compute the speed.

Soil Type

The vibration propagation characteristics used in this analysis are based on the data presented in the FTA Guidance Manual. The ability of the soil to propagate vibration is classified as being either efficient or non-efficient. Our classification of propagation was based on FTA guidelines and a brief analysis of the geotechnical data. FTA guidelines state that shallow bedrock (within 30 feet of the surface) is likely to have efficient vibration propagation and stiff clayey soils have sometimes been associated with efficient vibration propagation. Soil with efficient vibration propagation can increase train vibration levels up to 10 VdB.

Based on the geotechnical data obtained for this project, bedrock is on average 25 feet below the surface in the study area. As a result, soils within the project corridor were determined to have efficient vibration propagation characteristics for all vibration sensitive receptors.

Related to soil type is the peak frequency of the vibration associated with the generation and estimation of ground-borne noise. FTA guidelines for the general vibration assessment provide three vibration frequency ranges: low (less than 30 Hz), typical

(between 30 and 60 Hz) and high (greater than 60 Hz). Low-frequency vibration characteristics can be assumed for non-efficient soils. “Typical” vibration characteristics can be assumed for efficient soils. As the vibration analysis assumes the presence of bedrock within 30 feet of the surface, the “typical” frequency range was used.

Building/Foundation Type

FTA guidelines allow for reduction of train vibration levels by 5 VdB, 7 VdB and 10 VdB for wood-frame construction, one to two story commercial construction and large masonry construction on piles, respectively. All single-family residential receptors were conservatively assumed to have wood-frame construction and residential apartments were identified as brick/masonry structures.

Train and Track Characteristics

The train was assumed to have ‘soft’ primary suspension with wheels in ‘good’ condition. No special features/procedures such as floating slab trackbeds or ballast mats were assumed. The track was assumed to be continuously welded and in good condition. Although portions of the track would be elevated or depressed, the track would primarily be at-grade with ballasted trackbed and with stiffly supported ties of low resilience. The streetcar would have no elevated track sections.

Crossovers (“frogs”) are specified in the design of the streetcar alignment near the maintenance facility options and in the downtown area near the arena. Frogs and other special trackwork add up to 10 VdB to overall train vibration levels per FTA guidelines. However, the FTA qualitatively states that the increase would be less at greater distances from the track. For the purposes of the EA, it was assumed that the 10 VdB penalty would not apply for distances beyond 200 feet.

3.7.3 Existing Conditions and Resources

3.7.3.1 Noise

The project corridor currently experiences high levels of existing noise due to traffic on I-77, Beatties Ford Road, Trade Street and Central Avenue and typical noise levels associated with downtown regions.

General Noise Screening Analysis

Table 3-20 and Table 3-21 list the noise sensitive receptors within the noise screening distances. Table 3-20 identifies the street limits with the location of the streetcar track, a land use description, the corresponding land use category, and the distance of the sensitive areas to the streetcar tracks and stations. The number of housing units within each noise sensitive area is also provided. Where apartments are identified, only the number of buildings is provided.

Currently, there are two site options for the VMF.

Table 3-21 identifies each noise sensitive area, provides a land use description, the corresponding land use category, and the distance of the sensitive areas to each of the VMF sites in Figure 3-33 presents the study area with the noise impact screening areas. These areas represent the area of potential impact as a result of project-related noise.

Table 3-20: Noise Sensitive Receptors Streetcar Tracks and Stations

Receiver Site	Land Use	# Residential Units	FTA Noise Category	Distance to Centerline (feet)
N. Hoskin Rd. – La Salle St. (Curb Running Track)				
	Residence	1	2	170
	Residence	1	2	200
	Church	-	3	40
	Church	-	3	110
La Salle St. – Celia St. (Curb Running Track)				
	Residence	21	2	50
	Residence	25	2	60
	School	-	3	80
Celia Ave. – Brookshire Freeway (Curb Running Track)				
	Day Care	-	3	90
	Residence	12	2	40
	Residence	5	2	25
	Residence	1	2	130
	Residential	1	2	200
Brookshire Fwy. – Dixon Street (Curb Running Track)				
	Residential	1	2	130
	Residential	1	2	200
	Church	-	3	75
	Residential	7	2	50
	Residential	1	2	25
Johnson C. Smith University	Residence Hall	1	2	90
	Residence Hall	1	2	120
Dixon St. – I-77 (Center running track)				
Johnson C. Smith University	Residence Hall	1	2	180
	Residential	1	2	65
	Residential	1	2	80
	Residence	1	2	200
	Apartments*	1	2	220
	Church	-	3	65

Table 3-20: Noise Sensitive Receptors Streetcar Tracks and Stations (continued)

Receiver Site	Land Use	# Residential Units	FTA Noise Category	Distance to Centerline (feet)
I-77 – N. Graham St. (Center running track)				
Irwin Creek Greenway (below grade)	Park	-	3	45
Sycamore St.	Apartments	1	2	45
Trade / 4th Connector	Apartments	1	2	45
N. Cedar St	Apartments	1	2	70
	Church	-	3	100
Johnson & Wales Univ.	Residence Hall	1	2	65
N. Graham St. – Hawthorn Lane (Center running track)				
Presbyterian Church	Playground	-	3	100
Church Street	Park/Plaza	-	3	60
YMCA	Child Care	-	3	40
Little Sugar Creek Greenway**	Park	-	3	Crosses track
Hawthorn/Elizabeth – US 74 (Curb running track)				
Presbyterian Hospital	Hospital*	-	2	350
St. Johns Church	Church	-	3	100
	Church*	-	3	950
Independence Park	Park	-	3	55
	Residential	13	2	50
	Apartments	4	2	50
	Church	-	3	60
Alignment Option US-74 Central Ave. @ Plaza				
Hawthorn	Apartments	2	2	52
Hawthorn	Residential	16	2	55
Clement Ave	Residential	5	2	40
Clement Ave	Residential	1	2	40
Central Ave.	Library	-	3	50
The Plaza – Morningside Drive (Curb running track)				
Central Ave.	Residential	1	2	30
	Residential	2	2	40
	Residential	1	2	50

Table 3-20: Noise Sensitive Receptors Streetcar Tracks and Stations (continued)

Receiver Site	Land Use	# Residential Units	FTA Noise Category	Distance to Centerline (feet)
The Plaza – Morningside Drive (Curb running track) continued				
	Residential	1	2	60
	Residential	4	2	70
	Residential	2	2	100***
Veterans Park – Disk Golf Course	Park	-	3	45
Morningside Drive – Briar Creek Road (Curb running track)				
Briar Creek Greenway**	Park	-	3	Crosses alignment
	Residential	3	2	100
	Apartments	3	2	100
	Residential	1	2	150
	Apartments	2	2	150
	Apartments	1	2	180
	Apartments	1	2	200
Briar Creek Road – Eastway Drive (Curb running track)				
	Apartments	2	2	120
	Residential	6	2	140
	Residential	8	2	100
	Church	-	3	130
	Residential	4	2	80
Eastway Drive – Killbourne Dr./Norland Rd. (Curb running track)				
	Residential	22	2	110
	Church	-	3	130
	Church	-	3	90
Killbourne Dr./Norland Rd. – End of Line (Curb running track)				
Evergreen Cemetery - bench	Park	-	3	200
	Apartment	1	2	60
	Residential	2	2	110
	Apartments	4	2	90
	Apartments	2	2	80
	Residential	3	2	80

Table 3-20: Noise Sensitive Receptors Streetcar Tracks and Stations (continued)

	Apartments	2	2	120
Receiver Site	**Land Use**	**# Residential Units**	**FTA Noise Category**	**Distance to Centerline (feet)**
Killbourne Dr./Norland Rd. – End of Line (Curb running track) continued				
	Apartments	6	2	90
	Residential	4	2	70

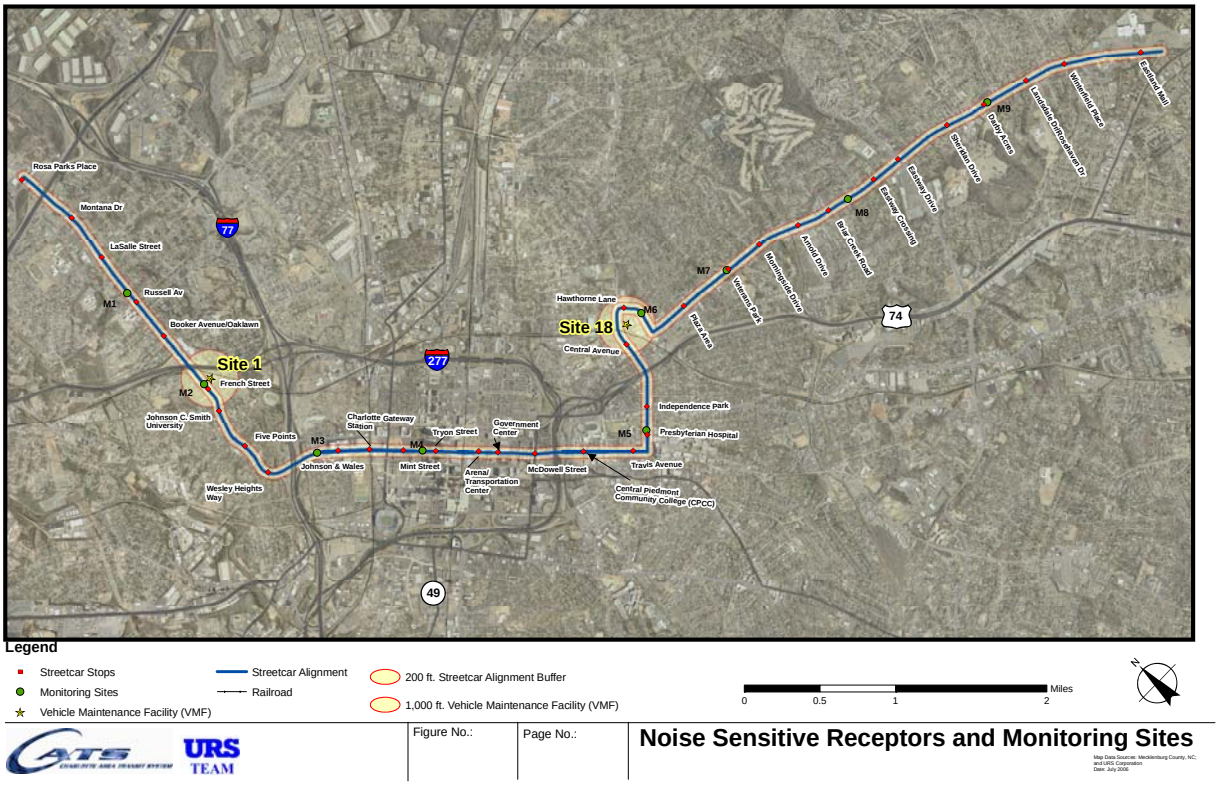
Source: URS January 2006
Notes:* Receptor located out of 200 foot distance because of proximity to wheel squeal noise
** At grade Greenway planned but not constructed
*** Receptor located with 1 row of buildings between streetcars

Table 3-21: Noise Sensitive Receptors
Operations & Maintenance Facility Site Options

Receiver Site	Land Use	# Residential Units	FTA Noise Category	Distance to Centerline (feet)
French Street				
Johnson C. Smith University	Residence Hall	1	2	660
	Residence Hall	1	2	720
	Residence	2	2	250
	Church	-	3	450
	Residence	13	2	800
	Residence	4	2	550
	Residence	3	2	750
Hawthorn Lane				
Clement Ave	Residential	5	2	50
Clement Ave	Residential	1	2	50

Source: URS July 2006

Figure 3-33: Noise Sensitive Receptors & Monitoring Sites



Legend

- Streetcar Stops
- Monitoring Sites
- Vehicle Maintenance Facility (VMF)
- Streetcar Alignment
- Railroad
- 200 ft. Streetcar Alignment Buffer
- 1,000 ft. Vehicle Maintenance Facility (VMF)

0 0.5 1 2 Miles

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Noise Sensitive Receptors and Monitoring Sites

Map Data Sources: Mecklenburg County, NC; and URS Corporation
Date: July 2006

Ambient Noise Conditions

The monitored existing noise levels are shown in Table 3-22. Monitor location 4 identified midday noise levels only because noise receptors only include daytime parks.

Table 3-22: Monitored Existing Noise Levels (dBA)

Monitoring Location	MID	PM	NITE	24-hour	Primary Noise
	L_{eq}	L_{eq}	L_{eq}	L_{dn}	Sources
1. Beatties Ford Rd./Estelle Street	63.6	65.2	62.4	67.1	Cars/Trucks/Planes
2. Beatties Ford Rd./French St.	60.8	65.0	61.9	66.3	Cars/Trucks
3. W. Trade St./N. Sycamore St.	70.0	69.9	65.9	71.2	Highway
4. Church Street Park	68.5	N/A*	N/A	N/A	Cars/Buses
5. Independence Park/Hawthorne Ln	60.3	52.9	57.4	62.2	Cars/Trucks
6. Clement Ave. (by VSMF)	59.8	56.9	55.8	60.9	Cars/Trucks
7. Veterans Park	59.8	66.9	63.6	67.9	Cars/Trucks
8. Central Ave. & Flynwood Dr.	58.9	61.9	58.7	63.3	Cars/Trucks
9. Evergreen Cemetery	66.6	64.1	62.0	67.3	Cars/Trucks

*N/A – Not applicable. Monitor site 4 identified midday noise levels only because noise receptors only included daytime parks.

3.7.3.2 Ground-Borne Noise and Vibration

Figure 3-34 shows the area of potential vibration impacts. Table 3-23 lists the sensitive receptor sites within the screening distances described under Stage 1 of the general assessment (Section 0). Potentially affected land uses include residential, day care, churches and schools. There are no Category 1 land uses within the applicable screening distance.

Figure 3-34: Vibration Impact Screening Area

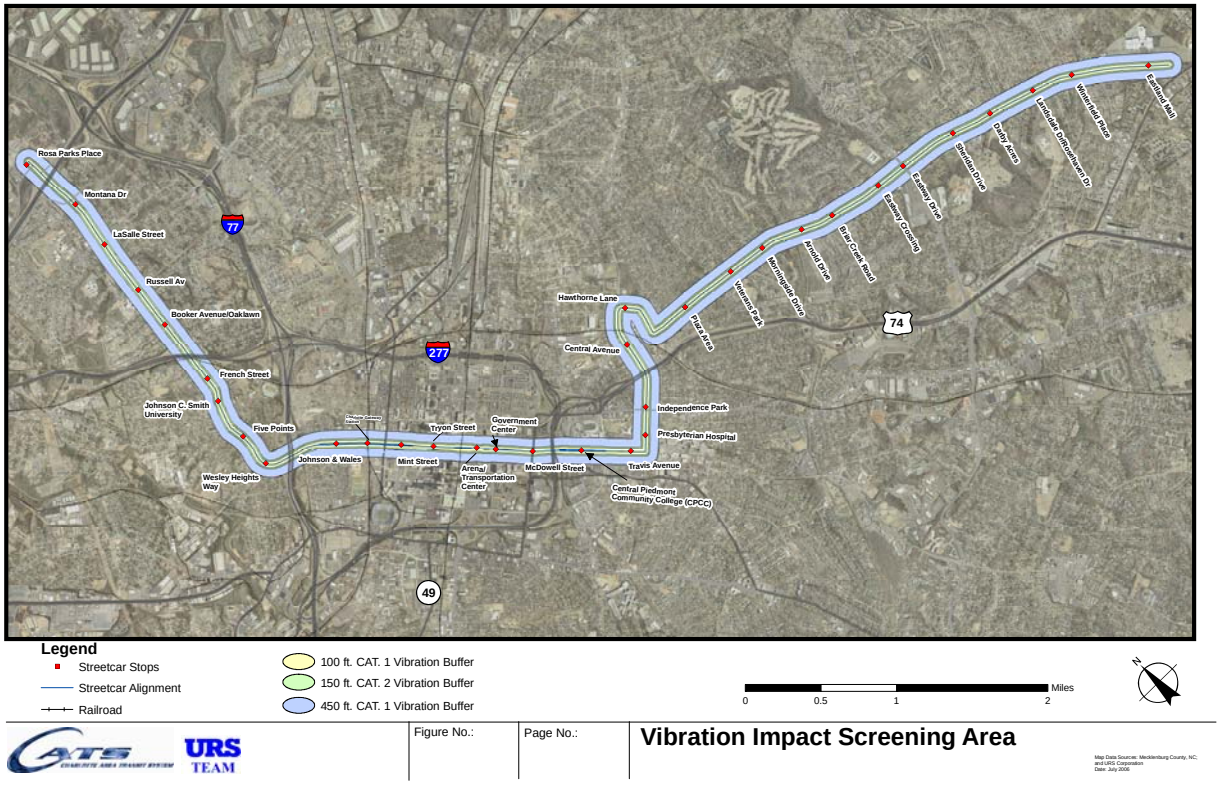


Table 3-23: Vibration Sensitive Receptors

Receiver Site	Land Use	# Residential Units	FTA Vibration Category	Distance to Centerline (feet)
N. Hoskin Rd. – La Salle St. (Curb Running Track)				
	Church	-	3	40
La Salle St. – Celia St. (Curb Running Track)				
	Residence	21	2	50
	Residence	25	2	60
	School	-	3	80
Celia Ave. – Brookshire Freeway (Curb Running Track)				
	Day Care	-	3	90
	Residence	12	2	40
	Residence	5	2	30
	Residence	1	2	130
Brookshire Fwy. – Dixon Street (Curb Running Track)				
	Residential	1	2	130
	Church	-	3	75
	Residential	7	2	50
	Residential	1	2	30
Johnson C. Smith University	Residence Hall	1	2	90
	Residence Hall	1	2	120
Dixon St. – I-77 (Center running track)				
	Residential	1	2	65
	Residential	1	2	80
	Church	-	3	65
I-77 – N. Graham St. (Center running track)				
Sycamore St.	Apartments	1	2	45
Trade / 4th Connector	Apartments	1	2	45
N. Cedar St	Apartments	1	2	70
	Church	-	3	100
Johnson & Wales Univ.	Residence Hall	1	2	65
N. Graham St. – Hawthorn Lane (Center running track)				
YMCA	Child Care	-	3	40
Hawthorn/Elizabeth – US 74 (Curb running track)				
St. Johns Church	Church	-	3	100
	Residential	13	2	50
	Apartments	4	2	50

Table 3-23: Vibration Sensitive Receptors (continued)

Receiver Site	Land Use	# Residential Units	FTA Vibration Category	Distance to Centerline (feet)
Hawthorn/Elizabeth – US 74 (Curb running track) continued				
	Church	-	3	60
Northern Option: Hawthorn @ US 74 – Central & Plaza				
Hawthorn & US 74	Apartments	2	2	40
Hawthorn Lane	Residential	14	2	52
Clement Ave	Residential	6	2	50
Central	Library	-	3	50
Morningside Drive – Briar Creek Road (Curb running track)				
	Residential	3	2	100
	Apartments	3	2	100
	Residential	1	2	150
	Apartments	2	2	150
Briar Creek Road – Eastway Drive (Curb running track)				
	Apartments	2	2	120
	Residential	6	2	140
	Residential	8	2	100
	Residential	4	2	80
Eastway Drive – Killbourne Dr./Norland Rd. (Curb running track)				
	Residential	22	2	110
	Church	-	3	90
Killbourne Dr./Norland Rd. – End of Line (Curb running track)				
	Apartment	1	2	60
	Residential	2	2	110
	Apartments	4	2	90
	Apartments	2	2	80
	Residential	3	2	80
	Apartments	2	2	120
	Apartments	6	2	90
	Residential	4	2	70

Source: URS July 2006

Table 3-24: Results of Vibration General Assessment

Receiver Site	# Residential Units	FTA Noise Category	Distance to Receiver (ft.)	Impact Distance	Potential Impact
La Salle St. – Celia St.					
Residence	21	2	50	60	**Impact**
Residence	25	2	60	60	**Impact**
Celia Ave. – Brookshire Freeway (Curb Running Track)					
Residence	12	2	40	60	**Impact**
Residence	5	2	30	60	**Impact**
Brookshire Fwy. – Dixon Street (Curb Running Track)					
Residence	7	2	50	60	**Impact**
Residence	1	2	45	60	**Impact**
I-77 – N. Graham St. (Center running track)					
Sycamore St. Apts.	1 Building	2	45	60	**Impact**
Trade / 4th Connector Apts.	1 Building	2	45	60	**Impact**
Hawthorn/Elizabeth – US 74 (Curb running track)					
Residence	13	2	50	60	**Impact**
Apartments	4 Buildings	2	50	60	**Impact**
Northern Option US-74 – Central					
		2	35	60	**Impact**
Hawthorn Lane Apts.	2 Buildings	2	50	60	**Impact**
Clement Av Houses	6	2	50	60	**Impact**
The Plaza – Morningside Drive (Curb running track)					
Residence	1	2	30	60	**Impact**
Residence	2	2	40	60	**Impact**
Residence	1	2	50	60	**Impact**
Residence	1	2	60	60	**Impact**
Killbourne Dr./Norland Rd. – End of Line (Curb running track)					
Apts.	1 Building	2	60	60	**Impact**

Source: URS July 2006

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3.7.4 Environmental Impacts and Benefits

3.7.4.1 Noise

A noise impact is assessed based on the comparison of the existing (ambient) noise levels and the predicted noise level at a given noise sensitive area in terms of either the L_{dn} or L_{eq} descriptors assigned for the appropriate land use category.

Short-term Impacts and Benefits

No-Build Alternative

The No-Build Alternative would have no short-term effects on noise levels in the area.

TSM Alternative

The TSM Alternative would have no short-term effects on noise levels in the area. Changes in bus operations would not significantly change existing noise levels.

Build Alternative

Construction of the Build Alternative would result in temporary increases in noise levels adjacent to project construction areas. Operation of construction equipment would be the primary factor in creating elevated noise levels. The rolling construction method proposed for the project would limit construction-related noise to immediate vicinity of constriction. Construction activities would comply with the City of Charlotte noise ordinance.

Long-term Impacts and Benefits

No-Build Alternative

The No-Build Alternative would have no effect on noise levels in the area. Changes in traffic volumes and bus operations would not significantly change existing noise levels.

TSM Alternative

The TSM Alternative would have minimal effects on noise levels in the area. Changes in bus operations would not significantly change existing noise levels.

Build Alternative

Based on the potential for the Build Alternative to impact nearby noise sensitive areas, a detailed noise analysis was conducted using hourly operational schedules during day and night, plan and profiles of the guideway, and location of grade crossings, curved track data, and warning sound inputs.

Table 3-25 shows the results of the detailed noise analysis for the Build Alternative. To be consistent with the FTA methodology, the standard wheel squeal noise was included in the analysis. However, as a result of the vehicle specifications identified in the design reports, no noise impacts would result from wheel squeal.

The noise assessment included noise from the streetcar and the VMF. The assessment includes comparing the project-related noise levels to the existing noise levels in order to determine human reaction to the amount of change. There are three possible outcomes to the detailed noise assessment: no impact, impact and severe impact. Note that, for

each noise sensitive receptor, noise is generated by a combination of streetcar vehicle, station area bell noise, streetcar wheel squeal, and noise from the VMF car wash, with each noise event occurring at variable distances from the receptor.

Table 3-25 identifies the ambient noise levels, the future project-related noise levels, and whether an impact or severe impact was identified by using the noise impact criteria described above. The “impact range” indicates that the noise levels at a receptor would be 1 to 5 dBA over the acceptable level, as prescribed by the FTA methodology. The “severe impact” range indicates an increase of greater than 5 decibels. As noted in Table 3-25, the Build Alternative would have impacts to the Presbyterian Hospital, two apartment buildings on Hawthorne Lane and six houses on Clement Avenue.

Table 3-25: Summary of Noise Impacts

Site	Description	Noise Sources	Distance*	Combined Noise	Ambient Noise	Impact Range	Impact	Impact Source
	N. Hoskin Rd. – La Salle St.							
1	Residence	Streetcar	170	37	67.1	63-67	No Impact	
2	Residence	Streetcar	200	36	67.1	63-67	No Impact	
3	Church	Streetcar	40	43	63.6	66-70	No Impact	
4	Church	Streetcar	110	39	63.6	66-70	No Impact	
	La Salle St. – Celia St.							
5	Residence	Streetcar	50	42	67.1	63-67	No Impact	
6	Residence	Streetcar, Bell	60	59	67.1	63-67	No Impact	
7	School	Streetcar	80	40	63.6	66-70	No Impact	
	Celia Ave. – Brookshire Freeway							
8	Day Care	Streetcar	90	39	63.6	66-70	No Impact	
9	Residence	Streetcar	40	43	67.1	63-67	No Impact	
10	Residence	Streetcar, Bell	25	59	67.1	63-67	No Impact	
11	Residence	Streetcar	130	38	67.1	63-67	No Impact	
12	Residential	Streetcar	200	36	67.1	63-67	No Impact	
	Brookshire Fwy. – Dixon Street							
13	Residential	Streetcar	130	38	66.3	66-70	No Impact	
14	Residential	Streetcar	200	36	66.3	66-70	No Impact	
15	Church	Streetcar, Bell	75	58	60.8	64-69	No Impact	
16	Residential	Streetcar, Bell	50	60	66.3	66-70	No Impact	
17	Residential	Streetcar	25	45	66.3	66-70	No Impact	
18	Johnson C. Smith Univ. Residence Hall	Streetcar	90	39	66.3	66-70	No Impact	
19	Johnson C. Smith Univ. Residence Hall	Streetcar, Bell	120	56	66.3	66-70	No Impact	
	Dixon St. – I-77							
20	Johnson & Wales Univ., Residence Hall	Streetcar	180	56	66.3	66-70	No Impact	

Table 3-25: Summary of Noise Impacts (continued)

Site	Description	Noise Sources	Distance*	Combined Noise	Ambient Noise	Impact Range	Impact	Impact Source
21	Residential	Streetcar, Bell	65	59	66.3	66-70	No Impact	
22	Residential	Streetcar	80	40	66.3	66-70	No Impact	
23	Residence	Streetcar, Bell	200	61	66.3	66-70	No Impact	
24	Apartments*	Streetcar, Squeal	220	63	66.3	66-70	No Impact	
25	Church	Streetcar	65	41	60.8	64-69	No Impact	
	I-77 – N. Graham St.							
26	Irwin Creek Greenway	Streetcar	45	42	70.0	70-74	No Impact	
27	Sycamore St. Apartments	Streetcar, Bell	45	61	71.2	66-70	No Impact	
28	Trade / 4th Connector Apartments	Streetcar	45	42	71.2	66-70	No Impact	
29	N. Cedar St Apartments	Streetcar, Bell	70	59	71.2	66-70	No Impact	
30	Church	Streetcar	100	39	70.0	70-74	No Impact	
31	Johnson & Wales Univ., Residence Hall	Streetcar, Bell	65	59	71.2	66-70	No Impact	
	N. Graham St. – Hawthorn Lane							
32	Presbyterian Church playground	Streetcar	100	39	68.5	68-75	No Impact	
33	Church Street Park/Plaza	Streetcar	60	41	68.5	68-75	No Impact	
34	YMCA Child Care	Streetcar, Bell	40	61	68.5	68-75	No Impact	
35	Little Sugar Creek Greenway (Future)	Streetcar	5	54	68.5	68-75	No Impact	
	Hawthorn/Elizabeth – US 74							
36	Presbyterian Hospital	Streetcar, Squeal	350	64	52.9	60-65	**Impact**	Squeal
37	St. Johns Church	Streetcar, Squeal	100	59	52.9	60-65	No Impact	
38	Church	Streetcar, Bell	950	47	52.9	60-65	No Impact	
39	Independence Park	Streetcar, Bell	55	59	52.9	60-65	No Impact	
40	Residential	Streetcar	50	42	62.2	59-64	No Impact	
41	Apartments	Streetcar	50	42	62.2	59-64	No Impact	
42	Church	Streetcar	60	41	52.9	60-65	No Impact	

Table 3-25: Summary of Noise Impacts (continued)

Site	Description	Noise Sources	Distance*	Combined Noise	Ambient Noise	Impact Range	Impact	Impact Source
	Northern Option: Hawthorne @ US 74 - Central & Plaza							
43	2 Apartments Hawthorn / 74	Streetcar, Bell, Squeal	35	77	60.9	59-64	**Severe**	Squeal
44	16 houses Hawthorn	Streetcar	50	42	60.9	59-64	No Impact	
45	5 Clement Ave Houses (Historic)	Streetcar, Squeal, VMF	50	67	60.9	59-64	**Severe**	Squeal
46	1 Clement Ave Houses (Historic)	Streetcar, Squeal, VMF	60	61	60.9	59-64	**Impact**	Squeal
47	Library	Streetcar, Bell	50	60	59.8	63-68	No Impact	
	The Plaza – Morningside Drive							
48	Residential	Streetcar, Bell	30	62	67.9	63-68	No Impact	
49	Residential	Streetcar, Bell	40	61	67.9	63-68	No Impact	
50	Residential	Streetcar, Bell	50	60	67.9	63-68	No Impact	
51	Residential	Streetcar	60	41	67.9	63-68	No Impact	
52	Residential	Streetcar	70	41	67.9	63-68	No Impact	
53	Residential	Streetcar	100	39	67.9	63-68	No Impact	
54	Veterans Park	Streetcar, Bell	45	61	59.8	63-68	No Impact	
	Morningside Drive – Briar Creek Road							
55	Briar Creek Greenway (future)	Streetcar	5	59	59.8	63-68	No Impact	
56	Residential	Streetcar	100	39	67.9	63-68	No Impact	
57	Apartments	Streetcar	100	39	67.9	63-68	No Impact	
58	Residential	Streetcar	150	37	67.9	63-68	No Impact	
59	Apartments	Streetcar	150	37	67.9	63-68	No Impact	
60	Apartments	Streetcar, Bell	180	55	67.9	63-68	No Impact	
61	Apartments	Streetcar, Bell	200	54	67.9	63-68	No Impact	
	Briar Creek Road – Eastway Drive							
62	Apartments	Streetcar, Bell	120	56	63.3	60-65	No Impact	

Table 3-25: Summary of Noise Impacts (continued)

Site	Description	Noise Sources	Distance*	Combined Noise	Ambient Noise	Impact Range	Impact	Impact Source
63	Residential	Streetcar	140	38	63.3	60-65	No Impact	
64	Residential	Streetcar	100	39	63.3	60-65	No Impact	
65	Church	Streetcar, Bell	130	56	58.9	63-68	No Impact	
66	Residential	Streetcar, Bell	80	58	63.3	60-65	No Impact	
	Eastway Dr.–Killbourne Dr./Norland Rd.							
67	Residential	Streetcar, Bell	110	57	67.3	63-67	No Impact	
68	Church	Streetcar	130	38	66.6	68-72	No Impact	
69	Church	Streetcar, Bell	90	58	66.6	68-72	No Impact	
	Killbourne Dr./Norland Rd.–End of Line							
70	Evergreen Cemetery Bench	Streetcar, Bell	200	54	66.6	68-72	No Impact	
71	Apartment	Streetcar, Bell	60	59	67.3	63-67	No Impact	
72	Residential	Streetcar	110	39	67.3	63-67	No Impact	
73	Apartments	Streetcar	90	39	67.3	63-67	No Impact	
74	Apartments	Streetcar	80	40	67.3	63-67	No Impact	
75	Residential	Streetcar	80	40	67.3	63-67	No Impact	
76	Apartments	Streetcar	120	38	67.3	63-67	No Impact	
77	Apartments	Streetcar, Bell	90	58	67.3	63-67	No Impact	
78	Residential	Streetcar, Bell	70	59	67.3	63-67	No Impact	

Table 3-25: Summary of Noise Impacts (continued)

Comparison of VMF Site Options		Noise Source	Distance **	Combined Noise	Ambient Noise	Impact Range	Impact	Impact Source
	VMF Beatties Ford Road Site							
79	Johnson C. Smith Univ. Residence Hall	VMF, Streetcar	660	48	67.1	63-67	No Impact	
80	Johnson C. Smith Univ. Residence Hall	VMF, Streetcar	720	48	67.1	63-67	No Impact	
81	Residence	VMF, Streetcar	250	52	67.1	63-67	No Impact	
82	Church	VMF, Streetcar	450	50	63.6	66-70	No Impact	
83	Residence	VMF, Streetcar	800	47	67.1	63-67	No Impact	
84	Residence	VMF, Streetcar	550	49	67.1	63-67	No Impact	
85	Residence	VMF, Streetcar	750	47	67.1	63-67	No Impact	
	VMF Barnhardt Manufacturing Facility Site							
86	5 Houses Clement Ave. (Historic)	VMF, Streetcar, Squeal	50	67	60.9	59-64	**Severe**	Squeal
87	1 Houses Clement Ave. (Historic)	VMF, Streetcar, Squeal	50	64	60.9	59-64	**Impact**	Squeal

Source: URS Corp. July 2006

Notes: * Distance refers to the distance between the streetcar track centerline and receptor.
** Distance refers to the distance between the VMF vehicle washing facility and receptor.
Distances for other noise sources (bell and squeal) are provided in the Noise and Vibration Technical Appendix.

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3.7.4.2 Ground-Borne Noise and Vibration

Short-term Impacts

No-Build Alternative

The No-Build Alternative would have no short-term effect on vibration levels in the area. Changes in traffic volumes and bus operations would not change existing vibration levels.

TSM Alternative

The TSM Alternative would have no short-term effect on vibration levels in the area. Changes in traffic volumes and bus operations would not change existing vibration levels.

Build Alternative

Construction of the Build Alternative could result in short-term increases in vibration levels adjacent to project construction areas. Operation of construction equipment and construction activities, such as pneumatic hammering, grading, and removal of pavement, would be the primary source of ground-borne vibration. The rolling construction method proposed for the project would limit the duration of construction-related vibration.

Long-term Impacts

No-Build Alternative

The No-Build Alternative would have no effect on vibration levels in the area. Changes in traffic volumes and bus operations would not change existing vibration levels.

TSM Alternative

The TSM Alternative would have no effect on vibration levels in the area. Changes in traffic volumes and bus operations would not change existing vibration levels.

Build Alternative

Table 3-26 provides the results of the general vibration analysis, including adjustments for project and receptor specific data. The resulting ground-borne vibration levels are then compared to the Criterion Impact Levels, identified in Table 3-26 resulting in three scenarios:

1. Projected vibration is below the impact threshold. Vibration impact is unlikely in this case.

2. Projected ground-borne vibration is 0 to 5 decibels greater than the impact threshold. In this range there is still a significant chance that actual ground-borne vibration levels will be below the impact threshold. In this case, the impact would be reported in the environmental document as exceeding the applicable threshold and a commitment would be made to conduct more detailed studies to refine the vibration impact analysis during final design and

determine appropriate mitigation, if necessary. A site-specific detailed analysis may show that vibration control measures are not needed.

3. Projected ground-borne vibration is 5 decibels or more greater than the impact threshold. Vibration impact is probable and detailed analysis will be needed during final design to help determine appropriate vibration control measures.

As shown in Table 3-26, only the six historic houses on Clement Avenue would be impacted by ground-borne vibration, due to the proximity of special trackwork associated with VMF site at the Barnhardt Manufacturing Facility. If the VMF site on Beatties Ford Road is selected, then the Build Alternative will have no vibration impacts.

Table 3-26: Stage 2 Vibration Impact Results

ID	Description	Vibration Land Use Category (1-3 or [S]pecial)	Distance	Speed (mph)	Crossovers w/in 200 ft.	Elevated Structure	Building Type	Criterion Impact Level	Estimated Vibration Level (VdB)	Ground-borne Vibration impact?	Ground-borne Noise impact?
1	LaSalle – Celia Residences 21	2	50	13	N	N	Wood frame	72	66.3	No	No
2	LaSalle – Celia Residences 25	2	60	13	N	N	Wood frame	72	65	No	No
3	Celia /Brookshire Residence 12	2	40	13	N	N	Wood frame	72	67.9	No	No
4	Celia /Brookshire Residence 5	2	30	13	N	N	Wood frame	72	69.8	No	No
5	Brookshire/Dixon Residence 7	2	50	13	N	N	Wood frame	72	66.3	No	No
6	I-77 – Graham Sycamore Apts.	2	45	13	N	N	6-10 Story Masonry	72	66.1	No	No
7	I-77 – Graham Trade Apts.	2	45	13	N	N	6-10 Story Masonry	72	66.1	No	No
8	Hawthorn – US 74 Residence 13	2	45	13	N	N	Wood frame	72	67.1	No	No
9	Hawthorn – US 74 Apts. 4	2	50	13	N	N	2-4 story masonry	72	61.3	No	No
10	Hawthorn Apts. 2	2	40	13	N	N	2-4 story masonry	72	62.9	No	No
11	Hawthorn Houses 14	2	52	13	N	N	Wood frame	72	66.1	No	No
12	Clement Av Houses 6	2	50	13	N	Y	Wood frame (Historic)		76.3		**Yes**

Table 3-26: Stage 2 Vibration Impact Results (continued)

ID	Description	Vibration Land Use Category (1-3 or [S]pecial)	Distance	Speed (mph)	Crossovers w/in 200 ft.	Elevated Structure	Building Type	Criterion Impact Level	Estimated Vibration Level (VdB)	Ground-borne Vibration impact?	Ground-borne Noise impact?
13	Morningside Residence A 1	2	30	13	N	N	Wood frame		69.8	No	No
14	Morningside Residence B 2	2	40	13	N	N	Wood frame	72	67.9	No	No
15	Morningside Residence C 1	2	50	13	N	N	Wood frame	72	66.3	No	No
16	Morningside Residence D 1	2	60	13	N	N	Wood frame	72	55	No	No
17	Norland Apts.	2	60	13	N	N	4-6 story masonry	72	50	No	No

Source: URS Corp. August 2006

3.7.5 Mitigation

3.7.5.1 Noise

All affected properties would be impacted by wheel squeal on tight radius curves. Wheel squeal noise will be eliminated through a combination of a thinner wheel flange and a flange lubrication system, as defined in the vehicle design specifications.

3.7.5.2 Vibration

During final design, a site specific detailed analysis will be conducted at the six houses on Clement Avenue to refine the vibration impact analysis and determine appropriate mitigation, if necessary. The most effective vibration control measures would be to relocate the special trackwork to a less vibration-sensitive area. Sometimes this requires adjusting the location by several hundred feet and will not have a significant adverse impact on the operation plan for the system. Careful review of crossover and turnout locations during the preliminary engineering stage is an important step to minimizing potential for vibration impact. Another approach is to use special devices at turnouts and crossovers, or "frogs," that incorporate mechanisms to close the gaps between running rails. Frogs with spring-loaded mechanisms and frogs with movable points can significantly reduce vibration levels near crossovers.

3.8 ECOSYSTEMS

3.8.1 Legal and Regulatory Framework

3.8.1.1 Farmland Protection Policy Act

The *Farmland Protection Policy Act* (FPPA) of 1981 (7 CFR 658) requires all federal agencies to consider the impact of land acquisition and construction activities on prime, unique, statewide and locally important farmland soils, as defined by the U.S. Department of Agriculture (USDA) and the Natural Resources Conservation Service (NRCS) (Public Law 97-98, Subtitle 1, Section 1540). The NRCS, in cooperation with state and local agencies, developed a listing of Prime and Statewide Important Farmland of North Carolina.[36] "Prime farmland does not include land already in or committed to urban development or water storage" (7 CFR part 658.3). The entire project corridor is urbanized and no land is in use as farmland. Therefore, this project is not subject to the requirements of the FPPA.

3.8.1.2 Federal Endangered Species Act

The Fish and Wildlife Service (FWS) in the US Department of the Interior (DOI) and the National Marine Fisheries Service (NMFS) in the Department of Commerce (DOC) are responsible for administering the *Endangered Species Act* (ESA) of 1973 as amended (16 USC 1531 et. seq). Some of the principle provisions of the ESA, as amended in 1973, include the prohibition of federal agencies from "authorizing, funding, or carrying out any action that would jeopardize a listed species or destroy or modify its 'critical habitat'," and the introduction of broad taking prohibitions.[37] The reference to a taking includes activities that may result in incidental or indirect taking of endangered species through habitat modification. If a Federal agency action or activity is permitted,

funded, carried out, or conducted that might affect a listed species or designated critical habitat, the agency must consult with the Secretary of the Interior or the Secretary of Commerce. The ESA includes further provisions for consultation with the DOI and DOC and preparation of biological assessments.

3.8.1.3 North Carolina Endangered Species Act

Species with the federal status of endangered (E), threatened (T), proposed endangered (PE), and proposed threatened (PT) are protected under provisions of the ESA. The ESA does not formally protect federal candidate species or state listed species. In North Carolina, certain species are granted limited protection under the North Carolina Endangered Species Act. The North Carolina Wildlife Resource Commission and the North Carolina Department of Agriculture are responsible for enforcing and administering species protection.

3.8.1.4 North Carolina Plant Protection and Conservation Act of 1979

In this act procedures are established to protect and conserve plants of concern for the recreational needs of people, interests of science and the State's economy. One provision of the act makes it unlawful to disturb or remove any plant on a protected plant list without a written permit from the landowner except for incidental disturbance during development operations, agriculture or forestry if the plants are not collected for sale or commercial use.[38] This act is administered by the North Carolina Department of Agriculture.

3.8.1.5 Migratory Bird Treaty Act

Under the Migratory Bird Treaty Act (MBTA), it is unlawful to take any migratory bird, or nest or egg of any migratory bird except as permitted by regulations. This act applies to endangered bird species and waterfowl as well as birds thought to be common, such as robins and sparrows. Some courts have suggested transportation agencies seek permits when there is a mere possibility of a project causing a take. Other courts have interpreted the policy to apply only to activities such as poaching and hunting. Federal agencies that take actions likely to have a measurable negative impact on migratory bird populations are required by Executive Order to adopt a Memorandum of Understanding with FWS to promote the conservation of migratory birds.[39]

3.8.2 Method

A review of existing literature and mapping was conducted prior to field surveys to identify soils, potential riparian and wetland areas, and threatened and endangered species within the project vicinity. Media consulted included the U.S. Geological Survey 7.5 minute Charlotte East and Derita topographic quadrangles, soil survey mapping of Mecklenburg County, FWS National Wetland Inventory (NWI) mapping of Charlotte East and Derita Quadrangles, the FWS and North Carolina Natural Heritage Program (NCNHP) Endangered, Threatened, Proposed and Candidate Species for the project region. [40, 41, 42, 43, 44, 45]

Field investigations were conducted on October 19, 2004 by URS Corporation – North Carolina (URS) to identify the natural elements in the project corridor. Visual observations were made as necessary to ensure adequate coverage and characterization of the project corridor. Pedestrian surveys were performed to evaluate natural resource conditions and to document natural communities, wildlife, and the presence of protected species or their habitats. The land surrounding the project corridor

is urban and suburban, and consequently, wooded communities are highly disturbed and cannot be classified according to the Classification of the Natural Communities of North Carolina.[46] Dominant plant species were identified for all plant communities encountered. The observed vegetative communities are identified for this document as Urban/Disturbed and Riparian Disturbed. Observations of wildlife and signs of wildlife were noted during field investigations. Wildlife identification involved visual observations and noting characteristic signs of wildlife such as vocalizations, scat, tracks, and burrows.

3.8.3 Existing Conditions and Resources

The project corridor is highly urbanized. Mecklenburg County falls within the southeastern portion of the Southern Outer Piedmont ecoregion of the Central Piedmont physiographic province.[47] Mecklenburg County is characterized by broad, gently rolling interstream areas with steeper slopes along the drainageways. Approximately three-quarters of the county, including the entire project corridor, are drained by the Catawba River. No prominent hills stand out above the generally level uplands.[48] Elevations in the project area range from approximately 650 feet above Mean Sea Level (MSL) to 780 feet MSL on the Charlotte East and Derita topographic maps.[49]

3.8.3.1 Geology

The greater Charlotte metropolitan area lies within the Charlotte Belt, which is dominantly plutonic and consists mostly of igneous rocks such as granite, diorite and gabbro, 300-500 million years old. The majority of Mecklenburg County is comprised of intrusive rocks; metamorphosed granite rocks, foliated to weakly foliated and locally migmatitic, of the Late Proterozoic to the Middle Paleozoic Era.[50]

3.8.3.2 Soils

The project corridor is highly disturbed and urbanized. The majority of the soils in the project corridor are classified as Urban Lands or as an Urban Land Complex. Soils located within the project corridor and in the vicinity of the project were identified from The Soil Survey of Mecklenburg County, North Carolina.[51] Soils within the project corridor are identified in Table 3-27.

Table 3-27: Soils Mapped in the Project Corridor

Soil Series	Mapping Unit	Soil Phase
Cecil sandy clay loam[a]	CeB2	2 to 8 percent slopes, eroded
Cecil-Urban land complex	CuD	8 to 15 percent slopes
Cecil-Urban land complex	CuB	2 to 8 percent slopes
Helena sandy loam	HeB	2 to 8 percent slopes
Mecklenburg-Urban land complex	MkB	2 to 8 percent slopes
Monacan soils and Arents	MS	No individual phase identified
Urban land	Ur	No individual phase identified

[a] Indicates soils listed as Prime Farmland and soils of State and Local Importance in Mecklenburg County
Sources: U.S. Department of Agriculture (USDA). 1978. Technical Guide, Section IIc. Soil Conservation Service. Mecklenburg County, North Carolina.

Source: U.S. Department of Agriculture (USDA). 2001. Prime Farmland List of Mecklenburg County, North Carolina. Soil Conservation Service.

Cecil sandy clay loam is well drained upland soils on broad, smooth ridges. Permeability is moderate, available water capacity is medium, shrink-swell potential is moderate, and the surface runoff is medium. Depth to bedrock is more than 60 inches and the water table is below 6 feet. These soils are only found in a small area along the southern most section of the alignment.

Cecil-Urban land complex consists of Cecil soils and areas of urban land primarily in the suburban areas of Charlotte. Permeability is moderate, available water capacity is medium, shrink-swell potential is moderate, and surface runoff is medium. Depth to bedrock is more than 60 inches and the water table is below 6 feet. The Urban land of this unit supports residential and commercial development, infrastructure, and other impervious surfaces such as parking lots. In disturbed areas, erosion rates may be high due to steep gradients and large stormwater volume. These soils are found along approximately half of the alignment.

The Helena series consists of very deep, moderately well drained, slowly permeable soils on broad ridges and toeslopes of Piedmont uplands. Slopes are typically between 2 to 10 percent but may range from 0 to 15 percent. This soil type occurs in one location along the alignment, under the Hawthorne Lane stop.

Mecklenburg-Urban land soils consist of areas of Mecklenburg soils and areas of Urban land primarily in the suburban areas of Charlotte. Permeability is slow, available water capacity is medium, shrink-swell potential is moderate, and surface runoff is medium. Depth to bedrock ranges from 48-60 inches and the water table is below 6 feet. This mapping unit is developed mostly with closely spaced houses, streets, parking lots, commercial buildings, or the land is covered with more than 20 inches of fill material. Erosion is a hazard due to the slope and runoff as well as paved surfaces that can cause an increased hazard of flooding. These soils are found along a small portion of the northern section of the alignment.

Monacan soils and Arents consist of nearly level, low lying areas along major drainageways. The Monacan soil is somewhat poorly drained and is found on floodplains. Arents soil is found in areas where the natural soils have been altered by the addition of fill material. The main hazards are flooding, wetness, settling of fill areas, and the sediment damage to streams from erosion of the fill material. These soils are found in the section of the alignment that crosses Little Sugar Creek.

Urban land consists of areas where more than 85 percent of the surface area is covered with asphalt, concrete, buildings, or other impervious cover. Most of the soil material has been cut, filled, and graded, altering or destroying the natural characteristics. The remaining native soil is occupied by small lawns or shrub gardens near buildings, sidewalks, and parking lots. Impervious surfaces in Urban land areas generate very high volumes of stormwater and surface flow, often causing flooding in low-lying areas downstream. Approximately half of the alignment crosses Urban land soils.

The Natural Resources Conservation Service (NRCS) did not identify areas of hydric soils within the project corridor.[52] Hydric soils are defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation and are associated with wetlands.[53]

3.8.3.3 Biotic Resources

Plant Communities

Urban/Disturbed Vegetative Communities

The majority of land in the project corridor was classified as Urban/Disturbed, which includes commercial, office, and industrial developments, residential areas, existing roads, and other natural areas that have been cleared for development. Most of the vegetation in these areas has been removed or altered by human activity. Maintained grasses and ornamental landscape plantings adjacent to residential houses, businesses and industrial areas, and roadside rights-of-way are included in this category. Tree species identified within the project corridor are dominated by sweet gum (*Liquidambar styraciflua*), willow oak (*Quercus phellos*), white oak (*Quercus alba*), flowering dogwood (*Cornus florida*), tulip poplar (*Liriodendron tulipifera*), and red maple (*Acer rubrum*).

Riparian Disturbed Vegetative Communities

In most locations, urban development has occurred up to stream banks. Dominant riparian vegetation included box elder (*Acer negundo*), black willow (*Salix nigra*), sycamore (*Platanus occidentalis*), river birch (*Betula nigra*), green ash (*Fraxinus pennsylvanica*), black cherry (*Prunus serotina*), black walnut (*Juglans nigra*), pecan (*Carya illinoinensis*), sweet gum (*Liquidambar styraciflua*), giant cane (*Arundinaria gigantea*), and jewelweed (*Impatiens capensis*). Invasive species such as paper mulberry (*Broussonetia papyrifera*), Chinese privet (*Ligustrum sinense*), multiflora rose (*Rosa multiflora*), kudzu (*Pueraria lobata*), and several unidentified ornamental species were identified along riparian corridors.

Wildlife

Birds

Although highly disturbed, the project corridor provides habitat for some bird populations. Birds seen or heard during the field visits include; mockingbird (*Mimus polyglottos*), blue jay (*Cyanocitta cristata*), American crow (*Corvus brachyrhynchos*), American robin (*Turdus migratorius*), common grackle (*Quiscalus quiscula*), European starling (*Sturnus vulgaris*), mourning dove (*Zenaida macroura*), and eastern phoebe (*Saynoris phoebe*).

Mammals

Several mammals adaptable to urban areas can be expected to live in the project vicinity. These mammals include; white-tailed deer (*Odocoileus virginianus*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), gray squirrel (*Sciurus carolinensis*), and eastern cottontail (*Sylvilagus floridanus*).

Reptiles, Amphibians, and Other Aquatic Wildlife

The riparian corridors identified within the project corridor, provide some habitat for many species of reptiles, amphibian, and aquatic wildlife common to urban areas. Asian clams (*Corbicula fluminea*) as well as many unidentified minnow species were observed in several perennial streams. Asian clams are exotic, invasive, small bivalves typically found at high densities and have a relatively high growth rate. Because of their reproductive success and high infestation, this species has become a serious pest throughout the United States. Concerns have been raised over the capacity of Asian clams to alter trophic and nutrient

dynamics of aquatic systems, and to displace native bivalves.[54] Other wildlife may include: salamanders, toads, tree frogs, true frogs, spiny lizards, skinks, and snakes.

Listed Species

Federally Listed Threatened or Endangered Species

The FWS and NCNHP have identified the federally listed threatened or endangered species that occur in Mecklenburg County.[55, 56] Data available through NCNHP did not indicate known occurrences of federally protected threatened or endangered species within one mile of the project corridor. Protected species were not observed within the project corridor during field operations. The protected species listed in the county are listed in Table 3-28.

Bald Eagle

The bald eagle primarily occupies forested shoreline habitats. Nesting habitat is generally found within one half mile of bodies of water 40 acres or larger. The birds tend to build their nests at least 500 meters from any human disturbance including logging operations, roads, housing, commercial areas, or busy recreational areas.[57,58]

Carolina Heelsplitter

The Carolina Heelsplitter currently has a very fragmented, relict distribution but historically was known from several locations within the Catawba and Pee Dee River systems in North Carolina. Historically, the species was collected from the Catawba River, Mecklenburg County and several streams and ponds in the Catawba River system around the Charlotte area of Mecklenburg County. Recent collection records indicate that small remnant population occurs in North Carolina in the Catawba River system in Waxhaw Creek, tributary to the Catawba River, in Union County, and in a short stretch of Goose Creek, a tributary to the Rocky River in the Pee Dee River system.

Smooth Coneflower

The reported historical range of the smooth coneflower included Pennsylvania, Maryland, Virginia, North Carolina, South Carolina, Georgia, Alabama, and Arkansas. The species is now known to survive only in Virginia, North Carolina, South Carolina, and Georgia. Six populations survive in North Carolina. The North Carolina populations are in Durham and Granville counties. This species has not been recorded in Mecklenburg County for over 50 years. The habitat of smooth coneflower is open woods, cedar barrens, roadsides, clearcuts, dry limestone bluffs, and power line rights-of-way, usually on magnesium- and calcium-rich soils.[59]

Table 3-28: Federally Listed Species in Mecklenburg County

Common Name	Scientific Name	Federal Status[a]	State Status[b]	County Status[c]
Birds				
Bald Eagle	Haliaeetus leucocephalus	T (PD)	T	Current
Invertebrates				
Carolina heelsplitter	Lasmigona decorata	E	E	Historic
Vascular Plants				
Smooth coneflower	Echinacea laevigata	E	E-SC	Historic
Schweinitz's sunflower	Helianthus schweinitzii	E	E	Current
Michaux's sumac	Rhus michauxii	E	E-SC	Historic

Source: North Carolina Natural Heritage Program (NCNHP) 2006. Natural Heritage Program List of Rare Plant Species of North Carolina. Office of Conservation and Community Affairs, NC Department of Environment and Natural Resources. Raleigh, NC. Available URL: http://www.ncsparks.net/nhp/county.html [Accessed June 28, 2006].

[a] Federal Protection Status
E: Endangered – A taxon in danger of extinction throughout all or a significant portion of its range.
T: Threatened – A taxon likely to become endangered within the foreseeable future throughout all or a significant portion of its range.
PD: Proposed de-listed – Species has been proposed for de-listing.

[b] State Protection Status
Animals:
E: Endangered – Any native or once-native species of wild animal whose continued existence as a viable component of the State's fauna is determined by the Wildlife Resources Commission to be in jeopardy or any species of wild animal determined to be an 'endangered species' pursuant to the Endangered Species Act.
T: Threatened – Any native or once-native species of wild animal which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range, or one that is designated as a threatened species pursuant to the Endangered Species Act.
Plants:
E: Endangered – Any species or higher taxon of plant whose continued existence as a viable component of the State's flora is determined to be in jeopardy. Endangered species may not be removed from the wild except when a permit is obtained for research, propagation, or rescue which will enhance the survival of the species.
SC: Special Concern – Any species of plant in North Carolina which requires monitoring but which may be collected and sold under regulations adopted under the provisions of the Plant Protection and Conservation Act. Propagated material only of Special Concern species which are also listed as Endangered or Threatened may be traded or sold under specific regulations.

[c] USFWS historic species were last observed in the county more than 50 years ago. NCNHP historic species were last observed in the county more than 20 years ago.

Schweinitz's Sunflower

This species is currently known from Anson, Cabarrus, Davidson, Gaston, Mecklenburg, Montgomery, Randolph, Rowan, Stanly, Stokes, Surry and Union counties in North Carolina. Current habitats where this species is found include roadsides, power line clearings, old pastures, woodland openings and other sunny or semi-sunny situations. Schweinitz's sunflower is known from a variety of soil types but is generally found growing on shallow, poor, clayey and/or rocky soils, especially those derived from mafic rocks.[60]

Michaux's Sumac

Michaux's sumac is historically thought to be endemic to the coastal plain and piedmont of the Carolinas. Currently, the plant is documented in the following North Carolina counties: Richmond, Hoke, Moore, Scotland, Franklin, Davie, Robeson, and Wake. No known populations of Michaux's sumac occur in Mecklenburg County. This species has not been recorded in Mecklenburg County for over 50 years. Michaux's sumac grows in sandy or rocky open woods in association with basic soils. This plant survives best in areas where some form of disturbance has provided an open area.[61]

Federal Candidate Species and State Listed Species

No candidate or state listed species listed for Mecklenburg County (Table 3-29) were observed during field operations in October 2004.

Table 3-29: Federal and State Listed Species in Mecklenburg County

Common Name	Scientific Name	Federal Status[a]	State Status[b]	County Status[c]
Invertebrates				
Carolina creekshell	Villosa vaughanian	FSC	E	Current
Creeper	Strophitus undulatus	--	T	Current
Vascular Plants				
Tall larkspur	Delphinium exaltatum	FSC	E-SC	Historic
Piedmont aster	Eurybia mirabilis	FSC	SR-T	Current
Georgia aster	Symphyotrichum georgianum	C	T	Current

Source: North Carolina Natural Heritage Program (NCNHP) 2006. Natural Heritage Program List of Rare Plant Species of North Carolina. Office of Conservation and Community Affairs, NC Department of Environment and Natural Resources. Raleigh, NC. Available URL: http://www.ncsparks.net/nhp/county.html [Accessed June 28, 2006].

[a] Federal Protection Status
FSC: Federal species of concern – A Federal species of concern--a species that may or may not be listed in the future (formerly Candidate 2 (C2) species or species under consideration for listing for which there is insufficient information to support listing).
C: Candidate – A taxon under consideration for which there is sufficient information to support listing. This category was formerly designated as a Candidate 1 (C1) species.

[b] State Protection Status
Animals:
E: Endangered – Any native or once-native species of wild animal whose continued existence as a viable component of the State's fauna is determined by the Wildlife Resources Commission to be in jeopardy or any species of wild animal determined to be an 'endangered species' pursuant to the Endangered Species Act.
T: Threatened – Any native or once-native species of wild animal which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range, or one that is designated as a threatened species pursuant to the Endangered Species Act.
SC: Special Concern – Any species of wild animal native or once-native to North Carolina which is determined by the Wildlife Resources Commission to require monitoring but which may be taken under regulations adopted under specific provisions.
Plants:
E: Endangered – Any species or higher taxon of plant whose continued existence as a viable component of the State's flora is determined to be in jeopardy. Endangered species may not be removed from the wild except when a permit is obtained for research, propagation, or rescue which will enhance the survival of the species.
T: Threatened – Any resident species of plant which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
SC: Special Concern – Any species of plant in North Carolina which requires monitoring but which may be collected and sold under regulations adopted under the provisions of the Plant Protection and Conservation Act. Propagated material only of Special Concern species which are also listed as Endangered or Threatened may be traded or sold under specific regulations.
SR: Significantly Rare – Species which are very rare in North Carolina, generally with 1-20 populations in the state, generally substantially reduced in numbers by habitat destruction. These species are generally more common somewhere else in their ranges, occurring in North Carolina peripherally to their main ranges, mostly in habitats which are unusual in North Carolina.
-L: Limited – The range of the species is limited to North Carolina and adjacent states (endemic or near endemic). These are species which may have 20-50 populations in North Carolina, but fewer than 50 populations rangewide.
-T: Throughout – These species are rare throughout their ranges (fewer than 100 populations total).

[c] USFWS historic species were last observed in the county more than 50 years ago. NCNHP historic species were last observed in the county more than 20 years ago.

3.8.4 Environmental Impacts and Benefits

3.8.4.1 Short-term Impacts and Benefits

No-Build Alternative

The No-Build Alternative retains existing transit routes. Planned improvements to services will be implemented through existing scheduled projects independent of the streetcar project. No short term direct impacts to the geology, soils, or biotic resources of the region are predicted.

Transportation System Management Alternative

The TSM Alternative involves expanding the use of existing transit routes and no soil or natural resource disturbing activity will be required. No short term direct impacts to the geology, soils, or biotic resources of the region are predicted.

Build Alternative

Implementation of the project would occur primarily on existing pavement within the existing travel lanes. Minimal acquisition of additional right-of-way is anticipated only at specific streetcar stops and where traction power sub-stations cannot be incorporated into existing parking structures. All construction activities will be limited to within the travel lane.

Geology

No cuts or blasting will be required, therefore no substantial short term impacts to the geological resources of the region are predicted.

Soils

Soil disturbing activities will be temporary and minimal by nature, and will occur at locations currently covered by impervious surface. Potential short term limitations of the soil types identified within the construction limits are described in Section 3.8.3.2 and include erosion hazards, shrink/swell potential, differential settlement, and flood hazard. The topography of the region and soil properties underlying the alignment may lead to any or all of these issues. Short term impacts will be compensated for through proper engineering design and best management practices for erosion control during construction.

Biotic Resources and Wildlife

No disturbance or clearing of vegetated areas or disturbance in riparian zones will be required. No substantial short term impacts to the biotic resources of the region are predicted.

No short term impacts to the Federal listed, Federal candidate, and State listed species in the vicinity of the project corridor are expected. Findings are summarized in Table 3-30.

3.8.4.2 Long-term Impacts and Benefits

No-Build Alternative

Under the No-Build Alternative, existing transit routes would continue in service. Construction of transit centers, park and ride lots, and other transportation infrastructure improvements scheduled in the State Transportation Improvement Program (STIP) as adopted by the North Carolina Board of Transportation (BOT) and the Mecklenburg-Union Metropolitan Planning Organization (MUMPO) would be independent of any transit project for the streetcar corridor. No long-term

direct impacts to the geology, soils, or biotic resources of the region are predicted.

Transportation System Management Alternative

The Transportation System Management (TSM) Alternative involves expanding the use of existing transit routes. No cuts, soil disturbing activity, clearing of forested areas, or disturbance in riparian zones will be required to implement the TSM Alternative. Therefore, no long-term direct impacts to the geology, soils, or biotic resources of the region are predicted.

Build Alternative

The design of the project is on existing pavement within the existing travel lanes and construction activities will be limited to within the travel lane. Minimal right-of-way acquisition will occur at specific stops and for some traction power sub-stations that cannot be incorporated into existing land uses.

Geology

No significant long term impacts to the geological resources of the region are predicted.

Soils

Soil disturbing activities will be temporary and minimal by nature. Soil properties can affect the engineering design of the final alignment. Potential long term limitations of the soil types identified within the construction limits of the project are described in Section 3.8.3.2 and include shrink/swell potential, differential settlement, and flood hazard.

Biotic Resources and Wildlife

No disturbance or clearing of vegetated areas or disturbance in riparian zones will be required. No significant long term impacts to the biotic resources of the region are predicted.

No long term impacts to the Federal listed, Federal candidate, and State listed species in the vicinity of the project corridor are expected. Findings are summarized in Table 3-30.

Table 3-30: Anticipated Impact on Listed Species

Species	Analysis	Status		Biological Conclusion
		Federal	State	
Federally Listed Species				
Bald eagle	Appropriate habitat for the bald eagle does not exist within the alignment and construction limits of the project corridor. No known occurrences of the species have been recorded within the project area and no bald eagles were observed during field investigations.	T	T	No Effect
Carolina heelsplitter	The project area does not provide suitable habitat for the Carolina heelsplitter. In addition, no individuals were observed during the field investigations.	E	E	No Effect
Smooth coneflower	Appropriate habitat for smooth coneflower does not exist within the alignment and construction limits of the project corridor. No known occurrences of the species have been recorded within the project area. In addition, no individuals were observed during the field investigation.	E	E-SC	No Effect
Schweinitz's sunflower	Appropriate habitat for Schweinitz's sunflower does not exist within the alignment and construction limits of the project corridor. No known occurrences of the species have been recorded within the project area. In addition, no individuals were observed during the field investigation.	E	E	No Effect
Michaux's sumac	Appropriate habitat for the Michaux's sumac does not exist within the alignment and construction limits of the project corridor. No individuals were observed during the field investigation.	E	E-SC	No Effect
State Listed Species				
Carolina creekshell	Appropriate habitat for the Carolina creekshell does not exist within the alignment and construction limits of the project corridor. No individuals were observed during the field investigation.	FSC	E	No Effect
Creeper	Appropriate habitat for the creeper does not exist within the alignment and construction limits of the project corridor. No individuals were observed during the field investigation.	None	T	No Effect
Tall larkspur	Appropriate habitat for the tall larkspur does not exist within the alignment and construction limits of the project corridor. No individuals were observed during the field investigation.	FSC	E-SC	No Effect
Georgia aster	Appropriate habitat for the Georgia aster does not exist within the alignment and construction limits of the project corridor. No individuals were observed during the field investigation.	C	T	No Effect

3.8.5 Mitigation

3.8.5.1 Geology

No significant impacts to the geological resources of the region are predicted. No mitigation will be required.

3.8.5.2 Soils

Long and short term impacts related to soils will be compensated for through proper engineering design; incorporating techniques such as soil modification, appropriate choice of fill material, use of non-corrosive sub-grade materials, and design of drainage structures capable of conveying estimated peak flows, and best management practices for erosion control during and following construction.

3.8.5.3 Biotic Resources and Wildlife

Since no substantial impacts to biotic resources and wildlife, no mitigation will be required.

3.9 WATER RESOURCES

Water resources including groundwater, surface water, jurisdictional wetlands, floodplains and floodways were assessed within the study area. In this section, regulations pertaining to water resources are summarized, the presence and characteristics of water resources are presented, and expected short-term and long-term impacts to these resources are assessed.

3.9.1 Legal and Regulatory Framework

While there is some overlap in applicability, for purposes of organization, policies related to water resources are organized under the categories of stormwater, groundwater, surface water, floodplains, and wetlands in this section.

3.9.1.1 Stormwater

EPA National Pollution Discharge Elimination System Phase I Stormwater Rules

In 1972 the National Pollution Discharge Elimination System (NPDES) program was established under the authority of the Clean Water Act (CWA) then delegated to the Department of Environment and Natural Resources (DENR) Division of Water Quality (DWQ) for implementation in North Carolina. Phase I of the program was established in 1990 and focuses on site and operations planning to reduce pollutant sources. Under Phase I of the NPDES, the following activities are regulated:

- Industrial facilities that fall into one of ten categories,
- Construction activities that disturb five or more acres of land, and
- Municipal separate storm sewer systems (MS4s) serving populations of 100,000 or more.

Depending on their Standard Industrial Classification (SIC) code, industrial facilities are required to obtain a general or individual NPDES permit. These permits require the industrial facilities to develop site-specific stormwater pollution prevention plans. There are several industrial facilities in the study area that are required to have an individual or general permit under Phase I of the NPDES.

Requirements for construction activities were strengthened by Phase II of the NPDES and are described in the next section. Requirements of NPDES related to construction activities for NCDOT are addressed through their sediment and erosion control program.

Charlotte is one of the six local governments in North Carolina with a MS4 serving a population of 100,000 or more (according to the 1990 census). Charlotte is, therefore, required to implement a stormwater management program that includes public education, illicit discharge detection and elimination, storm sewer system and land use mapping, and analytical monitoring.[62]

EPA National Pollution Discharge Elimination System Phase II Stormwater Rules

Phase II of the NPDES program was signed into law in 1999. This regulation builds on Phase I by requiring smaller communities and public entities that own and operate MS4s to obtain a NPDES permit for stormwater discharges. Phase II regulations apply where the MS4 is located in an urbanized area as designated by the most recent Decennial Census, or when the community or public entity is designated by the NPDES permitting authority. The NPDES permitting authority in North Carolina is the Environmental Management Commission.

Under Phase II of the NPDES program, construction projects that disturb one acre or more are subject to NPDES requirements. The NCDOT addresses stormwater on their roadways and facilities through the sediment and erosion control program under the Division of Land Resources. Under their NPDES permit, NCDOT addresses all NPDES requirements and implements Best Management Practice (BMP) retrofits.[63]

The Environmental Management Commission (EMC) has designated municipal spheres of influence (MSIs) within North Carolina that are subject to the Phase II regulations. Municipal spheres of influence are defined as either within an area that is considered urbanized under the decennial census, or the potential extraterritorial jurisdiction (ETJ) of a Phase II municipality. Extraterritorial jurisdictions typically extend between one and three miles beyond the municipal boundary. If the combination of area covered by Phase II municipalities, their potential ETJ, and urbanized areas totals at least 85 percent of the entire county, then Phase II requirements also apply to all new development in the entire county. This provision is applicable to Mecklenburg County.

The NPDES Phase II permit requires the implementation of a stormwater management program outlining the management practices and measurable goals that will be implemented in the following specific areas:

- Public education and outreach,
- Public participation and involvement,
- Illicit discharge detections and elimination,
- Construction site runoff control,
- Post construction site runoff control, and
- Pollution prevention for municipal operations.[64]

An annual report is required in which the achievement of stormwater management goals as included in the plan, additional goals achieved in that year, and new measures to be undertaken in the upcoming year are listed.

Charlotte Stormwater Control

The City of Charlotte established a series of ordinances applicable to stormwater: the *Stormwater Ordinance*, (no date) *Stormwater Pollution Ordinance*, (1995) and *Post-Construction Ordinance*, (adoption pending). In the *Stormwater Ordinance*, obstructing storm water is restricted and fees for stormwater services are established.[65] The purpose of the *Stormwater Pollution Ordinance* is to protect water quality by limiting the type and amount of pollutants entering the stormwater system. Illegal and accidental discharges and penalties are established in the ordinance.[66] The *Post-Construction Ordinance* is currently in draft stages. According to the City of Charlotte, "The purpose of the Post - Construction Ordinance is to control and manage stormwater runoff and associated negative water quality impacts resulting from post-construction stormwater discharges through the use of a combination of structural and non-structural best management practices." The draft regulation includes buffers around streams, open space requirements, volume control requirements, and structural BMPs.[67]

3.9.1.2 Surface Water

Section 404 of the Clean Water Act

Surface waters and wetlands fall under the jurisdiction of the U.S. Army Corps of Engineers (USACE) through section 404 of the Clean Water Act (33 USC 1344). Section 404 of the Clean Water Act requires regulation of discharges into "waters of the United States," including lakes, rivers, streams, and wetlands.

Section 401 Water Quality Certification Process

Surface waters and wetlands fall under the jurisdiction of the NCDWQ within the NCDENR through the Section 401 Water Quality Certification Process (NC General Statutes Chapter 143 Article 21, Part 1). The Section 401 Water Quality Certification Permit ensures that discharges would be in compliance with applicable state water quality standards.

North Carolina – Water Supply Watershed Protection Act

The North Carolina General Assembly adopted the *Water Supply Watershed Protection Act*, in 1989.[68] Under the resulting Water Supply Watershed Protection Rules, adopted in 1992, all local governments having land use jurisdiction within water supply watersheds are required to adopt and implement water supply watershed protection ordinances, maps, and a management plan. There are no water supply watersheds inside the study area.

Mecklenburg – Charlotte Water Supply Watershed Overlay Districts

Special requirements are established for water supply watershed districts in the City of Charlotte and Mecklenburg County, however, as previously noted, the study area does not fall within any water supply watersheds.[69]

Mecklenburg-Charlotte Stream Buffer Rules

To improve water quality, Mecklenburg County, the City of Charlotte, and other municipalities enacted a Surface Water Improvement and Management (S.W.I.M.) program. The program was enacted in three phases and some plans

include efforts to control pollution from sediment and bacteria, enhanced enforcement of water supply watershed protection requirements, and the establishment of vegetative creek buffers.[70] Of particular importance to this project is the buffer requirement.[71]

Under the stream buffer ordinances established in Charlotte and Mecklenburg County, buffers are required for streams that drain at least 100 acres. Buffers are defined for three zones, the stream side, managed use, and upland zone. Two tables are included in the ordinance that describe the total width of the buffer zone based on drainage area and provide a description of each buffer zone. Those tables are reproduced here as Table 3-31 and Table 3-32. Specific notes regarding methods of calculation and other provisions are included in the ordinance but are not reproduced here.[72]

Table 3-31: S.W.I.M. Stream Buffer Widths

Drainage Area Designation	Stream Side Zone	Managed Use Zone	Upland Zone	Total width of Buffer on each side of Stream
> 100 acres	20 feet	None	15 feet	35 feet
> 300 acres	20 feet	20 feet	10 feet	50 feet
> 640 acres	30 feet	45 feet	25 feet plus 50% of the area of the FEMA fringe beyond 100 feet	100 feet plus 50% of the FEMA fringe beyond 100 feet

Source: Mecklenburg County Land Use and Environmental Services Agency. *Part 8: S.W.I.M. (Surface Water Improvement and Management) Stream Buffers*. Accessed 14 July 2005. Available: http://www.co.mecklenburg.nc.us/Departments/LUESA/Water+and+Land+Resources/

Table 3-32: S.W.I.M. Stream Buffer Descriptions

Characteristics	Stream Side Zone	Managed Use Zone	Upland Zone
Function	Protect the integrity of the ecosystem	Provide distance between upland development and the stream side zone	Prevent encroachment and filter runoff
Vegetative Targets	Undisturbed (no cutting or clearing allowed) – If existing tree density is inadequate, reforestation is encouraged	Limited clearing – Existing tree density must be retained to a minimum of 8 healthy trees of a minimum 6 inch caliper per 1000 square feet – If existing tree density is inadequate, reforestation is encouraged	Grass or other herbaceous ground cover allowed – Forest is encouraged
Uses	Very restricted – permitted uses limited to: flood control structures and bank stabilization as well as installation of utilities and road crossings with stabilization of disturbed areas as specified in Section 12.806.2	Restricted – Permitted uses limited to: all uses allowed in the Stream side Zone, as well as storm water BMPs, bike paths, and greenway trails (not to exceed 10 feet in width)	Restricted – Permitted uses limited to: all uses allowed in the Stream Side and managed Use Zones, as well as grading for lawns, gardens, and gazebos and storage buildings (non-commercial and not to exceed 150 sq feet)

Source: Mecklenburg County Land Use and Environmental Services Agency. *Part 8: S.W.I.M. (Surface Water Improvement and Management) Stream Buffers*. Accessed 14 July 2005. Available: http://www.co.mecklenburg.nc.us/Departments/LUESA/Water+and+Land+Resources/

Dillons Twins Lakes and Lake Jo, Stewart Creek, Irwin Creek, Little Sugar Creek, Briar Creek, and Edwards Branch have 100-foot buffers. A tributary to Little Sugar Creek and tributaries to Briar Creek have 50-foot buffers. Other tributaries to Little Sugar Creek, Stewart Creek, Irwin Creek, and a tributary to Campbell Creek that fall within the study area have 35-foot buffers (Figure 3-35).[73]

City of Charlotte Soil Erosion and Sedimentation Control Ordinance

The City of Charlotte's Erosion Control Program originated from a State action, which granted local government authority to enforce the Sedimentation Pollution Control Act of 1973 and specifically the erosion control requirements. The ordinance strengthens the City's and County's ability to address two primary objectives: (1) Hold developers and contractors responsible for maintaining erosion control on their projects, and (2) Protect environmentally sensitive areas from sediment damage. The ordinance acts to identify critical areas, or areas vulnerable to erosion; limit the time of exposure from land-disturbing activity; limit exposed areas; control surface water; control sedimentation; and manage stormwater runoff.[74]

River Basin Water Quality Plans and Programs

Basinwide water quality planning is a non-regulatory watershed-based approach to restoring and protecting the quality of North Carolina's surface waters. Basinwide plans are developed by the DWQ for each of the 17 major river basins located in the State. Each plan is revised at five-year intervals. The study area falls within the Catawba River Basin. The first basinwide plan for the Catawba River Basin was completed in 1995. The third cycle of the basinwide plan was completed in September 2004.

The primary goals of basinwide planning are to:

- Identify water quality problems and restore full use to impaired waters;
- Identify and protect high value resource waters;
- Protect unimpaired waters while allowing for reasonable economic growth;
- Develop appropriate management strategies to protect and restore water quality;
- Assure equitable distribution of waste assimilative capacity for dischargers; and
- Improve public awareness and involvement in the management of the State's surface waters.[75]

The study is contained entirely within DWQ watershed subbasin 03-08-34. General information about the water quality in the subbasin is included Section 3.9.3.

3.9.1.3 Groundwater

Groundwater quality is protected by North Carolina statute under the Groundwater Classifications and Standards established in North Carolina Administrative Code (NCAC) Subchapter 2L. Classifications of groundwater quality and corresponding standards for protection, corrective actions, monitoring and notification are established in three sections.[76]

Mecklenburg County finalized groundwater regulations in October of 2004. In the regulations a fee-funded groundwater quality program is established for the

protection and preservation of groundwater through the identification of contamination sites, drinking water wells and collection of data; investigation of contaminated sites; and protection of drinking water supplies.[77]

3.9.1.4 Wetlands

Wetlands, defined in 33 CFR 328.3, are those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Section 404 of the Clean Water Act

This policy, as described under the surface waters section, is also applicable to wetlands.

Section 401 Water Quality Certification Process

This policy, as described under the surface waters section, is also applicable to wetlands.

Wetlands Executive Order and DOT Order 5660.1A

There are several policies that are applicable to wetlands, including the Wetlands Executive Order and DOT Order 5660.1A. Under the Wetlands Executive Order:

> [E]ach agency, to the extent permitted by law, shall avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds (1) that there is no practicable alternative, and (2) that the action includes all practicable measures to minimize harm to wetlands which may result from such use. In making this finding the head of the agency may take into account economic, environmental and other pertinent factors.[78]

This policy is applicable to all wetlands, not just those on publicly owned land. The DOT order implements the Wetlands Executive Order. Some of the provisions in the DOT order include limiting transportation agencies' reliance on economic factors in determining what alternatives are "practicable," requiring early review of proposals for new construction in wetlands to agencies and potential public involvement.[79]

Any action that proposes to place fill into these areas falls under the jurisdiction of the USACE under Section 404 of the Clean Water Act (33 USC 1344). Wetlands that are determined to be isolated and not covered by Section 404 are covered by policies set out in the NCDENR "Redbook." These policies will not be discussed in detail as no jurisdictional wetlands were identified in the study area.[80]

3.9.1.5 Floodplains and Floodways

Federal regulations pertaining to floodplains and floodways are the *National Flood Insurance Act* of 1968, as amended and the *Flood Disaster Protection Act* of 1973, as amended. Under these regulations, a program for extended coverage of flood insurance is established, provisions for dissemination of information regarding flood-prone areas are made, requirements for State and local agencies to adjust land uses for areas prone to floods through floodplain ordinances are made, and requirements to purchase insurance for projects assisted by Federal funding that may be at risk of flood hazards are established.[81]

In the City of Charlotte, rules pertaining to floodplains are set out in the *Floodplain Regulations of Charlotte, North Carolina*. The general purpose of this ordinance is to, "promote the public health, safety and general welfare and to minimize public and private losses due to flood conditions in specific areas." This purpose is accomplished through several provisions. Included in the provisions are restrictions of land uses in areas prone to floods; control of the alteration of floodplains, stream channels, and natural protective barriers; control of filling, grading, dredging and other development; and prevention or regulation of the construction of flood barriers that may unnaturally divert flood waters.[82]

3.9.2 Method

Rather than using the study area delineated using a one-half mile buffer of the streetcar corridor, an area described as the "water resources study area" and consisting of a 200-foot buffer of the streetcar corridor was used in the field investigation of water resources. A site visit was conducted to assess stream conditions using DWQ's Stream Classification Forms. Geographic Information System (GIS) data were used to determine what water resources are within the water resources study area. Data were also obtained from the NCDWQ web page at http://h2o.enr.state.nc.us/ and the Mecklenburg County web page at http://www.co.mecklenburg.nc.us. While information pertaining to specific water resources within the water resources study area refers to the area encompassed by the 200-foot buffer of the streetcar corridor, general information pertaining to the basin refers to a larger geographic area.

3.9.3 Existing Conditions and Resources

In this section the surface water, groundwater, and floodplains and floodways within the water resources study area are described.

3.9.3.1 Surface Waters

The water resources study area is located in the Catawba River Basin, which extends from the eastern slopes of the Blue Ridge Mountains southeast to the state line near Charlotte. The basin covers 3,279 square miles and encompasses all or part of Alexander, Avery, Burke, Caldwell, Catawba, Gaston, Iredell, Lincoln, McDowell, Mecklenburg, Union, and Watauga counties.

Forests dominate the northern mountainous counties, and smaller hills give way to a rolling terrain near the state line. As the basin enters the Inner Piedmont, land use shifts from forest to agricultural and urban uses. Water quality in the Catawba River and its tributaries reflect the changes in land use within the basin. Many of the tributaries in the northern portion of the basin have Good to Excellent water quality and are classified as trout waters by the DWQ. Water quality decreases in the southern portion of the basin as agricultural and urban discharges increase. The study area is located in the southern portion of the basin within the Charlotte Metropolitan Area. Urban runoff has negatively affected the water quality in and around the Charlotte Area.

Overview of Subbasin 03-08-34

The Catawba River Basin is subdivided into nine subbasins. The water resources study area lies entirely within subbasin 03-08-34. According to the basinwide plan, the region containing subbasin 03-08-34 is the most heavily urbanized region of the basin and the state. Only 52 percent of the subbasin is forested, which is the smallest percentage of all subbasins in the Catawba River Basin. An

overview of the characteristics of the subbasin is provided in 3-33. Creeks in the study area generally flow in a southerly direction.

Nine streams are located within the limits of the study area. Streams found within the study area include two unnamed tributaries (UT) to Irwin Creek, Irwin Creek, three UTs to Little Sugar Creek, Little Sugar Creek, one UT to Briar Creek, and Briar Creek (Figure 3-35). Stewart Creek, Edwards Branch, and Campbell Creek drain the study corridor, but do not cross the water resources study area.

Table 3-33: Overview of Subbasin 03-08-34

Land and Water Area	
Total area:	324 mi^2
Land area:	317 mi^2
Water area:	7 mi^2
Population Statistics	
2000 Estimated Population	408,821 people
Population Density:	1,231 persons/mi^2
Land Cover (Percent)	
Forest/Wetland:	52
Surface Water:	2
Urban:	32
Agriculture:	13
Counties[a]	
Gaston and Mecklenburg	
Municipalities[b]	
Belmont, Charlotte, Huntersville, Matthews, Mint Hill, Mount Holly and Pineville	

[a] The only county that is located in both the subbasin and the study area is Mecklenburg.
[b] The only municipality located in both the subbasin and the study area is Charlotte.
Source: North Carolina Department of Environment and Natural Resources, Division of Water Quality, Basinwide Planning Program. *September 2004 Catawba River Basinwide Water Quality Plan*. Available: http://h2o.enr.state.nc.us/basinwide/.

Figure 3-35: Surface Waters in the Water Resources Study Area (Beatties Ford)

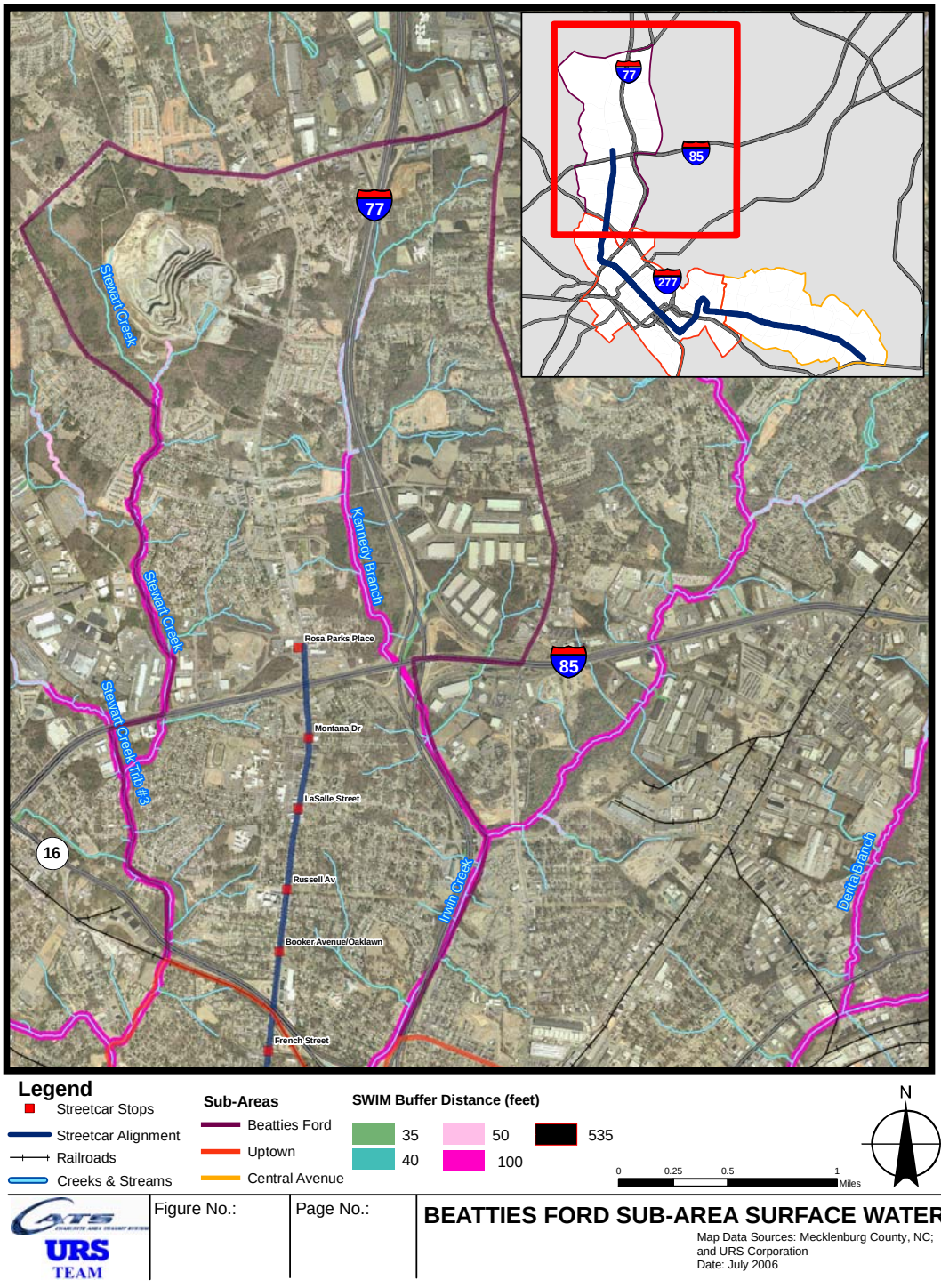


Figure 3-36: Surface Waters in the Water Resources Study Area (Center City)

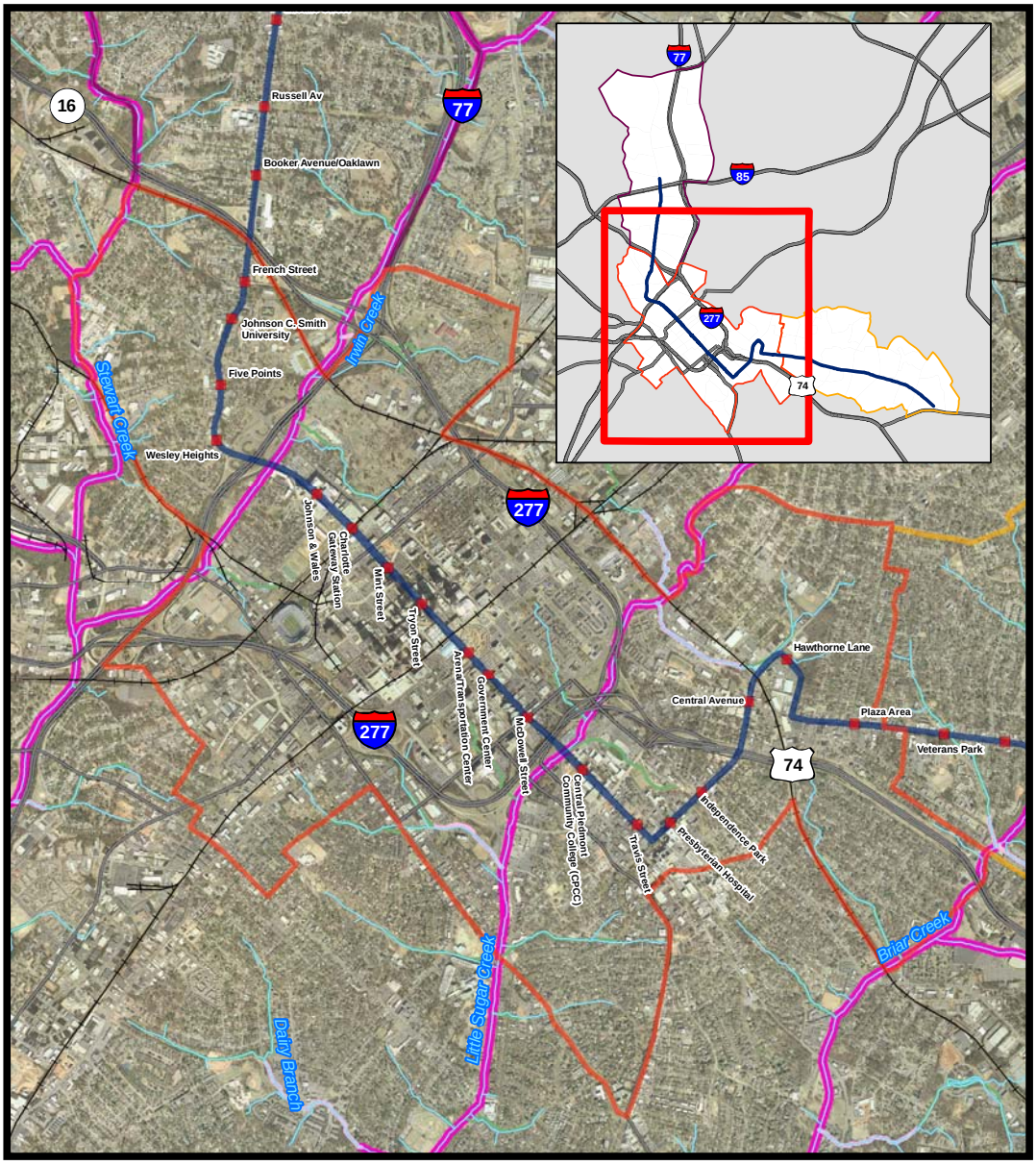
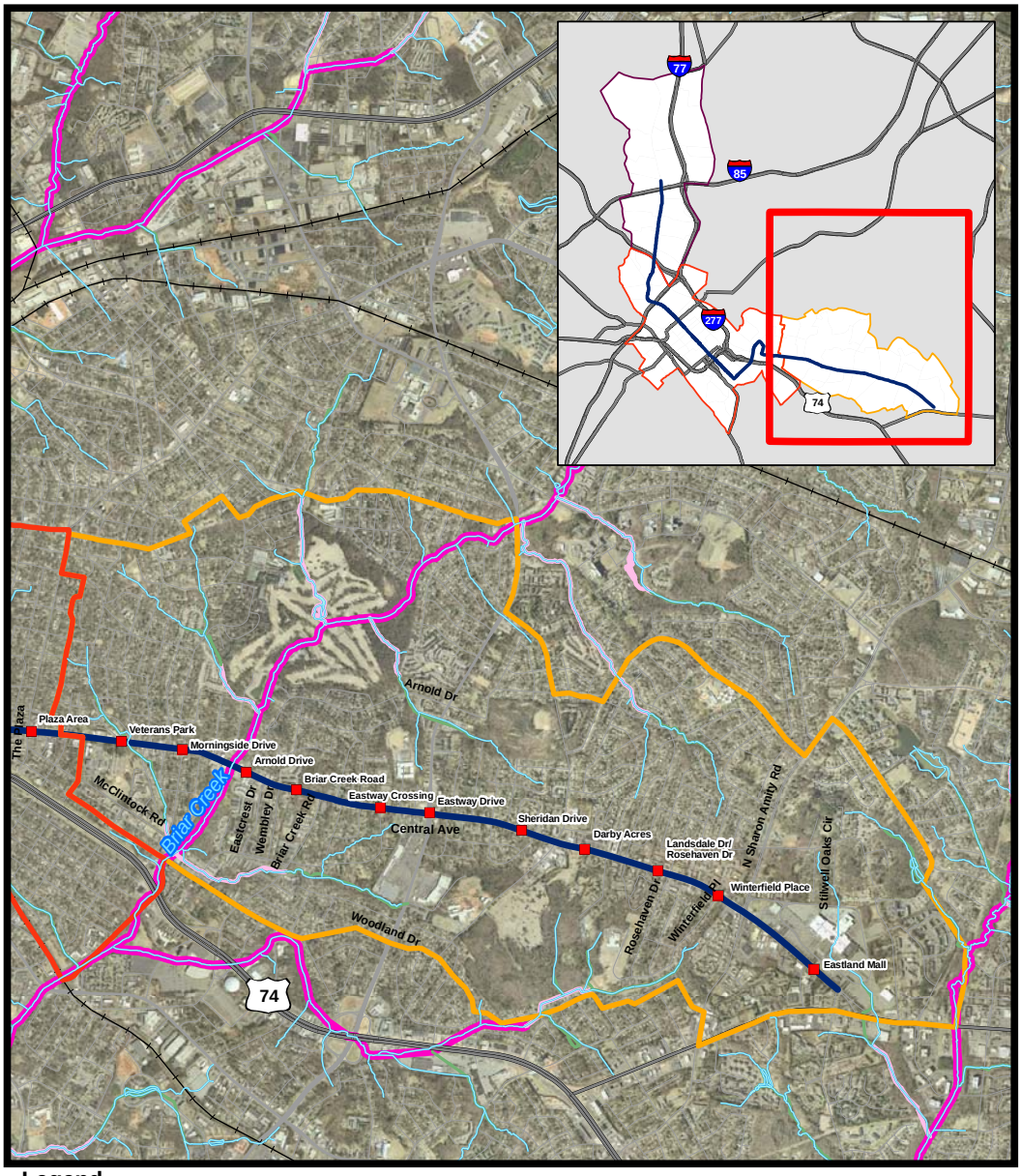


Figure 3-37: Surface Waters in the Water Resources Study Area (Central)



Prior to field investigations, US Geological Survey (USGS) topographic and National Wetland Inventory (NWI) maps of the water resources study area were examined to determine areas where stream crossings may be present. The entire 200-foot corridor was then walked during field investigations and all drainages were examined. An expanded area within the I-277 loop was reviewed via aerial photographs but was not field verified. Drainages were evaluated using the DWQ guidelines.[83]

Five of the nine streams were assessed at the time of the field visit. The alignment has changed since that time, and now includes four additional stream crossings (UT2 to Irwin Creek, UT1 to Little Sugar Creek, UT2 to Little Sugar Creek, and UT3 to Little Sugar Creek). Due to the location of the water resources study area within the existing roadway alignment and the urban nature of the project, impacts to these streams are expected to be minimal, if any. Stream forms for the four additional streams have not been completed.

Stream 1 is a UT to Irwin Creek which runs under Beatties Ford Road within the water resources study area. This channel is approximately two feet wide at the streambed and the substrate consists of trash, concrete blocks, and clay. Stream 1 is open on the east side of Beatties Ford Road and flows into a long culvert on the west side of the road.

Irwin Creek (Stream 2) runs under West Trade Street within the water resources study area. It has a bed width of 25 feet. The substrate consists mostly of sand, silt, and clay with some gravel.

Little Sugar Creek (Stream 3) flows under Elizabeth Avenue within the water resources study area. The stream is only open on the west side of the road and flows into a culvert on the east side. The bed of the stream is approximately 25 feet wide, and the substrate consists of boulder-sized and gravelly rip rap, silt, and clay.

Stream 4 is a UT to Briar Creek which crosses Central Avenue just south of a military reserve. The creek is only open on the south side of the road and flows into a culvert on the north side. Within the water resources study area, the stream bed is approximately ten feet wide with a gravel substrate with some silt and clay.

Briar Creek (Stream 5) crosses under Central Avenue within the study area. The streambed width is eight feet with a gravel substrate intermixed with some sand. The west bank appears to be lined with six inch and greater rocks.

UT2 to Irwin Creek flows northwest across Cedar Street before entering Irwin Creek. UT1 to Little Sugar Creek flows south under US-74, UT2 flows southeast under South Kenilworth Avenue, and UT3 flows west under South Kings Drive before entering Little Sugar Creek.

Status of Assessed Waters in Subbasin 03-08-34

Waters are classified by the NCDWQ according to their best-intended uses. The DWQ rates waters for five use categories: aquatic life, recreation, fish consumption, water supply, and shellfish harvesting. Waters are classified as ‘Supporting’ if data and information used to assign a use support rating meet the criteria for that use category. If these criteria are not met, then the waters are categorized as ‘Impaired’. Waters with inconclusive data and information are labeled as ‘Not Rated’, and when there is no data available, the waters are

labeled as 'No Data'. Additional information regarding the classification system is available in Appendix III of the September 2004 basinwide plan for the Catawba River Basin.[84] Determining how well a waterbody supports its designated use is an important method of interpreting water quality data and assessing water quality.

Charlotte-Mecklenburg Storm Water Services collects water samples from Charlotte-Mecklenburg lakes and streams on a regular basis to identify and eliminate pollution problems and to assess the overall quality of Mecklenburg County's surface waters. Additionally, samples of fish and other aquatic life are also routinely collected.

The 303d list is a State list of waters that are not meeting water quality standards or have impaired uses. Listed waters must be prioritized, and a management strategy or total maximum daily load (TMDL) must be developed. Irwin Creek and Little Sugar Creek are both listed on the 303d list. This listing is primarily due to wastewater discharges and urban runoff. Problems include turbidity, impaired biological integrity, fecal coliform, industrial point sources, municipal point sources, and urban runoff/storm sewers.[85]

Water quality stressors identified in the subbasin were urban runoff, poor habitat, and potential wastewater discharges. Declines in bioclassifications for Little Sugar Creek between basinwide planning periods may have been attributed to drought. It was noted in the 2004 basinwide plan that Irwin Creek and Little Sugar Creek (as well as other streams in the Sugar Creek watershed but not the water resources study area) receive a large amount of both point and nonpoint pollution from urban areas, severely impacting stream health. Sand/silt substrate, severe bank erosion, and disturbed or nonexistent riparian vegetation are common attributes of the habitat found in these streams. There are also elevated levels of fecal coliform bacteria and turbidity indicating impairment by urban runoff and wastewater discharges. Water quality has remained low but stable over the planning cycle. Total Maximum Daily Loads are used to limit the pollutants entering the water bodies.[86]

According to the latest basinwide plan, there are over 50 NPDES permitted dischargers in subbasin 03-08-34. The largest NPDES permitted discharger is the Charlotte/Mecklenburg Utilities District. This source discharges to Irwin Creek and Little Sugar Creek as well as a stream outside of the water resources study area.[87]

Surface Water Classifications

Under the Water Quality Standards Program, all surface waters in North Carolina are assigned primary and supplemental classifications. Primary classifications refer to the best use of the water and supplemental classifications provide protection to sensitive or highly valued resource waters.

All tributaries draining the project study area are classified as Class C (Table 3-34). The Class C rating is used to describe freshwaters protected for aquatic life propagation and maintenance of biological integrity (including fishing and fish), wildlife, secondary recreation, agriculture, and any other usage except for primary recreation or as a source of water supply for drinking, culinary, or food processing purposes. Primary classifications not applicable to the water resources study area are those for water supply watersheds (WS), primary recreation and Class C uses (B and SB) and those for commercial shellfish

harvesting (SA). Supplemental classifications not applicable to surface waters in the water resources study area include those for swamp waters (Sw), trout waters (Tr), high quality waters (HQW), outstanding resource waters (ORW), and nutrient sensitive waters (NSW).[88] In addition to these classifications, the US Department of the Interior (USDOI) and the US Department of Agriculture (USDA) maintain a list of designated rivers, as well as rivers that may be eligible for Wild and Scenic Rivers designation. None of the creeks within the water resources study area are designated as or are eligible to be Wild and Scenic Rivers.

The DWQ classifies stream segments according to their highest supportable use. All tributaries that are not listed carry the same stream classification as the stream into which they flow. The name, classification, and index number for each creek in the water resources study area is shown in Table 3-34.

Table 3-34: Creeks Draining the Water Resources Study Area

Creek Name	Classification	Index Number
Dillons Twins Lake and Lake Jo (connecting stream to Irwin Creek)	C	11-137-1-1
Stewart Creek	C	11-137-1-2
Irwin Creek	C	11-137-1
Little Sugar Creek	C	11-137-8
Briar Creek	C	11-137-8-2
Edwards Branch	C	11-137-8-2-1
Campbell Creek	C	11-137-9-1

Source: NCDWQ website, http://h2o.enr.state.nc.us/bims and North Carolina Division of Water Quality, September 2004 Basinwide Water Quality Plan. Available: http://h2o.enr.state.nc.us/basinwide/.

3.9.3.2 Groundwater

The water resources study area is located in the Piedmont Physiographic Province. The region is characterized by gently rolling, well-rounded hills and long low ridges with a few feet of elevation difference between the hills and valleys. Most of the information for this section was taken from the USGS report, *Preliminary Hydrogeologic Assessment and Study Plan for a Regional Groundwater Resource Investigation of the Blue Ridge and Piedmont Provinces of North Carolina*, (USGS report). As noted in the report, there is limited information available regarding the groundwater system in the Piedmont province.[89] In this section, a brief description of policy pertaining to groundwater, characteristics of the Piedmont Physiographic Province, and some information pertaining to groundwater quality and levels is provided.

Characteristics of the Piedmont Physiographic Province

In the USGS report, characteristics of the Piedmont Province were described generally. A complex, two-part regolith-fractured crystalline rock aquifer system underlies most of this province. Due to its porosity, which ranges from 35 to 55 percent, the regolith provides the bulk of the water storage of the system. There is a transition zone at the base of the regolith where saprolite grades into unweathered bedrock. The transition zone is considered a potential conduit for rapid groundwater flow, and therefore, a potential conduit for rapid movement of contaminants to nearby wells or streams that cut through it.[90]

While groundwater systems are most often described in terms of aquifers, according to the USGS report, the complex geology and secondary porosity and permeability of the bedrock makes hydrologic terranes a more useful method of describing the characteristics of the system. Four terranes were identified: (1) massive or foliated crystalline rocks mantled by thick regolith, (2) massive or foliated crystalline rocks mantled by thin regolith, (3) metamorphosed carbonate rocks, and (4) sedimentary rocks of the Mesozoic basins. The USGS provides further technical details about the characteristics of each terrane and should be referred to by readers interested in more information.[91]

Water Levels and Quality

While groundwater quality in the crystalline-rock terranes of the province are generally suitable for drinking and other purposes, groundwater in the Piedmont Province has not traditionally been used as a large source because of readily available surface water supplies and the perception that groundwater in the Piedmont Province occurs in a complex, generally heterogeneous environment. However, small communities and rural populations in the province depend on groundwater supplies. Groundwater pumped from aquifers in the Piedmont supplied about 30 percent of the population within the province. The number of people supplied by groundwater in the Piedmont remained fairly constant between 1960 and 1980 at about 47 to 48 percent. Between 1980 and 1990 there was a 15.6 decrease in the portion of the population served by groundwater. This decrease was attributed to an increase in the population in urban areas, including Charlotte, that are served from surface water supplies. According to the USGS report, “Municipal and industrial water supplies in the two provinces [Blue Ridge and Piedmont] are derived almost exclusively from surface-water sources. The potential for future development of surface water becomes limited, however, as the most suitable sites for reservoirs become inhabited or are used for other purposes, as land purchase and development costs increase, and as environmental concerns regarding surface-water impoundments cause delays in approval of necessary permits.” The average quantity of available groundwater in storage in the Piedmont is calculated to be 0.73 million gallons per acre, but, the water storage in specific areas may vary.[92]

According to the USGS report, as the population has grown, so has the number of real and potential sources of groundwater contamination. As mentioned, the transition zone may serve as a conduit for the movement of contaminants. According to the USGS report, “Because the distance from the point where water enters the terrestrial part of the hydrologic cycle in the Piedmont to where water discharges to a stream commonly is less than half a mile, contaminants entering the ground-water system and moving through the transition zone can rapidly become dispersed to surface-water bodies.” The USGS lists the following water-quality problems related to human activity:

- Discharge from septic tanks;
- Petroleum products leaking from storage tanks;
- Improper handling and (or) transport of industrial chemicals;
- Improperly constructed water-supply wells;
- Agricultural activities;
- Highway de-icing salts; and,
- Infiltration of contaminated surface water from lakes and streams as a result of nearby pumping from wells.

Specific problems noted in the Mooresville Region, in which the water resources study area falls, include growth-oriented issues and the fate and transport of chlorinated solvents in the bedrock and the effects of poor well construction.[93]

According to the NCDENR, Division of Environmental Health (DEH), Public Water Supply (PWS) Section (NCDEH website, http://www.deh.enr.state.nc.us/); one public water supply well is located within the water resources study area. This well is classified as a Transient Non-Community public water supply well.

3.9.3.3 Jurisdictional Wetlands

Wetlands, defined in 33 CFR 328.3, are those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Any action that proposes to place fill into these areas falls under the jurisdiction of the USACE under Section 404 of the Clean Water Act (33 USC 1344).

Review of the USFWS NWI maps of Charlotte East and Derita Quadrangles indicated a total of four wetlands within the water resources study area.[94, 95] Three of the four are designated stream channels within the water resources study area (Irwin Creek, Little Sugar Creek, and Briar Creek). The fourth designated wetland is a small pocket located adjacent to South McDowell Street (Figure 3-38). Irwin Creek and Little Sugar Creek have been classified as R2UBHx (Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded, Excavated). Briar Creek is classified as R2UBH (Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded). The small wetland is classified as PUBHx (Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated).

The water resources study area was evaluated for the presence of wetlands. USACE wetland criteria were used to evaluate topographically low areas, areas having hydric soils, and areas with poorly drained soils.[96] No wetlands were identified during field investigations. Since no wetlands were identified within the water resources study area, Section 404 of the Clean Water Act, as it pertains to wetlands, does not apply.

3.9.3.4 Floodplains and Floodways

Mecklenburg County, in cooperation with the Federal Emergency Management Agency (FEMA) and the USACE, developed Digital Flood Insurance Rate Maps (FIRMs) for Mecklenburg County. According to the FIRM maps for Mecklenburg County, the floodways and floodplains of Stewart Creek, Irwin Creek, Little Sugar Creek, Edwards Branch and Briar Creek fall within the water resources study area (Figure 3-39).[97]

Figure 3-38: NWI Mapping

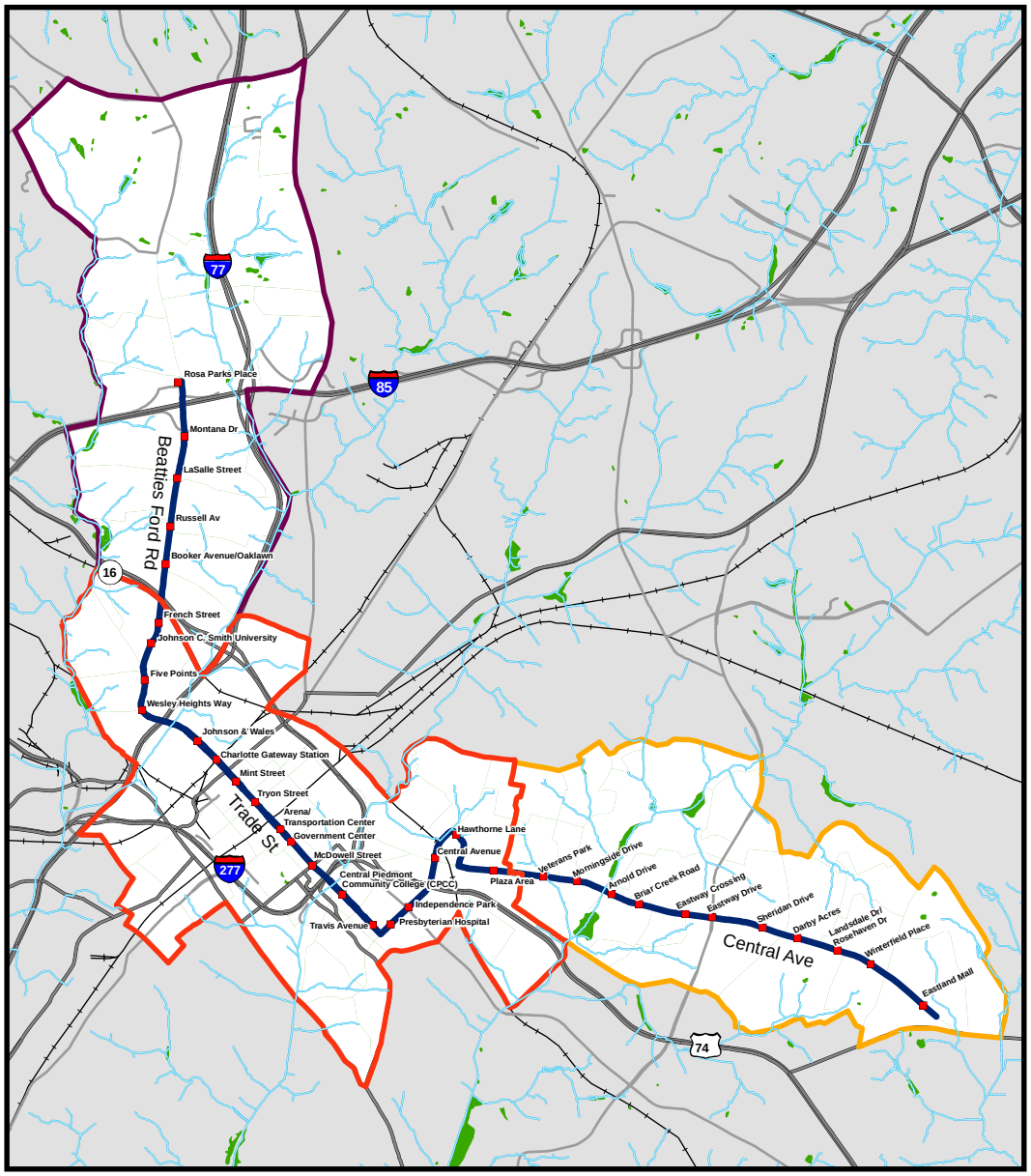


Figure 3-39: Floodplains and Floodways in the Study Area (Beatties Ford)

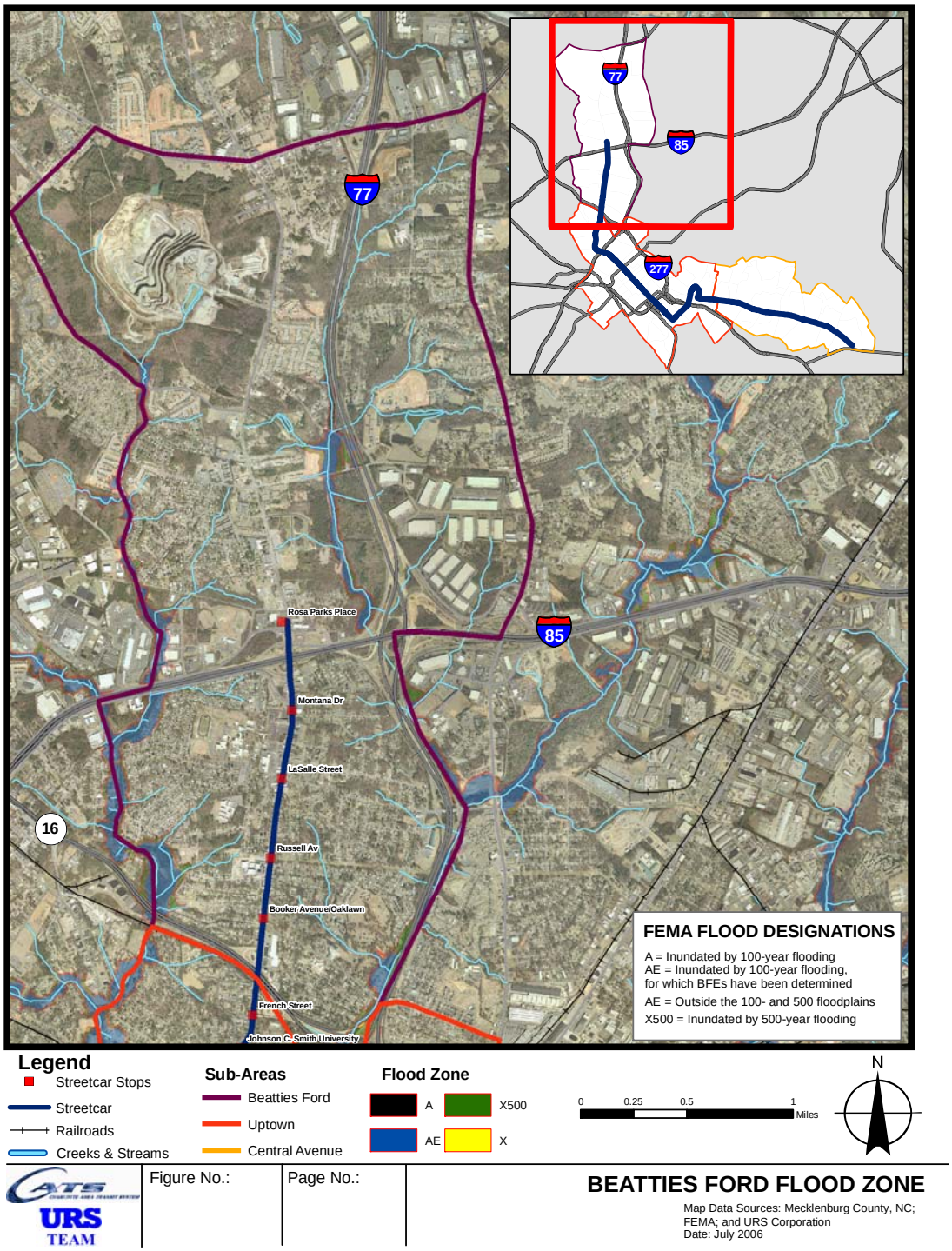


Figure 3-40: Floodplains and Floodways in the Study Area (Center City)

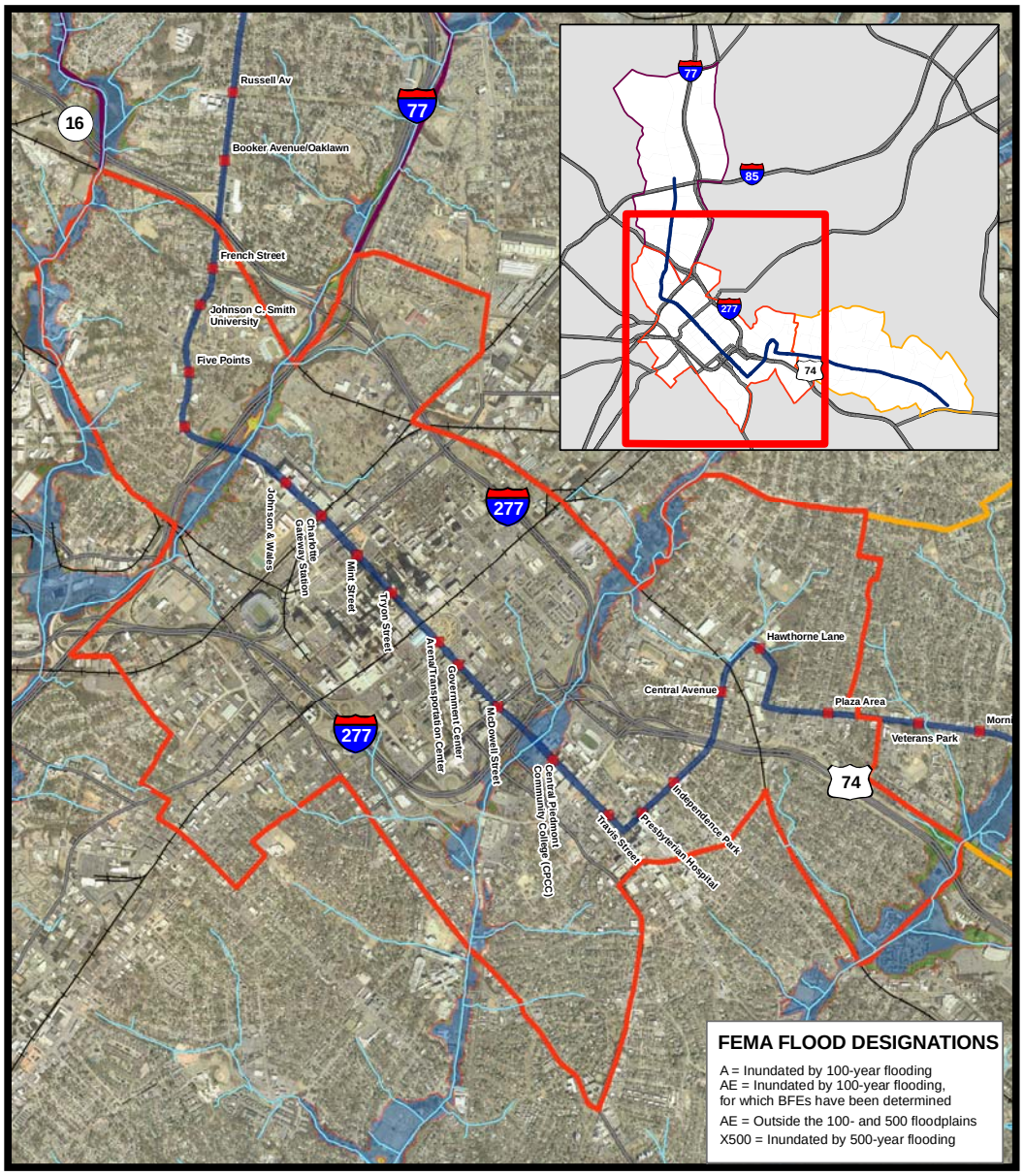
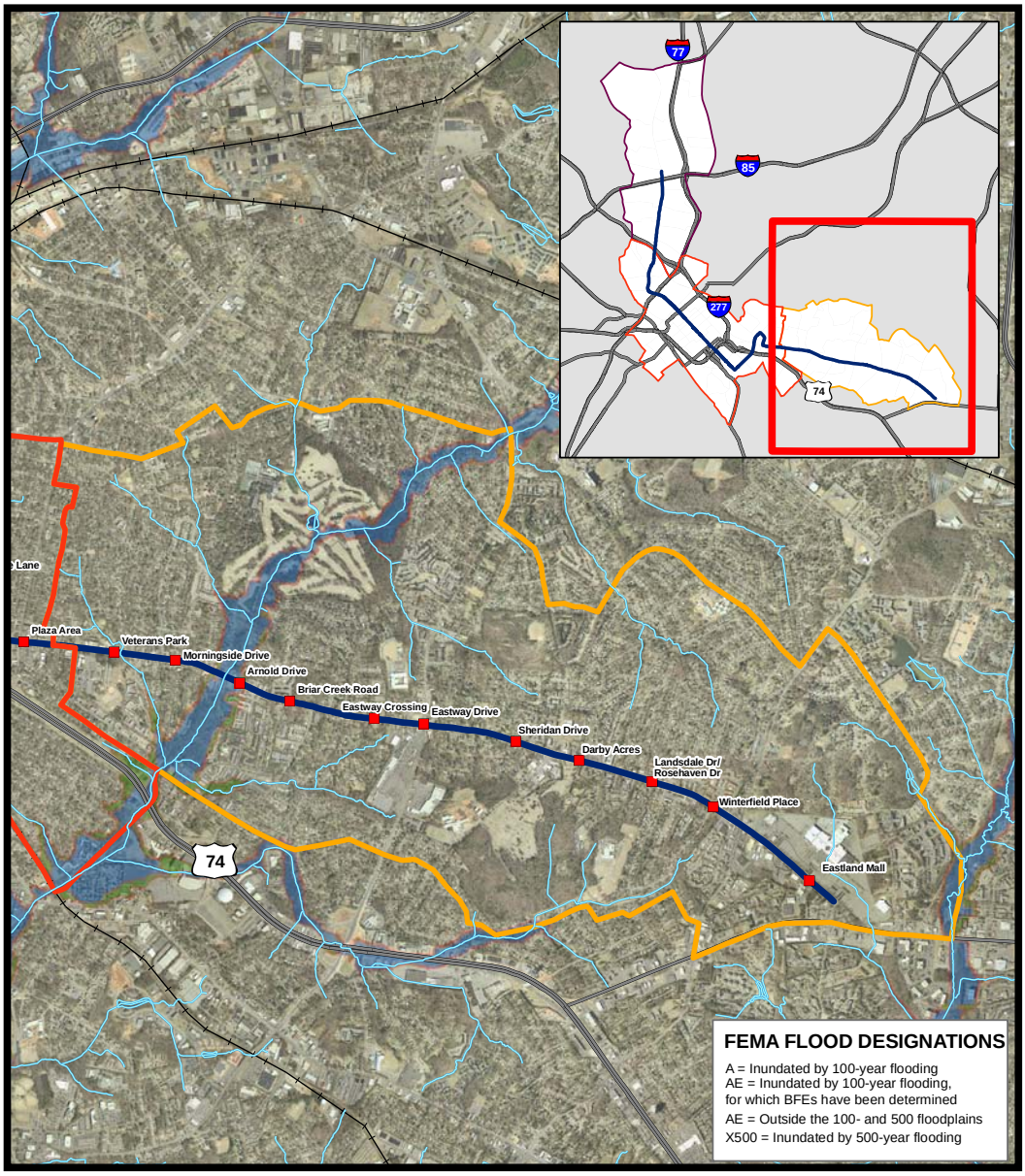


Figure 3-41: Floodplains and Floodways in the Study Area (Central)



3.9.4 Environmental Impacts and Benefits

3.9.4.1 Short-term Impacts and Benefits

No-Build and TSM Alternatives

No short-term impacts would result from the No-Build or TSM alternatives.

Build Alternative

Surface Waters

Land disturbing activities will be temporary and minimal by nature, and will occur at locations currently covered by impervious surface. Erosion hazard constitutes the greatest potential short term impact from construction activities of this nature. The topography of the region and soil properties underlying the alignment may lead to any or all of these issues.

Groundwater

Of the risks to project area groundwater identified in Section 3.9.1.3, the potential exists for spills, leaks, or other unintentional discharges of petroleum or other chemicals. No impacts to groundwater are predicted to result from implementation of this project.

Floodplains/Floodways

No impacts to flood areas are predicted to result from implementation of this project.

Water Quality

No impacts to water quality are predicted to result from implementation of this project.

Wetlands

No wetlands were identified within the water resources study area. No impacts to wetlands are predicted to result from implementation of this project.

3.9.4.2 Long-term Impacts and Benefits

No-Build and TSM Alternatives

The No Build and TSM Alternatives assume that the Charlotte transportation system would develop as currently planned without providing public transportation in the form of a streetcar service. Under the No Build Alternative or the TSM Alternative, no construction would take place; therefore, no impacts to water resources would result.

Build Alternative

The design of the project is on existing pavement within the existing travel lanes and construction activities will be limited to the travel lane area. Project design does not include increases to the area of impervious surface or expansion of the footprint of the existing transportation network. No significant long term impacts to the water resources of the region are predicted.

3.9.5 Mitigation

3.9.5.1 Surface Waters

Long and short term impacts related to surface waters will be compensated for through proper engineering design and best management practices for erosion control during and following construction.

3.9.5.2 Groundwater

No impacts to groundwater are predicted to result from this project. Spills, leaks, or other unintentional discharges of petroleum or other chemicals will be avoided through proper construction engineering and adherence to best management practices for materials control. No mitigation will be required.

3.9.5.3 Floodplains/Floodways

No impacts to flood zones are predicted to result from implementation of this project. No mitigation will be required.

3.9.5.4 Water Quality

No impacts to flood zones are predicted to result from implementation of this project. No mitigation will be required.

3.9.5.5 Wetlands

No impacts to flood zones are predicted to result from implementation of this project. No mitigation will be required.

3.10 ENERGY

An energy analysis estimating total energy consumption using Btus is a part of the energy analysis. This will require information on the engineering, construction, and expected travel demand and will be updated in future phases of the project.

3.10.1 Environmental Impacts and Benefits

3.10.1.1 Long-term Impacts and Benefits

No-Build and TSM Alternatives

The No-Build and TSM alternatives would not substantially affect energy supply or use within the region over the long term. However, as transit demand increases, the energy demand will also increase. Since the both the No-Build and TSM alternatives include transit, they will both have a positive long-term benefit on energy conservation in the region.

Build Alternative

The streetcar project would not substantially affect energy supply or use within the region. The streetcar would be powered with electricity which is clean and efficient relative to the diesel-fueled buses of the existing transit system. Relative to the No-Build and TSM alternatives, the Build alternative will have a greater long-term positive affect on energy conservation in the region because the electrically powered streetcar will replace diesel powered buses and reduce auto trips thereby reducing fuel consumption.

3.10.1.2 Short-term Impacts and Benefits

Implementing the Build Alternative would require the expenditure of energy for the relatively short period of construction. Gasoline and diesel fuel would be consumed in operating equipment at the construction site. Other energy sources (e.g., electricity, natural gas, oil) would be consumed locally during the production and transport of construction materials, such as concrete and asphalt.

Applicable federal, state, and local guidelines and regulations would be followed in developing construction plans for the streetcar project. Construction plans and phasing would be reviewed to ensure the most efficient use of construction equipment and to establish the most effective means of transporting materials needed for project development. As the cost of energy is a significant factor in the cost of project development, it is anticipated that the project bidding process would stimulate low energy use as a function of project costs.

3.11 HISTORIC, ARCHAEOLOGICAL, AND CULTURAL IMPACTS

3.11.1 Legal and Regulatory Framework

Section 106 of the National Historic Preservation Act (NHPA) of 1996, as implemented by 36 CFR 800 *Protection of Historic Properties,* protects those properties that are listed or determined eligible for inclusion in the National Register of Historic Places (NRHP). In addition, Section 4(f) of the Department of Transportation Act of 1996 provides protection for special properties, including significant historic sites and all archeological sites on, or eligible for, inclusion on the NRHP.

3.11.2 Method

The preparation of this historic, archeological and cultural impacts assessment required repeated field visits to Charlotte, primary source research and, to an unusual degree, the use of secondary source materials primarily consisting of previous inventories and reports. This assessment was researched and prepared by URS senior architectural historian Marvin A. Brown, who meets the Secretary of Interior's Standards as an architectural historic and historic principal investigator.

3.11.2.1 Archaeological Resources

All reasonable precautions have been taken to identify archaeological sites of potential significance to minimize damaging these resources. Still, because archaeological resources by their very nature are hidden beneath urban development, their extent and condition are unknown. Clearing, grubbing, excavation, and other construction actions have the potential to damage or destroy any archaeological resources that may remain intact. However, construction activities generally would be confined to areas disturbed by previous street construction, utility installations, and other types of urban development and any adverse effects are expected to be limited.

3.11.2.2 Historic Resources

A reconnaissance-level survey was conducted in Charlotte in early March 2005. On January 24, 2006, Willie Noble of CATS, Marvin Brown, and Brian Piascik of URS met with Renee Gledhill-Earley of the North Carolina State Historic Preservation Office (HPO) to discuss the results of the reconnaissance-level inventory and to establish an Area of Potential Effect (APE) for the project. The

APE was established as the buildings immediately fronting the streetcar alignment. On April 25, 2006, as a follow-up to the January meeting, Mr. Brown met with Sarah McBride of the HPO to review in detail the findings of the reconnaissance-level survey and to determine the necessary scope of work of a subsequent intensive-level historic architectural survey of the APE. Intensive-level fieldwork for the project, already commenced in mid-March, 2006, was supplemented after the meeting by field visits in mid-May and early June.

It was agreed at the April meeting that the assessment would include, in an abbreviated fashion, a project description and purpose statement, a methodology, a physical environment description, and a summary of findings. The assessment was determined not to require a background historic context and architectural history of Charlotte, as these have been reported on in depth in numerous earlier reports and publications. The report was to include National Register assessments of the resources to be reported on at the intensive level. The resources that were already listed in the Register or that had Determinations of Eligibility (DOEs) were to be reported on in summary fashion. The assessments of the resources that were listed as Charlotte-Mecklenburg Historic Landmarks (CMHLs) were also to be brief and were to largely rely upon the detailed reports previously prepared for these resources, which are on file at the offices of the Charlotte-Mecklenburg Historic Landmarks Commission in Charlotte. Those resources that had not been designated as National Register-listed or -eligible or as CMHLs would require more in-depth field assessment and research. All individual assessments were to contain the information necessary to determine whether they merit continued National Register listing or eligibility or should be determined eligible for such listing. The information was to include resource histories and descriptions, a photograph or photographs and, where not already established, National Register boundaries. As numerous buildings at the northeast corner of the Elizabeth Historic District have been moved or demolished within the past year, the boundaries of the district at this corner were to be reassessed in the report.

Primary and secondary source research for the assessment was conducted at the following repositories: the Charlotte-Mecklenburg Public Library, the Charlotte-Mecklenburg Historic Landmarks Commission, and the Mecklenburg County Courthouse in Charlotte (and on-line); the North Carolina Collection at the University of North Carolina in Chapel Hill; the North Carolina HPO, the North Carolina Archives and State Library, and the design library at North Carolina State University in Raleigh; and the fire insurance maps of the Sanborn Map Company on-line. Particularly fruitful repositories of primary sources were the tax records and maps of Mecklenburg County (easily accessible on-line at <http://maps2.co.mecklenburg.nc.us/ website/ realestate/viewer.htm>); the city directories and vertical files in the Robinson-Spangler Carolina Room at Charlotte's public library; and the Sanborn Company maps (accessible on-line, with a Wake County library card, at <http://www.sanborn.com/products/ fire_insurance_maps.htm>). Particularly useful secondary sources include three reports prepared for other CATS rail projects by Frances Alexander and Richard Mattson in 2005 and the many reports, histories, and resource assessments previously prepared by and for, or otherwise reproduced on, the website of the Charlotte-Mecklenburg Historic Landmarks Commission, which are sited at the bibliography at the close of this report and which can be accessed on-line at< http://www.cmhpf.org/>.

3.11.3 Existing Conditions and Resources

3.11.3.1 Archaeological Resources

Since the streetcar rails are designed to be constructed at a depth up to 12 inches within the surface of existing roadways, no archaeological resources have been identified as potential impacts of the projects.

3.11.3.2 Historic Resources

Following the completion of reconnaissance- and intensive-level inventories and associated research, URS prepared a report, *Draft Intensive-Level Historic Architectural Survey CATS Center City Streetcar*, which assesses the National Register eligibility of 28 potential historic architectural properties within the project's Area of Potential Effect. All but five of these resources are listed in the National Register, have been determined eligible for National Register listing, or are recommended as eligible for National Register. Separated by their status, they are listed in this section and shown in Figures 3-43 through 3-48.

Resources Previously Listed in the National Register that Appear to Continue to Merit Listing

- Charles R. Jonas Federal Building/United States Post Office and Courthouse [URS #1] (401 West Trade Street)
- First Presbyterian Church [URS #2] (200 West Trade Street)
- Mecklenburg County Courthouse [URS #3] (700 East Trade Street)
- (Former) East Avenue Tabernacle Associated Reformed Presbyterian Church [URS #4] (926 Elizabeth Avenue)
- Elizabeth Historic District [URS #5] (Roughly bounded by Central Avenue, Seaboard Coast Line Railroad, Bascom Street, East Fifth Street, Kenmore Avenue, Park Drive, and East Independence Boulevard)

Figure 3-42: Historic Resources Map (Beatties Ford)

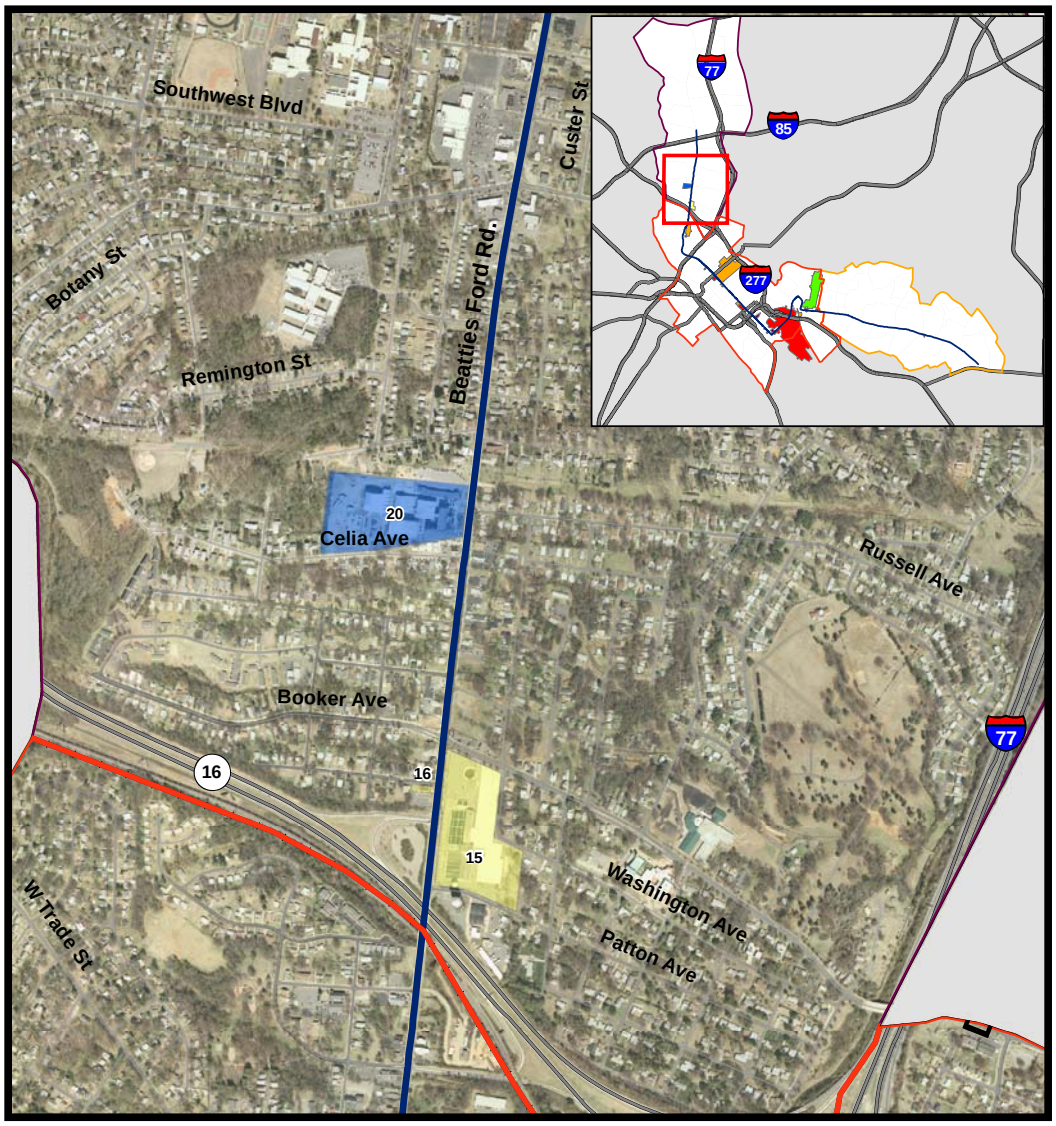
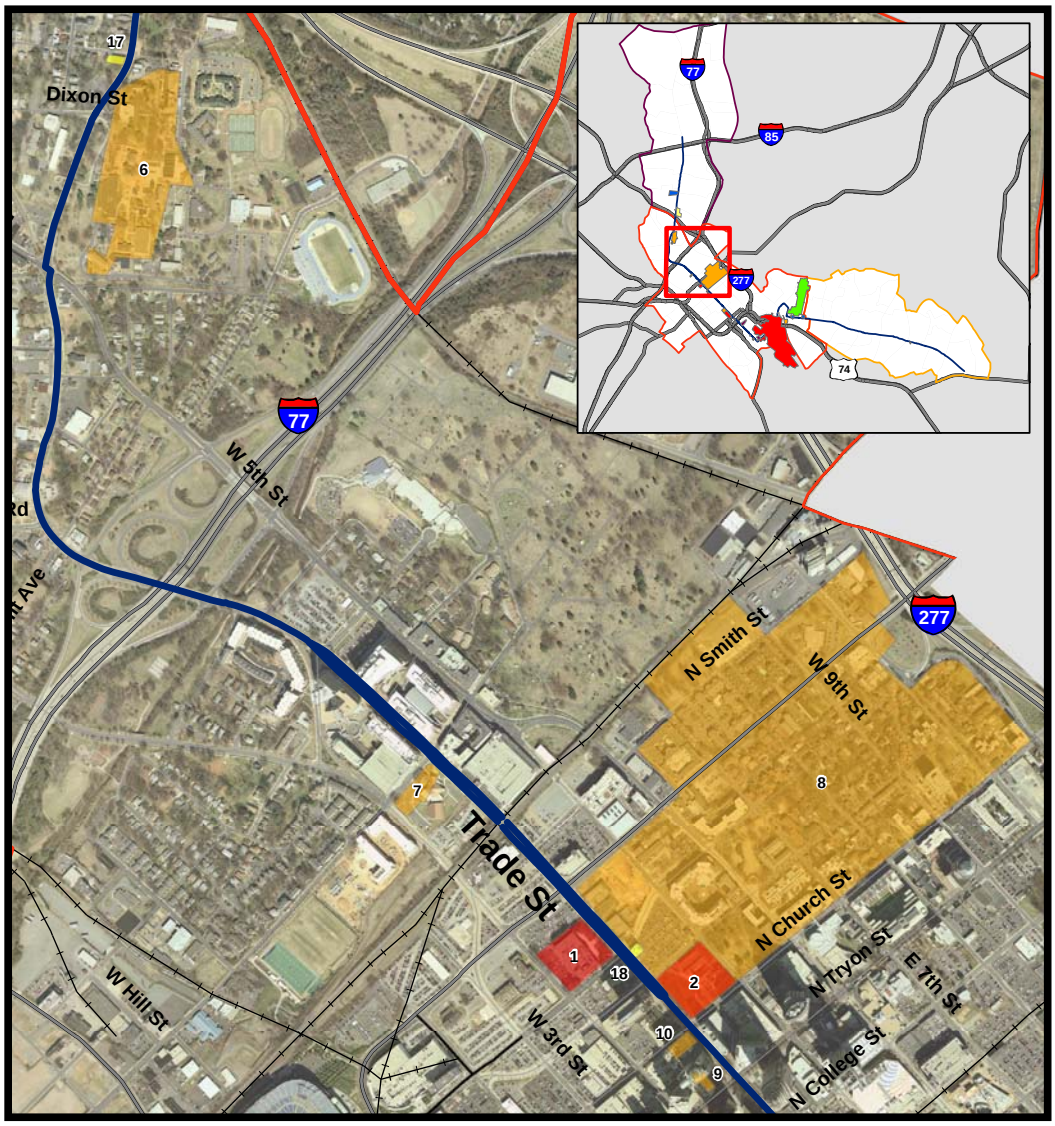


Figure 3-43: Historic Resources Map (Center City – West Trade)



CATS / URS TEAM	Figure No.:	Page No.:	**UPTOWN-WEST: HISTORIC RESOURCES**

Map Data Sources: Mecklenburg County, NC; and URS Corporation
Date: July 2006

Figure 3-44: Historic Resources Map (Center City – East Trade)

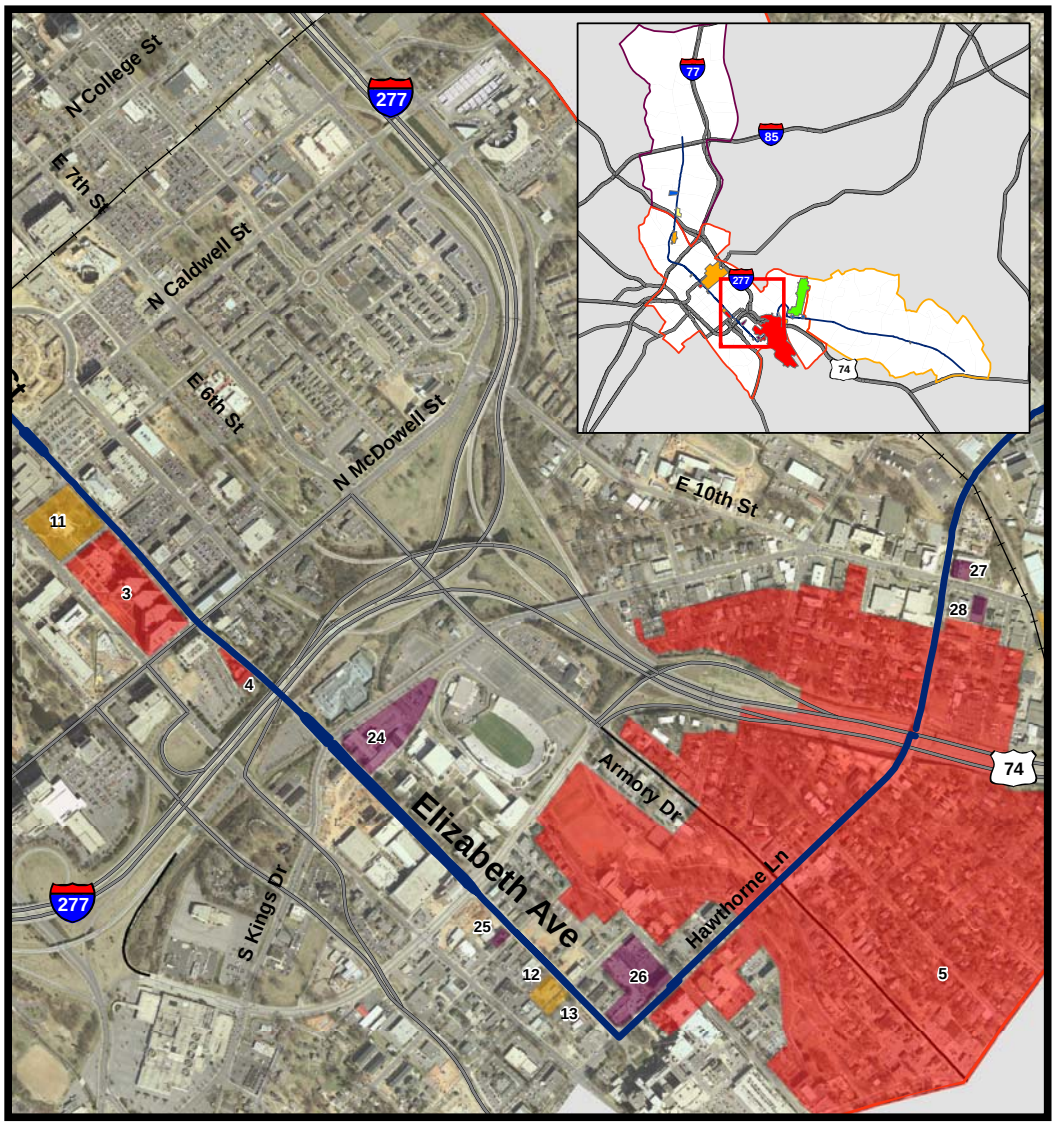
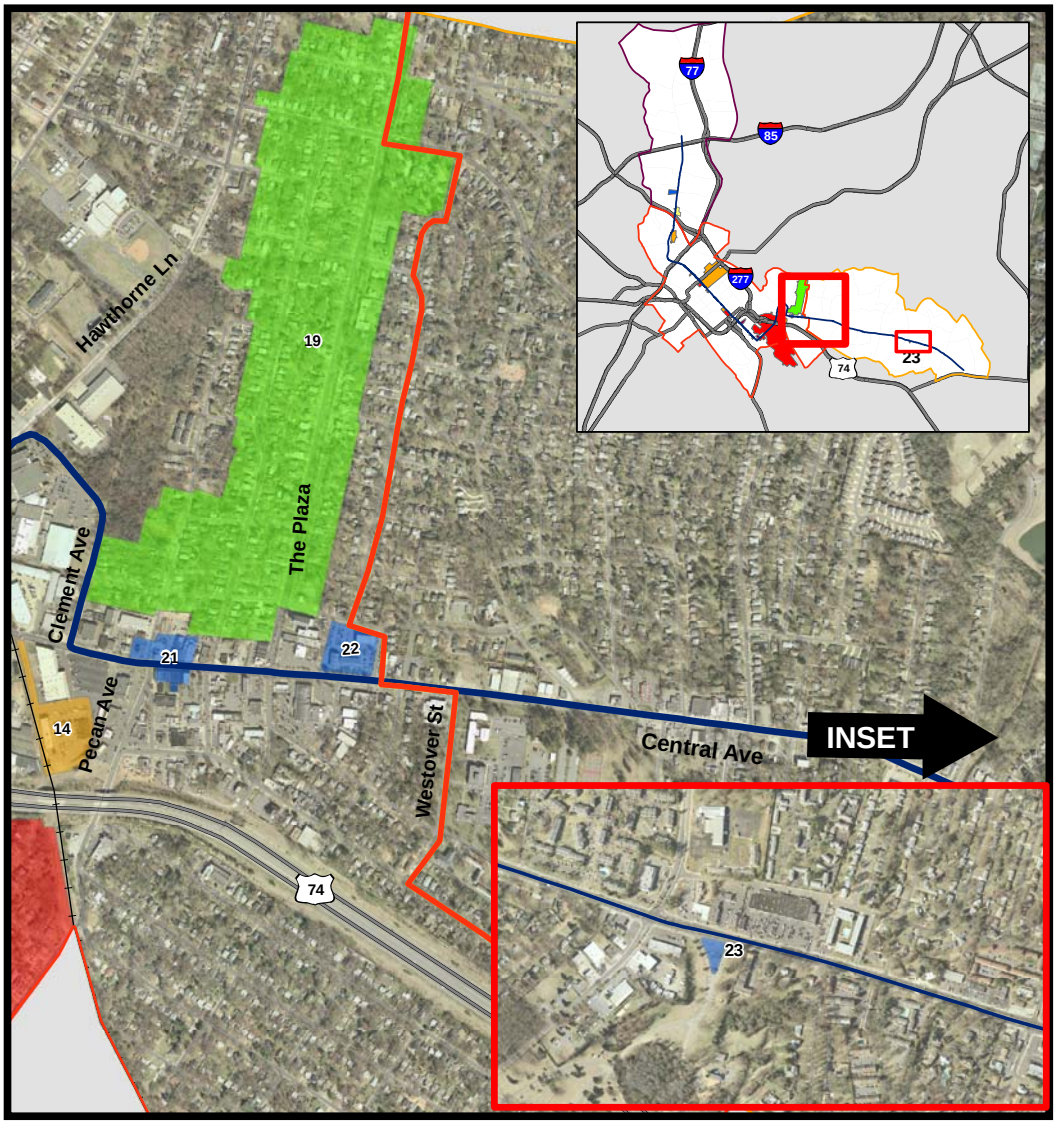


Figure 3-45: Historic Resources Map (Central Avenue)



Legend

Streetcar Alignment
Railroads

Sub-Areas

Beatties Ford
Uptown
Central Avenue

Historic Architectural Resources

National Register (NR)-listed resources
Resources Determined Eligible for NR listing
Charlotte-Mecklenburg historic landmarks recommended as NR-eligible
Charlotte-Mecklenburg historic district recommended as NR-eligible
Other resources recommended as NR-eligible
Other resources recommended as not NR-eligible

N

0 550 1,100 2,200 Feet

CATS
URS TEAM

Figure No.:

Page No.:

CENTRAL AVENUE: HISTORIC RESOURCES

Map Data Sources: Mecklenburg County, NC; and URS Corporation
Date: July 2006

Resources Previously Determined Eligible for Listing in the National Register that Appear to Continue to Remain Eligible

- Johnson C. Smith University Historic District [URS #6] (East side of Beatties Ford Road, north of Martin Street)
- West Avenue Presbyterian Church/Mount Moriah Primitive Baptist Church [URS #7] (747 West Trade Street)
- Fourth Ward Historic District [URS #8] (West Trade Street at south, West Eleventh Street at north, North Church Street at east, and North Smith Street and railroad tracks at west)
- (Former) First National Bank Building [URS #9] (112 South Tryon Street)
- Wachovia Bank and Trust Company Building [URS #10] (129 West Trade Street)
- Charlotte City Hall [URS #11] (600 East Trade Street)
- Medical Office Building [URS #12] (1530 Elizabeth Avenue)
- R.C. Biberstein House[URS #13] (1600 Elizabeth Avenue)
- Cole Manufacturing Company [URS #14] (1318 Central Avenue)

Charlotte-Mecklenburg Historic Landmarks Recommended as Eligible for National Register Listing

- Charlotte Water Works/Vest Station [URS #15] (East side of Beatties Ford Road between Oakland and Patton Avenues)
- Excelsior Club [URS #16] (921 Beatties Ford Road)
- (Former) Grand Theatre/Pharr Building[URS #17] (333 Beatties Ford Road)
- Builders Building [URS #18] (312 West Trade Street)

Charlotte Local Historic Districts Recommended (in part) as Eligible for National Register Listing

- Plaza-Midwood Historic District [URS #19] (Northeast of junction of Clement Avenue and south side of Hamorton Place)

Other Resources Recommended as Eligible for National Register Listing

- (Former) West Charlotte High School [URS #20] (1415 Beatties Ford Road)
- Central Avenue Commercial Historic District [URS #21] (1501-1521 and 1500-1518 Central Avenue)
- (Former) Midwood School/Lawyers Road School [URS #22] (1817 Central Avenue)
- World War II Veterans Memorial [URS #23] (South side of Central Avenue east of Norland Road)

Other Resources Recommended as Not Eligible for National Register Listing

- (Former) Central High School [URS #24] (Northeast corner of Elizabeth Avenue and North Kings Drive)
- House [URS #25] (1430 Elizabeth Avenue)
- Hawthorne Medical Center (Demolished) [URS #26] (301 Hawthorne Lane)

- (Former) First Methodist Protestant Church [URS #27] (1203 Central Avenue)
- (Former) Queens Pie Company Building [URS #28] (1212 Central Avenue)

3.11.4 Environmental Impacts and Benefits

3.11.4.1 Short-term Impacts and Benefits

Archaeological Resource

All reasonable precautions have been taken to identify archaeological sites of potential significance to minimize damaging these resources. Still, because archaeological resources by their very nature are hidden beneath urban development, their extent and condition are unknown. Clearing, grubbing, excavation, and other construction actions have the potential to damage or destroy any archaeological resources that may remain intact. However, construction activities generally would be confined to areas disturbed by previous street construction, utility installations, and other types of urban development and any adverse effects are expected to be limited.

Historic Resources

Construction-related impacts, such as effects from noise, vibration, and deteriorated air quality, were analyzed. Short-term impacts during project development would be associated with:

- Physical disturbance due to construction activities;
- Noise and vibration of construction and operation; and
- Construction of the guideways and stations.

Impacts generally would be confined to the project corridor, almost entirely in existing streets. Ancillary facilities and landscaping, as well as any necessary relocation of utilities may extend beyond this corridor, but have not been identified at this stage of project development. However, construction activities would largely be confined to previously disturbed areas.

Typical construction noise levels in 50 feet of the construction site for various pieces of construction equipment are presented in Section 3.7 Noise and Vibration. Noise and vibration levels associated with implementing the Streetcar project would not be uncommon for the urban environment of the project area; therefore, construction noise and vibration is not expected to have any substantial effects. However, vibration could reach a level that potentially could damage loosely attached architectural embellishments or older elements of sensitive historical structures to a distance of about 50 feet beyond the construction right-of-way. None of the historical buildings in the corridor would be directly affected by construction ground disturbance, and none are likely to be affected by construction vibration or noise.

3.11.4.2 Long-term Impacts and Benefits

CATS is involved in ongoing coordination with the HPO to determine project impacts within the APE. The HPO is concerned with potential degradation of the visual environment in the vicinity of historic resources from the location and design of electrical substations. Siting of the substations depends on many factors, but can be somewhat flexible to avoid and minimize impacts to visually

sensitive resources. Efforts will be made to position substations away from historic resources and to locate them with compatible land uses such as in parking garages and on commercial properties.

Presently, CATS is working on developing a draft map of all TPSS locations to be delivered to the State Historic Preservation Office in April 2007. Once HPO has the opportunity to review the map they will provide a letter making a conditional determination that, pending review of the preliminary engineering design plans, the project will have no effect on historic resources within the APE.

3.11.5 Mitigation

3.11.5.1 Archaeological Resource

If archaeological resources are discovered, they would be evaluated and investigations would be conducted to recover information from any significant sites.

3.11.5.2 Historical Resources

No adverse visual, air quality, noise, and vibration impacts on historic resources are anticipated to be associated with construction activities. Nevertheless, efforts will be made to design project elements to be compatible with existing visual characteristics and standard measures to abate noise would be included in the construction specifications. If any unforeseen impacts are identified during subsequent stages of project implementation, CATS will engage the HPO for possible revision of the determination of effect and to identify potential mitigation measures.

3.12 PARKLANDS

In this section, parklands located within the study area are examined for potential environmental impacts and benefits of the project and a discussion of any necessary mitigation measures is presented.

3.12.1 Legal and Regulatory Framework

49 USC 303: Section 4(f) of the Department of Transportation Act of 1966 (Section 4(f)) declares a national policy to preserve, where possible, “the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites.” Projects can only cross these special lands if there is no feasible and prudent alternative, and the sponsoring agency demonstrates that all possible planning to minimize harm has been accomplished. Visual resource mitigation may be required in certain instances as part of these plans.[98]

3.12.2 Method

Neighborhood, community parks, and preserves were identified using the Mecklenburg County Geographic Information System (GIS) and information from the Mecklenburg County Parks and Recreation Department. The National Parks Service and the North Carolina Division of Parks and Recreation were also consulted. A half mile buffer of the streetcar centerline was used to identify the parklands that may potentially be impacted by the project. In addition, field visits were conducted to inventory park resources along the streetcar alignment.

3.12.3 Existing Conditions and Resources

In this section, parklands (including greenways), recreation centers, and wildlife/waterfowl refuges that may potentially be impacted by the project are identified. The National Parks Service and the North Carolina Division of Parks and Recreation indicate no federal or state parks are located within the study area. The majority of the parks described in this section are maintained by the Mecklenburg County Park and Recreation Department.

3.12.3.1 Study Area Parklands

Mecklenburg County and the City of Charlotte have numerous parks, open spaces, and recreation facilities. A total of 37 of these facilities, including three parks are within a half-mile of the streetcar alignment (see Figure 3-46 through 3-48). Table 3-35 identifies each facility by name, location, type of resource, and size.

Directly on the streetcar line, there are two educational institutions with open space and four parks. Johnson C. Smith University and Central Piedmont Community College (CPPC) campuses include open space and athletic facilities, however, these campuses are generally only available for student use. Frazier Park, St. Mary's Chapel, Independence Park, and Veteran's Park are parks located directly on the streetcar alignment. Other recreational areas near the alignment that are potential destinations for streetcar riders include the Five Points Park, the Mecklenburg County Aquatic Center, Old Settler's Cemetery, "The Green," Ray's Splash Planet, Marshall Park, Little Sugar Greenway, and Briar Creek Greenway. These parkland resources are described in the following section.

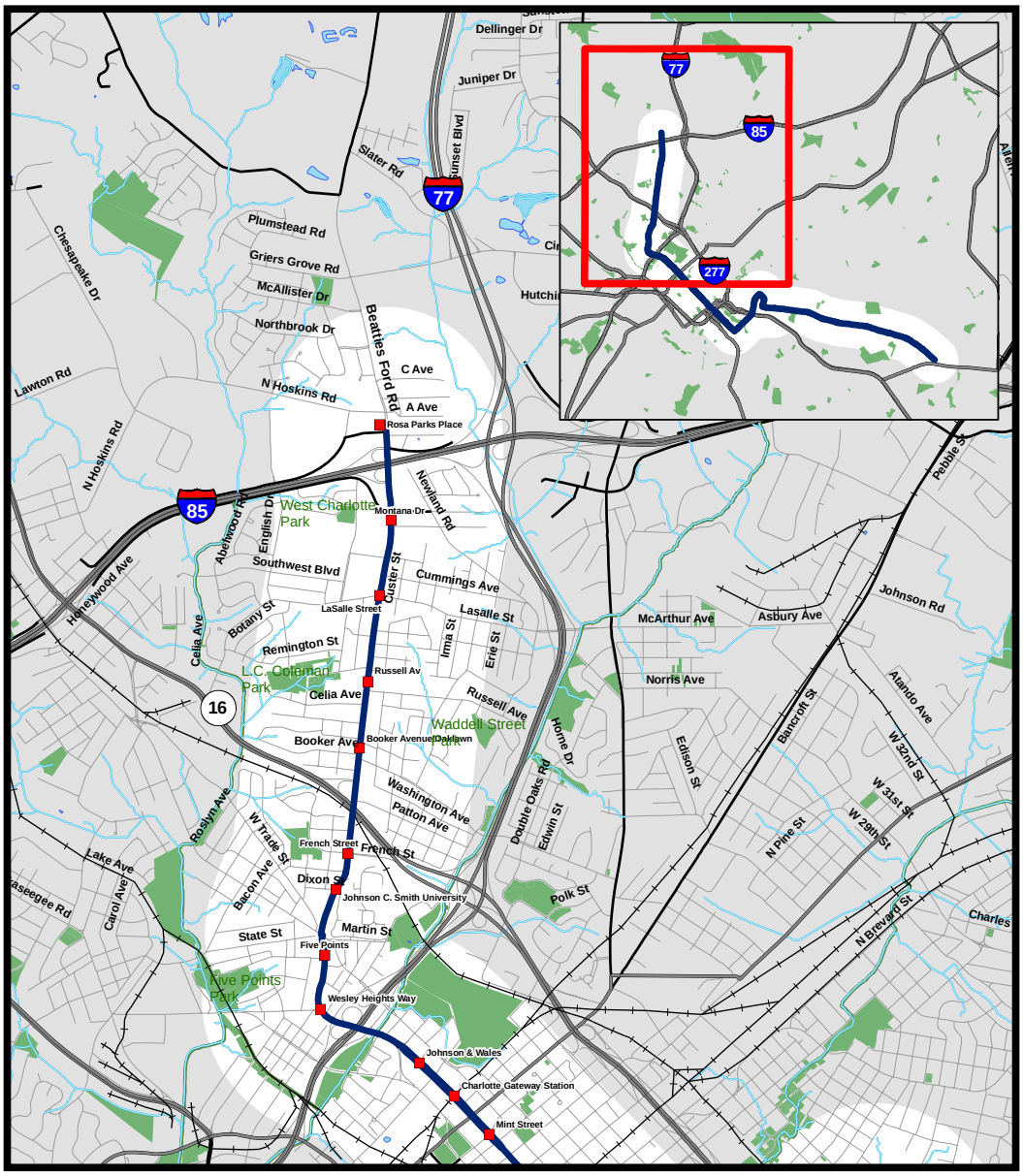
Table 3-35: Parks within a Half-Mile of the Streetcar

Park	Location	Type	Acres
Aquatic Center	800 E 2nd St	Special Facility	4.1
Briar Creek Greenway	No Address	Greenways	0.0
Biddleville Park	500 Andrill Ter	Neighborhood Park	3.2
Five Points Park	200 French St	Neighborhood Park	9.2
Fourth Ward Park	301 N Poplar St	Neighborhood Park	2.9
Frazier Park	1200 W 4th St Ext	Neighborhood Park	16.4
First Ward Center	610 E 7th St	Recreation Center	0.0
First Ward Park	301 N McDowell St	Neighborhood Park	2.7
Grady Cole Center	310 N Kings Dr	Special Facility	3.2
Hawthorne Center	345 Hawthorne Ln	Recreation Center	0.0
Independence Park	300 Hawthorne Ln	Neighborhood Park	24.0
Irwin Center	329 N Irwin Av	Recreation Center	15.0
JCSU Track	100 Beatties Ford Rd	Special Facility	9.6
Kilborne District Park	2600 Kilborne Dr	District Park	48.1
L.C. Coleman Park	1501 McDonald St	Neighborhood Park	17.8
Lincoln Heights Park	No Address	Neighborhood Park	0.0
Little Sugar Creek Greenway	No Address	Greenways	0.0
Little Peoples Park	1120 Harrill St	Neighborhood Park	1.0
Marshall Park	No Address	District Park	0.0
Memorial Stadium	310 N Kings Dr	Special Facility	6.7
Merry Oaks Center	No Address	Recreation Center	0.0

Table 3-35: Parks within a Half-Mile of the Streetcar (continued)

Park	Location	Type	Acres
Morgan Park	1509 Baxter St	Neighborhood Park	2.0
Ninth Street Park	417 W 9th St	Neighborhood Park	1.0
Old Settler's Cemetery	No Address	Special Facility	0.0
Phillip O. Berry Recreation Center	440 Tuckaseegee Rd	Recreation Center	0.0
Ray's Splash Planet	215 N. Sycamore St.	Special Facility	0.0
Seversville Park	540 S Bruns Ave	Neighborhood Park	10.8
Staff Annex	1418 Armory Dr	Special Facility	0.0
Staff Office	1900 Park Dr	Special Facility	0.0
St Mary's Chapel/Thompson Park	1129 E 3rd St	Special Facility	3.0
St Pauls Ray Of Hope Center	1401 Allen St	Recreation Center	0.0
The Green	No Address	Special Facility	0.0
Thompson Park	1129 E 3rd St	Neighborhood Park	3.3
Third Ward Park	1001 W 4th St	Neighborhood Park	1.0
Veterans Park	2136 Central Av	Neighborhood Park	19.0
West Charlotte Center	2401 Kendall Dr	Recreation Center	0.0
West Charlotte Park	2401 Kendall Dr	Neighborhood Park	3.2
Wesley Heights Greenway	No Address	Greenways	6.4

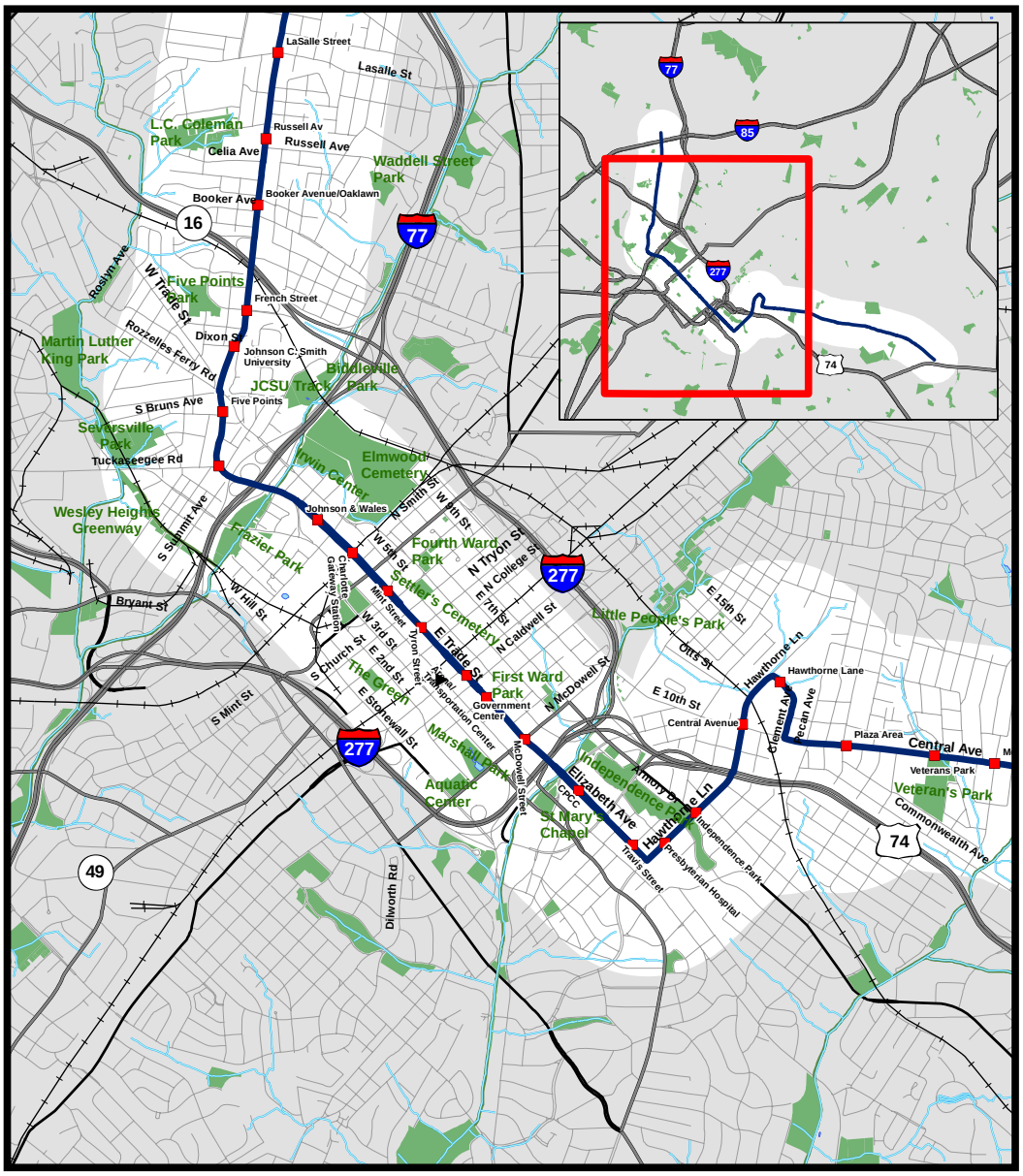
Figure 3-46: Parklands in the Study Area (Beatties Ford)



CATS / URS TEAM	Figure No.:	Page No.:	**BEATTIES FORD ROAD SUB-AREA: PARKLANDS**

Map Data Sources: Mecklenburg County, NC; CATS; ESRI Inc.; and URS Corporation
Date: June 2006

Figure 3-47: Parklands in the Study Area (Center City)

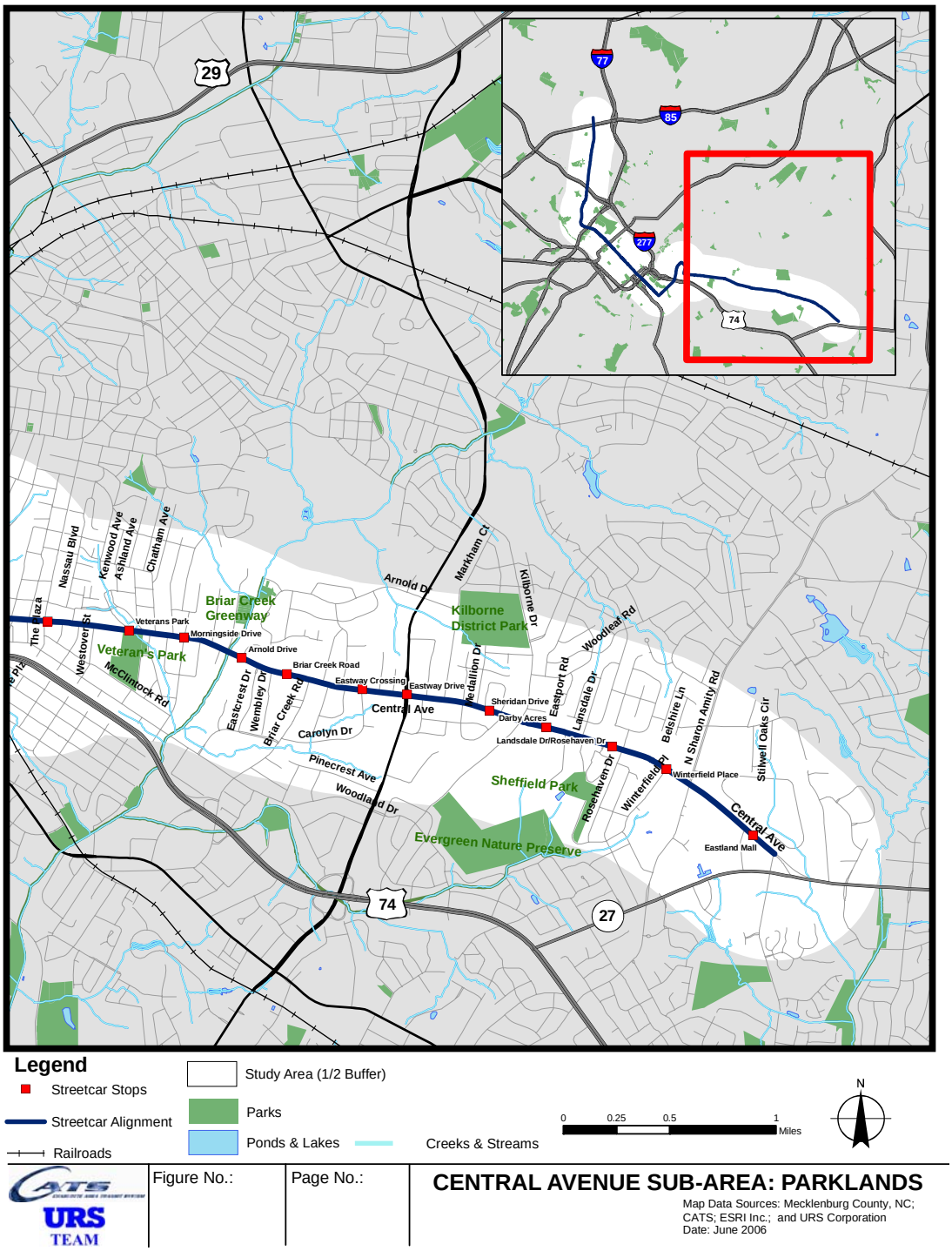


CATS / URS TEAM	Figure No.:	Page No.:

UPTOWN SUB-AREA: PARKLANDS

Map Data Sources: Mecklenburg County, NC; CATS; ESRI Inc.; and URS Corporation
Date: June 2006

Figure 3-48: Parklands in the Study Area (Central Avenue)



3.12.3.2 Parks along the Streetcar Alignment and Potential Destination Parks

The Mecklenburg County Aquatic Center

The Mecklenburg County Aquatic Center is located at 800 East Second Street. It is a state-of-the-art indoor aquatic and exercise facility. Resources include an Olympic size pool, a kid's pool, and shower. The exercise equipment includes free weights and aerobic machinery. The entire facility is approximately 4.1 acres. It is in close proximity to Marshall Park and government buildings. The Mecklenburg County Aquatic Center is a destination location within a five to ten minute walk from the Government Center streetcar stop.

Marshall Park

Marshall Park is a passive open space with park benches and shaded areas. It includes a lake and fountain. This park is near the Mecklenburg Aquatic Center and is surrounded by Government Center and Charlotte Mecklenburg Schools office buildings. Government employees and persons from other nearby offices often use this park. Marshall Park occasionally will serve as a destination location when it hosts events such as Earth Day. It is a five to ten minute walk from the Government Center streetcar stop.

The Green

The Green is a passive open space owned by Wachovia Bank. It hosts many musical and other cultural events. The park is above a parking garage surrounded by offices, condominiums, retail stores, and is across the street from the Charlotte Convention Center. The Green is artfully arranged with an innovative interactive walkway, diverse public art, including a sprayground with a fountain where children play. It is a destination location and is a five to seven minute walk from the Arena/Transportation Center streetcar stop.

Old Settler's Cemetery

Old Settler's Cemetery is a cemetery where many of Charlotte's important historical figures are buried. Today, it serves as a tourist destination and a passive open space for nearby residents and office workers as well as a dog park. Old Settler's Cemetery has many shaded areas, park benches, and quaint walkways. Old Settler's Cemetery is near Discovery Place, fine restaurants, condominiums, and major office buildings, like Bank of America. It is a five minute walk from the Tryon Street streetcar stop.

Frazier Park

Frazier Park is located on 1200 West 4th Street Ext., just inside the I-277 loop. The park is located between the Wesley Heights and Johnson & Wales streetcar stops. It connects with the Irwin Greenway, along Irwin Creek up to Ray's Splash Planet and Elmwood Cemetery. Frazier Park is 11.9 acres and includes a soccer/flag football field, two full court basketball courts, two tennis courts, greenway trails along Irwin Creek, and a playground. It also has a memorial for young children who died in Charlotte. Frazier Park is an active park hosting office tournaments for flag football and soccer for nearby Center City workers.

Ray's Splash Planet

Ray's Splash Planet is located at 215 N. Sycamore Street, about one-half mile from Frazier Park along the Irwin Creek Greenway. The facility includes a water park, fitness center, dance/aerobic room, cardiovascular theater, freeweights,

resistant equipment, and party rooms. Outside is a large open space for various activities and picnicking. Ray's Splash Planet is a ten minute walk from the Johnson & Wales streetcar stop. It is one of Mecklenburg County's most popular destination recreation centers. The park is near Elmwood Cemetery and Irwin Elementary School.

St. Mary's Chapel/Thompson Park

St. Mary's Chapel/Thompson Park is located on 1129 3rd Street, west of the I-277 loop. The CPCC streetcar stop would be in close proximity to the park, approximately a five minute walk. Its facilities consist of beautifully shaded areas with park benches, a kiosk, and a Vietnam Memorial. It also has a quaint church called St. Mary's Chapel that hosts many weddings. St. Mary's Chapel/Thompson Park is also adjacent to the planned Little Sugar Greenway which will be Charlotte's signature greenway and is anticipated to be a major destination for both tourists and residents.

Independence Park

Independence Park is located at 300 Hawthorne Lane. The park is anticipated to have a streetcar stop at one of the park's entrances. Independence Park is 24 acres with a baseball field, two basketball courts, two tennis courts, a rose garden, hiking trails, walking trails, a playground, volleyball court, and picnic areas.

Veteran's Park

Veteran's Park is located at 2136 Central Avenue, near The Plaza area. A streetcar stop is planned for the park. The park is 19 acres and includes a basketball court, spray ground, baseball field, softball field, 6 tennis courts, 3 volleyball courts, 9-hole disk golf course, 2 outdoor shelters, indoor shelter, and a playground. It is a popular park which draws many nearby residents.

Briar Creek Greenway

Briar Creek Greenway is the latest Mecklenburg County Park and Recreation Department greenway. It is a five minute walk from the Arnold Drive streetcar stop. The greenway provides walkways and trials connecting to Merry Oaks Center, a popular neighborhood park and the Charlotte Country Club. It is a passive park with benches and shaded areas.

Five Points Park

Five Points Park is within a five minute walk from the French Street streetcar stop. It is located at 200 French Street. The park is 9 acres with a basketball court, two tennis courts, walk trails, a playground, and picnic areas.

3.12.3.3 Planned Parks

In the *Center City 2010 Vision Plan*, city planners question how to make Charlotte into a memorable city through its transit and parks. In the planning study, it recommends tying neighborhoods through the development of open spaces and a connection to regional parks. The plan also advocates the concept of "urban parkways" with green streets which are two lane vehicular streets with wide landscaping zones. This green space connectivity along with its distinct neighborhoods and their histories, unique architecture would create a uniquely Charlotte "sense of place." Historically, Charlotte has been referred as the "City of Trees".

Recommendations in the *City Center 2010 Vision Plan* for additional open space, parks, and recreation in Center City provides an opportunity for improved quality of life for Center City residents with the opportunities for open space to run, play, read, skate, or just enjoy the outdoors. Proposed park locations in Center City have not been finalized but could include the addition of park lands in Center City, specifically in the Third Ward.

The Little Sugar Greenway which crosses the streetcar alignment will provide a connection to a number of other parks that are not adjacent to the alignment or included in the study area.

3.12.4 Environmental Impacts and Benefits

3.12.4.1 Short-term Impacts and Benefits

Short-term impacts to parklands adjacent to the streetcar alignment are expected to occur during implementation of the project. The presence of construction activities (e.g., roadways torn up, temporary barriers, signs, etc.) and various forms of equipment (trucks, tractors, jackhammers, concrete cutters, etc.) would detract from the recreational and aesthetic qualities of some parkland resources. Construction activities may also temporarily impact access to parklands.

3.12.4.2 Long-term Impacts and Benefits

The project is located entirely within the urbanized area of the City of Charlotte. Construction of the project is on existing right-of-way or within previously disturbed urban areas. Acquisition of additional right-of-way is limited to areas adjacent to the right-of-way for minor road widening associated with transit stops and for placement of traction power substations (TPSS). One TPSS is required for approximately every one half mile of streetcar guideway to power the vehicles. Where possible the TPSS structures will be located within existing buildings or parking structures, otherwise new structures measuring approximately 15 feet wide by 24 feet long will be constructed. There will be no TPSS directly impacting parklands.

Additionally, a vehicle maintenance facility (VMF) will be constructed to store and maintain the streetcars when they are not in operation. The VMF is in an area that is not substantially disruptive to existing land uses or any parkland. The construction and operation of the streetcar is not expected to affect any natural areas including parklands, wildlife habitat or protected species. Therefore, no substantial impacts to the parklands identified in the study boundary are anticipated. Rather, the high quality, high capacity streetcar system would provide enhanced access to parklands for Charlotte residents and visitors. Improved access to parklands could help bolster tourism by providing enhanced access to destination parks such as the Mecklenburg County Aquatic Center while also improving community health and fitness by enhancing access to recreational areas.

3.12.5 Mitigation

The entire streetcar alignment will be on existing right-of-way within urbanized areas of the City of Charlotte. Therefore, the streetcar is not expected to substantially impact study area parkland resources. Hence, no mitigation is needed for the streetcar project to offset negative impacts to parklands.

3.13 ECONOMIC IMPACTS

3.13.1 Legal and Regulatory Framework

In Charlotte, the *Economic Development Strategic Framework 2005-2010* (Strategic Framework) identifies the vision for economic development in the city and identifies relevant economic development trends and actions the City of Charlotte can take in order to attain their vision. The economic development vision for the City of Charlotte is "…to attain a vision for Charlotte of being the most prosperous and livable city for all citizens through quality economic development." The three primary goals set by the City of Charlotte to attain this vision are: (1) quality job growth, (2) tax base expansion, and (3) increased personal income. The five focus areas of the Strategic Framework are: (1) business attraction and retention; (2) transit corridor and business district revitalization; (3) small business/entrepreneurial development; (4) workforce development; and (5) hospitality, cultural and tourism assets.[99]

3.13.2 Method

Existing conditions and resources in the study area are described using information available from the City of Charlotte and Mecklenburg County economic development and budget offices, data from the Charlotte Chamber of Commerce, and the State Employment Securities Commission (ESC). This information is used to describe current economic conditions through factors such as employment, employment sectors and special economic activities. Based on this information, a qualitative assessment of how the Build, No-Build and TSM alternatives might impact the Study Area economy is performed.

3.13.3 Existing Conditions and Resources

According to the Strategic Framework, "Charlotte has enjoyed a 'golden age' of seemingly unlimited economic growth during the last fifteen years." This golden age was characterized by increases in jobs, increases in new business firms and investments, increases in the tax base and increases in the population. The popularity and economic position of Center City also increased, as the city gained NBA and NFL franchises, established museums in Center City and residents moved closer to work and entertainment options.[100]

Challenges facing Charlotte identified in the Strategic Framework include globalization of the economy which impacts the regional manufacturing base, attracting people in the 25 to 44 age group to replace retiring baby-boomers, a likely slow-down in growth of the banking industry as merger activity decreases, potential threats to the hub status of the Charlotte Airport as US Airways faces financial problems, and maintaining environmental quality and development standards in the face of continued growth so that the area remains attractive to businesses and families.[101]

In this section, current and projected economic conditions in Charlotte are described through characteristics of employment, employment sectors, and special economic activities.

3.13.3.1 Employment

According to the Strategic Framework, Mecklenburg County accounts for three out of every five jobs in a multi-county, two-state region. A challenge facing Charlotte will be to attract workers in the 25 to 44 age group to replace retiring

baby-boomers. According to the Strategic Framework, "The shortage in the quality and quantity of available labor will be one of the most significant constraints on economic growth."[102] Information pertaining to current and projected employment in the study area and associated geographies was provided in Section 3.13.4 and is summarized here. Additional information is presented at the sub-area level in Table 3-36 and TAZ level in Figure 3-49.

Table 3-36: Current and Projected Employment

Geographic Area	2000	2030	Growth 2000-2030	
			Absolute Growth	**Percent Growth**
Mecklenburg County[a]	529,672	948,291	418,619	79.0
Study Area[b]	95,674	151,650	55,976	58.5
Beatties Ford Road Sub-Area[b]	4,454	7,547	3,093	69.4
Center City Sub-Area[b]	83,378	129,711	46,333	55.6
Central Avenue Sub-Area[b]	7,842	14,392	6,550	83.5

[a] Source: Mecklenburg-Union Metropolitan Planning Organization. *2030 Long Range Transportation Plan*. June 2005.
[b] Source: Charlotte Area Transit System.

According to the data shown in Table 3-36 Mecklenburg County as a whole is expected to have a higher rate of increase in employment between 2000 and 2030 compared to the study area. Although the Center City sub-area is expected to have the lowest percent-increase in employment in the study area, it is expected to remain the center of employment.

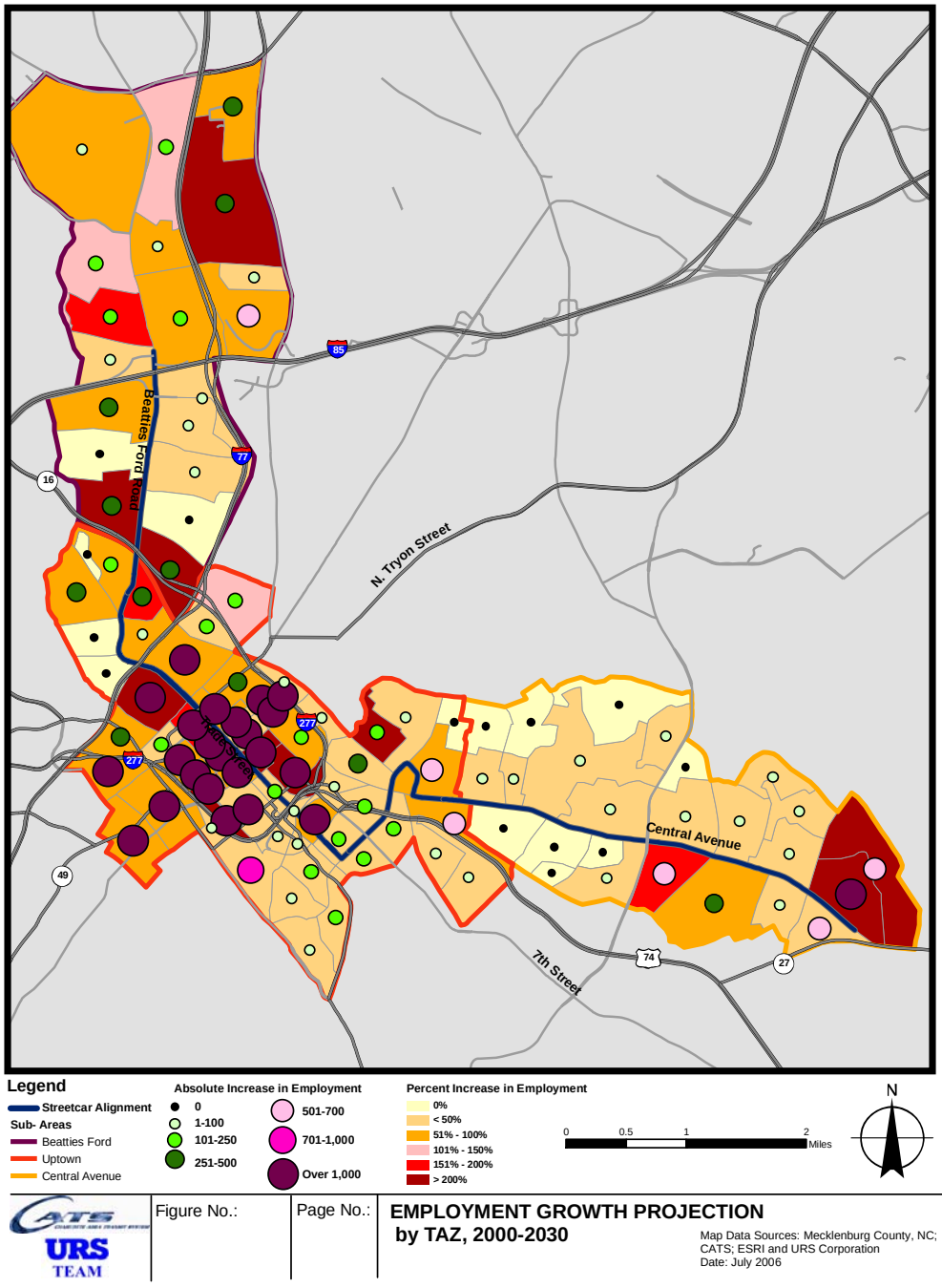
The total labor force, employed population, unemployed population and unemployment rate are provided in Table 3-37 for Charlotte and surrounding geographies. Note that the difference in employment in Mecklenburg County compared to the employment shown in Table 3-38 is due to different data sources rather than a decrease in employment between 2000 and 2005. The unemployment rates for Charlotte and Mecklenburg County are slightly lower than those for the region and State of North Carolina as a whole.

Table 3-37: Civilian Labor Force Estimates for 2005

Geographic Area	Labor Force	Employed	Unemployed	Rate
North Carolina	4,332,710	4,105,734	226,976	5.2
Charlotte-Gastonia-Concord MSA	795,694	754,579	41,115	5.2
Mecklenburg County	430,061	409,047	21,014	4.9
Charlotte	329,085	313,295	15,790	4.8

Source: *Civilian Labor Force Estimates*. Employment Security Commission of North Carolina. Available: http://www.ncesc.com/lmi/laborStats/laborStatMain.asp?init=true. Accessed: 5 July 2006.

Figure 3-49: Current and Projected Employment at the TAZ Level



3.13.3.2 Employment Sectors and Employers

Information regarding sectors of employment and employers in the area is provided in this section. In 2005, the estimated annual average employment for all industries was 520,835 in Mecklenburg County and 719,849 for the Charlotte-Gastonia-Concord MSA. Average 2005 wages were estimated at $49,140 for Mecklenburg County and $44,460 for Charlotte-Gastonia-Concord MSA. These are both higher than the state-wide average wage per employee of $35,932. In Table 3-38 year 2005 employment and wage data for North Carolina, the Charlotte-Gastonia MSA and Mecklenburg County are shown. The top three employment sectors for North Carolina are Manufacturing, Health Care and Social Assistance, and Retail Trade. The top three in the Charlotte-Gastonia-Concord MSA are Retail Trade, Manufacturing, and Local Government. The top three employment sectors in Mecklenburg County are Retail Trade, Finance and Insurance, and Health Care and Social Services.

Table 3-38: Year 2005 Employment and Wage Data by Employment Sector

Industry	North Carolina		Charlotte-Gastonia-Concord MSA		Mecklenburg County	
	Annual Average Employment	Average Annual Wage Per Employee	Annual Average Employment	Average Annual Wage Per Employee	Annual Average Employment	Average Annual Wage Per Employee
Total Federal Government	61,638	$52,260	6,309	$56,732	5,246	$58,864
Total State Government	170,766	$37,024	10,519	$33,956	6,648	$36,192
Total Local Government	415,340	$34,164	74,007	$39,468	46,021	$43,108
Agriculture Forestry Fishing & Hunting	29,328	$25,635	2,213	$30,846	858	$34,141
Mining	3,499	$58,788	351	$53,409	171	$60,185
Utilities	14,383	$64,553	2,803	$68,000	1,823	$74,796
Construction	232,326	$35,088	49012	$41,849	32,220	$45,294
Manufacturing	569,308	$42,703	74,444	$47,919	34,966	$55,726
Wholesale Trade	170,524	$51,171	43,324	$53,259	35,231	$55,685

Table 3-38: Year 2005 Employment and Wage Data by Employment Sector (cont.)

Industry	North Carolina		Charlotte-Gastonia-Concord MSA		Mecklenburg County	
	Annual Average Employment	Average Annual Wage Per Employee	Annual Average Employment	Average Annual Wage Per Employee	Annual Average Employment	Average Annual Wage Per Employee
Retail Trade	450,486	$23,099	79,542	$25,341	53,999	$27,092
Transportation and Warehousing	136,571	$37,845	35,402	$42,337	30,067	$43,541
Information	78,013	$54,055	25,439	$63,817	23,766	$65,469
Finance and Insurance	142,751	$64,405	53,574	$87,692	50,367	$90,779
Real Estate and Rental and Leasing	50,132	$33,487	11,643	$42,402	9,645	$45,070
Professional and Technical Services	162,927	$53,577	36,990	$60,317	32,038	$63,098
Management of Companies and Enterprises	63,407	$79,249	21,353	$108,823	19,738	$113,883
Administrative and Waste Services	225,671	$24,462	51,903	$28,163	40,804	$29,341
Educational Services	344,234	$34,131	44,419	$34,324	27,600	$36,398
Health Care and Social Assistance	488,681	$36,187	72,978	$41,764	47,669	$45,238
Arts Entertainment and Recreation	50,017	$25,015	10,755	$41,511	7,501	$39,755
Accommodation and Food Services	313,509	$12,803	56,436	$14,738	41,031	$15,941
Other Services Ex. Public Admin	98,537	$23,387	20,416	$24,773	15,276	$25,648

Table 3-38: Year 2005 Employment and Wage Data by Employment Sector (cont.)

Industry	North Carolina		Charlotte-Gastonia-Concord MSA		Mecklenburg County	
	Annual Average Employment	Average Annual Wage Per Employee	Annual Average Employment	Average Annual Wage Per Employee	Annual Average Employment	Average Annual Wage Per Employee
Public Administration	220,236	$37,086	25,037	$41,202	14,852	$46,469
Unclassified	12,531	$27,116	1,820	$31,822	1,222	$34,938
Total/Average	3,857,059	$35,932	719,849	$44,460	520,835	$49,140

Source: Employment Security Commission of North Carolina, 2005

Total employment growth for all industries in the Mecklenburg County between 2002 and 2012 is projected to be about 30 percent. The Professional and Business Services sector is projected to see the highest growth rate at 43 percent. The Natural Resources and Mining and Manufacturing sectors are the only industry groups expected to have a decline in employment between 2002 and 2012. Projected employment and growth between 2002 and 2012 by employment sector are shown in Table 3-39.

Table 3-39: Mecklenburg County Projected Growth by Employment Sector 2002-2012

Major Industry Group	Total Employment 2002	Total Employment 2012	Percent Growth 2002-2012
Natural Resources and Mining	2,251	1,952	-15.3
Manufacturing	41,220	41,014	-0.5
Goods-Producing	74,702	83,621	11.9
Government	23,726	28,337	19.4
Trade, Transportation and Utilities	115,078	139,828	21.5
Information	20,823	26,484	27.2
Other Services (except Government)	14,942	19,279	29.0
Construction	31,231	40,655	30.2
Services-Providing	432,861	574,668	33.8
Education and Health Services	65,287	87,441	33.9
Financial Activities	57,085	79,402	39.1
Leisure and Hospitality	42,901	60,611	41.3
Professional and Business Services	93,019	133,286	43.3
Total	**1,015,126**	**1,316,578**	**29.7**

Source: The Employment Security Commission of North Carolina, North Carolina Occupational Trends, Projections 2002-2012, http://eslmi23.esc.state.nc.us/projections/. Accessed 5 July 2006.

More banking resources are headquartered in Charlotte than in all other U.S. cities except New York, however, the diversity of employers in Charlotte extends beyond financial institutions.[103] The 25 largest employers in Mecklenburg County are shown in Table 3-40. Many of these employers are also headquartered in the County, including Wachovia Corporation, the County's largest employer. According to the Charlotte's Economic Development Office (EDO), in 2005, the total number of new and expanded firms in Charlotte, as reported by the Charlotte Chamber of Commerce, is projected to equal or exceed the 2004 number, but not match the 2003 post-recession high. According to the EDO, "While the 2004 and 2005 numbers won't approach the 2003 high, these numbers continue to show a very positive trend for Charlotte and Mecklenburg County."[104]

Table 3-40: Top 25 Largest Employers in Mecklenburg County

Company	Employment
Wachovia Corporation[a]	18,967
Carolinas Healthcare System[a]	15,257
Charlotte-Mecklenburg Schools[a]	15,134
Bank of America[a]	13,000
City of Charlotte[a]	5,838
US Airways	5,749
Duke Energy Corporation[a]	5,400
Mecklenburg County[a]	5,373
Presbyterian Healthcare/Novant Health[a]	5,166
Excel Staffing Services of Charlotte, Inc.	4,500
Lowe's	4,062
Ruddick/Harris Teeter[a]	3,867
UNC at Charlotte[a]	3,764
Bi-Lo	3,210
YMCA of Greater Charlotte[a]	2,838
Bell-South Telecommunications	2,760
U.S. Postal Service	2,618
Belk, Inc. [a]	2,500
Compass Group[a]	2,500
Family Dollar Stores, Inc. [a]	2,500
Wal-Mart Stores, Inc.	2,256
Adecco	2,000
Food Lion, Inc.	1,945
Time Warner Cable	1,800
IBM	1,750

Source: *Largest Employers 2005*. Charlotte Chamber of Commerce. Available: http://www.charlottechamber.com/content.cfm?category_level_id=347&content_id=1738. Accessed: 5 July 2006.
[a] Headquartered in Mecklenburg County

3.13.3.3 Special Economic Activities

Two of the focus areas identified in the Strategic Framework relate to the Center City Streetcar; transit corridor and business district revitalization, characterized generally in this section as transit oriented development (TOD); and hospitality, cultural, sports and tourism assets.

Transit Oriented Development

According to a presentation given by the Director of the Charlotte-Mecklenburg Planning Commission at the 3rd Annual Transit and Land Use Summit, Charlotte's definition of transit oriented development (TOD) is "A compact neighborhood with housing, jobs and neighborhood services within easy walking distance of a transit station."[105] One of the five focus areas described in the Strategic Framework is Transit Corridor and Business District Revitalization. According to the Strategic Framework, "The City will take a lead role in redeveloping land around transit stations, in distressed business districts and other in-fill redevelopment opportunities. It will form partnerships with private developers to leverage City resources and grow the tax base." In the Strategic Framework it is noted that distressed areas close to Center City can become vibrant economic centers with commitment from both the City of Charlotte and private partners. It is also noted that the City of Charlotte targets redevelopment around current and future transit corridors to leverage the City's commitment to invest in mass transit.

Several areas within the study area are included among the key locations identified for redevelopment in the Strategic Framework; the Belmont neighborhood, West Trade Street and the Eastland neighborhood. The solicitation of private sector redevelopment of City-owned land around the new arena is also recommended. A market analysis with recommended revitalization strategies was conducted for the West Trade/Beatties Ford Road Corridor in 2001. The subject area extends from I-77 to Cindy Lane and is also part of the Center City Streetcar corridor in the Center City and Beatties Ford Road sub-areas. Among the goals identified in the analysis for revitalization of this corridor were to close the development gap between the Gateway village development in Center City and the Johnson C. Smith University campus. Another goal was to improve the perception and appearance of the West Trade/Beatties Ford Road corridor by creating a new entrance to the corridor. It is noted in the analysis that one amenity of the corridor is that it is a pedestrian-friendly shopping environment due to the narrow street, the closeness of physical structures to sidewalks and streets, and the small scale of structures. According to an interview of shoppers along Beatties Ford Road, 70 percent indicated that convenience was what they liked about shopping along the corridor.[106] Other action items included in the Strategic Framework fall under the need to recognize and provide for current and future infrastructure and to continue and expand existing programs for revitalization.[107]

As described in Table 3-7, there has been a flurry of development activity in the study area. Two projects were noted in a presentation at the 2005 3rd Annual Transit and Land Use Summit, as exemplifying economic development opportunities in the Center City Streetcar and Southeast Light Rail Corridor. The Elizabeth Avenue development project includes 250,000 square feet of retail space, 340,000 square feet of office space and 810 residential units. The project included a $13 million dollar public investment including a public/private

partnership to fund 1,000 parking spaces. In the Central Avenue sub-area, the Plaza Central projected was noted as exemplifying economic development opportunities. The project included commercial rehabilitation and re-tenanting as well as six new residential projects proposed or under construction. Projects cited in Center City as exemplifying Center City's growth as a cultural, entertainment and residential center include the new arena, ImaginOn, EpiCenter, residential projects including The Vue and The Park, and the Ritz Carlton Hotel.[108]

Another presentation given at the 3rd Annual Transit and Land Use Summit identified the market for Transit Oriented Development (TOD) in Charlotte. In the presentation it was noted that the national trend is a movement toward aging baby-boomers and young generation-X-ers, with fewer families with children and more singles and childless couples. According to two large-scale employment-based surveys conducted by Robert Charles Lesser & Co., LLC, it is estimated that one-third to one-half of the market is interested in more urban environments. The ability to walk from home to destinations such as shops was one of the amenities that attracted people to an urban environment. Fifty-seven percent of those surveyed were interested in living in-town in Charlotte.[109]

Hospitality, Cultural, Sports and Tourism Assets

Another of the five focus areas described in the Strategic Framework is Charlotte's Hospitality, Cultural, Sports and Tourism Assets. According to the Strategic Framework, "The City will continue its leadership role in developing hospitality, cultural, sports and tourism related infrastructure and partner with other organizations to market Charlotte and manage these capital facilities." It is noted that as more facilities, such as Discovery Place, Blumenthal Performing Arts Center, the new arena, Bank of America's Stadium and Charlotte Convention Center cluster in Center City, Center City life becomes increasingly vibrant, diverse and attractive to tourists and convention attendees.[110]

3.13.4 Environmental Impacts and Benefits

3.13.4.1 Short-term Impacts and Benefits

No-Build and TSM Alternatives

There would be no short-term impacts associated with the No-Build and TSM alternatives.

Build Alternative

In the short term, the regional and local economy would experience beneficial impacts in the form of increased local production of materials, services, and labor. Local benefits from construction activity would depend on the magnitude of the expenditures and the ability of local suppliers and the local labor pool to fulfill the demand for construction goods and services. The magnitude of local economic benefits also would be related to the length of the construction period, as expenditures and construction-related employment would occur throughout this period.

Potentially adverse economic effects associated with the construction phase of the project would be short-term and related primarily to the disruption of commercial activity due to impeded access and the diversion of traffic. In most cases, only minor effects would be experienced by area businesses, as the majority of construction activity would be in existing rights-of-way. Small and

marginal businesses would likely be affected to a greater degree than larger businesses, as the viability of these types of enterprises is more sensitive to small variations in the level of commerce.

Businesses beyond the immediate construction zone could also be affected due to lane closures and traffic detours. Construction disturbances also are likely to have a greater effect on businesses that rely on truck deliveries and shipments, timely deliveries of goods, and a constant movement of trucks into and out of their premises (e.g., industrial properties, including manufacturers and distributors) than businesses that rely on pedestrian traffic. However, the loss of any direct access, including on- and off-site parking and inconveniences to pedestrian and vehicle circulation to the site, could result in some temporary loss of business patronage during the construction activity.

3.13.4.2 Long-term Impacts and Benefits

No-Build and TSM Alternatives

The No-Build and TSM alternatives are not likely to have a substantial impact on the economy in the study area. While the Center City Streetcar would facilitate some of the drivers of economic growth including the attraction of Center City for workers between ages 25 to 44 and tourists, transit-oriented development and revitalization of identified priority areas such as the West Trade Street and Beatties Ford Road corridor, these goals are underway and still possible without the project. In addition, TOD projects around the Southern corridor would continue and would help the economy of the study area and city as a whole.

Build Alternative

Implementation of the project would have a number of long-term economic impacts related to its ongoing operation and maintenance expenditures and facilitation of other economic drivers.

One potential negative impact of the Build Alternative could be the displacement of some businesses. This impact is assessed further in Section 3.3.

The operation and maintenance of the streetcar would represent a cost to the City of Charlotte but would also funnel money into the City through the collection of fares and the creation of jobs. The cost-effectiveness of the project is discussed in more detail in Section 5.3, Cost Effectiveness.

It is expected that the Build Alternative would have a positive economic impact by facilitating some of the drivers of economic growth and helping to overcome some of the challenges of economic growth identified in Section 3.13.3. The attraction of workers between the ages of 25 and 44 was noted among the challenges to maintaining positive growth trends in employment. It was also pointed out that demographic trends indicate a growth in the number of singles and couples without children and that this group, in part, composes the market for TOD. The project is expected to help facilitate dense urban land use patterns in the study area and increase its walk-ability. This trend will likely facilitate the attraction of workers in the desired age group to the study area. This attraction would result in an increased employment pool and an increased tax base.

Data on employers and employment sectors shows that Charlotte and the surrounding region have a varied economy, with employment growth expected in all sectors with the exceptions of Natural Resources and Mining and

Manufacturing. While the Build-Alternative would not have a substantial impact on employers or employment sectors; it would serve many of the area's largest employers in the study area, including Wachovia Corporation, Bank of America, US Airways, Duke Energy Corporation, Presbyterian Healthcare, Ruddick, Bell-South and Adecco; and could serve as another amenity attracting business to the study area.

It is expected that the Build Alternative would have a positive impact on ongoing special economic activities. Transit oriented development is a focus area of the Strategic Framework. While there has already been a trend of increased development, especially in the Center City sub-area, the implementation of a viable transit system such as the Center City Streetcar is a key component of TOD and continued development. While TOD would likely take place in the South Corridor under the No-Build and TSM alternatives; TOD would likely fail in other corridors, including the Center City corridor without the implementation of transit amenities.

The Center City Streetcar could be an additional amenity the city could offer to potential visitors to support the focus area identified in the Strategic Framework of hospitality, culture, sports and tourism assets. While strides have already been made in developing attractions such as museums and stadiums to the study area, ease of access to these amenities afforded by the streetcar would add to the attraction of the city and facilitate this goal of the Strategic Framework.

The Center City Streetcar would also help meet some of the specific goals identified for the West Trade/Beatties Ford Road corridor. Specifically, it was noted that the development gap between Johnson C. Smith University and Gateway Village should be bridged. The streetcar would connect these two areas and facilitate the potential for development in this area.

In general, it is expected that the Build Alternative would have a positive impact on the economy in the study area. The Center City Streetcar would add to the quality of life in the study area, making it an attractive place to live and thereby increasing the employment pool; it would serve major employers in the study area; and it would facilitate goals identified in the Strategic Framework including supporting TOD and focusing on hospitality, cultural, sports and tourism assets.

3.13.5 Mitigation

Impacts from construction activities should be temporary and not substantial in nature, as the construction would be staged and restricted to the designated alignment and streetcar stops. Deliveries of construction materials would be controlled to minimize disruptions to surrounding areas. Various other measures would be implemented, as appropriate, to further minimize the possibility of short-term impacts associated with construction activities, including:

- Restricting construction activities to off-peak hours;
- Confining heavy construction vehicle operations to the location of the alignment itself to minimize noise or other intrusions on adjacent streets;
- Maintaining at least one entrance into businesses at all times where there are multiple entrances; and,
- Controlling demolition activities.

Mitigation of adverse impacts during construction also would include planning with business owners and managers to provide increased signage where appropriate, and coordination and timing of temporary closures, when necessary. Property owners would be notified of access restrictions in advance, and CATS would ensure that the contractor/developer of the streetcar system coordinate such restrictions with property owners to the maximum extent feasible within the constraints imposed by project budget and schedule. A public information and notification program would advise area residents of traffic detours. Temporary paths to facilitate pedestrian movements to and through the area, and channelization, detour/guide signs, and temporary traffic signals are among the tools available to help maintain travel patterns. In addition, construction offices would be set up in the project area. A mitigation coordinator would be located in the office to provide information to business owners and the concerned public on the progress of construction and mitigation measures being enacted.

3.14 SECONDARY AND CUMULATIVE EFFECTS

3.14.1 Legal and Regulatory Framework

The purpose of this section to the extent reasonable and practical is to assess the potential secondary and cumulative impacts that may result from the incremental effects of the Center City Streetcar Project and other past, present, and future development activities in the same geographic region. Secondary impacts are those effects that may result from activities induced by the action. For example, providing improved public transportation alternatives to an urban environment could induce higher density residential and commercial development. This, in turn, could induce changes in population, travel patterns, and economic conditions, which could consequently have cumulative impacts on air quality, ecosystems, protected species, water quality, quality of life, or other aspects of the natural and human environment.

The Council on Environmental Quality (CEQ) for Implementing the Procedural Provisions of the National Environmental Policy Act (NEPA) defines "secondary effects" (also referred to as "indirect effects") as "impacts on the environment, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable."[111] The CEQ regulations further state that secondary effects "…may include growth-inducing effects and other effects related to induced changes in the patterns of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems." The CEQ defines "cumulative impacts" as those "…which result from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions."[112] Cumulative impacts are typically the result of several events or actions overtime.

3.14.2 Method

The analysis of the secondary and cumulative impacts associated with this project was conducted using the latest guidance available from federal and state regulatory agencies. These include:

- North Carolina Department of Transportation (NCDOT)/North Carolina Department of Environment and Natural Resources (NCDENR's) Revised *Draft Secondary and Cumulative Impact Assessment Guidance:*

Integrated NEPA/SEPA/401 Eight-Step ICE Assessment Process (May 2003).

- CEQ Guidance *Considering Cumulative Effects Under the National Environmental Policy Act*. (1997).
- NCDOT's *Guidance for Assessing Indirect and Cumulative Impacts of Transportation Projects in North Carolina*. (November 2001).
- North Carolina Wildlife Resource Commission's *Guidance Memorandum to Address and Mitigate Secondary and Cumulative Impacts to Aquatic and Terrestrial Wildlife Resources and Water Quality*. (August 2002).

The assessment of secondary and cumulative effects is identified as a requirement under the National Environmental Policy Act (NEPA) of 1969, the North Carolina Environmental Policy Act (SEPA), and under the Council on Environmental Quality (CEQ) regulations implementing NEPA.

The Secondary and Cumulative Impacts Assessment (SCIA) follows a sequential process that includes the following steps:

- identifying the study area for analysis;
- reviewing the population, employment, land use plans, transportation plans, and natural resources in the study area;
- the identification of secondary and cumulative impacts;
- an analysis of the secondary and cumulative impacts; and
- mitigation techniques for the identified secondary and cumulative impacts.

3.14.3 Existing Conditions and Resources

Recently completed and planned transit and development projects to consider in the assessment of cumulative impacts are described in this section.

3.14.3.1 Transit Projects

In consideration of the cumulative impacts of the project, both existing and planned transit services were considered. Existing services are described in Section 1, and include rail lines, 30 local bus routes using the Trade Street/Elizabeth Avenue corridor, three bus routes using the Central and Beatties Ford Road corridors, the Gold Rush Circulator shuttle service, and the CTC and GTC. Planned services are described in Section 1 and include transit facility improvements in the five corridors described in the 2025 Corridor System Plan

3.14.3.2 Development Projects

The development climate in Charlotte has been positive throughout recent years. In particular, Center City has thrived as the home to several large financial institutions. The corporate presence coupled by capital investments and planning by city officials has led to a vibrant downtown that has had several large-scale projects come to fruition in recent years. Additionally, as growth has pushed outward from Center City, adjacent areas have also experienced an increase in development pressure and growth.

Strengths supporting development and challenges to development in Center City were highlighted in the *Center City 2010 Vision Plan.* According to the plan, strengths include the corporate presence and involvement in downtown, reemerging residential communities, community interest in Center City, and the

city's regional focus. Challenges Center City faces are the lack of financing opportunities to spur development, the tendency to use suburban patterns for urban development, and the need for a variety of housing types and costs.[113] A snapshot of development trends in Center City provided by the Center City Partners was that, in 2005 there were "…more than 40 development projects announced, breaking ground, undergoing renovation or reaching completion." According to the source, "These projects represent an investment of over $1.6 billion of development activity, encompassing more than 6,000,000 square feet of office, residential, retail, entertainment and institutional space in Center City."[114]

Section 3.2.3.2 Land Use and Development, gives a detailed description of major development projects within the study area and highlights areas that have potential for future development and redevelopment. Additionally, development projects are summarized in Table 3-8.

3.14.4 Environmental Impacts and Benefits

3.14.4.1 Short-term Impacts and Benefits

Development of a project in an urban environment can have a variety of impacts during the construction period, depending on the size and scope of the project. Although they are short term in nature, construction impacts may be disturbing or disruptive to the use of or access to a community facility as well as to the ability of community services to fulfill their functions.

Potential construction period impacts of the Build Alternative are addressed in the short-term impacts and benefits portions throughout Chapter 3 of this EA. When considered together with other construction projects in the study area, cumulative impacts are possible. However, because of the phased construction approach that will be implemented in block-by-block stages, the magnitude of the cumulative impacts can be largely mitigated through advanced planning and coordination with the appropriate construction permitting agency or municipality.

Table 3-41: Overview of Direct, Secondary, and Cumulative Effects

Impact Type	No-Action Future Conditions (Conditions without the Proposed Action)		Impacts of the Proposed Action (Incremental Effect of the Proposed Action)			Cumulative Effect (Future Conditions with the Proposed Action)
	Other Past/ Present Actions	Other Future Actions	Direct Impacts	Secondary Effects		
				Encroachment Alteration Effects	Effects Related to Induced Growth	
Habitat and Wildlife	Negl	Negl	Negl	Negl	Negl	Negl
Vegetative Communities	Negl	Negl	Negl	Negl	Negl	Negl
Threatened and Endangered Species	Negl	Negl	Negl	Negl	Negl	Negl
Water Quality	Negl	Negl	Negl	Negl	Negl	Negl
Community Cohesion	Negl	Negl	Low	Negl	Pos	Pos
Vehicular Travel Patterns	Negl	Negl	Low	Low	Low	Low
Other Travel Patterns[a]	Low	Pos	Pos	Pos	Negl	Pos
Economic Impacts	Pos	Pos	Low	Low	Pos	Pos
Hazardous Materials	Low	Low	Low	Unp	Unp	Unp
Historic/Cultural Resources	Mod	Unp	Low	Negl/Unp	Negl/Unp	Negl/Unp
Noise	Low	Low	Mod	Mod	Mod	Mod/Unp
Aesthetics/Visual	Negl	Negl	Mod	Negl	Negl	Low/Negl

KEY: Low = Low Adverse Effect Mod = Moderate Adverse Effect High = High Adverse Effect NA = Not Applicable
Pos = Positive Effect Negl = Negligible Effect Unp (Unpredictable)= Adverse effect is possible but likelihood and magnitude are unpredictable

[a] Other travel patterns includes pedestrian, bicycle and transit.

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3.14.4.2 Long-term Impacts and Benefits

A summary of the direct, secondary and cumulative effects expected to be associated with the project is provided in Table 3-41. First, direct impacts of the project, such as those associated with construction, are presented. Secondary and cumulative impacts of the project are indicated in the final columns of the tables. Expected direct, secondary and cumulative impacts are summarized under several different conditions in the table. In the second and third columns, expectations of what future conditions in the study area might be like if the project is not constructed, such as under the No-Build or TSM alternatives, are summarized. Impacts from other past actions and current actions are separated from impacts of potential future actions in the study area (other than the project). When considering the impact of past actions, only actions since Charlotte has been considered an urban area were taken into account. In the proceeding columns, expectations of what future conditions in the study area might be like if the project is constructed are summarized. Please refer to the Center City Streetcar Project Secondary and Cumulative Impact Assessment Technical Report for a more detailed description of long term impacts and benefits.

3.14.5 Mitigation

3.14.5.1 No-Build and TSM Alternatives

No mitigation is warranted if the No-Build Alternative or the TSM Alternative is selected.

3.14.5.2 Build Alternative

Detailed mitigation of potential impacts that will occur as a result of implementing the Build Alternative is discussed throughout Chapter 3 in each respective impact section. General direction for assessing consequences and mitigation development is provided in the *Guidance for Assessing Indirect and Cumulative Impacts of Transportation Projects in North Carolina, Volume II: Practitioners Handbook.*[115] Portions of this guidance document applicable to the project are summarized below.

Mitigation Techniques for Effects Related to Encroachment-Alteration

Encroachment-alteration secondary/cumulative effects, although often distant in time and space from the project, are similar to many direct project effects and can be addressed with similar mitigation strategies. As with direct effects, in many cases these strategies involve altering one of the following aspects of the project or plan within the control of the CATS:

- Facility type
- Facility alignment
- Facility design features
- Techniques used during construction
- Facility maintenance

Mitigation Techniques for Induced Growth

Project-induced growth can be mitigated to some extent through a variety of land use control techniques implemented by local municipalities. In addition to managing residential and commercial growth induced by a transportation project, a local jurisdiction may also choose among strategies designed to mitigate the environmental and social effects related to induced growth.

Specific regulations are designed to protect vital resources and work to guide the path and intensity of development. These policies can limit impacts on notable features

related to induced growth. There are several examples of where resource management in North Carolina has been implemented. General categories include:

- Stream buffers where development is regulated to protect the quality and quantity of water resources, prevent flooding, and promote water-related tourism and recreation.
- Coasts where development areas are delineated and development is permitted only under special circumstances in critical areas.

North Carolina law makes provision for the use of performance standards in local zoning and subdivision regulations. Performance standards can define uses as of right or the standards required for obtaining a conditional use permit. Performance standards encompass the following types of regulation:

- Regulation of height, bulk, setback, lot size and other dimensional features.
- Regulation of uses within zones and standards that define and distinguish uses.
- Specification of site design features such as off-street parking, impervious surface, vegetative cover removal, landscaping and screening, and signage.
- Specifications of standards for noise and pollutant emissions allowed in manufacturing or agricultural activities.
- Standards for community appearance or historic preservation with review and limited enforcement powers vested in a planning agency or special commission.

A technique for preservation of green space, habitat, or other important resource areas that is seeing increasing use is the acquisition of land or development rights by government agencies, non-profit groups, or other private initiatives. These groups purchase or accept donations of land and pledge to keep the land permanently undeveloped. Development rights can also be purchased while the underlying title and use is retained by a landholder through the use of conservation easements. These easements, once written into a deed, can permanently prevent development on a parcel regardless of future ownership. Carefully planned acquisitions can work to focus growth and protect notable features from growth-related impacts.

Another mitigation technique is Context Sensitive Design. “Context sensitive design (CSD) is a collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic, and environmental resources, while maintaining safety and mobility. CSD is an approach that considers the total context within which a transportation improvement project will exist.”[116]

A major goal of context-sensitive design is to allow for local public input early in the design process so that costly delays and revisions can be avoided. Examples of context sensitive design and flexible standards include deviation from the standard length of an acceleration or deceleration lane to protect a notable feature, modifying the design of an arterial that passes through a downtown area to allow for a boulevard that would better fit with the local context, and inclusion of special materials or design features to allow the facility to fit the scale and style of its surroundings.

Techniques for Systems Planning Stage

Many of the techniques previously outlined are applicable to transportation systems planning as well as to project development. As noted above, comprehensive planning, resource preservation regulations, and other techniques meant to shape growth when integrated with the planning of transportation systems will minimize the likelihood of secondary/cumulative effects on notable features and conflicts with community goals. Additional techniques applicable to transportation systems planning include comprehensive performance measures and promoting regional coordination; these techniques are discussed below.

Comprehensive Performance Measures

Traditionally in the planning of transportation systems, the assessment of need for a transportation project has been based in part on measures of mobility in the existing transportation system. These measures focus on efficient movement. Mobility measures typically do not provide linkage to land use conditions in the vicinity of projects. This disconnect can lead to the potential for conflict with notable features or goals later in the process. Evaluating projects with performance measures related to accessibility will help better connect transportation needs, land use considerations, and concerns regarding sustainability. Such measures include:

- Potential Transit Ridership
- Vehicle Miles Traveled (VMT) or Vehicle Hours Traveled (VHT)
- Accessibility to Jobs and Commercial Centers
- Impact on Jobs/Housing Balance

Promoting Regional Coordination

Early coordination on a regional level is the best method for evaluation and mitigation of secondary/cumulative effects. Regional coordination is especially important in controlling induced growth because a variety of uncoordinated local regulatory responses may work to intensify effects in the least regulated areas.

3.15 HAZARDOUS MATERIALS

The objective of the hazardous materials assessment was to evaluate whether there is a Recognized Environmental Condition on the project corridor, or whether such Recognized Environmental Condition is likely to occur in the future due to onsite or nearby activities or problems. Under American Society for Testing and Materials (ASTM) standard E1527, a Recognized Environmental Condition is defined as:

> The presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to include *de minimis* conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.[117]

The presence of a Recognized Environmental Condition has the possibility to adversely impact costs and schedules initiated to complete a transportation improvement project. Therefore, the identification of a Recognized Environmental Condition that could adversely impact the project corridor provides valuable information for project planning and design.

A detailed description of the hazardous materials analysis is described in a separate technical memorandum.

3.15.1 Legal and Regulatory Framework

3.15.1.1 Comprehensive Environmental Response Compensation and Liability Act (CERCLA)

Under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) provisions are established for cleaning up sites where wastes may have been released or disposed of in the past. Liable parties under CERCLA may be current owners and operators, former owners and operators who owned the site when hazardous substances were disposed of, generators or persons who arranged for disposal or treatment of hazardous substances, and transporters. Transportation agencies may be liable under CERCLA in acquiring and operating contaminated row or other facilities and in the disposal of wastes generated in transportation system operations.[118]

3.15.1.2 Resource Conservation and Recovery Act (RCRA)

The Resource Conservation and Recovery Act (RCRA), provides control of hazardous wastes through the establishment of requirements on the transport, storage, and disposal of hazardous wastes.[119]

3.15.1.3 North Carolina Hazardous Waste Rules

In North Carolina, the hazardous waste management program is administered by the hazardous Waste Section of the Division of Waste Management. According to the branch, the rules "…define hazardous waste, establish a management system for that waste from generation to final destination, require registration and reporting by generators, and establish permitting procedures for hazardous waste treatment, storage and disposal facilities." The program implements RCRA and establishes additional requirements for the State of North Carolina. [120]

The Superfund Section of the Divisions of Waste Management is responsible for the implementation of the Federal policy established under CERCLA. In addition, the branch enforces The North Carolina Inactive Hazardous Sites Response Act of 1987 (N.C.G.S. 130A-310 et seq). Under this act, a program was established to protect the public and the environment from uncontrolled and unregulated hazardous wastes sites that are not addressed by other environmental programs.[121]

3.15.2 Method

3.15.2.1 ASTM Database Search

The methodology used for this investigation and risk assessment generally follows American Society for Testing and Materials (ASTM) E 1527 Standard Practice for Environmental Site Assessments: Phase 1 Environmental Site Assessment Process. Project analysts reviewed information gathered from a listing of Federal ASTM Standard Records, Federal ASTM Supplemental Records, State of North Carolina ASTM Standard Records, and State of North Carolina ASTM Supplemental Records through Environmental Database Resources, Inc. (EDR) to evaluate whether activities on, or near, the project corridor have the potential to create a Recognized Environmental Condition on the subject property. This information is reported as received from EDR, which in turn reports information as it is provided in various government databases. It is not possible to verify the accuracy or completeness of information contained in these

databases. However, the use of and reliance on this information is a generally accepted practice in the conduct of environmental due diligence. The databases searched are summarized below:

Federal ASTM Standard Records

- The Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database identifies hazardous waste sites that require investigation and possible remedial action to mitigate potential negative impacts on human health or the environment.
- The Resource Conservation and Recovery Information System (RCRIS) lists RCRA-regulated hazardous waste generators. Both Large- and Small-Quantity Generators are included in this list. A RCRA small-quantity generator (SQG) is defined as a facility that generates less than 1,000 kilograms (kg) per month of hazardous waste or less than 1 kilograms per month of acutely hazardous waste. A RCRA large-quantity generator (LQG) is defined as a facility that generates greater than 1,000 kg per month of non-acutely hazardous wastes or greater than 1 kg per month of acutely hazardous wastes.
- The Emergency Response Notification System (ERNS) List contains reported spill records of oil and hazardous substances.

State of North Carolina ASTM Standard Records

- The Leaking Underground Storage Tank (LUST) List contains information pertaining to confirmed and suspected releases from underground storage tanks.
- The Underground Storage Tank (UST) List contains State underground storage tank (UST) sites which list USTs regulated under Subtitle I of RCRA.
- The Inactive Hazardous Sites Inventory (IHSI) List is the state-equivalent priority list of uncontrolled or abandoned hazardous waste sites.

ASTM Supplemental Records

- In addition to the ASTM Standard Records identified above, the following ASTM Supplemental Records were also included in the Hazardous Materials Assessment.
- The Incident Management Database (IMD) List contains information on known groundwater and/or soil contamination incidents.
- The Drycleaners List identifies potential and known drycleaning sites, active and abandoned, that the Dry-cleaning Solvent Cleanup Program has knowledge of and entered into the database.
- The Brownfield List provides information as to if a brownfield site is an abandoned, idled, or underused property where the threat of environmental contamination has hindered its redevelopment. All of the sites listed in the inventory are working toward a brownfield agreement for cleanup and liability control.
- The US Brownfield List includes brownfield properties addressed by Cooperative Agreement Recipients and brownfield properties addressed by Targeted Brownfields Assessments.
- The Hazardous Materials Information Reporting System (HMIRS) List contains hazardous material spill incidents reported to the Department of Transportation.
- The Material Licensing Tracking System (MLTS) List is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements.

- The Toxic Chemical Release Inventory System (TRIS) List identifies facilities which release toxic chemicals to the air, water, and land in reportable quantities under SARA Title II Section 313.
- The Section 7 Tracking Systems (SSTS) List identifies establishments which, Under Section 7 of the Federal Insecticide, Fungicide, and Rodenticide Act, as amended (92 Stat. 829), must register and submit a report to the Environmental Protection Agency by March 1st of each year.
- The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)/Toxic Substances Control Act (TSCA) Tracking System (FTTS) List identifies administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA, and Emergency Planning and Community Right-to-Know Act (EPCRA).
- The Hazardous Substance Disposal Site (HSDS) List contains locations of uncontrolled and unregulated hazardous waste sites.
- The Aboveground Storage Tank (AST) List identifies facilities with aboveground storage tanks that have a capacity greater than 21,000 gallons.

3.15.2.2 Focus Maps

Three corridor sub-areas (Beatties Ford Road, Central Avenue, and Trade Street) of the study area were divided into the Focus Maps shown in Appendix A and defined as follows:

- Focus Map 1 - includes the length of corridor and a 0.25-mile radius that extends from I-85 to North Hoskins Road.
- Focus Map 2 - includes the length of corridor and a 0.25-mile radius that extends from Brookshire Freeway (NC16) North to I-85.
- Focus Map 3 - includes the length of corridor and a 0.25-mile radius that extends from Graham Street to Brookshire Freeway (NC16) North.
- Focus Map 4 - includes the length of corridor and a 0.25-mile radius that includes I-277 from North Brevard Street to I-77.
- Focus Map 5 - does not contain any portions of the project corridor.
- Focus Map 6 - includes the length of corridor and a 0.25-mile radius that extends along I-277 from South Boulevard to Morehead Street.
- Focus Map 7 - includes the length of corridor and a 0.25-mile radius that along the southeast portion of the I-277 loop.
- Focus Map 8 - includes the length of corridor and a 0.25-mile radius that extends from Logie Avenue to East 7th Street.
- Focus Map 9 - includes the length of corridor and a 0.25-mile radius that extends from Norland Road to Logie Avenue.
- Focus Map 10 - includes the length of corridor and a 0.25-mile radius that extends from North Sharon Amity Road to Norland Road.
- Focus Map 11 - does not contain ay portions of the project corridor.
- Focus Map 12 - does not contain any portions of the project corridor.
- Focus Map 13 - does not contain any portions of the project corridor.
- Focus Map 14 - includes the length of corridor and a 0.25-mile radius that extends from Reddman Road to North Sharon Amity Road.
- Focus Map 15 - does not contain any portions of the project corridor.

The Environmental Database Resources, Inc. (EDR) database searches included the four corridor sub-areas as well as a 0.25-mile radius extending from the existing roadway centerline within the project study corridor.

3.15.2.3 Site Ranking

The sites identified by the EDR database search were ranked based on the potential risk for the site to impact the project during construction and/or operation. The determination of the ranking was based on the understanding that the construction and/or operation of the Center City Streetcar will occur primarily at ground level of roadways with shallow subsurface excavation for utilities or related buildings. The ranking was further established by assessing the general nature of the record listing and the number of record listings for a particular site. The rankings were given a designation of H (High), M (Medium), and L (Low) according to the following criteria:

High

A high ranking indicates site areas where environmental record findings suggest a higher potential for project impact. Examples include, but are not limited to, open LUST files, recent hazardous materials spills or ERNS listings, and/or inclusion on the Federal CERCLIS database. A high ranking does not necessarily indicate that the project corridor will be adversely impacted; however, further investigation should be conducted to evaluate the most current information available in order to more accurately assess the potential. Further investigation would possibly involve the review of the most current available project files through government offices, a specific site reconnaissance, a thorough site-specific review of available historical documents and contact with site owners for current site status. Following the site-specific assessment for each of the "high" risk sites, additional site investigation work (including sampling and testing) may be necessary to further define the potential site-specific concerns.

Medium

A medium ranking indicates site areas where environmental record findings suggest a moderate potential for project impact. Examples include, but are not limited to, sites that may have been investigated for regional groundwater problems, but lack specific site information; are listed as RCRA CORRACTS or TSD facilities; or are located near landfill sites. A medium ranking does not necessarily mean that the named site facility, or address will present a known problem for project construction or operation, but should be included in more site-specific review. This review could include specific site reconnaissance and reviews of the most current project files through government offices. Following the site-specific assessment for each of the "medium" risk sites, additional site investigation work (including sampling and testing) may be necessary to further define the potential site-specific concerns.

Low

A low ranking indicates site areas where environmental record findings suggest a low potential for project impact due to the nature of the reported finding and adequate documentation from government agencies regarding site closure, or where identified incidents were small in nature and addressed at the time of the incidents. Examples include, but are not limited to, a small quantity or conditionally exempt RCRA generator or a UST site with no reported release incidents.

3.15.2.4 Impact Evaluation

Potential impacts relative to contaminated and hazardous materials can occur in two forms. The costs and scheduled implementation of the Build Alternative can be directly

affected by the presence of potential contaminated and hazardous materials sites. The hazardous materials assessment was done to assess whether any project elements would adversely affect the clean-up of environmentally sensitive areas, such as a Superfund site. These are construction-related issues. In addition, the continuous, long-term activities and day-to-day operations associated with a project once completed would have the potential to create environmental impacts. An assessment was made of the potential for project elements and operations to affect or impact environmental conditions over the long-term.

3.15.3 Existing Conditions and Resources

3.15.3.1 ASTM Primary Record Search

The EDR database review revealed 450 sites located within 0.25-mile radius extending from the existing roadway centerline of the project corridor. The number of sites for each Focus Map ranked according to Low, Medium, or High as well as the total number of sites for each Focus Map is shown in Table 3-42.

Table 3-42: Database Records Within 0.25-mile of the Project Corridor

Focus Map	Number of Low Sites	Number of Medium Sites	Number of High Sites	Total Number of Sites[a]
Focus Map 1	3	0	1	4
Focus Map 2	6	2	5	13
Focus Map 3	32	5	15	52
Focus Map 4	17	5	13	35
Focus Map 5	0	0	0	0
Focus Map 6	59	15	33	107
Focus Map 7	90	5	40	135
Focus Map 8	36	1	10	47
Focus Map 9	10	5	7	22
Focus Map 10	9	0	5	14
Focus Map 11	3	0	2	5
Focus Map 12	0	0	0	0
Focus Map 13	0	0	0	0
Focus Map 14	13	0	3	16
Focus Map 15	0	0	0	0
Total	**278**	**38**	**134**	**450**

[a] Multiple incidents, listed under different regulatory programs, may have occurred at any particular site. Therefore, these numbers do not reflect the absolute magnitude of discreet locations.

Summary tables for Focus Maps 1 through 15 were developed by identifying the 450 sites which are considered to have the potential to impact the Center City Streetcar Project corridor. The tables include site-specific information including the site name, site location, and the type of record associated with each site based on the environmental database records. These tables are included in the separate hazardous materials technical memorandum.

3.15.3.2 ASTM Supplemental Record Search

The supplemental databases listed in the Methodology section are used for reporting purposes and do not indicate a recorded release or spill. Therefore, the sites are identified to have a low potential to create a Recognized Environmental Concern for the project corridor. A copy of the complete EDR database is included in the separate hazardous materials technical memorandum. In Table 3-43 the supplemental database listings are summarized by Focus Map.

Table 3-43: Supplemental Federal and State of North Carolina Listings

Focus Map #	HMIRS	MLTS	TRIS	SSTS	FTTS	HSDS	AST
Focus Map 1							
Focus Map 2							
Focus Map 3						3	
Focus Map 4			1			2	2
Focus Map 5							
Focus Map 6	1	1		2	1	7	15
Focus Map 7		1			1	2	3
Focus Map 8	24			1			1
Focus Map 9					1		1
Focus Map 10							
Focus Map 11	2						
Focus Map 12							
Focus Map 13							
Focus Map 14	1						
Focus Map 15							
Total	**28**	**2**	**1**	**3**	**3**	**14**	**22**

3.15.3.3 Orphan Summary List

The Orphan Sites list, which is a list of sites that have not been geo-coded based on a lack of sufficient data regarding their exact location, was reviewed. A summary of orphan sites by Focus Map is presented in Table 3-44. A copy of the complete EDR database is included in the separate hazardous materials technical memorandum.

Table 3-44: Orphan Site Listings

Focus Map #	IMD	Drycleaner	Brownfield	US Brownfield	CERCLIS	LUST	UST	RCRIS Generator	ERNS	SHWS
Focus Map 1						2	4	4		
Focus Map 2						9	4	9		
Focus Map 3						8	9	4		
Focus Map 4					1	11	8	3		
Focus Map 5						1	2	1		
Focus Map 6						19	8	1		
Focus Map 7						14	8	5		
Focus Map 8						4	1	1		
Focus Map 9						1	1	1		
Focus Map 10						3	2	1		
Focus Map 11						3	0	3		1
Focus Map 12						3	1	1		
Focus Map 13						6	1	2		
Focus Map 14						6	2	2		
Focus Map 15						6	2	0		
Total					**1**	**96**	**53**	**38**		

Due to lack of sufficient data, the direct impact that the Orphan Sites may have on the project corridor is not able to be determined. Further investigation should be conducted to evaluate the exact location of the recorded orphan sites in order to more accurately assess the potential risk.

3.15.3.4 Environmental Impacts and Benefits

The findings of the contamination screening and evaluation are based on preliminary information only and are not intended to replace more detailed studies such as individual site assessments and subsurface soil and groundwater investigations. Rather, the screening is intended to be a guide for identifying potential contamination in the project corridor. Other technical studies may be required to determine the existence of site contamination prior to right-of-way acquisition, utility relocation, or construction of stormwater treatment facilities. Potential contamination sites may extend beyond those identified in this report because of limited historical and regulatory information, illegal dumping practices, and a lack of compliance with storage tank registration and hazardous waste generator programs. Finally, the identification of a site in this report does not necessarily indicate that the site contains contamination, but only that there is the potential for contamination to occur.

3.15.3.5 Short-term Impacts and Benefits

No-Action Alternative

Potential impacts associated with the construction of planned facilities, such as roadways planned on new alignment and the South Corridor Light Rail line, will be documented during the environmental studies for those projects.

TSM Alternative

Expansion of bus services would not require construction. No additional short-term hazardous material impacts beyond those associated the No-Action alternative are expected.

Build Alternative

The results of the survey for contaminated and hazardous materials in the project corridor indicate there are sites of known or suspected concern. Implementation of transportation improvements could result in the disturbance and release of contaminated or hazardous materials during construction activities on or near these sites.

3.15.3.6 Long-term Impacts and Benefits

No-Action Alternative

The No-Action Alternative includes the transit and roadway improvement projects already planned or programmed for implementation by the year 2030. No known long-term impacts would be associated with existing facilities or services beyond the normal loss of fugitive fuels and oils that are washed from roadways during storm events. Potential impacts associated with planned facilities, such as roadways planned on new alignment and the South Corridor Light Rail line, will be documented during the environmental studies for those projects, TSM Alternative.

TSM Alternative

The TSM Alternative includes the transit, roadway and multi-modal improvement projects under the No-Action scenario and expanded bus service in the corridor. It is not expected that any additional long-term hazardous materials impacts beyond those for the No-Action alternative would result from expanded bus service.

Build Alternative

In the long-term, operation of Center City Streetcar and supporting sites and properties developed as part of the Center City Streetcar Project would not result in a serious releases of contaminated or hazardous materials on a continuous basis. Activities at the maintenance facility would include the handling and use of volatile and hazardous substances such as lubricants, oils, greases and solvents on a day-to-day basis, and accidental releases would be possible. Historic and current rail transit operations indicate that active streetcar trackbeds potentially would sustain an accumulation of petroleum hydrocarbons from the use of lubricants and some heavy metals deriving from the operation of steel wheels on steel rails. This would come as a result of normal and customary practices and the degree of hazard and magnitude of accumulations would not represent a public health concern. There are no indirect or cumulative impacts expected to be associated with any of the three alternatives.

3.15.4 Mitigation

For all sites identified within the corridor ranked low for severity of potential impact, the data accumulated will be revisited prior to project right-of-way acquisition and construction and an updated review of agency files and public records will be conducted to determine if there has been any substantial change in the status since the report was prepared. For those sites ranked with a moderate to high expected severity of impact, a further review of records will be conducted to determine the status of any contamination assessments or remedial actions taking place at those sites. A Phase II Site Assessment, including, at a minimum, soil and water sampling, will be conducted. The resulting mitigation requirements would depend upon the nature, extent, and mobility of the contaminants in addition to the construction activity and ultimate use for a particular site.

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CHAPTER 4 TRANSPORTATION CONSEQUENCES

4.1 TRANSIT

The CATS Center City Streetcar Corridor is a key recommendation of the 2025 Corridor System Plan for the Charlotte Region. It will serve as a distributor system for commuters using transit to reach Center City, the Region's primary employment and commercial center, which is home to national corporations such as Bank of America, Wachovia Corporation, and Duke Energy Corporation. These companies are some of the largest employers in the Charlotte area. The Center City area which is defined as all of the area within the I-227 loop is expected to grow to approximately 114,000 employees by the year 2030.

The Center City Streetcar is planned to extend approximately ten miles from Beatties Ford Road just beyond I-85, through Center City on Trade Street/Elizabeth Avenue, to Plaza-Midwood via Hawthorne Lane, to Eastland Mall via Central Avenue. The Center City Streetcar will establish an east-west transit spine that links all five rapid transit corridors in Center City and provide easy movement between the existing Charlotte Transportation Center and the proposed Charlotte Gateway Station, facilitating a connection between regional and inter-regional services. The Center City Streetcar also will connect major trip generators that include Central Piedmont Community College, Johnson & Wales University, Johnson C. Smith University, the Blumenthal Performing Arts Center, government offices, Charlotte Bobcats Arena, and Presbyterian Hospital.

The desire to live closer to work and interest in urban living has created an increase in residential development in the Center City and surrounding neighborhoods. The streetcar will better connect these neighborhoods and support higher densities that are encouraged by Transit Oriented Development.

4.1.1 Service

The Center City Streetcar is anticipated to serve 34 stations from Rosa Parks Place, adjacent to the County Health Department to Eastland Mall. Its ten mile alignment will take approximately 45 minutes in service travel time to complete. Average distance between stations is planned at 1/3 mile, yet stations will be more closely spaced in Center City, because of the employment and commercial densities. The streetcar average speeds are anticipated to average 14 miles per hour (mph) with a maximum speed of 30 mph. Thirteen vehicles will be utilized to operate at 7.5 minute frequency during peak periods. Midday is programmed at 10 minutes, off-peak at 15 minutes, Saturday, and Sundays and holidays at 20 minutes.

The streetcar system is intended to enhance transit service on the two of the busiest routes in the CATS system. Routes 7 and 9 which serve Central Avenue and Beatties Ford Road respectively, currently offer 10 minute frequencies during peak service periods. The streetcar offers greater capacity at the same frequency of service and will allow CATS to accommodate expected growth in ridership without increasing operating cost.

4.1.2 Market/Ridership/User Benefits

According to the regional travel demand model, the Metrolina region is expected to reach 9.7 million person trips by the year 2030. Daily trips to Center City are anticipated to increase from 290,030 to 650,000 trips during the same time period. These Center City Charlotte trips are an anticipated, 124 percent increase. Most of these trips would be home-based work trips and result from the commutes of 114,000 employees projected for the Center City Area.

The streetcar will also become a major transit connector to persons who seek access to regional institutions, such as Johnson and Wales University, Johnson C. Smith University, Blumenthal Performing Arts Center, Charlotte Bobcats Arena, Central Piedmont Community College, Presbyterian Hospital, various government offices, and others.

The streetcar is anticipated to increase Charlotte's transit market by serving a larger catchment area. Bus stops have a catchment area of ¼ mile and a premium transit service such as a streetcar has a catchment of a ½ mile.

The streetcar is anticipated to bring more transportation user benefits than a conventional bus. Important user benefits are categorized as mobility improvements, cost effectiveness, and local financial commitment.

Mobility improvements are evaluated by estimating the utilization of the system and also projecting the number of low income households and the total employment that will have access to the facility. Utilization is derived by dividing the transportation system user benefits for all users of the transit system by passenger miles traveled on the project. The second reflects the number of low-income households and total employment within one half mile of a station or stop of the project

Cost effectiveness is the incremental cost of the project divided by hours of travel-time savings. It is reported in units of dollars per hour. Cost is defined as the estimated annualized capital cost plus annual operating and maintenance costs. Transportation system user benefit is defined as all annual travel-related benefits in terms of hours saved by all users of the transportation system including both existing and new riders.

In 2005, transit ridership for the proposed streetcar route on conventional buses is 10,191 daily riders. By 2030, daily riders are expected to reach 14,206 on conventional buses. The streetcar is expected to increase ridership to nearly 16,000 daily riders for the same alignment.

The Center City Streetcar catchment area (1/2 mile from each access point) is expected to have significant growth in employment between 2000 and 2030, by adding 45,131 jobs. Jobs in the streetcar catchment will increase from 77,307 to 122,442.

4.1.3 Farebox Revenues

The Center City Streetcar fares will be the same as the CATS conventional bus fares. CATS' base fares are $1.20 per boarding. These fares generate 51 cents per boarding, because some passengers use bus passes or other discount rates. Bus transfers also reduce the base fare average per boarding because of its lower price. The methodology to compute farebox revenue entails multiplying the average fare per boarding, 51 cents by the total annual boardings, 5,012,062. Farebox revenue for the Center City Streetcar is estimated to be $2,556,121 per year (does not include the cost of inflation).

As a potential alternative, it may be desirable to implement a small fare free zone in Center City. A fare free zone is a defined area in which a passenger transportation system does not charge patrons in order to use its services. All trips that begin and end within the fare free zone are at no cost. Patrons who travel outside the fare free zone pay the system's standard fare. These zones are usually near university or downtown areas. Fare free zones are generally one of many transportation demand management measures to encourage transit use, where parking is limited and/or traffic congestion heavy.

Fare free zones increase ridership, but can decrease farebox revenue. The decreases in revenue are a result from fewer paying customers which also drop the farebox recovery rates.

A center city fare free zone for the streetcar is expected to increase annual ridership to 5,661,217 and bring farebox revenue to $2,110,222.

Benefits of fare free zones include:

- Lessen demand for parking
- More land availability (from fewer needed parking spaces)
- Reduce traffic congestion
- Increase accessibility options (with fare free incentive)

An important factor to consider about fares is the recovery rate when compared to operating costs. Generally, public transit systems do not generate farebox revenue beyond 25-45 percent of total operating costs, but the farebox recovery ratio is a significant statistic that speaks to a system's efficiency and effectiveness. According to the National Transit Database, the national average in the US is 27 percent for farebox recovery while the CATS system is closer to 21 percent.

Without the fare free zone in Center City the farebox recovery ratio for the Streetcar system is estimated at 38 percent, which is significantly higher than the system average. It is also higher than the national average. This is partly due to the fact that the corridor in general has a high propensity for transit. Routes 7 and 9, the existing services are also above the system farebox recovery average. But the efficiencies provided by the streetcar from an operating cost standpoint as well as encouraging higher ridership will help the overall system farebox recovery.

The introduction of the fare free zone in Center City would reduce the farebox recovery of the streetcar system to 31.4 percent. However, this is a ratio that is still above the system average.

4.2 ROAD NETWORK

The Center City Streetcar will operate in mixed traffic serving 34 stop locations, along a ten mile alignment. Its design will have minimal impacts on the Charlotte's streetscape and adjacent properties. This alignment will preserve the wide sidewalks that are essential to the Center City core area, and will provide an efficient and convenient system between Rosa Parks Place and Eastland Mall. Along Beatties Ford Road and Central Avenue, the streetcar will run entirely along curbside. Higher traffic volumes and speeds in these corridors, make a curbside option more attractive because the streetcar will be operating in the slower curbside travel lane. Curbside service will also avoid impacts to the recently planted median strip on Central Avenue. On Trade Street, the Center City Streetcar will have median stops at many of the Center City locations in order to preserve wide sidewalks.

4.2.1 Grade Crossings, Intersections and Roadways

The proposed Center City Streetcar alignment follows existing roadways such as Beatties Ford Road, Trade Street/Elizabeth Avenue, Hawthorne Lane, and Central Avenue. The following provides a description of the roadways the streetcar alignment will follow as well as the roadways the streetcar alignment will intersect.

Beatties Ford Road

Within the study area, Beatties Ford Road is a two-way, north-south, minor arterial with a posted speed limit of 35 miles per hour. Beatties Ford Road includes sidewalks on both sides of the street, however, no on street parking is provided. The Beatties Ford Road typical section varies within the study area and is summarized below.

The section of Beatties Ford Road between Rosa Parks Place and LaSalle Street is four-lanes with a center lane for left-turning vehicles. Between LaSalle Street and Brookshire Freeway (NC 16) southbound ramp/French Street, Beatties Ford Road consists of four lanes with left-turn lanes provided at the intersections with LaSalle Street and southbound onto Brookshire Freeway. The Beatties Ford Road southbound left turn onto the Brookshire Freeway serves as a lane drop for southbound Beatties Ford Road. From the Brookshire Freeway southbound ramp/French Street and Mill Road, Beatties Ford Road is marked for one lane southbound and two lanes northbound. The southbound lane dropped at the Brookshire Freeway southbound ramp is then reintroduced along Beatties Ford Road between Mill Road and Dixon Street which results in four lanes being maintained to the Rozzelles Ferry Road/5th Street intersection. Beatties Ford Road then turns into Trade Street south of Rozzelles Ferry Road/5th Street.

The land use is generally commercial with some residential mixed with commercial between LaSalle Street and the Brookshire Freeway/French Street. Between French Street and Rozzelles Ferry Road, land use is mostly institutional due to the Johnson C. Smith University campus.

Bus stops are located at approximately two-block intervals along Beatties Ford Road and are served by the CATS Bus Route 7. The route currently operates on 15 minute peak and 20 minute off-peak intervals.

The following is a brief description of major cross streets that intersect Beatties Ford Road in the study area.

- **Rosa Parks Place** is a two-lane, two-way, east-west local street located just north of I-85, with a posted speed of 25 miles per hour. Rosa Parks Place terminates with Beatties Ford Road to the east and North I-85 Service Road to the west.

- **I-85** is an eight-lane, two-way, north-south interstate highway with a posted speed limit of 60 miles per hour.

- **LaSalle Street** is a two-lane, two-way, east-west local street providing access between I-77 and Beatties Ford Road. The posted speed on LaSalle Street is 30 miles per hour.

- **Booker Avenue/Oaklawn Avenue** is a two-way, east-west, local street which is named Booker Avenue west of Beatties Ford Road, and Oaklawn Avenue to the east of Beatties Ford Road. Booker Avenue is a two-lane, two-way, local street with a posted speed limit of 25 miles per hour. Oaklawn Avenue is a four-lane, two-way, local street with a posted speed limit of 35 miles per hour.

- **Brookshire Freeway (NC 16**) is a four-lane, two-way, north-south freeway with a posted speed limit that varies from 50-55 miles per hour. Access to Brookshire Freeway from Beatties Ford Road is via a partial cloverleaf interchange. The Brookshire Freeway northbound ramps intersect Beatties Ford Road at a 'T' intersection north of the freeway. The Brookshire Freeway southbound ramps intersect Beatties Ford Road across from French Street, forming a four-legged intersection.

- **Dixon Street** serves as an entrance to Johnson C. Smith University to the east of Beatties Ford Road. On the west side of Beatties Ford Road, Dixon Street is a two-lane, two-way, local street with a posted speed limit of 30 miles per hour.

- **JC Smith Pedestrian Bridge** spans Beatties Ford Road near the main entrance to the University. Depending on the timing of streetcar implementation, there may be some issues with the clearance under the bridge for the overhead catenary system. Due to very low usage, the University plans to dismantle the bridge as a part of their efforts to expand and improve its main entrance and the related surface pedestrian facilities.

- **Rozzelles Ferry Road/5th Street** is a four-lane, two-way, east-west collector street with a posted speed limit of 35 miles per hour, which is named Rozzelles Ferry Road to the west of Beatties Ford Road and 5th Street to the east of Beatties Ford Road.

Trade Street

Trade Street was an important Native American trading path prior to the founding of the City of Charlotte in 1768 and has remained a primary thoroughfare all through the city's history. The intersection of Trade Street and Tryon Street is the center of Charlotte's Center City, and is a city landmark called "The Square". Charlotte's Center City is classified as the area within I-77 and I-277. Trade Street begins at Johnson C. Smith University on the west and ends at McDowell Street on the east where it becomes Elizabeth Avenue.

Trade Street, to the west of Charlotte's Center City, between Rozzelles Ferry Road and I-77 is a four-lane, two-way minor arterial, with left-turn lanes provided adjacent to the I-77 interchange. At I-77, the roadway widens to three through lanes eastbound and two through lanes westbound. The posted speed limit along Trade Street is 40 miles per hour. Trade Street includes sidewalks on both sides of the street, however, no on-street parking is provided.

The majority of land uses along Trade Street, west of Center City are commercial. Bus stops are located at approximately two-block intervals that are served by CATS Bus Route 7 – Beatties Ford Road. Buses run at approximately 9 minute peak and 20 minute off-peak intervals.

The following is a brief description of major cross streets that intersect Trade Street prior to entering the area inside the I-277 loop.

- **I-77** is a six-lane, two-way, north-south interstate highway with a posted speed limit of 55 miles per hour.

Trade Street between I-77 and I-277, is a part of Charlotte's Center City grid roadway system, which consists mostly of a four-lane undivided facility with two lanes eastbound and two lanes westbound. There are however, several areas where raised planted medians or left turn lanes are provided.

The section of Trade Street from I-77 to the Trade-4th Connector Street is classified as a principal arterial. From the Trade-4th Connector Street to I-277, Trade Street is classified as a collector Street. The posted speed limit along Trade Street is 35 miles per hour. Trade Street includes sidewalks on both sides of the street, with intermittent on street parking provided.

The majority of land uses along Trade Street, within Center City are commercial. This portion of Trade Street is serviced by the CATS Gold Rush Circulator Service Red Line Route, which runs at approximately 7 minute peak and 12 minute off-peak intervals.

The following is a brief description of major cross streets or grade separations that intersect Trade Street within the Charlotte Center City area.

- **Norfolk Southern Railroad** passes over Trade Street near the Gateway Center area of Center City. In addition to freight rail service, the overpass will be utilized by the North Commuter Rail Line. The bridge also represents a low clearance area for streetcar implementation, which is addressed in the conceptual design.
- **Graham Street** is a four-lane, two-way, north-south principal arterial.
- **Mint Street/Pine Street** is a three lane, one-way, southbound local street.
- **Poplar Street** is a two-lane, one-way, northbound local street.
- **Church Street** is a two-lane, one way, southbound minor arterial street.
- **Tryon Street** is a four-lane, two-way, north-south collector street.
- **College Street** is a three-lane, one-way, northbound minor arterial.
- **LYNX Light Rail Line** is a north-south 9.6 mile corridor east of I-77, which will run from the CATS Transportation Center to the south near I-485, while providing 15 stations.
- **Brevard Street** is a two-lane, one-way, southbound minor arterial adjacent to the CATS Transportation Center.
- **Caldwell Street** is a two-lane, two-way, north-south minor arterial.
- **Davidson Street** is a four lane, two-way, north-south local street.
- **Alexander Street** is a short one-way, north-south local street.
- **McDowell Street** is a two-lane, two-way, north-south principal arterial.

Elizabeth Avenue

After crossing McDowell Street, Trade Street becomes Elizabeth Avenue. Elizabeth Avenue is a two-way, east-west collector street with a posted speed limit of 35 miles per hour. From McDowell Street to Kings Drive it has two lanes in each direction. From Kings Drive to Hawthorne Lane, Elizabeth Avenue is currently marked for one lane westbound and two lanes eastbound. Opposite of the Elizabeth Avenue termination is the main entrance of Presbyterian Hospital.

The City of Charlotte is implementing a streetscape improvement project which entails the widening of sidewalks, the addition of bike lanes, curbside parking and moving existing above-ground utilities underground. The project also includes the construction of the rails for the CATS Center City Streetcar in order to avoid retrofitting rails in the future. Upon completion of the streetscape project, Elizabeth Avenue will become a two lane, two-way minor arterial. This constitutes a reduction in capacity for the roadway.

The majority of land uses along Elizabeth Avenue are commercial and institutional. Bus stops are located at approximately two-block intervals that are served by the CATS Bus Route 39. Buses operate on approximately 30 minute peak and 60 minute off-peak intervals.

The following is a brief description of major cross streets that intersect Elizabeth Avenue within the study area.

- **I-277** is an interstate highway loop around Center City Charlotte with a posted speed limit of 55 miles per hour. I-277 is a six to eight-lane, two-way facility which forms a grade separation with Elizabeth Avenue.
- **Kings Drive** is a four lane, divided, two-way, north-south minor arterial.
- **Independence Boulevard** is a four lane, two-way, east-west local street where crossing Elizabeth Avenue.
- **Hawthorne Lane** is a four lane, two-way, north-south collector street.

Hawthorne Lane

Hawthorne Lane is a north-south, collector street, which runs from the south at 4th Street to the north at Parkwood Avenue. Hawthorne Lane south of Elizabeth Avenue is a four lane, two-way, facility with a posted speed limit of 35 miles per hour. There are sidewalks on both sides of the street with commercial land use on the west and institutional land use on the east. Bus stops are located at approximately two-block intervals that are served by the CATS Bus Route 20. Buses operate on approximately 30 minute peak and 60 minute off-peak intervals.

Hawthorne Lane between Elizabeth Avenue and Central Avenue is a four-lane, two-way, north-south collector street with a posted speed limit of 35 miles per hour. There are sidewalks along both sides of the street with very large trees lining the both sides of the street south of Independence Boulevard. The land uses along Hawthorne Lane are mixed between commercial and multi-family residential on the west and institutional and multi-family residential on the east between Elizabeth Avenue and Park Drive. Land use between Park Drive and 7th Street consists of Park/open space, with predominantly single-family and multi-family residential between 7th Street and Central Avenue. Bus stops are located at approximately two-block intervals that are served by the CATS Bus Route 39. Buses operate on approximately 30 minute peak and 60 minute off-peak intervals.

Hawthorne Lane, north of Central Avenue is a two-lane, two-way, north-south collector street with sidewalks on both sides of the street. Land use along this portion of Hawthorne Lane consists mostly of commercial and industrial, before transitioning to Park/Open space and ultimately residential as Hawthorne Lane ends at Parkwood Avenue. Mid-block is a bridge, passing over Hawthorne Lane to accommodate CSX ROW. The conceptual design must address the underpass' low clearance.

The following is a brief description of major cross streets that intersect Hawthorne Lane within the study area.

- **5th Street** is a two-lane, two-way east-west local street with a posted speed limit of 25 miles per hour.
- **7th Street** is a three-lane, two-way east-west, minor arterial with one lane in each direction and an interchangeable center turn lane. The posted speed limit is 35 miles per hour.
- **Independence Boulevard** is a six-lane, two-way east-west, expressway which forms a grade separation with Hawthorne Lane. Independence Boulevard also includes two-lane, two-way HOV lanes within the median.

Central Avenue

Central Avenue is an east-west minor arterial, which begins at the Kings Drive/7th Street intersection (western terminus). The streetcar alignment crosses Central Avenue at Hawthorne and then enters the roadway at Clement Avenue. Central Avenue continues to the east where it ends at Albemarle Road. Between 7th Street and The Plaza, Central Avenue consists of sidewalks on both sides of the street with four lanes serving two-way traffic and turn lanes are provided at major intersections. The posted speed limit is 35 miles per hour with the land use generally commercial in this area.

Between The Plaza and Albemarle Road, Central Avenue widens to a four-lane, two-way, with left and right-turn lanes at major intersections. Bicycle lanes and sidewalks are on both sides of Central Avenue between Cyrus Drive and Sharon Amity Road. The land uses along Central Avenue include mostly commercial and multi-family residential uses. The CATS Bus Route 9 operates the Central Avenue corridor on 8 minute peak and 20 minute off-peak interval.

The following is a brief description of major cross streets that intersect Central Avenue in the study area.

- **Pecan Avenue** is a two-lane, two-way, local street with a posted speed limit of 25 miles per hour.
- **Thomas Avenue** is a two-lane, two-way, local street with a posted speed limit of 25 miles per hour.
- **The Plaza** is a two-lane, two-way major arterial with a posted speed limit of 35 miles per hour near the project limits.
- **Morningside Drive** is a two-lane, two-way, local street with a posted speed limit of 25 miles per hour.
- **Eastcrest Drive** is a two-lane, two-way, local street with a posted speed limit of 30 miles per hour which terminates at a “T” intersection on the south side of Central Avenue.
- **Briar Creek Road** is a two-lane, two-way, collector street with a posted speed limit of 35 miles per hour which terminates as a “T” intersection on the south side of Central Avenue.
- **Eastway Drive** is a four-lane, two-way principal arterial with a posted speed limit of 45 miles per hour.
- **Norland Road/Kilbourne Drive** is a two-lane, two-way, minor arterial. North of Central Avenue, the roadway is named Kilbourne Drive and has a posted speed limit of 35 miles per hour; south of Central Avenue, the roadway is named Norland Road and has a posted speed limit of 25 miles per hour.
- **Sharon Amity Road** is a four-lane, two-way, principal arterial, with a raised median to the north of Central Avenue and a center lane for left-turning vehicles to the south of Central Avenue. The posted speed limit is 45 miles per hour.
- **The Eastland Mall West Entrance** is a two-lane, two-way private street. The entrance is one of three Central Avenue entrances into Eastland Mall.

4.2.2 System Performance and Congestion

Traffic analysis for the streetcar project was completed in two distinct phases. City traffic engineers performed the analysis of roadway segments and intersections within Center City (within the I-277 loop) as a part of their work on other Center City transportation initiatives. The streetcar consultant conducted the traffic analyses for the rest of the streetcar alignment. Two documents were prepared as a result of the traffic analysis: The *Traffic Impact Analysis for Proposed Streetcar Alternatives along Trade Street* which covers the segments within the I-277 loop and the *Center City Streetcar Corridor Travel Analysis* which covers the rest of the alignment. The analyses examine the 2004 Existing Conditions as well as the 2030 No Build Alternative and 2030 Build Alternative.

The 2004 Existing Conditions were analyzed in order to evaluate the capacity conditions of the existing roadway. The 2030 No Build Alternative assumes that the Center City Streetcar project would not be constructed and that there are currently no roadway improvements projects planned or programmed as part of the NCDOT 2006-2012 TIP that would affect this project. The 2030 No Build Alternative analysis serves as a baseline condition from which the impacts of changes in traffic patterns due to the proposed project can be measured. The 2030 Build Alternative represents future traffic flow conditions in the study area with the Center City Streetcar Corridor in place. This alternative includes all the roadway improvement projects included in the 2030 No Build Alternative and the improvements by the Center City Streetcar Corridor project team's recommendations as discussed in further detail under the 2030 Build Alternative portion of Section 4.2.3. To keep the analysis conservative, 2030 traffic volumes were not adjusted to reflect the potential of reduction in traffic attributable to increased transit ridership in the corridor. The traffic volumes used for the 2030 Build Alternative are the same as those under the 2030 No Build Alternative. Analysis will be performed on arterial segments and major intersections along the streetcar corridor for all three scenarios.

4.2.3 Arterial Capacity Analysis

VISSIM was used to determine the impacts of transit service on the existing roadway grid network in Center City Charlotte. Measures of effectiveness reported from VISSIM for Arterial Analysis include Travel Time and Average Speed. Travel Time is the amount of time the average vehicle takes in traversing a portion of the network. Average Speed is the speed the average vehicle can expect to maintain along each segment. Average Speed is then correlated to 2000 *Highway Capacity Manual* (HCM) Level of Service based upon the Urban Street Class. The section of the Streetcar corridor analyzed within the I-277 loop would be classified by HCM as a Class IV Urban Street.

For the rest of the corridor, the *2002 Quality/Level of Service Handbook,* issued by the Florida Department of Transportation was approved by the Charlotte DOT and used to analyze the Streetcar Corridor sections of arterials located outside of Center City Charlotte. According to the Handbook*,* average travel speed is typically the service measure used to determine Level of Service for a signalized segment of roadway. Use of "Table 4-1 Generalized Annual Average Daily Volumes for Urbanized Areas", which is included in the handbook is recommended in order to account for traffic volume as a variable in the determination of Level of Service by means of the volume to capacity ratio calculation by roadway Class. The Handbook classifies the Streetcar alignment along Beatties Ford and Central Avenue as Class II corridor. The calculation of the volume to capacity ratio is the ratio of the traffic demand or Average Annual Daily Traffic and the capacity or the volume the number of lanes can service. As set forth in the 2000 edition of the HCM, the volume to capacity ratio ranges from 0.0 to 1.0 with 1.0 indicating that the traffic demand is fully utilizing the capacity provided by the facility. Given the volume to

capacity ratio, the Level of Service can be determined. Six levels of service – from A to F – are directly related to the volume. Level of Service A represents no congestion; Level of Service E represents long delays; and Level of Service F represents excessive delays.

2004 Existing Conditions analysis included existing conditions along Beatties Ford Road, Trade Street, Elizabeth Avenue, Hawthorne Lane and Central Avenue and assumed that the Center City Streetcar project would not be constructed.

The 2004 Existing Conditions analysis for Center City included the entire length of Trade Street. Morning peak traffic along this section of Trade Street has, by direction, the highest approach volume of any time of day. As a result, evening peak hour traffic was not analyzed. Analysis for westbound Trade Street resulted with an average speed of 14.98 miles per hour which would correlate to an HCM Level of Service C. Analysis for eastbound Trade Street resulted with an average speed of 15.59 miles per hour which would correlate to an HCM Level of Service C.

Outside the I-277 loop, the analysis included 27 arterial segments within the study area. The analysis shows that for the 2004 Existing Conditions, the traffic demand on Beatties Ford Road, Trade Street, Hawthorne Lane and Central Avenue (west of Morningside Drive) is well below the routes' capacities. The one section in which traffic demand is approaching or currently exceeds roadway capacity is on Central Avenue between Morningside Drive and Sharon Amity Road.

A summary of the results of the arterial capacity analyses for the 2030 Build Alternative is provided in Table 4-1 and Table 4-2.

Table 4-1: Arterial Capacity Analysis 2004 Existing Conditions within I-277 Loop

Segment			Average Speed (mph)	Level of Service
From		To		
Trade Street				
	McDowell Street	Cedar Street	14.98	C
	Cedar Street	McDowell Street	15.59	C

Source: Charlotte Department of Transportation

Table 4-2: Arterial Capacity Analysis 2004 Existing Conditions outside I-277 Loop

Segment			Average Annual Daily Traffic (vpd)	Level of Service	V/C Ratio
From		To			
Beatties Ford Road					
	Hoskins Rd.	I-85	29,800	D	0.86
	I-85	Service Road NB	27,700	D	0.80
	Service Road NB	Lasalle St.	17,000	C	0.49
	Lasalle St.	Oaklawn Ave.	12,000	C	0.35
	Oaklawn Ave.	Brookshire Fwy. SB ramps/ French St.	16,700	C	0.48
	Brookshire Fwy. SB ramps/French St.	Dixon St.	10,200	C	0.40
	Dixon St.	Rozzelles Ferry Rd.	10,200	C	0.30
Trade Street					
	Rozzelles Ferry Rd.	Wesley Heights Rd.	15,900	C	0.46
	Wesley Heights Way	I-77 SB ramps	21,600	C	0.63
	I-77 SB ramps	I-77 NB ramps	23,100	C	0.67
	I-77 NB ramps	Johnson and Wales Wy.	22,000	C	0.64
Hawthorne Lane					
	Elizabeth Av.	5th St.	11,900	C	0.34
	5th St.	7th St.	11,900	C	0.34
	7th St.	Bay St.	9,500	C	0.28
	Bay St.	Sunnyside Ave.	9,500	C	0.28
	Sunnyside Ave.	Central Ave.	9,500	C	0.28
Central Avenue					
	Hawthorne Ln.	Pecan Ave.	29,000	D	0.84
	Pecan Ave.	Thomas Ave.	29,000	D	0.84
	Thomas Ave.	The Plaza	29,000	D	0.84
	The Plaza	Club Rd.	23,700	C	0.69
	Club Rd.	Morningside Dr.	23,700	C	0.69
	Morningside Dr.	Briar Creek Rd.	33,200	E	0.96
	Briar Creek Rd.	Eastway Dr.	34,500	F	1.00
	Eastway Dr.	Norland Dr.	31,300	D	0.91
	Norland Dr.	Rosehaven Dr.	36,800	F	1.07
	Rosehaven Dr.	Sharon Amity Rd.	36,800	F	1.07
	Sharon Amity Rd.	Reddman Rd.	23,200	C	0.67

Source: *Center City Streetcar Corridor Traffic Analysis* (2006)

2030 No Build Alternative conditions assume that the Center City Streetcar project would not be constructed and that there are currently no roadway improvements projects planned or programmed as part of the NCDOT 2006-2012 TIP that would affect this project. The 2030 No Build Alternative analysis serves as a baseline condition from which the impacts of changes in traffic patterns due to the proposed project can be measured.

The 2030 No Build Alternative analysis for inside the I-277 loop included Trade Street as a corridor from Graham Street to Brevard Street. Morning peak traffic along this section of Trade Street has, by direction, the highest approach volume of any time of day. As a result, evening peak hour traffic was not analyzed. Analysis for Trade Street as a corridor resulted with an average speed of 14.86 miles per hour for westbound and 15.40 miles per hour for eastbound, which correlates to an HCM Level of Service C for both. Analysis for westbound Trade Street from Graham Street to Brevard Street resulted with an average speed of 10.9 miles per hour which would correlate to an HCM Level of Service D. Analysis for eastbound Trade Street from Brevard Street to Graham Street resulted with an average speed of 12.0 miles per hour which would correlate to an HCM Level of Service D.

The 2030 No Build Alternative analysis for outside I-277 Loop included 27 arterial segments and shows that the roads analyzed within the study area would be congested with several segments failing to serve the future traffic demand by the year 2030. Segments where traffic demand would exceed capacity include segments of Beatties Ford Road north of I-85, Trade Street near I-77 and the majority of Central Avenue. Central Avenue where traffic demand is below the roadway's capacity includes the segments from The Plaza to Morningside Drive and from Sharon Amity Road to Reddman Road.

A summary of the results of the arterial capacity analyses for the 2030 No Build Alternative is provided in Table 4-3 and Table 4-4.

Table 4-3: Arterial Capacity Analysis 2030 No Build Alternative within I-277 Loop

Segment		Average Speed (mph)	Level of Service
From	To		
Trade Street			
Graham Street	Brevard Street	10.9	D
Brevard Street	Graham Street	12.0	D
Entire Trade Street Corridor westbound		14.86	C
Entire Trade Street Corridor eastbound		15.40	C

Source: Charlotte Department of Transportation

Table 4-4: Arterial Capacity Analysis 2030 No Build Alternative outside I-277 Loop

Segment			Average Annual Daily Traffic (vpd)	Level of Service	V/C Ratio
From		To			
Beatties Ford Road					
	Hoskins Rd.	I-85	40,800	F	1.18
	I-85	Service Road NB	44,000	F	1.28
	Service Road NB	Lasalle St.	33,800	E	0.98
	Lasalle St.	Oaklawn Ave.	23,600	C	0.68
	Oaklawn Ave.	Brookshire Frwy. SB ramps/ French St.	25,000	C	0.72
	Brookshire Frwy. SB ramps/French St.	Dixon St.	20,600	D	0.81
	Dixon St.	Rozzelles Ferry Rd.	20,600	C	0.60
Trade Street					
	Rozzelles Ferry Rd.	Wesley Heights Rd.	24,000	C	0.70
	Wesley Heights Way	I-77 SB ramps	31,700	D	0.92
	I-77 SB ramps	I-77 NB ramps	38,900	F	1.13
	I-77 NB ramps	Johnson and Wales Wy.	41,400	F	1.20
Hawthorne Lane					
	Elizabeth Ave.	5th St.	14,900	C	0.43
	5th St.	7th St.	14,900	C	0.43
	7th St.	Bay St.	11,900	C	0.34
	Bay St.	Sunnyside Ave.	11,900	C	0.34
	Sunnyside Ave.	Central Ave.	11,900	C	0.34
Central Avenue					
	Hawthorne Ln.	Pecan Ave.	38,500	F	1.12
	Pecan Ave.	Thomas Ave.	35,800	F	1.04
	Thomas Ave.	The Plaza	35,800	F	1.04
	The Plaza	Club Rd.	31,500	D	0.91
	Club Rd.	Morningside Dr.	31,500	D	0.91
	Morningside Dr.	Briar Creek Rd.	44,000	F	1.28
	Briar Creek Rd.	Eastway Dr.	45,800	F	1.33
	Eastway Dr.	Norland Dr.	35,300	F	1.02
	Norland Dr.	Rosehaven Dr.	41,400	F	1.20
	Rosehaven Dr.	Sharon Amity Rd.	41,400	F	1.20
	Sharon Amity Rd.	Reddman Rd.	26,100	D	0.76

Source: *Center City Streetcar Corridor Traffic Analysis* (2006)

2030 Build Alternative conditions assume that the Center City Streetcar project would be constructed and that there are currently no roadway improvements projects planned or programmed as part of the NCDOT 2006-2012 TIP that would affect this project. The City, however, will be completing the Elizabeth Avenue streetscape project that will reduce the roadway from four lanes to two lanes between Kings Drive and Hawthorne Lane.

Additional improvements assumed with the 2030 Build Alternative, include the following changes:

Beatties Ford Road:

- No changes between Rosa Parks Place and Dixon Street
- Two lanes with a center left-turn lane between Dixon Street and Rozzelles Ferry Road

Trade Street:

- Two lanes with a center left-turn lane between Rozzelles Ferry Road and Wesley Heights Way
- No changes between Wesley Heights Way and Johnson and Wales Way

Hawthorne Lane:

- Two lanes with a center left-turn lane between Elizabeth Avenue and 7th Street (Per City of Charlotte Road diet project)

Central Avenue:

- No changes between Hawthorne Lane and Reddman Road

The 2030 Build Alternative analysis within the 1-277 loop included Trade Street from Graham Street to Brevard Street and for Trade Street as a corridor. Morning peak traffic along this section of Trade Street has, by direction, the highest approach volume of any time of day. As a result, evening peak hour traffic was not analyzed. Analysis for Trade Street as a corridor resulted with an average speed of 14.69 miles per hour for westbound and 14.90 miles per hour for eastbound, which correlates to an HCM Level of Service C for both. Analysis for westbound Trade Street from Graham Street to Brevard Street resulted with an average speed of 10.9 miles per hour which would correlate to an HCM Level of Service D. Analysis for eastbound Trade Street from Brevard Street to Graham Street resulted with an average speed of 11.5 miles per hour which would correlate to an HCM Level of Service D.

The 2030 Build Alternative analysis for the alignment outside I-277 was performed for the Center City Streetcar Corridor along Beatties Ford Road, Trade Street, Hawthorne Lane, and Central Avenue. The 2030 Build Alternative analysis included 27 arterial segments and shows that the roads analyzed within the study area would be congested with several segments failing to serve the future traffic demand by the year 2030.

On Beatties Ford Road, between Rosa Parks Place and Brookshire Freeway, the roadway cross-section is unchanged, with the analysis resulting with the v/c ratios remaining the same as under the 2030 No Build Alternative. Between Brookshire Freeway and Wesley Heights Way, Beatties Ford Road was reduced from four through lanes to two through lanes plus a center median/left-turn lane as needed. The arterial analysis for the 2030 Build Alternative indicates that traffic demand will exceed the roadway capacity on this segment of Beatties Ford Road as well.

On Trade Street west of I-77, the roadway cross-section is unchanged and the v/c ratio will remain the same as under the 2030 No Build Alternative, except for the segment of Trade Street between Rozzelles Ferry Road and Wesley Heights Way.

On Hawthorne Lane, between Elizabeth Avenue and 7th Street the roadway cross-section is reduced from four lanes to two lanes with a center median/left-turn lane. Due to the reduction in capacity, the v/c ratios will increase, however, the traffic demand will still remain below the route's capacity.

On Central Avenue, the change in roadway capacity is negligible between the 2030 No Build Alternative and the 2030 Build Alternative and the v/c ratios remain essentially the same. All sections, except the segment of Central Avenue between The Plaza and Morningside Drive and the segment between Sharon Amity Road and Reddman Road, will have traffic demand exceeding capacity.

A summary of the results of the arterial capacity analyses for the 2030 Build Alternative is provided in Table 4-5 and Table 4-6.

Table 4-5: Arterial Capacity Analysis 2030 Build Alternative within I-277 Loop

Segment		Average Speed (mph)	Level of Service
From	To		
Trade Street			
Graham Street	Brevard Street	10.9	D
Brevard Street	Graham Street	11.5	D
Entire Trade Street Corridor westbound		14.69	C
Entire Trade Street Corridor eastbound		14.90	C

Source: Charlotte Department of Transportation

Table 4-6: Arterial Capacity Analysis 2030 Build Alternative outside I-277 Loop

Segment		Average Annual Daily Traffic (vpd)	Level of Service	V/C Ratio
From	To			
Beatties Ford Road				
Hoskins Rd.	I-85	40,800	F	1.18
I-85	Gilbert St.	44,000	F	1.28
Gilbert St.	Lasalle St.	33,800	E	0.98
Lasalle St.	Oaklawn Ave.	23,600	C	0.68
Oaklawn Ave.	Brookshire Frwy. SB ramps/French St.	25,000	C	0.72
Brookshire Frwy. SB ramps/French St.	Dixon St.	20,600	F	1.26
Dixon St.	Rozzelles Ferry Rd.	20,600	F	1.26
Trade Street				
Rozzelles Ferry Rd.	Wesley Heights Rd.	24,000	F	1.47
Wesley Heights Way	I-77 SB ramps	31,700	D	0.92
I-77 SB ramps	I-77 NB ramps	38,900	F	1.13
I-77 NB ramps	Johnson and Wales Wy.	41,400	F	1.20
Elizabeth Avenue				
McDowell Street	Independence Blvd.	24,000	F	1.47
Independence Blvd.	Hawthorne Lane	31,700	D	0.92

Table 4-6: Arterial Capacity Analysis 2030 Build Alternative outside I-277 Loop (Cont.)

Hawthorne Lane					
	Elizabeth Ave.	5th St.	14,900	D	0.91
	5th St.	7th St.	14,900	D	0.91
	7th St.	Bay St.	11,900	D	0.73
	Bay St.	Sunnyside Ave.	11,900	D	0.73
	Sunnyside Ave.	Central Ave.	11,900	D	0.73
Central Avenue					
	Hawthorne Ln.	Pecan Ave.	38,500	F	1.12
	Pecan Ave.	Thomas Ave.	35,800	F	1.04
	Thomas Ave.	The Plaza	35,800	F	1.04
	The Plaza	Club Rd.	31,500	D	0.91
	Club Rd.	Morningside Dr.	31,500	D	0.91
	Morningside Dr.	Briar Creek Rd.	44,000	F	1.28
	Briar Creek Rd.	Eastway Dr.	45,800	F	1.33
	Eastway Dr.	Norland Dr.	35,300	F	1.02
	Norland Dr.	Rosehaven Dr.	41,400	F	1.20
	Rosehaven Dr.	Sharon Amity Rd.	41,400	F	1.20
	Sharon Amity Rd.	Reddman Rd	26,100	D	0.76

Source: *Center City Streetcar Corridor Traffic Analysis* (2006)

4.2.4 Intersection Capacity Analysis

At intersections, the Level of Service is used to measure delay. Six levels of service – from A to F – are related to vehicle delay. Level of Service A represents no congestion; Level of Service E represents long delays; and Level of Service F represents excessive delays with vehicles having to wait several signal cycles to clear an intersection. The capacity of a roadway is usually limited by the capacity of its intersections, therefore the major intersections along the Center City Streetcar corridor where analyzed for the 2004 Existing Conditions, the 2030 No Build Alternative and the 2030 Build Alternative.

2004 Existing Conditions within I-277 Loop were not analyzed; however outside I-277 Loop 2004 Existing Conditions were analyzed in order to evaluate the capacity conditions of the existing major intersections along the streetcar corridor. The 2004 Existing Conditions analysis included 22 signalized intersections and one unsignalized intersection within the study area. Of the 22 signalized intersections, traffic flow with minimal congestion (v/c ratio less than 0.85) occurred at 19 intersections, traffic flow with moderate congestion (v/c ratio between 0.85 and 0.94) occurred at two intersections, and traffic flow with severe congestion (v/c ratio 0.95 or greater) occurred at one intersection.

At the Unsignalized intersection of Trade Street at the I-77 southbound ramps, traffic on the cross street has long delays during the PM peak hour, which suggests the intersection should be monitored to determine whether a traffic signal is warranted.

A summary of the results of the intersection capacity analyses for the 2004 Existing Conditions is provided in Table 4-7.

Table 4-7: Intersection Capacity Analysis 2004 Existing Conditions outside I-277 Loop

Major Street / Cross Street	AM Peak Hour			PM Peak Hour		
	Delay (seconds)	Level of Service	V/C Ratio	Delay (seconds)	Level of Service	V/C Ratio
Beatties Ford Rd.						
I-85 SB ramps	31.1	C	0.94	17.6	B	0.65
I-85 NB ramps	8.0	A	0.65	11.4	B	0.65
LaSalle St.	10.9	B	0.52	18.1	B	0.66
Booker Ave./Oaklawn Ave.	6.2	A	0.52	11.8	B	0.64
Brookshire Frwy NB ramps	9.4	A	0.49	28.7	C	0.67
Brookshire Frwy SB ramps/ French St.	3.4	A	0.53	5.2	A	0.34
Dixon St.	1.9	A	0.25	3.1	A	0.35
Rozzelles Ferry Rd./5th St.	13.6	B	0.34	13.8	B	0.55
Trade St.						
I-77 SB ramps	25.0	C	N/A	94.0	F	N/A
I-77 NB ramps	18.6	B	0.51	9.9	A	0.40
Hawthorne Ln.						
Elizabeth Ave.	17.7	B	0.48	13.2	B	0.38
5th St.	14.7	B	0.42	16.9	B	0.32
7th St.	21.5	C	0.68	21.5	C	0.70
Central Ave.						
Pecan Ave.	11.3	B	0.62	7.6	A	0.49
Thomas Ave.	2.5	A	0.40	4.5	A	0.44
The Plaza	17.7	B	0.48	21.2	C	0.60
Morningside Dr.	6.4	A	0.40	7.8	A	0.49
Eastcrest Dr.	2.8	A	0.36	4.3	A	0.41
Briar Creek Rd.	9.7	A	0.63	22.1	C	0.72
Eastway Dr.	39.6	D	0.85	49.8	D	0.90
Kilbourne Dr/Norland Rd.	29.1	C	0.60	40.0	D	0.81
Sharon Amity Rd.	48.6	D	0.80	66.3	E	0.99
Eastland Mall west entrance	1.7	A	0.38	5.7	A	0.42

Source: *Center City Streetcar Corridor Traffic Analysis* (2006)

2030 No Build Alternative conditions assume that the Center City Streetcar project would not be constructed and that there are currently no roadway improvements projects planned or programmed as part of the NCDOT 2006-2012 TIP that would affect this project. The City of Charlotte proposes modifications to the intersection of Elizabeth Avenue and Hawthorne Lane, which consists of providing one through lane shared with left-turning movements and an exclusive right-turn lane for the eastbound approach, providing one through lane shared with both left and right-turning movements for the westbound approach and no changes for the northbound and southbound Hawthorne Lane approaches. The 2030 No Build Alternative analysis serves as a baseline condition from which the impacts of changes in traffic patterns due to the proposed project can be measured.

The 2030 No Build Alternative analysis for conditions within the I-277 Loop were analyzed in order to evaluate the capacity conditions of the intersections of Church Street, Tryon Street and College Street with Trade Street. Morning peak traffic along this section of Trade Street has, by direction, the highest approach volume of any time of day. As a result, evening peak hour traffic was not analyzed. VISSIM reported a Peak Hour Delay of 28.6 seconds for the Church Street/Trade Street intersection, 12.9 seconds for the Tryon Street/Trade Street intersection and 19.7 seconds for the College Street/Trade Street intersection resulting with HCM equivalent Levels of Service of C, B and B respectively.

The 2030 No Build Alternative analysis for conditions outside I-277 Loop were analyzed in order to evaluate the capacity conditions of the major intersections along the streetcar corridor. The 2030 No Build Alternative analysis included 23 signalized intersections within the study area. Of the 23 intersections analyzed, traffic flow with minimal congestion (v/c ratio 0.85 or lower) occurred at 10 intersections, traffic flow with moderate congestion (v/c ratio between 0.85 and 0.94) occurred at five intersections, and traffic flow with severe congestion (v/c ratio 0.95 or greater) occurred at eight intersections.

A summary of the results of the intersection capacity analyses for the 2030 No Build Alternative is provided in Table 4-8 and Table 4-9.

Table 4-8: Intersection Capacity Analysis 2030 No Build Alternative within I-277 Loop

Major Street / Cross Street		AM Peak Hour	
		Delay (seconds)	Level of Service
Trade Street			
	Church Street	28.6	C
	Tryon Street	12.9	B
	College Street	19.7	B

Source: Charlotte Department of Transportation

Table 4-9: Intersection Capacity Analysis 2030 No Build Alternative outside I-277 Loop

Major Street / Cross Street	AM Peak Hour			PM Peak Hour		
	Delay (seconds)	Level of Service	V/C Ratio	Delay (seconds)	Level of Service	V/C Ratio
Beatties Ford Rd.						
I-85 SB ramps	43.8	D	1.01	23.6	C	0.81
I-85 NB ramps	37.1	D	0.98	19.8	B	0.91
LaSalle St.	33.4	C	0.88	21.8	C	0.88
Booker Ave./Oaklawn Ave.	58.3	E	0.97	36.3	D	0.96
Brookshire Frwy NB ramps	18.1	B	0.64	48.5	D	0.71
Brookshire Frwy SB ramps/ French St.	14.5	B	0.88	9.5	A	0.53
Dixon St.	13.9	B	0.56	6.7	A	0.64
Rozzelles Ferry Rd./5th St.	125.8	F	1.10	95.5	F	1.08
Trade St.						
I-77 SB ramps	6.0	A	0.48	7.1	A	0.68
I-77 NB ramps	28.0	C	0.79	13.2	B	0.61
Hawthorne Ln.						
Elizabeth Ave.	20.9	C	0.77	13.9	B	0.53
5th St.	10.2	B	0.49	9.9	A	0.37
7th St.	27.2	C	0.76	26.8	C	0.87
Central Ave.						
Pecan Ave.	39.7	D	1.03	28.0	C	0.87
Thomas Ave.	5.5	A	0.58	14.3	B	0.64
The Plaza	41.0	D	0.91	45.0	D	0.84
Morningside Dr.	12.0	B	0.54	10.2	B	0.58
Eastcrest Dr.	12.0	B	0.62	8.7	A	0.62
Briar Creek Rd.	29.7	C	0.82	35.6	D	0.89
Eastway Dr.	61.2	E	1.00	60.2	E	1.04
Kilbourne Dr/Norland Rd.	34.1	C	0.81	51.5	D	0.98
Sharon Amity Rd.	97.4	F	1.15	77.8	E	1.06
Eastland Mall west entrance	8.2	A	0.39	11.0	B	0.42

Source: *Center City Streetcar Corridor Traffic Analysis* (2006)

2030 Build Alternative conditions assume that the Center City Streetcar project would be constructed and that there are currently no roadway improvements projects planned or programmed as part of the NCDOT 2006-2012 TIP that would affect this project.

Additional improvements assumed with the 2030 Build Alternative, include the following changes:

Beatties Ford Road at Brookshire Freeway (NC 16) Southbound Ramps/French Street

- **Eastbound:** One exclusive left-turn lane
  One through lane shared with right-turning movements
- **Westbound:** No change
- **Northbound:** No change
- **Southbound:** One exclusive left-turn lane

Beatties Ford Road at Dixon Street

- ***Eastbound: No change***
- ***Westbound: No change***
- ***Northbound: One exclusive left-turn lane***
  One through lane shared with right-turning movements
- ***Southbound: One through lane shared with right-turning movements***

Beatties Ford Road at Rozzelles Ferry Road

- **Eastbound:** One exclusive left-turn lane
  Two through lanes (one shared with right-turning movements)
- **Westbound:** No change
- **Northbound:** Two exclusive left-turning lanes
  One through lane shared with right-turning movement
- **Southbound:** One exclusive left-turn lane
  One through lane
  One exclusive right-turn lane

Hawthorne Lane at Elizabeth Avenue (same as 2030 No build Alternative)

- **Eastbound:** One through lane shared with left-turning movements
  One exclusive right-turn lane
- **Westbound:** One through lane shared with left and right-turning movements
- **Northbound:** One exclusive left-turn lane
  One through lane
  One exclusive right-turn lane
- **Southbound:** One exclusive left-turn lane
  One through lane shared with right-turning movements

Hawthorne Lane at 5th Street

- **Eastbound:** No change
- **Westbound:** No change
- **Northbound:** One exclusive left-turn lane
  One through lane shared with right-turning movements
- **Southbound:** One exclusive left-turn lane
  One through lane shared with right-turning movements

Hawthorne Lane at 7th Street

- **Eastbound:** No change
- **Westbound:** No change
- **Northbound:** One exclusive left-turn lane
  One through lane shared with right-turning movements
- **Southbound:** One exclusive left-turn lane
  One through lane shared with right-turning movements

These improvements fall within the existing right-of-way and do not require widening.

The 2030 Build Alternative analysis within the I-277 conditions were analyzed in order to evaluate the capacity conditions of the intersections of Church Street, Tryon Street and College Street with Trade Street. Morning peak traffic along this section of Trade Street has, by direction, the highest approach volume of any time of day. As a result, evening peak hour traffic was not analyzed. VISSIM reported a Peak Hour Delay of 27.8 seconds for the Church Street/Trade Street intersection, 12.6 seconds for the Tryon Street/Trade Street intersection and 20.1 seconds for the College Street/Trade Street intersection resulting with HCM equivalent Levels of Service of C, B and C respectively.

The 2030 Build Alternative analysis for outside the I-277 loop conditions were analyzed in order to evaluate the capacity conditions of the major intersections along the streetcar corridor. The 2030 Build Alternative analysis included 23 signalized intersections within the study area. Of the 23 intersections analyzed, traffic flow with minimal congestion (v/c ratio 0.85 or lower) occurred at nine intersections, traffic flow with moderate congestion (v/c ratio between 0.85 and 0.94) occurred at seven intersections, and traffic flow with severe congestion (v/c ratio 0.95 or greater) occurred at seven intersections.

A summary of the results of the intersection capacity analyses for the 2030 Build Alternative Conditions is provided in Table 4-10 and Table 4-11.

Table 4-10: Intersection Capacity Analysis 2030 Build Alternative within I-277 Loop

Major Street / Cross Street		AM Peak Hour	
		Delay (seconds)	Level of Service
Trade Street			
	Church Street	27.8	C
	Tryon Street	12.6	B
	College Street	20.1	C

Source: Charlotte Department of Transportation

Table 4-11: Intersection Capacity Analysis 2030 Build Alternative

Major Street / Cross Street	AM Peak Hour			PM Peak Hour		
	Delay (seconds)	Level of Service	V/C Ratio	Delay (seconds)	Level of Service	V/C Ratio
Beatties Ford Rd.[1]						
I-85 SB ramps	43.8	D	1.01	23.6	C	0.81
I-85 NB ramps	37.1	D	0.98	19.8	B	0.91
LaSalle St.	33.4	C	0.88	21.8	C	0.88
Booker Ave./Oaklawn Ave.	58.3	E	0.97	36.1	D	0.96
Brookshire Frwy NB ramps	17.9	B	0.64	48.7	D	0.71
Brookshire Frwy SB ramps/ French St.	12.2	B	0.84	9.8	A	0.53
Dixon St.	19.4	B	0.79	13.0	B	0.85
Rozzelles Ferry Rd./5th St.	45.3	D	0.90	46.5	D	0.93
Trade St.[2]						
I-77 SB ramps	6.0	A	0.48	7.8	A	0.68
I-77 NB ramps	28.0	C	0.79	12.6	B	0.61
Hawthorne Ln.[3]						
Elizabeth Ave.	42.8	D	0.90	19.7	B	0.67
5th St.	12.8	B	0.56	17.0	B	0.55
7th St.	34.1	C	0.84	31.0	C	0.91
Central Ave.[4]						
Pecan Ave.	35.4	D	1.03	26.9	C	0.88
Thomas Ave.	5.8	A	0.58	14.0	B	0.64
The Plaza	47.5	D	0.93	43.3	D	0.87
Morningside Dr.	12.1	B	0.54	10.2	B	0.58
Eastcrest Dr.	12.0	B	0.62	8.7	A	0.62
Briar Creek Rd.	30.3	C	0.82	34.7	C	0.89
Eastway Dr.	61.3	E	1.00	60.2	E	1.04
Kilbourne Dr/Norland Rd.	34.2	C	0.81	51.5	D	0.98
Sharon Amity Rd.	97.4	F	1.15	77.8	E	1.06
Eastland Mall west entrance	8.2	A	0.39	10.7	B	0.42

Source: Center City Streetcar Corridor Traffic Analysis (2006)

4.2.5 New or Altered Intersection Signalization

There are five intersections that will require signalization to accommodate streetcar movements and two where it will be necessary to add a streetcar only phase to the signal intersections. These changes will have little or no impact on the level of service at the intersection.

- At the intersection of Beatties Ford Road and Rosa Parks Place, a new signal with a 20-second exclusive phase for the streetcar (red phase for southbound Beatties Ford Road and east bound Rosa Parks) is required in order to execute the left turn streetcar movement from the northbound Beatties Ford Road approach into the neighborhood transit center. The return movement, being the right turn from the neighborhood transit center onto southbound Beatties Ford Road, would also require exclusive phasing. With estimated maximum 7.5-minute headways (eight trips/hour) in each direction and at 20 seconds of maneuver time per trip, the all-red signal phase would average 13.4 seconds per cycle.
- At the intersection of Beatties Ford Road and the northbound I-85 Ramp, the Streetcar alignment would need a 20-second exclusive phase for each trip (all-red vehicular phase) to execute the lane change from the curbside lane to the center lane from the northbound Beatties Ford Road approach. With estimated 7.5-minute headways (eight trips/hour) and at 20 seconds of maneuver time per trip, the all-red signal phase would average 4.0 seconds per cycle for a cycle length of 90 seconds.
- A potential site for a streetcar maintenance facility would be located down the access road at the intersection of Beatties Ford Road and Cemetery Street. This intersection is currently unsignalized and would require a new signal with a 20-second exclusive phase for the streetcar (red phase for northbound and southbound Beatties Ford Road) to execute the left turn streetcar movement from the westbound access road onto southbound Beatties Ford Road. Given the frequency of streetcar maintenance, the exclusive phase would only be required during off-peak hours.
- At the intersection of Trade Street and Wesley Heights Way, the Streetcar alignment would need a 20-second exclusive phase for each trip (all-red vehicular phase) to execute the lane change from the left turn lane to the curbside lane from the northbound Trade Street approach. With estimated 7.5-minute headways (eight trips/hour) and at 20 seconds of maneuver time per trip, the all-red signal phase would average 6.7 seconds per cycle. (An alternative concept that could be used in order to transition the streetcar from the center lane to the curbside lane would be to utilize a lane drop at the I-77 southbound loop. This could be achieved by either paint-striping or eradication of pavement. Paint-striping could then be used to transition the northbound streetcar and through traffic approaching Wesley Heights Way from the currently proposed left turn lane to the currently proposed through lane and ultimately avoiding the use of exclusive phasing for the streetcar. This concept could reduce driver delay as well as reduce the potential for driver confusion. The engineering drawings currently do not reflect this configuration).
- At the intersection of Hawthorne Lane and the entrance to the Barnhardt Industrial site, the Streetcar alignment would need a 20-second exclusive phase for each trip (all-red vehicle phase) to execute the left turn movement from the westbound Barnhardt Industrial site entrance onto southbound Hawthorne Lane. Currently the intersection of Hawthorne Lane and the Barnhardt Industrial site driveway is stop controlled, however under build conditions, the Barnhardt Industrial site driveway would be extended to Clement Avenue and become a part of the streetcar mainline corridor. There is also the potential for the streetcar maintenance facility to be located within the Barnhardt

Industrial site, which would increase the frequency of streetcars for this intersection. Given the uncertainties of this particular site, this intersection should be reevaluated in a subsequent phase of this study based upon the determination of the streetcar maintenance facility.

- At the intersection of Central Avenue and Clement Avenue, the Streetcar alignment would need a 20-second exclusive phase for each trip (all-red vehicular phase) to execute the left turn movement from the southbound Clement Avenue approach onto Central Avenue. With estimated 7.5-minute headways (eight trips/hour) and at 20 seconds of maneuver time per trip, the all-red signal phase would average 6.7 seconds per cycle. Clement Avenue is a local street providing access to the Barnhardt Industrial site, which will be the location of the proposed streetcar vehicle maintenance facility. Currently the intersection of Central Avenue and Clement Avenue is stop controlled, with Clement Avenue terminating at Central Avenue.
- At the intersection of Central Avenue and The Plaza, the Streetcar alignment would need a 20-second exclusive phase for each trip (all-red vehicular phase) to execute the left turn movement from northbound The Plaza approach onto Central Avenue. With estimated 7.5-minute headways (eight trips/hour) and at 20 seconds of maneuver time per trip, the all-red signal phase would average 6.7 seconds per cycle for a cycle length of 150 seconds. The right turn movement from the eastbound Central Avenue approach onto The Plaza pocket track would have an exclusive right-turn lane and would not require any additional all-red time.
- At the intersection of Central Avenue and the Eastland Mall west entrance, the Streetcar alignment would need a 20-second exclusive phase for each trip (all-red vehicular phase) to execute the left turn movement from the eastbound Central Avenue approach into the platform at Eastland Mall, which is adjacent to the CATS Eastland Community Transit Center. With estimated 7.5 minute headways (eight trips/hour) and at 20 seconds of maneuver time per trip, the all-red signal phase would average 7.3 seconds per cycle for a cycle length of 165 seconds.

Existing signalized intersections where pedestrian signal phasing time is required or could be increased due to the Streetcar project (split platforms and median platforms) include the following intersections:

- Beatties Ford Road and Montana Drive/Gilbert Drive
- Beatties Ford Road and LaSalle Street
- Beatties Ford Road and Booker Avenue
- Beatties Ford Road and Brookshire Freeway SB ramp/French Street
- Beatties Ford Road and Dixon Street
- Trade Street and Wesley Heights Way
- Trade Street and Clarkson Street
- Trade Street and Mint Street
- Trade Street and Tryon Street
- Trade Street and Charlotte Transportation Center
- Trade Street and Davidson Street
- Trade Street and McDowell Street
- Hawthorne Lane and 5th Street
- Hawthorne Lane and 7th Street

- Hawthorne Lane and Central Avenue
- Central Avenue and The Plaza
- Central Avenue and Morningside Drive
- Central Avenue and Briar Creek Road
- Central Avenue and Eastway Drive

Proposed mid-block signals are required in order for pedestrians to access split platforms and median platforms along the streetcar corridor. Pedestrian phases will only be required when actuated. Proposed mid-block signals are at the following locations:

- Along Beatties Ford Road, between Saint Paul Street and Russell Avenue
- Along Beatties Ford Road/Trade Street, between Rozzelles Ferry Road and Bruns Avenue
- Along Central Avenue, between Masonic Drive and Arnold Drive
- Along Central Avenue, between Timberhollow Drive and Kilbourne Drive
- Along Central Avenue, between Evergreen Cemetery Drive and Progress Lane
- Along Central Avenue, between Lansdale Drive and Wollow Park Drive
- Along Central Avenue, between Glen Hollow Apartments Drive and Winterfield Place

Proposed signalized intersections are required in order for pedestrians to access split platforms and median platforms along the streetcar corridor. Pedestrian phases will only be required when actuated. Proposed signalized intersections for pedestrian crossing are at the following intersections:

- Trade Street and Wilkes Place to serve the proposed Charlotte Gateway Station
- Central Avenue and Veterans Park/Landis Avenue
- Central Avenue and Carolyn Drive

4.2.6 Traffic Analysis Findings

Conclusions regarding the impact of the Center City Streetcar on local travel conditions can be determined by comparing the 2030 No Build Alternative with the 2030 Build Alternative. The 2030 No Build Alternative conditions assume that the Center City Streetcar project would be not be constructed and that there are currently no roadway improvement projects planned or programmed as part of the NCDOT 2006-2012 TIP that would affect this project. The 2030 Build Alternative includes various roadway and intersection modifications such as a reduction in the number of lanes along Beatties Ford Road south of the Brookshire Freeway, Trade Street near the I-77 ramps and Hawthorne Lane. Center City Streetcar impacts on existing arterial roadway capacity and intersection vehicular capacity is summarized below.

Arterial capacity analysis conducted for the 2030 No Build Alternative indicate adequate capacity for the 2030 travel demand for most roadway segments while some would be congested under both the 2030 No Build and 2030 Build Alternatives. On some sections of Beatties Ford Road and Trade Street north of I-77, the arterial capacity is impacted for the 2030 Build Alternative. The section of Beatties Ford Road near the I-85 ramps would be over capacity for both the 2030 No Build Alternative and 2030 Build Alternative. Along Beatties Ford Road between the Rozzelles Ferry Road and Brookshire Freeway, and along Trade Street north of I-77, the corridor cross-section narrows from four through-lanes for the 2030 No Build Alternatives to two through-lanes for the 2030 Build Alternative. This section of the City Center Streetcar corridor would not be over capacity for the 2030 No Build Alternative, but becomes over capacity for the 2030 Build Alternative due to the reduction in number of lanes. Brookshire Freeway to I-77 is an existing alternative route which may be used to avoid this over capacity

section of Beatties Ford Road. Integration of the Center City Streetcar (2030 Build Alternative) on Trade Street without reducing the number of lanes does not have a large impact on motor vehicular operation when compared to the 2030 No Build Alternative. The arterial capacity analysis for Hawthorne Lane indicates that the corridor would continue to have adequate capacity for the 2030 travel demand even though the typical cross-section of Hawthorne Lane would be reduced to two through lanes and a center median/left-turn lane for the 2030 Build Alternative. The arterial capacity analysis for the Central Avenue portion of the streetcar corridor indicates the corridor would be over capacity for both the 2030 No Build and 2030 Build Alternatives. The cross-section on Central Avenue would be the same for the 2030 No Build and 2030 Build Alternatives, retaining four through-lanes and a center median/left-turn lane along the corridor.

Intersection capacity analyses for the 2030 No Build Alternative indicate adequate capacity for the 2030 travel demand for most intersections while some would be congested during peak travel periods for both the 2030 No Build and Build Alternatives. Capacity analyses for intersections along Beatties Ford Road would be virtually the same for the 2030 No Build and 2030 Build Alternatives. Intersections along Trade Street within the Center City Charlotte area, which were assumed to be most affected by the City Center Streetcar included Church Street, Tryon Street and College Street. Capacity analysis for these intersections resulted with the 2030 Build Alternative delay being slightly higher, though not significantly higher than the 2030 No Build Alternative. Capacity analyses for the intersections along Hawthorne Lane indicate that the intersections would be minimally impacted and would provide adequate capacity under the 2030 Build Alternative. Capacity analysis for the intersections along Central Avenue indicate that the intersections will continue to provide adequate capacity during the peak travel periods for both the 2030 travel demand, although four intersections would be severely congested during peak travel periods for both the 2030 No Build and 2030 Build Alternatives.

Additional intersections will need to be analyzed in order to ensure the network and those intersections utilized during the interim construction phase will operate at an acceptable Level of Service.

A comparison of the 2030 No Build and 2030 Build Alternative arterial and intersection analysis indicates that the operation of the Streetcar system will not have a significant impact on roadway capacity or operations.

4.3 PEDESTRIAN AND BICYCLE ANALYSIS

The objective of this section is to evaluate the effect of the Center City Streetcar Corridor project on pedestrian and bicycle travel conditions in the study corridor. Design features that affect pedestrians and bicyclists crossing signalized intersections were analyzed using the “Pedestrian and Bicycle Level of Service Methodology for Crossings at Signalized Intersections” developed by the Charlotte Department of Transportation (CDOT). Level of Service (LOS) is assessed by comfort and safety for pedestrians crossing at signalized intersections which are influenced by crossing distance, roadway allocation (crosswalks, bicycle lanes) traffic signal characteristics, corner radius dimensions, and any other elements which may conflict with turning vehicles. Vehicle volumes and speeds are factors which are important but not dealt with directly. The presence of the traffic signal, its phasing, and/or physical characteristics of the intersection is an indirect method to deal with vehicle volumes and speeds.

Existing conditions along the corridor for bicycle and pedestrian circulation at intersections range from LOS B to LOS F depending on the width of the roadway, volume of vehicle turning movements and the basic provisions for cyclists and pedestrians at each intersection.

Existing conditions of Pedestrian and Bicycle LOS along Trade Street, inside the I-277 loop and Elizabeth Avenue until Hawthorne Lane, show that pedestrian conditions are average or better on most streets, while bicycling conditions were below average on all streets. 2030 No Build and Build scenario information was not available for the study area, however, pedestrian and bicycling conditions are expected to improve because the City of Charlotte has adopted plans, policies, and guidelines that embrace Smart Growth and Transit Oriented Development principles which encourage walking and biking.

Under the 2030 No Build Alternative, all of the 23 signalized intersections analyzed have a pedestrian Level of Service rating of D or better. The pedestrian analysis results show a Level of Service of B at one intersection, a Level of Service of C at 15 intersections, and a Level of Service of D at seven intersections. All of the intersections with ratings of Level of Service D have at least one intersection leg with five or more lanes, resulting in intersections that are difficult for pedestrians to cross. The intersections of Central Avenue at Eastway Drive and Central Avenue at Sharon Amity Road are among the more difficult for pedestrians to cross because they are major intersections with six or more lanes on each intersection leg. Pedestrian Level of Service ratings of D are for these types of intersections.

Under the 2030 No Build Alternative, the Center City Streetcar Corridor would not be compatible with bicycle travel, as under the 2004 Existing Conditions. The bicycle analysis results show that there would be a Level of Service of E at five intersections and a Level of Service of F at 17 intersections indicating that the travel conditions would continue to be unsuitable for bicycle travel. Only one intersection, Central Avenue at Kilborne Drive/Norland Road, would have a rating better than Level of Service C for bicycle travel. This poor Level of Service for bicycle travel along the Center City Streetcar Corridor is primarily due to the signal timing, competition for space with motorists, and posted speed limits of 35 miles per hour or higher on Beatties Ford Road, Hawthorne Lane, and Central Avenue.

4.3.1 Streetcar Impacts

Although the streetcar in this analysis does not have a significant impact on pedestrian or bicycle circulation in the study corridor, the streetcar may have positive cumulative impacts with implementation of city plans, like the Transportation Action Plan that aims to build over 625 miles of new sidewalks by 2030 and the Draft Urban Street Design Guidelines that guide the construction of easier, safer, and more enjoyable pedestrian facilities. Table 4-12 and Table 4-13 list the ratings and LOS for each of the intersections outside of the I-277 loop.

Future level of service Information about the Center City portion of the alignment (Trade Street and Elizabeth Avenue) was not available for this analysis. Generally, because of the urban environment the pedestrian level of service is very good at the intersections but bicycle level of service is predominantly poor. Sidewalks are wider in this area and all of the signalized intersections have pedestrian phases incorporated into their signal timing. There are slower traffic speeds along these streets which support bicycle travel, but restricted street geometry and the sheer volume of traffic make it difficult for cyclists. As mentioned, the *Center City Vision Plan* addresses many of these issues related to pedestrian and bicycle level of service and includes a project listing to support these initiatives.

Table 4-12: Pedestrian and Bicycle Level of Service Analysis
2030 No Build Alternative

Major Street / Cross Street		Pedestrian Analysis		Bicycle Analysis	
		Score	Level of Service	Score	Level of Service
Beatties Ford Rd.					
	Rosa Parks Pl.[5]	Unsignalized Intersection			
	I-85 SB ramps	43	D	14	F
	I-85 NB ramps	41	D	9	F
	LaSalle St.	49	D	11	F
	Booker Ave./Oaklawn Ave.	55	C	10	F
	Brookshire Freeway NB ramps	60	C	25	E
	Brookshire Freeway SB ramps/French St.	59	C	9	F
	Dixon St.	64	C	8	F
	Rozzelles Ferry St./ 5th St.	59	C	20	E
Trade St.					
	I-77 SB ramps	66	C	16	F
	I-77 NB ramps	59	C	20	E
Elizabeth Ave.					
	Kings Dr.				
	Independence Blvd.				
Hawthorne Ln.					
	Elizabeth Ave.	57	C	12	F
	5th St.	72	C	18	F
	7th St.	65	C	9	F
Central Ave.					
	Pecan Ave.	67	C	19	E
	Thomas Ave.[6]	72	C	18	F
	The Plaza	47	D	3	F
	Morningside Dr.[7]	73	C	18	F
	Eastcrest Dr.	81	B	18	F
	Briar Creek Rd.	68	C	22	E
	Eastway Dr.	42	D	12	**F**
	Kilbourne Dr/Norland Rd.	56	C	55	C
	Sharon Amity Rd.	38	D	8	**F**
	Eastland Mall west entrance	47	D	9	F

Source: Center City Streetcar Corridor Traffic Analysis (2006)

Table 4-13: Pedestrian and Bicycle Level of Service Analysis
2030 Build Alternative

Major Street / Cross Street		Pedestrian Analysis		Bicycle Analysis	
		Score	Level of Service	Score	Level of Service
Beatties Ford Rd.					
	Rosa Parks Pl.	61	C	20	E
	I-85 SB ramps	43	D	14	F
	I-85 NB ramps	41	D	9	F
	LaSalle St.	49	D	11	F
	Booker Ave./Oaklawn Ave.	55	C	10	F
	Brookshire Freeway NB ramps	60	C	25	E
	Brookshire Freeway SB ramps/French St.	58	C	9	F
	Dixon St.	69	C	10	F
	Rozzelles Ferry St./ 5th St.	56	C	22	E
Trade St.					
	I-77 SB ramps	66	C	16	F
	I-77 NB ramps	59	C	20	E
Elizabeth Ave.					
	Kings Dr.				
	Independence Blvd.				
Hawthorne Ln.					
	Elizabeth Ave.	62	C	12	F
	5th St.	77	B	20	E
	7th St.	70	C	12	F
Central Ave.					
	Pecan Ave.	67	C	19	E
	Thomas Ave.[8]	72	C	18	F
	The Plaza	50	D	4	F
	Morningside Dr.[9]	73	C	18	F
	Eastcrest Dr.	81	B	18	F
	Briar Creek Rd.	68	C	22	E
	Eastway Dr.	42	D	12	F
	Kilbourne Dr./Norland Rd.	56	C	55	C
	Sharon Amity Rd.	38	D	8	F
	Eastland Mall west entrance	47	D	9	F

Source: Center City Streetcar Corridor Traffic Analysis (2006)

The design philosophy for the streetcar includes maintaining or improving the provisions for pedestrians and cyclists along the corridor. In Center City much of the alignment utilizes the median lane for the streetcar. This configuration has fewer conflicts with cyclists in the curbside lane and also requires median platforms at stop locations. As an ancillary benefit, streetcar platforms can double as refuge islands for pedestrians crossing Elizabeth Avenue and Trade Street.

On Central Avenue and Beatties Ford Road where the alignment uses the curbside lane, the streetcar stop design preserves sidewalk widths and also makes provisions to maintain the continuity of bicycle lanes where they have been installed or there are plans for them. Figure 4-1 depicts the design and Figure 4-2 shows a similar design already in place in Portland, OR.

Figure 4-1: Bike Lane on Streetcar Alignment in Portland (OR)

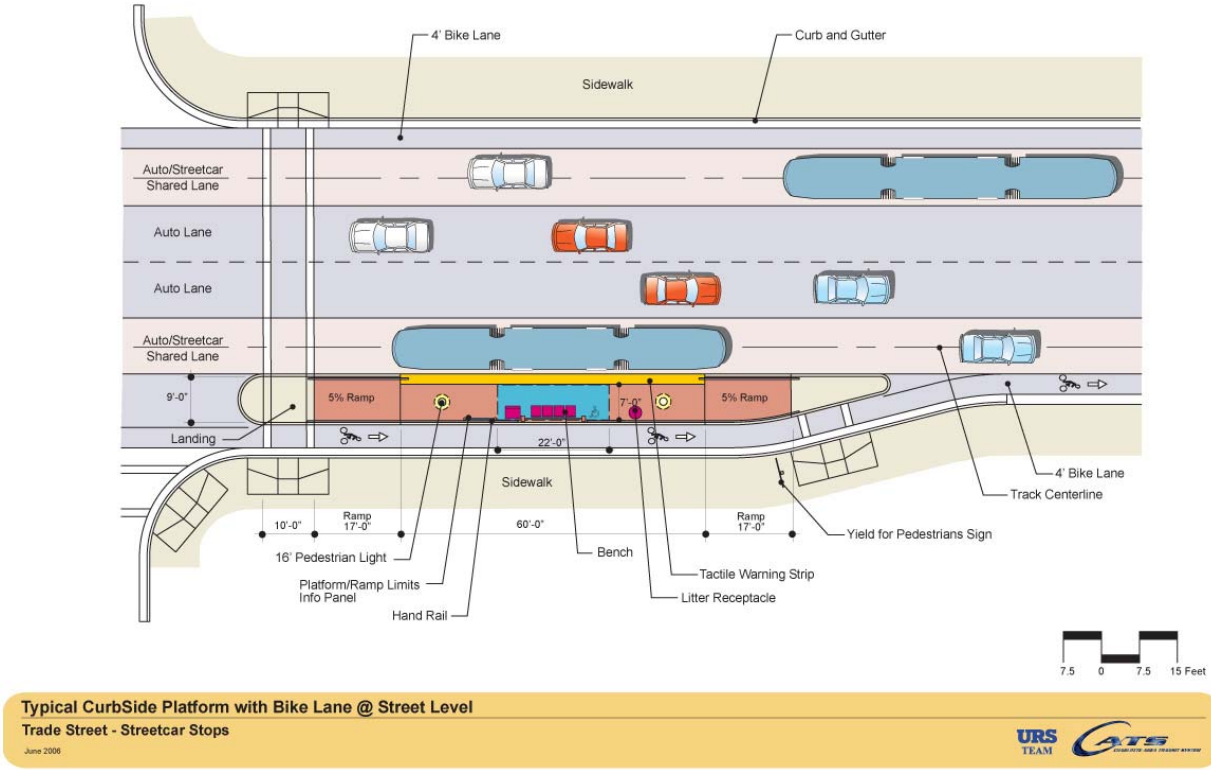


Figure 4-2: Bike Lane on Streetcar Alignment in Portland (OR)



4.3.2 Access to Stations

The Center City Streetcar will serve 34 stop locations from Rosa Parks Place, near the County Health Department, to Eastland Mall. The average spacing for stops will be 1/3 mile from each other along the alignment. In terms of accessibility to a station, there is a ¼ mile buffer to assess a distance a person would walk to a conventional bus stop and ½ mile buffer for premium transit stop or station, such as streetcar

A spatial analysis from the Center City Streetcar alignment was performed using Geographic Information Systems software and socioeconomic data (2000 and 2030) from the region's Metropolitan Planning Organization to determine the level of accessibility to the streetcar project. The ½ mile buffer analyses indicate that 40,695 persons would have access to streetcar in 2000 and 69,521 in 2030. The same geospatial methods show that 77,307 employees have access in 2000 and 122,442 in 2030. Both analyses illustrate a favorable accessibility to potential patrons to the streetcar system.

4.4 PARKING

A review of the parking inventory along the CATS Center City Streetcar alignment was performed using aerial photography, CADD files, and street maps. The following is a summary of the parking inventory review as it relates to existing parking and potential impacts on parking due to the CATS Streetcar alignment.

Beatties Ford Road Corridor

The Beatties Ford Road section of the CATS Streetcar alignment begins at the interchange of Interstate 85 (and Beatties Ford Road and travels south to the beginning of Trade Street, just west of Interstate 77 (I-77). There is no existing on-street parking along the entire Beatties Ford Road section of the CATS Streetcar alignment; thus the CATS Streetcar alignment should not impact existing parking along the Beatties Ford Road corridor.

Trade Street Corridor

The Trade Street section of the CATS Streetcar alignment begins just west of I-77 and travels southeast to McDowell Street where it becomes Elizabeth Avenue and continues southeastward to Hawthorne Lane. There appears to be existing parking along the Trade Street corridor and some impacts to surface-street parking along the corridor. In many places along Trade Street, parking impacts are avoided with median running service of the streetcar. The Elizabeth Avenue streetscape projects will reduce the width of the roadway from 4 to 2 travel lanes. There will be some widening of sidewalks and the potential for additional on-street parking, but the streetcar should have no impact on the existing parking and will not preclude new spaces added as a result of the streetscape project. Table 4-14 shows the number of spaces per segment of Trade Street and Elizabeth Avenue.

Table 4-14: Surface Parking Impacts

From:	To:	Existing Spaces		Spaces Eliminated	
		East-bound	West-bound	East-bound	West-bound
Trade Street					
Irwin St.	Cedar St.	10	21	0	0
Cedar St.	Norfolk So. RR	7	14	0	0
Norfolk So. RR	Wilkes Pl.	3	0	0	0
Wilkes Pl	Graham St.	4	5	0	0
Graham St.	Pine St.	0	0	0	0
Pine St.	Poplar St.	2	4	0	0
Poplar St.	Church St.	7	4	0	0
Church St.	Tryon St.	0	0	0	0
Tryon St.	College St.	0	0	0	0
College St.	Brevard St.	0	0	0	0
Brevard St.	Caldwell St.	0	5	0	0
Caldwell St.	Davidson St.	0	5	0	0
Davidson St.	Alexander St.	0	0	0	0
Alexander St.	Myers St.	9	1	0	0
Myers St.	McDowell St.	0	4	0	0
Elizabeth Avenue					
McDowell St.	Kings Dr.	0	0	0	0
Kings Dr.	Independence Blvd.	0	0	0	0
Independence Blvd.	Torrence St.	0	2	0	0
Torrence St.	Travis Av.	9	11	0	0
Travis Av.	Hawthorne Ln.	4	6	0	0
Total		55	82	0	0

Source: Field Survey URS 2006.

Hawthorne Lane Corridor

The Hawthorne Lane section of the CATS Streetcar alignment begins the intersection of Elizabeth Avenue and Hawthorne Lane and travels northwest to the terminus of the US 74 overpass just south of Sunnyside Avenue. There appears to be no existing parking along the entire Hawthorne Lane section of the CATS Streetcar alignment; thus the CATS Streetcar alignment should not impact existing parking along the Hawthorne Lane corridor.

Central Avenue Corridor

The Central Avenue section of the CATS Streetcar alignment begins the intersection of Pecan Avenue and Central Avenue and travels east to the Eastland Mall at Sharon Amity Road. There appears to be no existing parking along the entire Central Avenue section of the CATS Streetcar alignment except between the intersections of Pecan and Plaza, where parking is allowed on the north side of Central Avenue during off-peak hours only. The alignment of the streetcar will require the elimination of parking in this area.

4.5 FREIGHT MOVEMENTS

The Center City streetcar will not have any impacts on freight movements. Existing infrastructure separates the streetcar alignment from commercial railways.

4.5.1 Railroads

The Center City Streetcar will not have any significant impact on any railroad right-of-way, because of existing infrastructure.

There are five locations where the streetcar intersects with railroad right-of-way, but there are no significant impacts, because in most cases existing grade separations mitigate any potential right-of-way conflicts. The five intersecting locations are:

1. On Beatties Ford Road near the Brookshire Freeway an existing grade separation will separate the streetcar from the CSX railway. A proposed vehicle maintenance facility will be constructed adjacent the commercial railway, yet the facility's design and setbacks will prevent any potential ROW issues.

2. At Gateway Center, the proposed commuter rail crosses above the Center City Streetcar alignment. An existing grade separation will prevent any significant ROW impacts.

3. On the intersections of College and Brevard, the South Light Rail Line will cross the Center City Streetcar alignment, yet an existing grade separation will prevent any potential ROW conflicts.

4. On Hawthorne Lane, north of Central Avenue, CSX passes above the Center City Streetcar alignment. An existing bridge separates the streetcar alignment from the CSX railway line.

5. On Central Avenue near Pecan Street, there is an at-grade rail crossing.

4.5.2 Trucking and Deliveries

The Center City Streetcar is planned to run curbside along Beatties Ford Road and Central Avenue. The primary goal of the conceptual design is to site streetcar stops such that driveways and other access points are not negatively impacted. This design is to allow deliveries at curbside. Along Trade Street, the streetcar is designed to be median running, so that it will not interfere with trucking and deliveries.

In terms of trucking and deliveries to an industrial site, there will be one site in where the streetcar impacts a commercial establishment. The proposed vehicle maintenance facility at Barnhardt industrial site will require a redesigning of loading and unloading docks, as well as the redesign of its parking facility.

[1] Beatties Ford Road is analyzed with four through lanes from I-85 to Brookshire Freeway (NC 16) and two through lanes from Brookshire Freeway (NC 16) to Rozzelles Ferry Road.
[2] Trade Street is analyzed with two through lanes from Rozzelles Ferry Road to Wesley Heights Road and four through lanes at the I-77 northbound ramps.
[3] Hawthorne Lane is analyzed with two through lanes between Elizabeth Avenue and Central Avenue.
[4] Central Avenue is analyzed with four through lanes throughout the study area.
[5] Eastbound approach movements are controlled by a stop sign.
[6] PM peak period shown; AM and PM have different Level of Service due to prohibited left turns during AM peak period.
[7] PM peak period shown; AM and PM have different Level of Service due to prohibited left turns during AM peak period.
[8] PM peak period shown; AM and PM have different Level of Service due to prohibited left turns during AM peak period.
[9] PM peak period shown; AM and PM have different Level of Service due to prohibited left turns during AM peak period.

CHAPTER 5 EVALUATION

The intent of the investment for the Center City Streetcar Corridor is to upgrade services in CATS' most productive corridor in terms of ridership and then also, to support the five regional corridors in the long range plan. Ridership on the Gold Rush Red Line, Route 7 – Beatties Ford Road and Route 9 – Central Avenue comprise three of the four most utilized bus routes in the CATS system. Service on these routes is expected to increase in intensity within the next three to five years with service frequencies of 5 minutes on Routes 7 and 9 and even higher frequencies on the Red Line. The implementation of streetcar in this corridor will increase capacity to a point where the existing frequencies or even lower frequencies (10 minutes versus 7.5 minutes) could be sufficient to meet demand with a net savings in operational cost.

As outlined in Chapter 1 of the Environmental Assessment, the purpose and need also illustrates that the implementation of the streetcar potentially increases the viability of the CATS regional corridors because the streetcar reduces the need for an automobile in the Uptown area. If employees or visitors do not need an automobile to make trips to restaurants and other services then they will be more inclined to use transit to get to the Uptown area.

To date, only a preliminary assessment of how the Center City Streetcar Corridor performs according to the FTA New Starts Evaluation Criteria has been completed. Further assessment will be undertaken when the Final Rule for the Small Starts Program is published by FTA. This section contains the information compiled to date about the effectiveness and efficiencies of the streetcar Build Alternative. New regional travel demand model runs and additional information about the Baseline Alternative will be completed during future phases of the project.

5.1 APPROACH

CATS is currently using the FTA New Starts templates to determine which of their projects should be submitted to FTA for funding under the New Starts or Small Starts programs. Information from this exercise is included in the following sections. A more complete evaluation will be included in an update of this document during future phases of the project's development.

5.2 EFFECTIVENESS

In order to receive New Starts funding from the FTA, all major transit investment projects must be rated according to a comprehensive set of evaluation criteria, which include: mobility improvements, environmental benefits, operating efficiencies, cost effectiveness, transit supportive land use and future patterns, and other factors. These performance measures are combined with an evaluation of the financial plan for the project. Other factors may include environmental justice considerations and equity issues; opportunities for increased access to employment for low income persons; livable communities initiatives and local economic development initiatives. These evaluation criteria are discussed below and in the following sections. Cost effectiveness is addressed in Section 5.3; other factors are addressed in Section 5.4.

5.2.1 Ridership

Forecasts of future daily ridership have been estimated for the project using both the regional travel demand model and an off-model travel estimation technique. The off-model technique was used because the regional model traditionally under-reports mid-day and non-home-based non-work trips. The off-model forecast

showed that the streetcar will have much higher productivity/ridership especially during the midday period. This includes non-home based non-work trips taken typically by workers to other services and visitors to the Center City area.

In addition, on-board counts conducted in 2005 for CATS Route 7 and 9, and the Gold Rush Red Line exceed the aggregate ridership forecasted by the regional travel demand model. It was determined that an off-model forecast was necessary to develop a more accurate picture of potential ridership since CATS passenger counts have grown significantly in the short time since the original baseline network was developed for the regional mode. The assumptions for the off-model process are outlined in the *Alternate Streetcar Ridership Estimate technical memorandum* (October 2006). It is important to note that these are preliminary forecasts for ridership and reflect a level of detail commensurate with the stage of planning/conceptual design currently being undertaken. Table 5-1 shows the daily boarding estimates for the regional travel demand model and the off-model forecasts.

Table 5-1: Estimated Ridership for the Center City Streetcar Corridor by Forecast Method

Source	Total Daily Ridership Estimates 2030
Regional Travel Demand Model	8,950
Off-Model Forecast	15,950
Off-Model Forecast (w/ Farefree Zone)	17,800

The off-model forecast strongly supports the potential for higher ridership on the streetcar facility. These are riders that will take advantage of moderately shorter travel times but also are utilizing the streetcar because they travelled to the Uptown area via other transit corridors and do not have access to a car for the mid-day and non-home based trips.

5.2.2 Mobility Improvements

Transportation System User Benefits

The regional travel demand model indicates that the streetcar will generate 1,699 hours of transportation system user benefits (TSUB) on a daily basis and over 530,000 hours annually. This figure was generated using SUMMIT software tool that is distributed by the FTA, and is essentially the aggregated amount of time saved across all of the trips taken regionally on all modes of travel. The streetcar probably will not have a significant impact on the travel time for motorists primarily because it generally serves very short trips, but the software is intended to account for such travel time savings attributable to the streetcar facility.

New model runs for both the Baseline and Build alternatives will be conducted during future phases of the project.

Since ridership on the streetcar is estimated to be significantly higher than the regional model projection, there is some question as to the true travel time savings attributable to the streetcar based on the higher ridership estimate. CATS plans to

work with FTA to address the issue that streetcar facilities, in general, have not performed well in the SUMMIT calculation. Two potential avenues for addressing this issue would be adjusting the regional model methodology to better reflect streetcar ridership or to establish a procedure to apply the SUMMIT calculation to the off-model ridership projection.

Low Income Households Served

Low income households served is defined as the estimated number of low income households served by the New Starts investment, which are households below the poverty level located within ½ mile of boarding points located directly on the project. Using the FTA procedure, the Center City Streetcar Corridor serves approximately 2,523 low-income households which constitute 16.9% of total number of households within ½ mile of the streetcar boarding points.

Employment Served

Employment near stations is measured by the estimated number of jobs located within ½ mile of stations located directly on the transit project corridor. Employment along the corridor is comprised of approximately 61,675 jobs, which constitutes nearly two thirds of the jobs within the study area and over 10% of the jobs in Mecklenburg County.

5.2.3 Environmental Benefits

Air Quality Savings

The net reductions in regional VMT for the Build Alternative was derived from ridership forecasts based on ridership results from Spring 2006. Comparing the highway network assignments of the No-Build and Build Alternatives provided an estimate of the reduction in regional VMT due to mode shift. The resulting net VMT reductions were used as the basis of the regional air quality analysis.

Year 2030 emission rates for CO and NO_X were estimated using the EPA MOBILE6.2 model with selected parameters adjusted to reflect assumed conditions in the study area. Mobile emission rates were obtained from the North Carolina Department of Environment and Natural Resources, Division of Air Quality. Table 5-2 summarizes the results of the Year 2030 regional air quality analysis for the No-Build and Build Alternatives. The project includes a TSM alternative; however, at the time of this analysis, the TSM alternative was being revised. The analysis shows the net reduction in regional VMT for the Build Alternative relative to the No-Build Alternatives, along with the estimated pollutant emission factors and the corresponding differences in regional emissions.

Table 5-2: 2030 Regional Air Quality Impact Analysis and Results

Project Alternative	Daily VMT Reduction[1] (veh-mi)	Carbon Monoxide (CO)		Nitrogen Oxides (NOx)	
		Emission Factor (g/veh-mi)	Emission Reduction (kg/day)	Emission Factor (g/veh-mi)	Emission Reduction (kg/day)
No-Build	0.00	7.3	0.00	0.7	0.00
TSM[2]	-	7.3	-	0.7	-
Build	119,603	7.3	873.10	0.7	83.72

Source: URS Corp., October 2006
Notes: 1. Net reduction in VMT relative to the No-Build Alternative.
2. TSM Alternative VMT assessment not available during analysis.

Energy Consumption Benefits

Change in energy consumption is measured in BTUs, comparing the build alternative to the baseline alternative. (This analysis will be completed during future phases of the project).

5.2.4 Operating Efficiencies

Operating efficiencies for the streetcar are measured in operating cost per passenger mile for the streetcar corridor and then its impact on the overall CATS system. Using the regional model generated statistics; the streetcar will cost approximately 70 cents per passenger mile and it will be replacing bus service in the baseline alternative that operates at 72 cents per passenger mile. The streetcar generates a higher number of passenger miles at a slightly lower annual cost, which suggests that in addition to encouraging more riders they are willing to ride longer distances.

This analysis does not include the passenger miles generated by the ridership estimated in the off-model procedure. A 50-60% increase in ridership will translate into a higher number of potential passenger miles and improve the streetcar's performance under this measure. This will be calculated in the updated environmental assessment during future phases of the streetcar project.

A comparison of the change in system-wide operating cost per passenger mile in the forecast year for the project to the baseline alternative shows a small decrease in cost per passenger mile. For the baseline alternative, system-wide costs per passenger mile was approximately 65.7 cents, while the build alternative was estimated at 64.3 cents. Incrementally, this is not a substantial change but it is in line with other projects in the New Starts pipeline.

5.3 COST EFFECTIVENESS

The cost effectiveness rating for a project is calculated by dividing the total annualized capital cost plus the annual operating cost by the annual transportation system user benefits (TSUB) calculated for the project above and beyond the baseline alternative. The regional travel demand model indicates that the streetcar will generate 1,699 hours of TSUB on a daily basis. Using the standard annualization factor (305) for operating costs and the most conservative fully allocated capital cost for the build alternative and the baseline alternative the annualized incremental cost

per TSUB for the streetcar is estimated at $39.77. To achieve a medium rating in cost effectiveness the project would need to be at $22.99/TSUB. If a New/Small Starts application is prepared for the project in the future, the following assumptions could be applied to the streetcar project to reduce its annualized incremental cost/TSUB.

- New TSM assumptions – Convert the 21 buses in the capital cost calculation to articulated buses; re-align the baseline alternative to add .15 mile bus road around the Barnhardt Vehicle Maintenance Site which would increase capital and operating costs will decrease the annual incremental cost per TSUB to $35.12;

- Convert annualization factor for operating costs and TSUB to 313.7 which is the FTA approved number for CATS (FTA Standard is 305); the annualized incremental cost per TSUB moves to $34.15;

- Operating cost of build alternative in the corridor is actually $60,000 less than the TSM (not based on model generated statistics) the annualized incremental cost per TSUB is reduced to $30.84;

- Each special event at the Arena, Stadium and Performing Arts Center potentially creates a potential estimated additional 31 hours of TSUB – annualized to 145 days per year the annualized incremental cost per TSUB decreases to $30.59;

- New model run with modest changes to the TSM performance to make it more consistent with the build – estimate additional 25 TSUB hours per day the annualized incremental cost per TSUB moves to $30.16;

- Reduce fleet size to 15 vehicles – Annualized capital cost down to $21,161,000 (fleet spare ratio lowered from 20% to 15% since this is not a commuter service) the annualized incremental cost per TSUB is lowered to $29.90;

- Use Site 18 for VMF – Annualized capital cost $21,021,000 the annualized incremental cost per TSUB drops to $29.65; and

- Off model ridership estimate shows 30% increase in TSUB over model generated estimate. – Additional 505 hours of TSUB daily. The annualized incremental cost per TSUB moves to $22.97.

All of these potential changes in assumptions are subject to FTA approval and in some cases, more in-depth analysis.

5.4 EQUITY

5.4.1 Introduction

Regulatory Requirements

Title VI of the 1964 Civil Rights Act (Title VI) and related statutes provide that no person shall, on the grounds of race, color, age, religion, sex, national origin, or handicap/disability, be excluded from participation in, or be denied the benefits of, or be otherwise subject to discrimination under any program of the federal, state, or local government.

On February 11, 1994, President Clinton signed Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations (59 FR 7629). EO 12898 was designed to supplement Title VI, EO 12250 and the resulting promulgated regulations for the United States Department of Transportation (USDOT) (49 CFR Part 21), all of which prohibit discriminatory practices in programs receiving Federal financial support. The thrust of EO 12898 is to identify and address, as appropriate, disproportionately high adverse human health or environmental effects of each agency's programs, policies, and activities on minority populations and low-income populations.

Specifically, EO12898 mandates that all federal agencies provide a strategy to implement the EO, which charges each federal agency with responsibility of,

> "conduct[ing] its programs, policies, and activities that substantially affect human health or the environment, in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under, such programs, policies, and activities, because of their race, color, or national origin" (59 FR 7629, Section 2-2).

This order also requires that each agency,

> "whenever practicable and appropriate, . . . collect, maintain and analyze information on the race, national origin, income level, and other readily accessible and appropriate information for areas surrounding facilities or sites expected to have a substantial environmental, human health, or economic effect on the surrounding populations, when such facilities or sites become the subject of a substantial Federal environmental administrative or judicial action. Such information shall be made available to the public, unless prohibited by law; and (c) Each Federal agency, whenever practicable and appropriate, shall collect, maintain, and analyze information on the race, national origin, income level, and other readily accessible and appropriate information for areas surrounding Federal facilities that are . . . (2) expected to have a substantial environmental, human health, or economic effect on surrounding populations. Such information shall be made available to the public, unless prohibited by law. . ." (59 FR 7629, Section 2-3(b)).

In response to the mandates of EO 12898, the USDOT developed a Final Environmental Justice Strategy (60 FR 125: 33896) and a proposed USDOT Order titled, Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. The analysis contained in this technical memorandum is consistent with that outlined in the USDOT Final Strategy and proposed Order.

Purpose

The purpose of this assessment is to determine whether the project will have disproportionate high and adverse impacts to low-income, minority, or other populations protected by Title VI and described as protected populations in this

document. A dual purpose is to determine whether protected populations will receive an equitable distribution of benefits.

5.4.2 Method

Study Area Delineation

For purposes of this assessment, the study area was delineated by including all U.S. Census blocks intersecting a one-half mile buffer of the Center City Streetcar corridor. The blocks were identified using a geographic information system (GIS) mapping tool and data from the U.S. Census Bureau.

Data Collection

Data was collected from the 2000 U.S. Census for each block composing the study area. For some parameters, data is only available at the larger geographic unit of block groups. Data was collected for each block group that had a component block in the study area. Data was collected for a total of 764 blocks and 48 block groups.

Public Involvement

Public involvement efforts throughout the project development process were aimed at including populations of diverse races, income status and physical ability. An Advisory Board with three subgroups was formed; one for the Trade Street/ Elizabeth Avenue corridor, another for the Central/Hawthorne Avenue corridor, and a third for the Beatties Ford Road corridor. Members of the Advisory Board represented varying incomes, diverse races, neighbourhoods throughout the study area, and groups such as Programs for Accessible Living (PAL), Metrolina Association for the Blind (MAB), and Latin America Coalition. Public meeting notices were posted in *LaNoticia*, a Spanish newspaper. A Spanish interpreter was also available at all public meetings with the exception of the last (due to a lack of demand). Meeting locations were chosen based on accessibility requirements of the Americans with Disabilities Act (ADA). Meeting attendees represented diverse races and income levels (as determined by visual observation and knowledge of the individuals).

5.4.3 Identification of Protected Populations

In order to assess potential impacts to populations protected by EO12898 and Title VI, low-income, minority, and transit-dependent populations in the study area were identified.

According to the USDOT Order on Environmental Justice (62FR18377), an individual is considered to have a low-income if their median household income is at or below the poverty guidelines, as set by the Department of Health and Human Services (DHHS). The DHHS poverty guidelines are available on-line at http://aspe.hhs.gov/poverty/figures-fed-reg.shtml. In 1999 the poverty guideline for a four-person family was $16,700. According to the DHHS, “The best approximation for the number of people below the HHS poverty guidelines in a particular area would be the number of persons below the Census Bureau poverty thresholds in that area.” For this reason the U.S. Census poverty threshold was used to calculate low-income individuals. Poverty levels used by the U.S. Census Bureau are available on-line at http://www.census.gov/hhes/poverty/threshld/thresh99.html. In 1999 the weighted average threshold for a four-person household was $17,029.

In *FHWA Actions to Address Environmental Justice in Minority and Low-income Populations* (Order 6640.23) the US Department of Transportation provides clear definitions of the four minority groups addressed by the EO12898. These groups are:

- Black – a person having origins in any of the black racial groups of Africa;
- Hispanic – a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race;
- Asian American – a person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands; and
- American Indian and Alaskan Native – a person having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition. [1]

Children, elderly, people living in households with no vehicles available and people with low incomes are considered transit-dependent. Disabled populations are also considered transit-dependent, however, it is difficult to quantify the number of disabled individuals in a block or block group because a person with multiple disabilities (e.g., mentally impaired, physically impaired, hearing impaired, or visually impaired), would be counted multiple times.

Low-Income Populations

Since data quantifying low-income populations are only available from the 2000 U.S. Census at the block group level, data was collected for low-income populations in the study area at the block-group level.

In order to determine where there are high concentrations of low-income populations in the study area, the data at the block-group level was compared to a larger-area geographic unit, called a threshold. Both countywide and citywide data were used as thresholds to determine if any of the block groups would qualify as having large concentrations of low-income populations.

County-wide, the portion of the population that is low-income is 9.2 percent. City-wide, the portion of the population that is low-income is 10.6 percent. In most of the study area, there is a higher percentage of low-income individuals compared to the city and county. Those block groups with the highest percentage of low-income individuals are concentrated around the Trade Street corridor.

Minority Populations

Data quantifying minority populations was collected for each block in the study area. In order to determine where there are high concentrations of minority populations in the study area, the data at the block level was compared to a larger-area geographic unit, called a threshold. Both countywide and citywide data were used as thresholds to determine if any of the blocks would qualify as having large concentrations of low-income populations.

County-wide, the portion of the population that is minority is 38.9 percent. City-wide, the portion of the population that is minority is 44.9 percent. The total portion of the population in the study area that is minority is 67.8 percent. Based on the

county parameter, 332 out of 764 blocks in the study area had an above-threshold minority population, as did the study area as a whole. Based on the city parameter, the study area as a whole, and 319 blocks in the study area are considered to have an above-threshold minority population.[2]

While there are scattered areas around the Trade Street corridor where the percentage of minority individuals is above the city and county thresholds, the highest concentrations of minority individuals occur around the Beatties Ford Road corridor and the eastern-most portion of the Central Avenue corridor.

Other Protected Populations

For purposes of this assessment, transit dependent populations were considered to include children, the elderly, zero-car households, and low-income populations. These categories are not mutually exclusive and the different types of data are not consistent by one type of population unit (i.e., some information is by individual, some by family, and some by household). Therefore, it was not possible to correlate data to obtain an accurate composite number of transit-dependent individuals for each block group. Instead, the four separate indicators of transportation dependency are shown in Table 5-3.

Whether a substantial transportation-dependent population is located in a block group was determined using data for Mecklenburg County as a threshold value. This criterion resulted in the following threshold values for transit dependency:

- The population of children within a block group is above threshold if it is greater than 25.1 percent of total block group population,
- The population of elderly individuals (above age 64) within a block group is above threshold if it is greater than 8.6 percent of total block group population,
- The percentage of occupied housing units (rented and owned) in a block group with no vehicles available is above threshold if it is greater than 6.9 percent of total occupied housing units in the block group, and
- The percentage of low-income individuals in a block group is above threshold if it is greater than 9.2 percent of the block group population.

All but one populated block group in the study area was found to have an above-threshold transit-dependent population measured by at least one indicator. The study area as a whole was found to have an above-threshold population of each transit-dependent group.

Table 5-3: Indicators of Transit Dependency

Census Block Group	Percentage of Block Group Consisting of				Substantial Concentration of			
	Children (< 18)*	Elderly (> 64)*	Zero Car Households**	Low Income**	Children (< 18)	Elderly (> 64)	Zero Car Households	Low Income
01-1	2.8	11.7	27.7	29.0		X	X	X
02-1	0.0	0.0	0.0	0.0				
03-1	1.2	24.2	64.8	41.9		X	X	X
04-1	3.9	28.0	49.4	25.7		X	X	X
05-1	1.5	18.6	29.0	18.6		X	X	X
05-2	48.3	2.4	21.2	48.4	X		X	X
05-3	13.5	6.2	15.7	17.6			X	X
06-1	39.2	2.8	5.6	32.9	X			X
06-2	11.7	5.4	33.7	59.2			X	X
08-1	38.1	6.2	39.8	33.5	X		X	X
08-2	45.6	2.1	57.0	73.7	X		X	X
10-1	19.8	9.3	4.8	9.4		X		X
10-2	15.8	7.1	11.9	15.9			X	X
10-3	15.0	7.4	9.3	16.0			X	X
11-1	20.3	8.6	15.6	22.3		X	X	X
11-2	8.3	10.0	6.4	5.4		X		
12-1	25.6	6.5	7.0	14.7	X		X	X
12-2	21.3	9.2	13.2	6.0		X	X	
12-3	17.4	14.3	7.4	5.3		X	X	
16.02-1	22.3	16.1	14.5	15.6		X	X	X
16.02-2	19.4	9.6	17.7	16.2		X	X	X
17.01-1	18.8	13.4	19.9	23.9		X	X	X
17.01-2	30.1	2.5	13.7	19.3	X		X	X
17.02-1	22.5	6.4	10.8	9.9			X	X
17.02-3	18.9	17.3	6.1	9.7		X		X
18-5	29.6	3.5	12.8	16.5	X		X	X
19.08-2	19.1	10.3	7.3	2.0		X	X	
19.08-3	20.3	12.9	10.5	4.5		X	X	
24-1	13.1	5.5	2.9	9.5				X
24-3	11.4	11.2	7.0	11.0		X	X	X
25-1	15.0	4.9	8.8	8.6			X	
25-2	7.8	14.2	7.3	34.3		X	X	X
26-1	27.1	12.7	56.0	43.5	X	X	X	X
26-2	3.9	8.1	4.0	0.0				
27-1	16.8	22.9	3.6	1.9		X		
41-1	37.8	6.6	37.2	20.5	X		X	X
41-2	21.8	13.9	16.8	22.0		X	X	X
45-1	42.0	5.6	37.3	31.2	X		X	X
45-4	28.2	12.8	35.8	35.9	X	X	X	X
46-1	18.0	32.3	9.6	24.4		X	X	X
46-2	28.5	13.9	24.2	21.5	X	X	X	X
47-1	15.9	7.4	29.8	34.8			X	X
48-1	24.4	13.6	33.8	19.5		X	X	X
48-2	23.8	23.3	27.0	24.1		X	X	X
48-3	25.2	22.2	22.7	19.1	X	X	X	X
49-1	38.1	3.4	13.5	16.3	X		X	X

Table 5-4: Indicators of Transit Dependency (Cont.)

Census Block Group	Percentage of Block Group Consisting of				Substantial Concentration of			
	Children (< 18)*	Elderly (> 64)*	Zero Car Households**	Low Income**	Children (< 18)	Elderly (> 64)	Zero Car Households	Low Income
54.01-1	28.1	8.9	8.6	11.5	X	X	X	X
54.01-2	23.9	14.8	15.2	13.9		X	X	X
Study Area	21.9	11.2	18.0	18.4	X	X	X	X
County	25.1	8.6	6.9	9.2				

Source: *U.S. Census Bureau. American Fact Finder. "Summary File 1." Available: http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=DEC&_submenuId=datasets_1&_lang=en. Accessed: February 2006.

**U.S. Census Bureau. American Fact Finder. "Summary File 3." Available: http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=DEC&_submenuId=datasets_1&_lang=en. Accessed: February 2006.

5.4.4 Impacts to Protected Populations

Agencies are to consider whether there will be disproportionately high or adverse impacts to protected populations, and, in the case of transit projects, whether there is an equitable distribution of benefits.

Evaluation criteria that can be used in the determination are listed in Table 5-5. Potential impacts of each alternative to protected populations are assessed in this section. The three alternatives assessed are the No-Build Alternative, TSM Alternative, and the Build Alternative.

No-Build or TSM Alternatives

Both the No-Build and TSM alternatives are essentially the same, except more intense bus service levels would be implemented on existing bus routes (CATS Routes 7 and 9) that serve the project area. Under the No-Build alternative transit headways would remain the same, while under the TSM alternative transit service would be increased by reducing headway times.

The transportation service provided by the Center City Streetcar is expected to be a positive impact on transit-dependent populations. The lack of the streetcar service, associated with the No-Build and TSM alternatives, could be viewed as a negative impact. However, there would be no disproportionately adverse impacts to protected populations under the No-Build and TSM alternatives.

Build Alternative

Expected impacts to protected populations as a result of the Build Alternative are presented in Table 5-5.

Table 5-5: Potential Impacts of the Build Alternative to Protected Populations

Criteria	Assessment
Involvement of protected populations in the project-development process	Efforts were made to include minority, low-income and other transit-dependent populations in the project development process.
Fare	Fares have not yet been determined, but may vary. For example, there may be a fare-free zone.
Siting of stops	Streetcar stops are well distributed throughout the project corridor, including 9 stops in the area with the highest minority population (Beatties Ford Rd) and 9 stops in the area with the highest low-income population (Trade St).
Siting of VMF (Vehicle Maintenance Facility)	Two potential sites are being considered for the VMF. The first site is located between Brookshire Freeway (NC 16), French Street and Beatties Ford Road. The second site is located between Hawthorne Lane, Central Avenue, Clement Street and CSX Railroad. There is a higher concentration of both low-income and minority populations in the area surrounding the first site compared to the second. It is more likely that any potential negative impacts associated with the VMF would disproportionately impact protected populations if the first site is chosen. While a VMF would be consistent with the planned/zoned land uses for either site, it could cause some negative impacts to surrounding residents in the form of noise and visual/aesthetics. Public input during the project indicated that both neighborhoods were amenable to the implementation of the VMF at their respective site.
Amenities (e.g., furniture and maintenance at stops)	The siting and distribution of amenities will be consistent throughout the service area and will serve areas with protected populations.
Air quality	It is expected that, overall, air quality would improve under the Build Alternative as vehicle miles traveled would be reduced and there would be less use of diesel-fueled buses. This would be a benefit impact for all populations (including protected) in the study area.
Noise	As reported in the 2006 technical memorandum, "Noise and Vibration Baseline Assessment," there are receptors sensitive to track and station noise and vibration distributed throughout the length of the corridor. Most of the noise sensitive receptors are located in areas that are heavily minority and residential (along Beatties Ford Road and Central Avenue). Many of the noise sensitive receptors in those areas that are heavily low-income are non-residential, or uses such as churches, parks, hospitals, and playgrounds. There are "above-threshold" minority and low-income areas around each of the five options investigated for the operations and maintenance facility, but two of the sites have a higher concentration of nearby minority populations than others – French Street and I-77.

Table 5-5: Potential Impacts of the Build Alternative to Protected Populations (Cont.)

Criteria	Assessment
Impacts to ecology	According to the 2006 "Natural Resources" technical memorandum, "The construction and operation of the streetcar is not expected to affect any natural areas, wildlife habitat or protected species." Since ecological impacts are not anticipated, there would not be a disproportionately negative impact to protected populations.
Impacts to water resources	Substantial or long-term impacts are not expected to be associated with the project and would not disproportionately impact protected populations.
Access	Stops are expected to be sited at approximately equal distances throughout the corridor. The streetcar is expected to be within walking-distance of individuals living within a half-mile of stops, this is further than the quarter-mile generally used for buses.
Changes in geographic service area	The streetcar is expected to be within walking-distance of individuals living within a half-mile of stops, this is further than the quarter-mile generally used for buses. This effectively doubles the population with access to transit in the corridor.
Changes in travel times and reliability	Travel times and reliability will be improved with additional transit service throughout the corridor.
Changes in frequency or hours of service	The frequency and hours of transit service will be improved by the streetcar throughout the corridor.
Changes in Traffic	Changes in traffic patterns are not likely within the corridor
Relocations	No relocations would result from implementation of the project
Economic impacts	The project is expected to have a positive economic impact in the study area as it will facilitate TOD, help attract workers to the study area and serve some of the major employment centers. The magnitude of development along the streetcar alignment, both short and long range, is quantified in the Development Study.
Impacts to historic/archaeological resources	Potential impacts to historic/archaeological resources will be determined through ongoing coordination with SHPO.
Construction impacts	Construction of the project will take place in phases and mostly within existing road right-of-ways with limited disturbance to the surrounding area.

5.4.5 Conclusion

Overall, the Center City Streetcar is expected to have a positive impact on transit-dependent and other protected populations in the study area. The project is expected to provide improved transit service and increased accessibility and mobility to protected populations in the study area. Considerable efforts were made to involve protected populations in the project development process through public involvement and outreach activities. Efforts have also been made to

disperse the siting of stops and equally distribute amenities such as street furniture throughout the project corridor. While, overall, protected populations will benefit from the Build Alternative, there could be some disproportionate impacts to protected populations associated with a VMF at a location between Brookshire Freeway (NC 16), French Street and Beatties Ford Road. While some negative impacts in the form of noise and visual changes could be associated with the VMF; a VMF at this site is consistent with planned land uses and would not represent a substantial negative or disproportionate impact. On the other hand, the lack of streetcar services, as with the No-Build and TSM alternatives, could be viewed as a negative impact to transit-dependent populations in the study area that would benefit from the streetcar.

5.5 FINANCIAL FEASIBILITY

Local sales tax revenue for the CATS system generated from the ½ cent sales tax gives the City the financial support necessary for developing the transit system outlined in the Region's Long Range Transportation Plan. There is a significant amount of financial planning still required to establish priority and the scheduling for system implementation. How the streetcar fits into this process is still being determined.

Some implementation and funding scenarios have been addressed as part of the *Implementation Plan* (October 2006) but will have to be further analyzed during subsequent phases of the project. These scenarios examine staged implementation of the streetcar by varying the segment of the facility that will be implemented first.

5.6 SUMMARY AND SIGNIFICANT TRADE-OFFS

Implementation of the Center City Streetcar Corridor will improve the overall operations of the CATS system and benefit its most productive transit corridors. Three of the four most utilized routes would be replaced by premium transit service that will be more reliable and have higher capacity than existing bus service or short range bus service improvements. This section describes four issues concerning the streetcar's conceptual design that were addressed.

5.6.1 Operational Trade-offs

Ten Minutes versus 7.5 minutes

In addition to the difference in the peak vehicle requirement, providing 7.5 minute service during peak periods rather than 10 minute frequencies will produce an increase of approximately 8,000 additional revenue hours annually. Waiting time for users of the system will decrease on average 1.25 minutes given the increase in frequency.

While ten minute frequencies will offer adequate capacity, it is anticipated that ridership demands may exceed 120% of seated volume during some runs during the peak periods, which is the current service standard threshold for CATS bus service. The threshold is set by CATS to serve as an indicator for possible service increases. If volumes exceed the 120% seated capacity with enough regularity then CATS will need to increase services. It is expected that with the introduction of rail services to the CATS system, a new set of service standard thresholds will be established that allow for a higher volume to seated capacity ratio on light rail and streetcar services.

Ten Minute Service with 30 Minutes Supplemental Bus Service

As an alternative to providing 7.5 minute service on the streetcar, it is possible to supplement streetcar service with additional bus service on the same alignment. By providing 30 minute frequencies on both Route 7 and 9 along Beatties Ford Road and Central Avenue, then combined with 10 minute service on the streetcar, CATS would effectively provide 7.5 minute frequencies by offering six streetcars per direction per hour (10 minute service) and two buses per hour (30 minute service). It should be noted, however, that two buses would be added into service based on their own schedule (twice and hour) and would be staggered with the streetcar service rather than creating 7.5 minute service that is more evenly distributed during the hour.

The operational analysis indicates that the Center City Streetcar will improve CATS service in its system's most productive corridor. The increase in capacity afforded by the streetcar technology will give CATS the ability to accommodate projected growth in ridership, maintain system service standards and improve the system's farebox recovery rate. With service increases eminent on its existing bus service in the corridor, the streetcar operation will provide equivalent service without the need to increase costs, if not operate at a lower overall cost.

Based on current travel patterns and ridership projections, it is recommended that CATS implement streetcar services in two primary areas – Center City and the CATS Route 9 alignment. Considering the aggregate utilization on the Gold Rush Red Line and both Route 7 and 9, the bulk of the ridership of the streetcar will occur between the CTC and the Pease Lane stop near CPCC. Peak loads on existing transit service in the corridor are occurring in these two locations. In addition, the Gold Rush Red Line service is operated with lower capacity rubber-tired trolleys that routinely have "crush loads" and leave behind passengers. Considering the project growth, the capacities offered by the streetcar technology at equivalent frequencies or even slightly lower frequencies should be sufficient. The initial streetcar segment to be constructed should include these areas.

The full-build alignment should be operated at no longer than a 10-minute frequency for the bulk of the day on weekdays and 20-minute service during off-peak periods. This level of service will provide ample capacity on the alignment, but it does represent a reduction in the frequency currently provided on the existing bus service, which is seven to eight minutes. The improved travel time provided by the streetcar service as well as other perceivable improvements in system reliability should sufficiently overcome ridership issues with a 2-3 minute reduction in frequency.

Enhanced service between 6 and 9:30 AM and 2:30 and 6 PM to 7.5-minute frequency should be considered to avoid the appearance of degradation in service to existing transit users or if CATS decides to implement a fare-free zone in Center City. Additional, ridership brought on by the fare-free zone may require the additional capacity during rush hours.

CATS should also be cognizant that maintaining frequency of service in transit corridors is a point of emphasis for the Federal Transit Administration in their review of New (Small) Start projects. Therefore, if CATS pursues federal funding for the project, increased capacity provided by the streetcar projects will not necessarily offset the issue of decreased frequency of service.

The primary concern about increasing service to 7.5 minute frequency is the increased capital cost for additional vehicles and the increased operating cost eliminates the cost savings of the 10 minute level of service. A potential solution would be to introduce bus service with 30 minute frequency to the alignment. Adding the bus service to 10 minute streetcar service will be equivalent to 7.5 minute service. Operating costs for this service plan will be much less than the 7.5 minute streetcar service. The supplemental bus service would be provided by extending the Route 7 and 9 routes in from the Rosa Parks and Eastland Mall, respectively. This will create an ancillary benefit by eliminating the transfer for some passengers at these facilities.

Providing higher capacity streetcars at lower levels of frequency is a trade-off for higher frequency buses. The preferred operating plan balances the capital investment of the streetcar and taking advantage of its higher capacity by offering service that will reduce overall operating expenses within the corridor. The savings in bus service can be re-allocated to other parts of the service area or applied to the bottom line savings.

5.6.2 Low Bridge Clearances

There is a 17.5-foot clearance requirement between the top of rail and the contact wire, when operating a streetcar in a mixed traffic environment. Any reduction will violate National Electric Safety Code (NESC) and necessitate avoidance measures. The 17.5-foot clearance requirement is based on allowing 16.5 feet for the maximum height of a large truck and one-foot minimum clearance to the live contact wire. The one-foot allowance assumes dynamic displacement of the vehicle under operating conditions, including tolerances for sag, installation and maintenance of the track and OCS. Typically, an additional six inches would be required between the contact wire and the bottom of the bridge structure. This brings the required clearance between an existing bridge structure and the proposed top of rail to 18 feet.

Along the proposed Trade Street portion of the streetcar route, there exist six locations where aerial structures have been built over the roadway. In each case the minimum clearance is below the required 18 feet. The locations and minimum clearances include:

- Beatties Ford Road - Johnson C. Smith University Pedestrian Bridge (16.2’);
- Trade Street - Interstate 77 (15.2’);
- Trade Street - Norfolk Southern Railroad (15.1’);
- Trade Street - Bank of America Pedestrian Bridge (16.7’);
- Trade Street - South Corridor LRT (14.9’); and
- Elizabeth Avenue - Interstate 277 (15.2’).

Eight general methods were identified to avoid the insufficient bridge clearance. Each method of avoidance has implications to cost, operations, construction impact, and safety. The eight methods are presented below and brief description of the implications and risks are included in the *Bridge Clearance Technical Memorandum* (July 2005).

- Eliminate the bridge.
- Reconstruct the bridge to the required elevation.
- Lower the profile of the tracks.
- Reroute the streetcar alignment.
- Sectionalize the OCS and apply for a variance in the NESC.
- Operate the streetcars in exclusive lanes under the bridges.
- Truncate the Overhead Catenary System under the bridges.
- Utilize “trolley-pole”.

In almost every instance where low clearances effect the streetcar operations and alignment, CATS will be applying for a variance in the NESC code. To enhance safety, an electrical sectionalization of the OCS will be employed. This approach would only electrify the OCS wire when the streetcar is present at the underpass. The infrastructure required for sectionalization does have a minor capital cost consideration but avoids major reconstruction of the bridge and/or the road, and keeps all existing traffic lanes open.

The bridge underpass at the CSX crossing of Hawthorne Lane (north of Central Avenue) is the sole exception. At this location, the road surface will be lowered to accommodate the height of the streetcar itself. The sectionalization approach will also be necessary since the full clearance required by NESC cannot be achieved without major reconstruction of the overpass.

5.6.3 Plaza Area Alignment Options

A major issue confronting the design of the streetcar was an at-grade crossing of CSX freight railroad on Central Avenue just west of the Plaza. At-grade crossings are feasible but generally are not preferred especially when the two sets of tracks are operated by different entities. Grade limitations for bridging the crossing were exorbitantly expensive and would negatively impact the land uses on either side of Central Avenue for a substantial distance in each direction. The solution was to identify another alignment that either crossed under the CSX facility or crossed over at a point where a bridge was more financially feasible.

The initial solution was an alignment south of Central Avenue that parallels Independence Boulevard and bridges the CSX line near Pecan Avenue. In addition to avoiding the at-grade crossing on Central Avenue, the alignment had minimal right of way impacts, supported new development and was less costly than building a bridge over the CSX line on Central Avenue. The alignment required additional structural changes to the Hawthorne Lane bridge over Independence Boulevard and provided access to a potential vehicle maintenance facility (VMF) site near Lamar Avenue.

As part of the VMF site assessment, a new alignment in the Plaza area was identified. The alignment continues on Hawthorne Lane north of Central Avenue, passes under the CSX line and provides access to another potential VMF site at the Barnhardt Manufacturing facility. The alignment also provides access to a potential transit oriented development site and rejoins Central via Clement Avenue. Once the VMF site assessment identified Barnhardt Manufacturing site as one of the top preferred sites, a cost comparison between the northern and southern alignments in the Plaza area was conducted.

The comparison showed that the primary disadvantage of the northern alignment was the increased run times required because of the increased length of track. However, the capital cost of the road construction under the CSX bridge and additional length of the facility was offset by the savings in structures and right-of-way associated with the southern alignment.

5.6.4 Trade Street Alignment Alternatives

A major decision point in the development of the streetcar design concept was to determine the preferred streetcar alignment through Center City. A three-tiered analysis was employed, each at an increasing level of detail to evaluate the trade-offs among the alignment options. The results of these three stages are summarized below, along with a description of the preferred streetcar alignment. More detail information is included in the *Alignment Definition Report* (April 2006)

Tier 1 Analysis

The Tier 1 analysis identified alternatives for more detailed examination, using the following four objectives as the basis for comparison:

- Provides the most benefits to surrounding land uses and development;
- Provides the best fit within the framework of the streetcar system;
- Minimizes negative transportation / environmental impacts; and
- Presents the fewest problems in terms of constructability.

This evaluation was conducted on the five east-west thoroughfares between Third and Sixth Streets. Specific performance measures were developed for each of the objectives, and were reviewed by the Working Session Group. Scores relative to “high”, “medium”, and “low” rankings were established for each measure, and equal weighting was used for all criteria.

Based on the Tier 1 rating system described earlier, Third, Fifth and Sixth Streets (and any alignment options utilizing these streets) were eliminated from further analysis. Therefore, the following three alternatives were advanced for further consideration under Tier 2 examination:

- Trade Street (bi-directional / curb-running);
- Trade Street (bi-directional / median-running); and
- Fourth Street / Trade Street couplet (curb-running).

Following stakeholder input received at the Center City Transit Workshop, a fourth option, Trade Street / Fifth Street couplet (curb-running) was reinstated for Tier 2 analysis:

Tier 2 Analysis

After the Tier 1 (“Basic Screening”) analysis was conducted to determine the streets in Center City most favorable to streetcar service, a more detailed assessment was performed on the four alternatives (described earlier) that advanced to this next stage of evaluation.

A series of objective criteria was developed, and a relative ranking (1st, 2nd, 3rd, 4th) was assigned to each alternative under each performance measure. All criteria were weighted equally to determine a final ranking of alternatives.

The Tier 2 analysis addressed many of the same impacts studied as part of the Tier 1 analysis, but provides a more in-depth examination of these impacts and also evaluates several additional aspects of the proposed streetcar service. The following eleven evaluation criteria were used:

- Access and traffic impacts;
- Existing on-street parking;
- Redevelopment opportunities;
- Platforms and pedestrian environment;
- Streetcar operations;
- Bridge clearances;
- Potential utilities impacts;
- Relative capital costs;
- Ease of construction;
- Flexibility of streetcar; and
- Compatibility with Light Rail Transit.

Based on evaluation using these eleven specific performance measures, the Trade Street (median-running) alternative ranked the highest among the four options studied. Although this evaluation weighted all criteria equally, a separate scoring compilation was created using only five highly critical criteria, as determined by the Team:

- Capital costs;
- Utility impacts;
- Streetcar operations;
- Ease of construction; and
- Platforms and pedestrian environment.

The Trade Street (median-running) alternative ranked the highest in this scenario as well, followed by the Trade Street (curbside) option and the Trade Street / Fourth Street couplet.

Tier 3 Analysis

Results from the Tier 2 investigation illustrate that a median alignment on Trade Street convincingly outranks the other alternatives when considering the stated performance measures; nevertheless, issues associated with this alignment must still be addressed. Though operating the streetcar primarily on a median alignment through Center City is preferred, alternative platform locations might better address the unique challenges and concerns at specific stops. Combining a median alignment with some of the best qualities of the curbside alternative on Trade Street may optimize a preferred alignment.

The purpose of the Tier 3 analysis was to confirm the Trade Street (median) option as the preferred alignment, by conducting a detailed analysis to compare the impacts of median and curbside platforms at individual stop locations. Special attention was given to widening requirements, parking displacement, tree displacement, and sidewalk impacts. This assessment resulted in stop-by-stop recommendations for each of the potential stop locations.

The examination of potential streetcar stop alternatives in the Tier 3 analysis indicates that in most cases, median platforms are preferred primarily due to the ability to maintain existing sidewalk widths. However, the unique conditions and the urban design surrounding the Trade Street/Tryon Street intersection provide strong support for a curbside alternative in this area.

The proposed alternatives for each stop location are as follows:

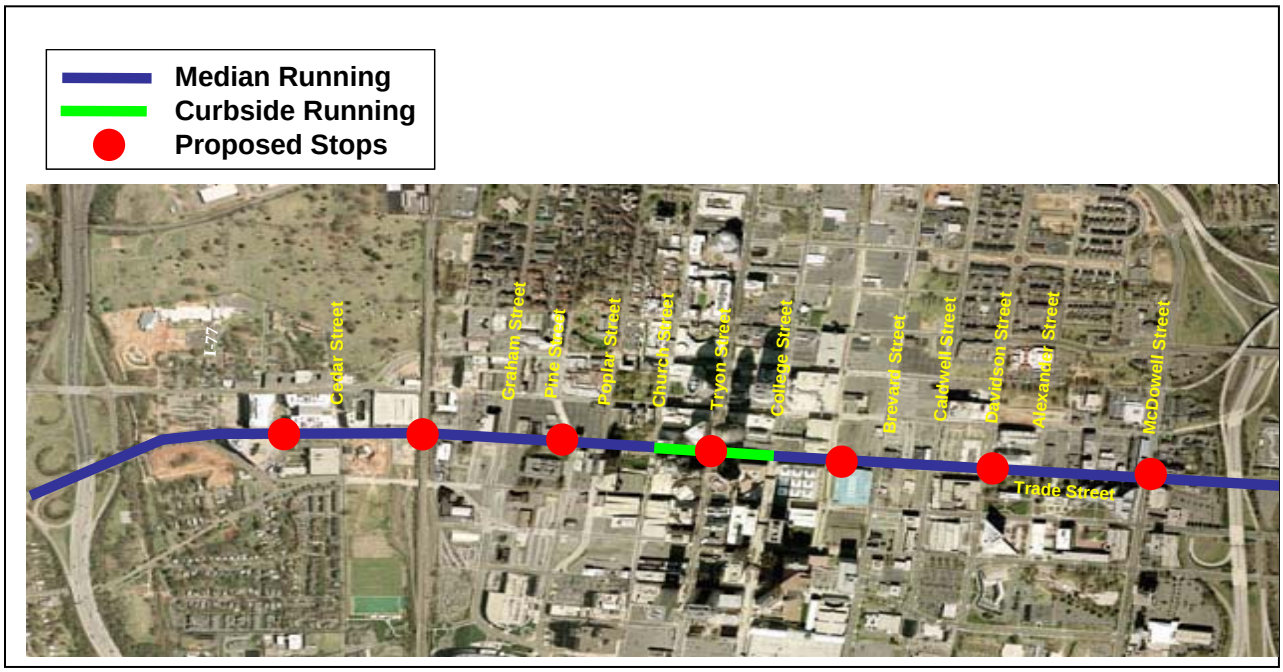
- **Johnson & Wales:** Median
- **Charlotte Gateway Station:** Median
- **Mint/Pine Street:** Split Median
- **Tryon Street:** Median to Curbside Shift
- **Arena/Transportation Center:** Narrow Median
- **Government Center:** Narrow Median

(A median stop at McDowell Street is also proposed, but this stop location was not examined in detail as part of this analysis due to its proximity to the Elizabeth Avenue section, where the alignment previously has been defined.)

Preferred Streetcar Alignment

Ultimately, a streetcar alignment was selected that would operate on Trade Street through Center City. Streetcars would operate in the median travel lanes through most of Center City, except for the area near The Square (Trade Street and Tryon Street), where unique design features would be utilized to shift to a curb-running alignment to take advantage of the distinctive urban design opportunities associated with curbside stops in this area. Graphic depictions of the overall alignment and each recommended stop location are provided on the following pages.

Figure 5-1: Preferred Center City Alignment



[1] US Department of Transportation. Federal Highway Administration. *FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.* Washington, D.C.: 1998. <http://www.fhwa.dot.gov/legregs/directives/orders/6640_23.htm> (31 August 2004).

[2] U.S. Census Bureau. *American Fact Finder.* "Summary Table 1." Available: http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=DEC&_submenuId=datasets_1&_lang=en. Accessed: February 2006.

CHAPTER 6 PUBLIC INVOLVEMENT

6.1 GENERAL APPROACH TO INVOLVING THE PUBLIC

6.1.1 Meeting Forums

Public involvement techniques were aimed at including all interested and/or potentially affected individuals. Involvement took place in six forums: (1) sub-area Advisory Board meetings, (2) sub-area public meetings, (3) public meetings, (4) small group meetings, (5) community workshops, and (6) interviews. Three sub-areas were developed, corresponding with the three segments of the Center City Streetcar corridor: (1) the Beatties Ford Road sub-area, (2) the Trade Street sub-area, and (3) the Central/Hawthorne Avenue sub-area. Full inclusion was established by using meetings focused on both a small geographic scale (sub-area meetings), a larger geographic scale (corridor-wide meetings), small groups (advisory board meetings, small group meetings), large groups (public meetings, community workshop), and by holding meetings at various times of day and at different locations.

Information specific to the Center City Streetcar was also posted on the CATS website beginning in November of 2005. Announcements of meetings, summaries of previous meetings, project descriptions, and the ability to submit comments are some of the features of the site.[i]

6.1.2 Notification Forums

Notification of upcoming meetings was provided through the mailing of postcards and personal letters; direct telephone contact; advertisements in local newspapers (i.e., Charlotte Observer, The Charlotte Post); postings on websites, brochures and bulletin boards; notification on the local government cable channel bulletin board, and through press releases to local newspapers, radio and television stations. Meeting notifications were also posted on the City of Charlotte and CATS websites. The method of notification for each meeting is included in the meeting summaries in Table 6-1.

Notice of project information and updates was provided at each of the meeting forums, through the CATS website, and through the project's newsletter, *Center City Transitions*.

6.1.3 Comments

Comments were accepted at each of the five forums, through the CATS website, and through written comments, emails, or telephone calls to the CATS project team.

6.2 PUBLIC INVOLVEMENT TIMELINE

A timeline of each public involvement opportunity is included in Table 6-1. The complete meeting summaries and newsletters are included in Appendix B.

Table 6-1: Public Involvement Activity Timeline

Date	Type	Details
09/23/04	Small Group meeting	Federal Transit Administration (FTA) Quarterly Meeting
10-11/04	Interviews	23 business representatives 4 government agency representatives 15 neighborhood representatives
11/10/04-11/18/04	Public Notice	1,500 postcards 42 personal letters 30 direct calls
11/22/04	Small Group Meeting	Transit Summit
Fall 2004	Center City Transitions issued	News Letter
11/18/04	Community Workshop	80 attendees total, 56 on sign-up sheet
12/08/04	Small Group Meeting	Interview with the Charlotte Business Journal
12/08/04	Small Group Meeting	Center City Partners Planning and Development Committee
12/15/04	Small Group Meeting	Hospitality Tourism Association (HTA)
12/16/04	Small Group Meeting	Eastside Community Development Corporation (Eastside CDC)
01/03/05	Small Group Meeting	City Council Presentation
01/26/05	Small Group Meeting	Media Day
01/27/05	Small Group Meeting	Eastside Community Development Corporation (Eastside CDC)
02/01/05	Advisory Board Meeting Trade Street Sub-Area	11 Advisory Board participants
02/02/05	Advisory Board Meeting Hawthorne/Central Avenue Sub-Area	GHA
02/03/05	Advisory Board Meeting Beatties Ford Road Sub-Area	GHA
03/08/05	Small Group Meeting	Northwest Community Development Corporation (NW CDC)
03/22/05	Small Group Meeting	Council Patsy Kinsey District Meeting
03/29/05	Small Group Meeting	Council James Mitchell District Meeting
03/31/05	Small Group Meeting	Federal Transit Administration (FTA) Quarterly Meeting
04/11/05	Public Notice	1,403 mailed notices & other media
04/12/05	Small Group Meeting	Transit Initiative Conference
04/13/05	Small Group Meeting	Center City CDOT's Transportation Study
04/14/05	Small Group Meeting	Transportation Services Advisory Committee (TSAC)

Table 6-1: Public Involvement Activity Timeline (Cont.)

Date	Type	Details
Spring 2005	Center City Transitions issued	Newsletter
04/19/05	Advisory Board Meeting Trade Street Sub-Area	GHA
04/20/05	Small Group Meeting	Dr. Dorothy C. Yancey, President of Johnson C. Smith University
04/21/05	Advisory Board Meeting Beatties Ford Road Sub-Area	GHA
04/26/05	Sub-Area Meeting Hawthorne/Central Avenue	63 attendees
04/28/05	Sub-Area Meeting Trade Street	15 attendees
04/28/05	Small Group Meeting	Council Nancy Carter District Meeting
05/04/05	Sub-Area Meeting Beatties Ford Road	40 attendees
05/25/05	Small Group Meeting	Metropolitan Transit Commission (MTC)-Streetcar Briefing
06/09/05	Small Group Meeting	Programs for Accessible Living (PAL)
06/10/05	Public Notice	1,462 mailed notices & other media
06/14/05	Advisory Board Meeting Hawthorne/Central Avenue Sub-Area	GHA
06/15/05	Advisory Board Meeting Trade Street Sub-Area	GHA
06/16/05	Small Group Meeting	Merry Oaks Neighborhood Association
06/16/05	Advisory Board Meeting Beatties Ford Road Sub-Area	GHA
06/16/05	Small Group Meeting	Federal Transit Administration (FTA) Quarterly Meeting
06/20/05	Small Group Meeting	Metrolina Association for the Blind (MAB)
06/21/05	Sub-Area Meeting Trade Street	70 attendees
06/22/05	Sub-Area Meeting Hawthorne/Central Avenue	35 attendees
06/23/05	Sub-Area Meeting Beatties Ford Road	35 attendees
06/28/05	Small Group Meeting	Center City Chamber Luncheon
06/28/05	Small Group Meeting	Bus Operations Department (BOD) 2 presentations
06/29/05	Small Group Meeting	Bus Operations Department (BOD)
06/30/05	Small Group Meeting	Bus Operations Department (BOD)-4 presentations

Table 6-1: Public Involvement Activity Timeline (Cont.)

Date	Type	Details
Summer 2005	Center City Transitions issued	Newsletter
07/09/05	Small Group Meeting	Cluster 1 Neighborhood Meeting
07/19/05	Small Group Meeting	Center City Chamber Luncheon
07/21/05	Small Group Meeting	Center City Transportation Open House
08/03/05	Small Group Meeting	Charlotte Mecklenburg Planning Commission Streetscape Committee
08/05/05	Small Group Meeting/Interview	Interview with News 14
09/08/05	Small Group Meeting	Federal Transit Administration (FTA) Quarterly Meeting
09/08/05	Small Group Meeting	Programs for Accessible Living (PAL)
09/09/05	Public Notice	1,567 mailed notices & other media
09/20/05	Advisory Board Meeting Trade Street Sub-Area	GHA
09/20/05	Small Group Meeting	Charlotte East Area Panel
09/21/05	Advisory Board Meeting Hawthorne/Central Avenue Sub-Area	GHA
09/22/05	Small Group Meeting	Eastside Community Development Corporation (Eastside CDC)
09/22/05	Advisory Board Meeting Beatties Ford Road Sub-Area	GHA
09/27/05	Public Meeting	100 attendees
10/06/05	Small Group Meeting	Bank of America/Senior Vice President of Corporate Real Estate
10/13/05	Small Group Meeting	North Carolina Department of Transportation-Raleigh (NCDOT)
11/05	Website established	
12/08/05	Small Group Meeting	Northwest Corridor Community Development Corporation Annual Meeting (NW CDC)
12/15/05	Small Group Meeting	Federal Transit Administration (FTA) Quarterly Meeting
01/12/06	Small Group Meeting	Art In Transit Committee
01/19/06	Small Group Meeting	Charlotte Center City Partners (CCCP)
01/26/06	Small Group Meeting	Eastside Community Development Corporation (Eastside CDC)
02/08/06	Small Group Meeting	Bank of America/Senior Vice President of Corporate Workplace & Security
02/10/06	Small Group Meeting	Kiwanis Club of Central Charlotte
03/03/06	Small Group Meeting	North Carolina Department of Transportation-Raleigh (NCDOT)

Table 6-1: Public Involvement Activity Timeline (Cont.)

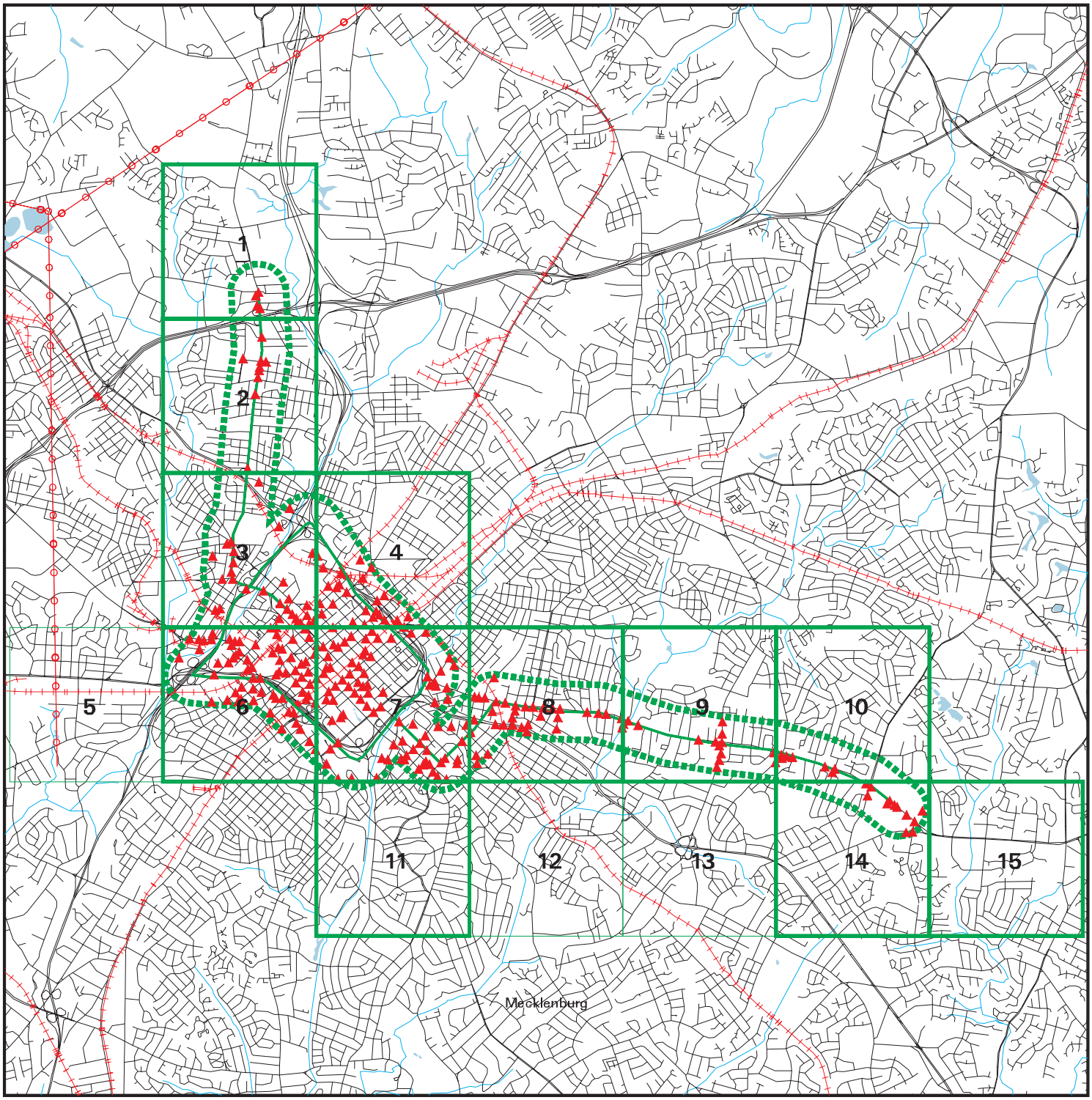
Date	Type	Details
03/07/06	Advisory Board Meeting Trade Street	GHA
03/08/06	Advisory Board Meeting Hawthorne/Central Avenue	GHA
03/09/06	Advisory Board Meeting Beatties Ford Road	GHA
03/16/06	Public Meeting	CMGC
06/28/06	MTC Meeting	CMGC
07/11/06	Advisory Board Meeting Trade Street	GHA
07/12/06	Advisory Board Meeting Central Avenue	GHA
07/13/06	Advisory Board Meeting Beatties Ford Road	GHA
07/18/06	Public Meeting	CMGC
07/26/06	MTC Meeting	CMGC (LPA Adopted)
Fall 2006	Center City Transitions issued	Newsletter
Winter 2006	Center City Transitions issued	Newsletter

[i] Charmeck.org. *Charlotte Area Transit System.* Available: http://www.charmeck.org/Departments/CATS/Rapid+Transit+Planning/Center+City/Home.htm. Accessed: 14 February 2006.

Appendix A

Hazardous Materials

Key Map



EDR DataMap −Environmental Atlas

Charlotte Center City Streetcar Project

Legend

- Roads
- Major Roads
- Contour Lines
- Waterways
- Railroads
- Study Boundary
- Powerlines
- Pipelines
- Fault Lines
- Federal DOD Sites
- Water
- Superfund Sites
- Indian Reservations BIA
- Listed Sites

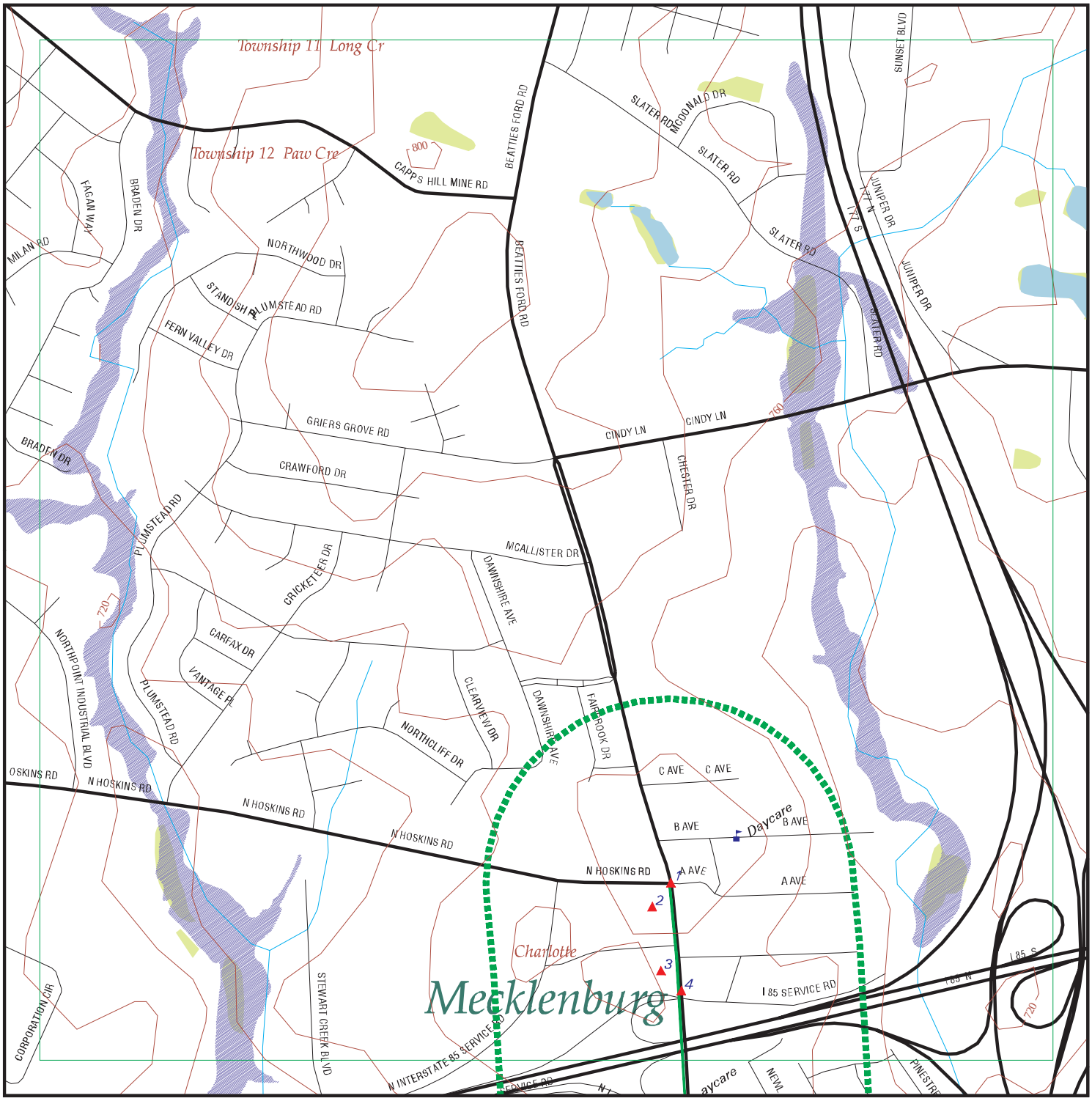
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Scale in Miles

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Focus Map 1



EDR DataMap −Environmental Atlas

Charlotte Center City Streetcar Project

Legend

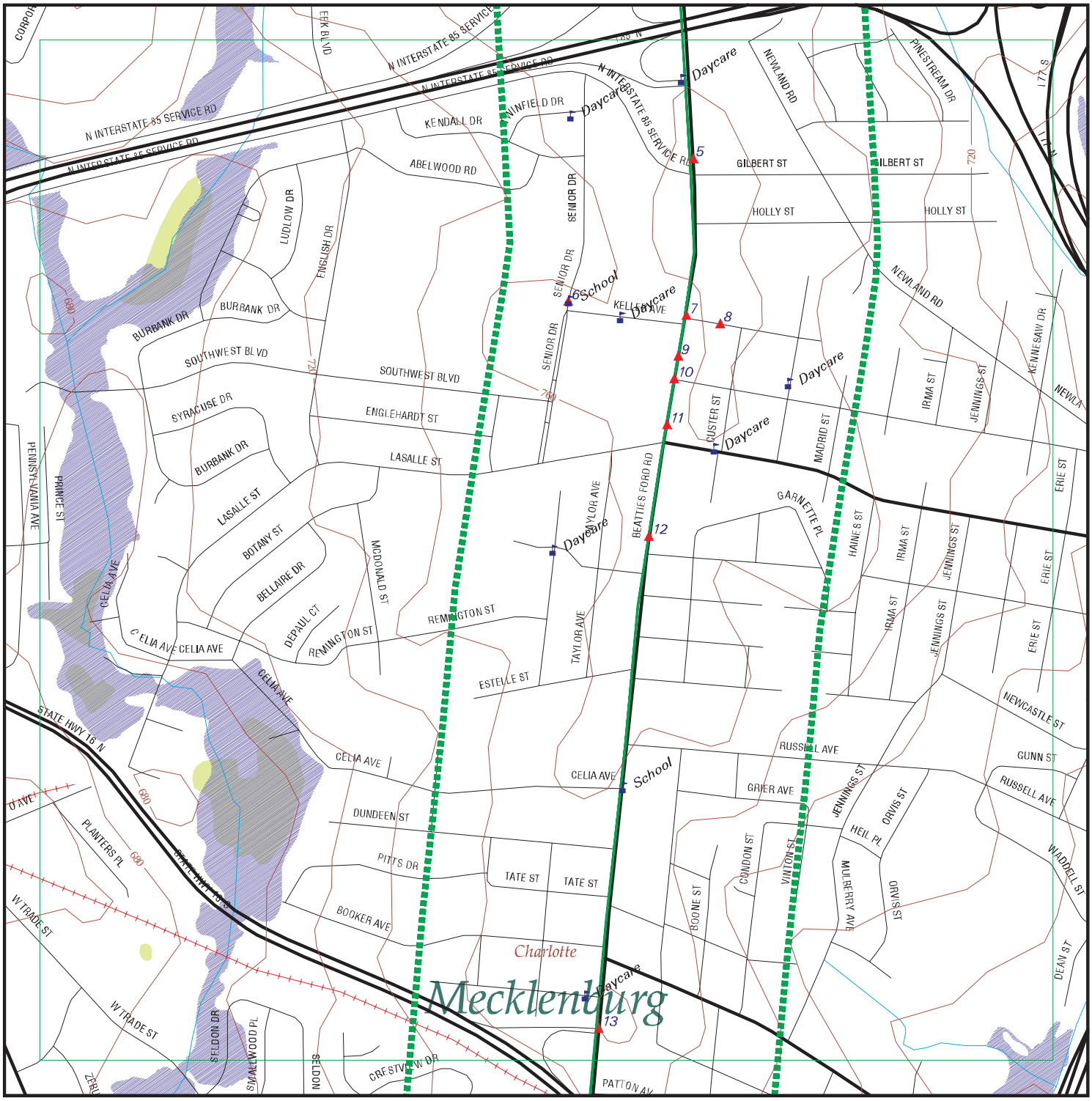
- Roads
- Major Roads
- Contour Lines
- Wetlands
- Waterways
- Railroads
- Study Boundary
- 100-Yr Flood Zones
- Powerlines
- Pipelines
- Fault Lines
- Federal DOD Sites
- Water
- Superfund Sites
- Indian Reservations BIA
- Listed Sites

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Scale in Miles

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Focus Map 2



EDR DataMap −Environmental Atlas

Charlotte Center City Streetcar Project

Legend

- Roads
- Major Roads
- Contour Lines
- Wetlands
- Waterways
- Railroads
- Study Boundary
- 100-Yr Flood Zones
- Powerlines
- Pipelines
- Fault Lines
- Federal DOD Sites
- Water
- Superfund Sites
- Indian Reservations BIA
- Listed Sites

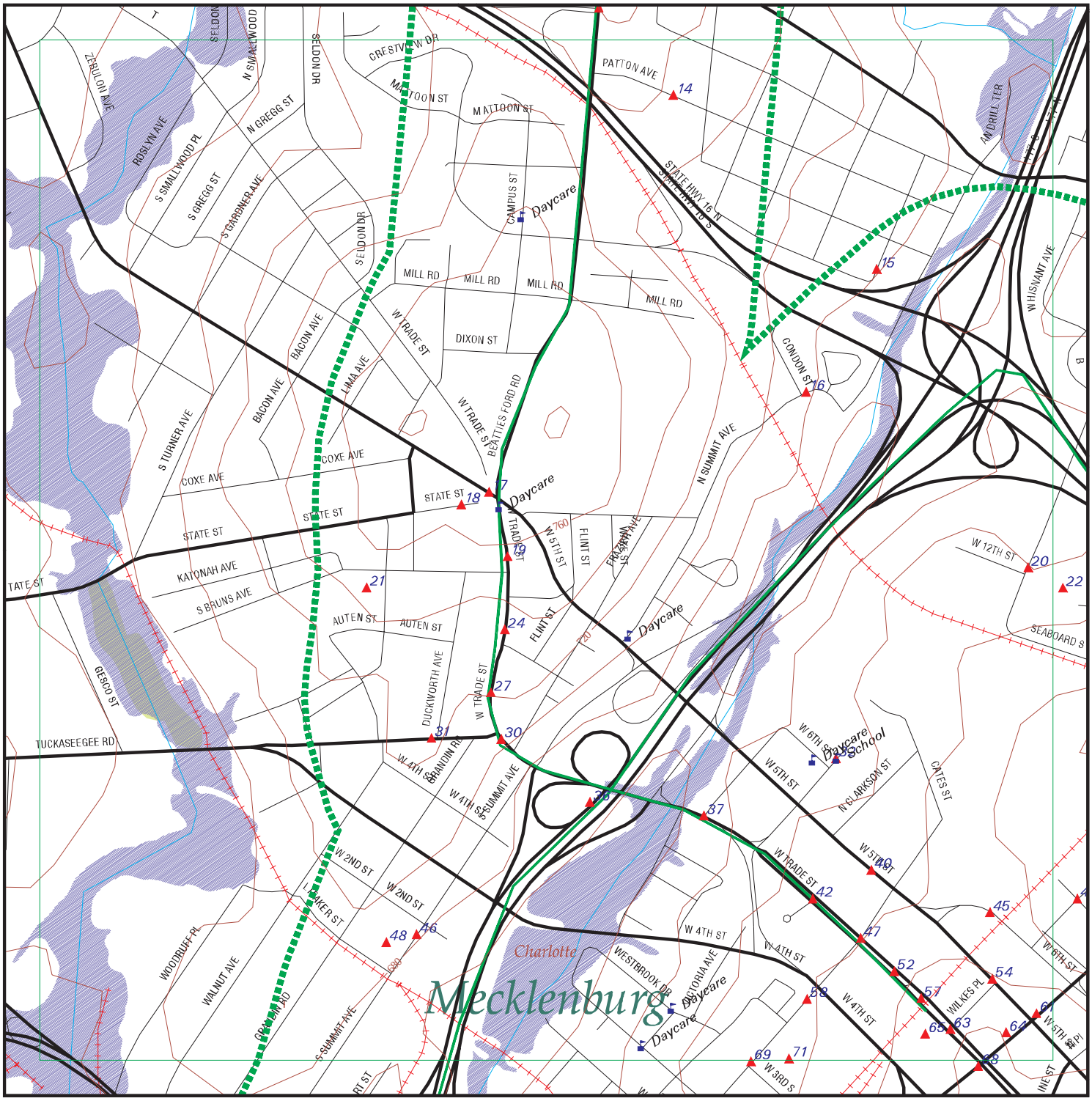
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Scale in Miles

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Focus Map 3



EDR DataMap −Environmental Atlas

Charlotte Center City Streetcar Project

Legend

Roads	Waterways	Powerlines	Water	Listed Sites
Major Roads	Railroads	Pipelines	Superfund Sites	
Contour Lines	Study Boundary	Fault Lines	Indian Reservations BIA	
Wetlands	100-Yr Flood Zones	Federal DOD Sites		

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Scale in Miles

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Focus Map 4



EDR DataMap −Environmental Atlas

Charlotte Center City Streetcar Project

Legend

- Roads
- Major Roads
- Contour Lines
- Wetlands
- Waterways
- Railroads
- Study Boundary
- 100-Yr Flood Zones
- Powerlines
- Pipelines
- Fault Lines
- Federal DOD Sites
- Water
- Superfund Sites
- Indian Reservations BIA
- Listed Sites

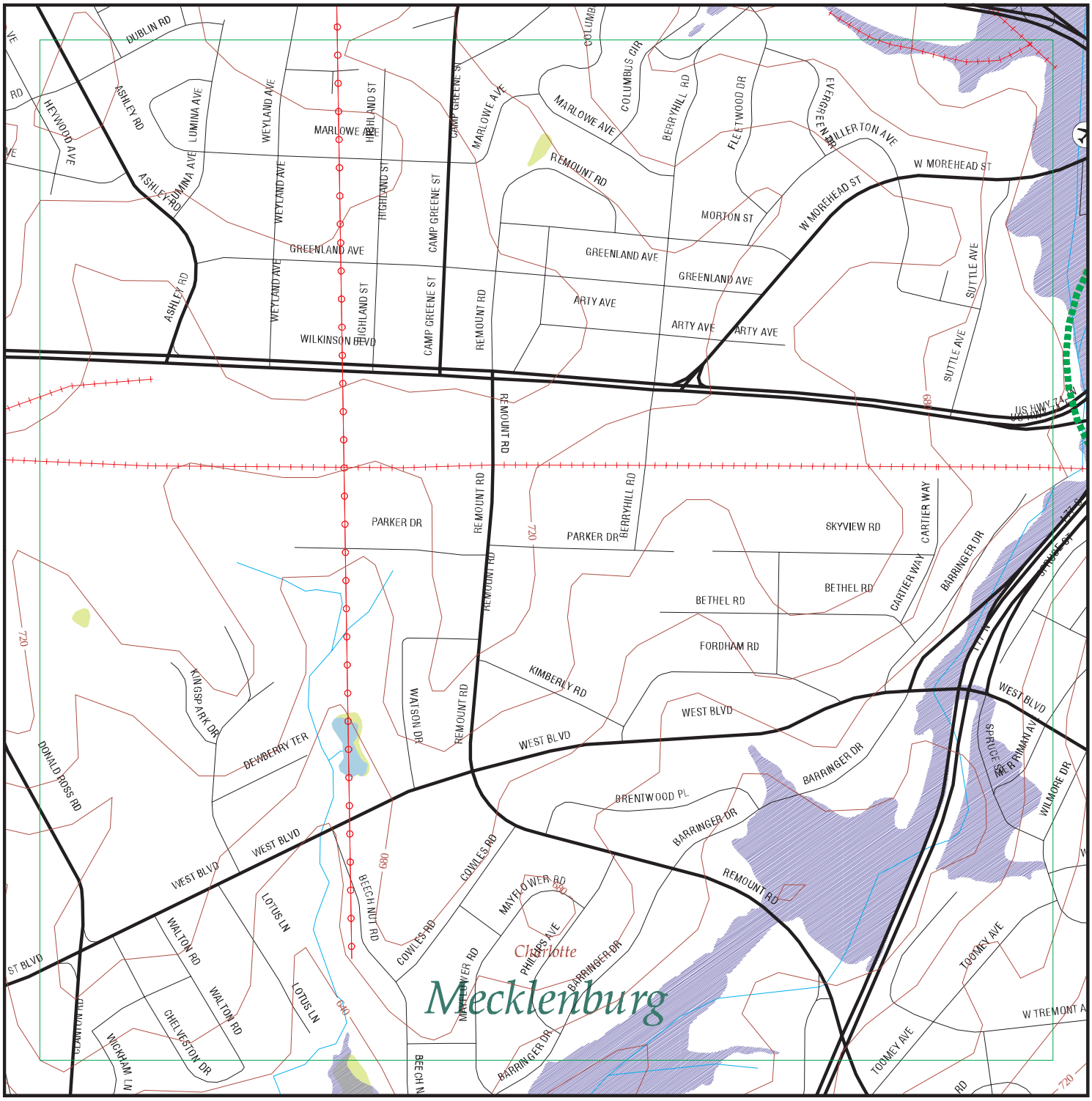
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Scale in Miles

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Focus Map 5



EDR DataMap −Environmental Atlas

Charlotte Center City Streetcar Project

Legend

- Roads
- Major Roads
- Contour Lines
- Wetlands
- Waterways
- Railroads
- Study Boundary
- 100-Yr Flood Zones
- Powerlines
- Pipelines
- Fault Lines
- Federal DOD Sites
- Water
- Superfund Sites
- Indian Reservations BIA
- Listed Sites

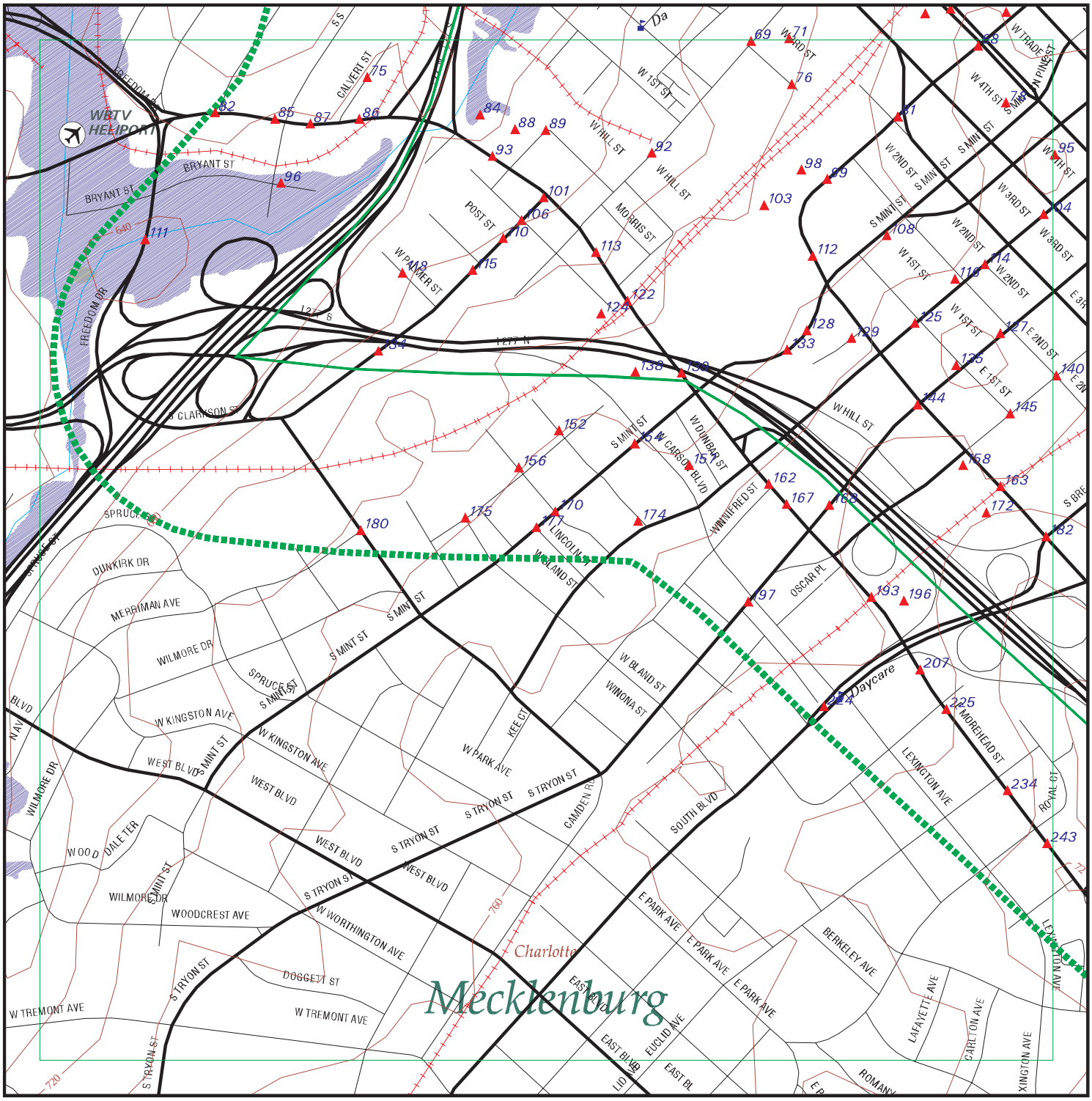
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Scale in Miles

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Focus Map 6



EDR DataMap −Environmental Atlas

Charlotte Center City Streetcar Project

Legend

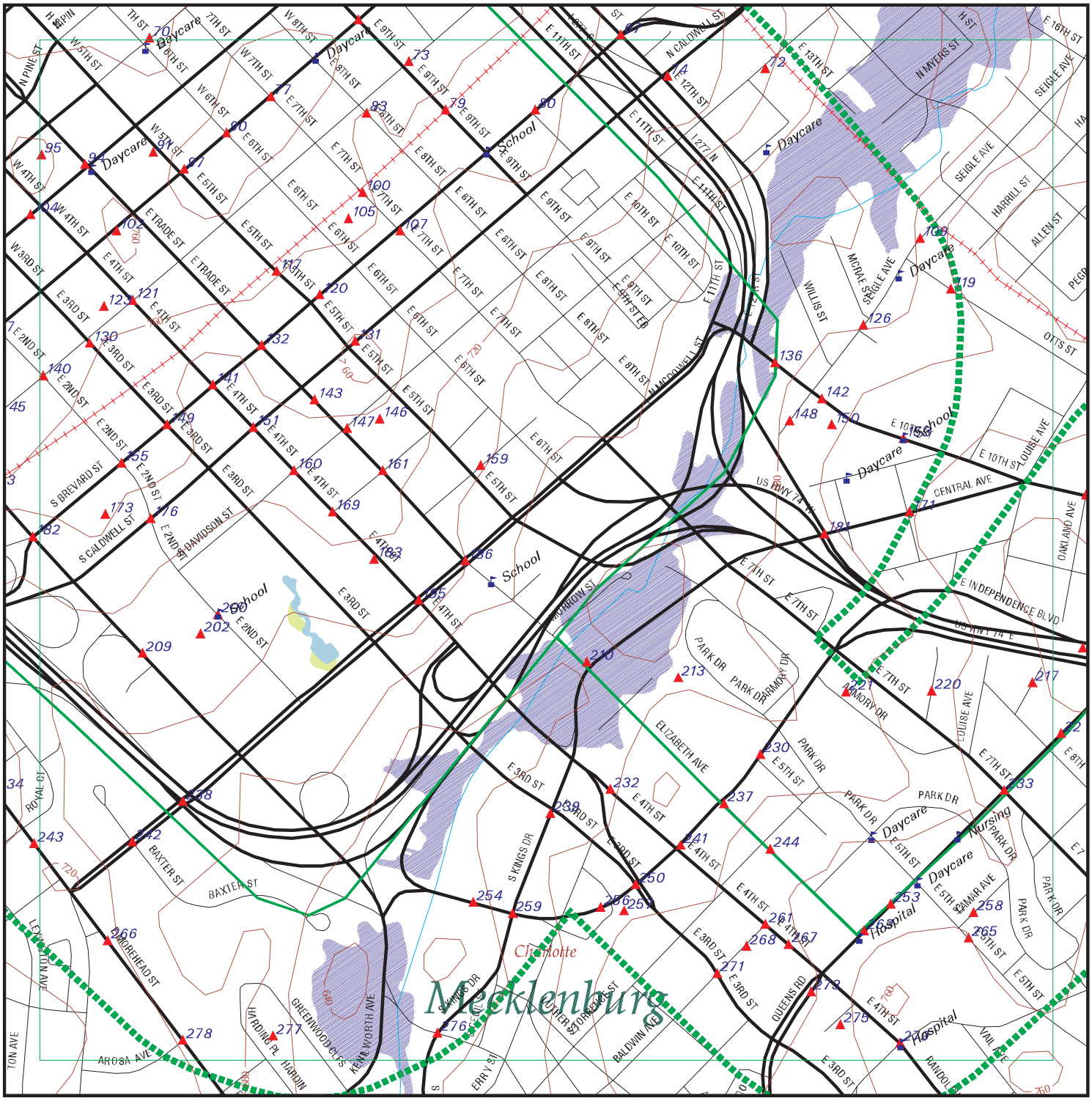
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- Major Roads
- Contour Lines
- Wetlands
- Waterways
- Railroads
- Study Boundary
- 100-Yr Flood Zones
- Powerlines
- Pipelines
- Fault Lines
- Federal DOD Sites
- Water
- Superfund Sites
- Indian Reservations BIA
- Listed Sites

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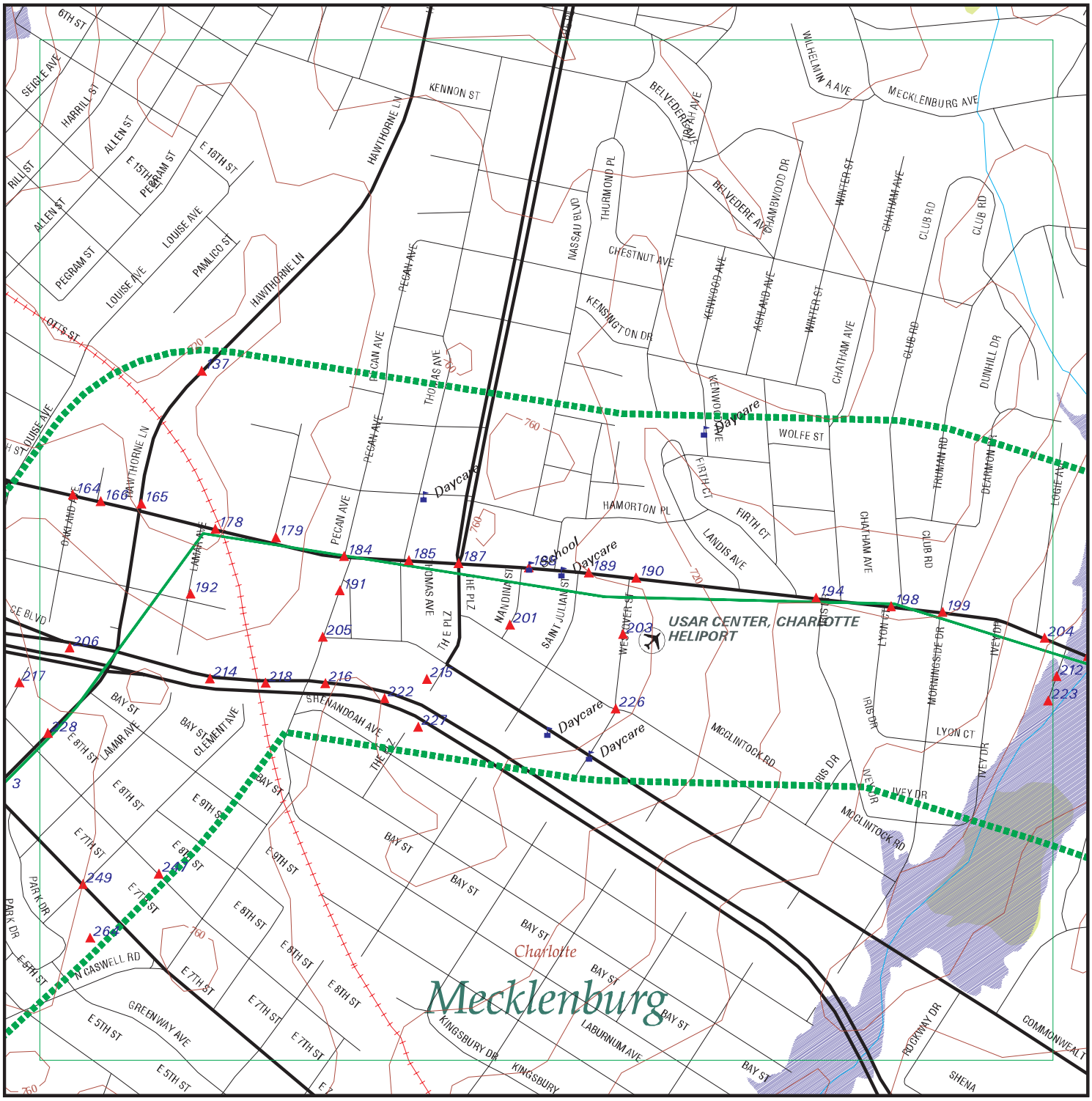
Scale in Miles

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Focus Map 7


Charlotte
Mecklenburg
Daycare
School
Hospital
Nursing
S CALDWELL ST
E 2ND ST
E 3RD ST
E 4TH ST
E 5TH ST
E 6TH ST
E 7TH ST
E 8TH ST
E 9TH ST
E 10TH ST
E 11TH ST
E TRADE ST
W 3RD ST
W 4TH ST
W 5TH ST
W 6TH ST
W 7TH ST
W 8TH ST
N CALDWELL ST
N MYERS ST
SEIGLE AVE
HARRILL ST
ALLEN ST
OTTS ST
LOUISE AVE
OAKLAND AVE
CENTRAL AVE
E INDEPENDENCE BLVD
US HWY 74 E
I-277 N
S BREVARD ST
S DAVIDSON ST
MORROW ST
WILLIS ST
MORAE ST
ELIZABETH AVE
PARK DR
PARK DRIVE
S KINGS DR
BAXTER ST
ROYAL CT
QUEENS RD
BALDWIN AVE
KENILWORTH AVE
GREENWOOD CLIFFS
HARDING PL
AROSA AVE
QUADREHEAD ST
LEXINGTON AVE
ERWIN ST
QUEENSBERRY ST
STONEWALL ST
HAMPDEN ST
E 16TH ST
E 13TH ST
E 12TH ST
E 11TH ST
E 10TH ST
E 9TH ST
E 8TH ST
E 7TH ST
E 6TH ST
E 5TH ST
E 4TH ST
E 3RD ST
E 2ND ST
W 8TH ST
W 7TH ST
W 6TH ST
W 5TH ST
W 4TH ST
W 3RD ST
W 2ND ST
W 1ST ST
N PINE ST
H ST
PEGRAM ST
HARRIS ST
ARMORY DR
PARK DR
PARK DRIVE
PARK DR
PARK DR
PARK DR

Focus Map 8



EDR DataMap −Environmental Atlas

Charlotte Center City Streetcar Project

Legend

- Roads
- Major Roads
- Contour Lines
- Wetlands
- Waterways
- Railroads
- Study Boundary
- 100-Yr Flood Zones
- Powerlines
- Pipelines
- Fault Lines
- Federal DOD Sites
- Water
- Superfund Sites
- Indian Reservations BIA
- Listed Sites

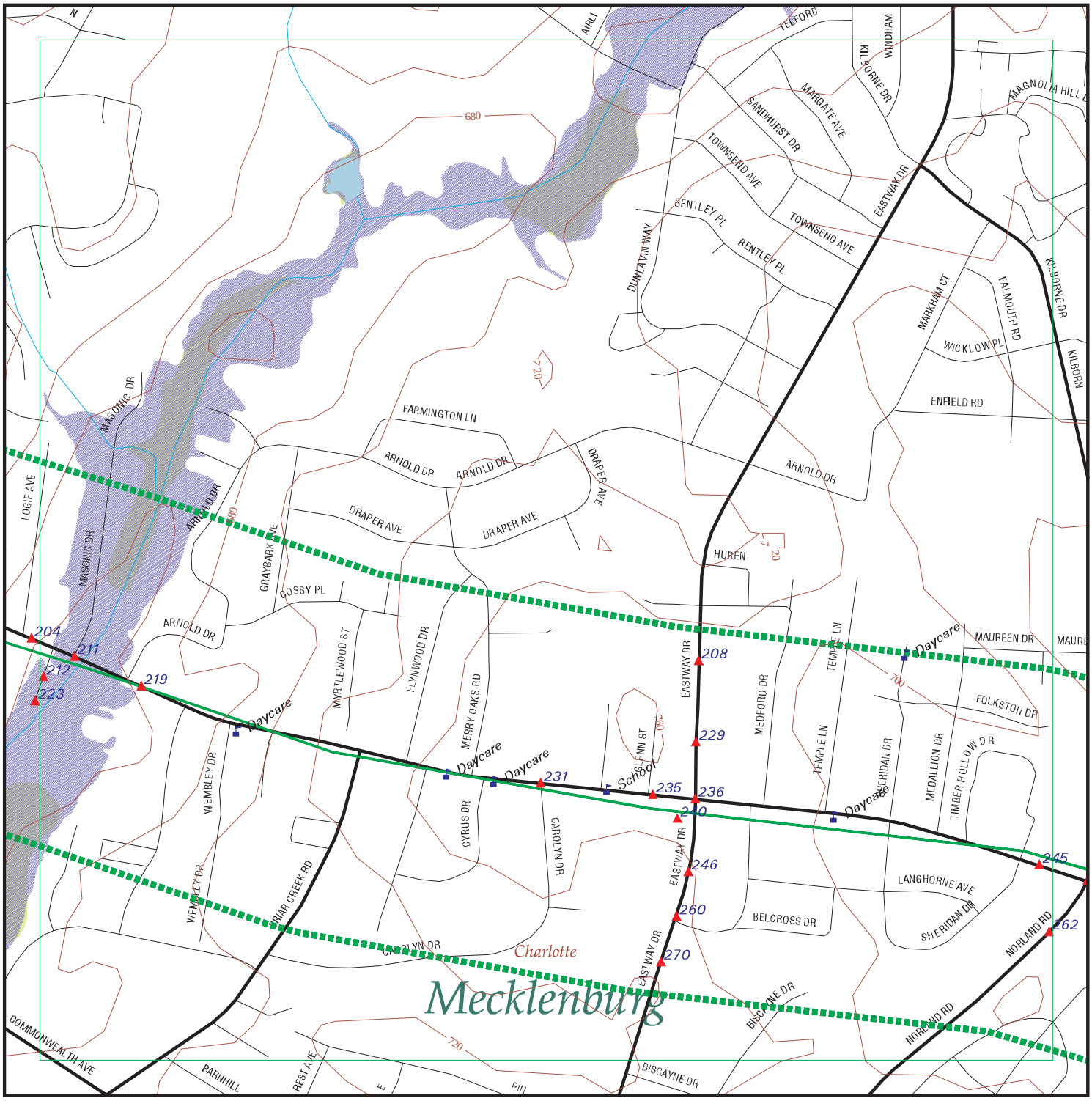
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Scale in Miles

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Focus Map 9



EDR DataMap −Environmental Atlas

Charlotte Center City Streetcar Project

Legend

Roads	Waterways	Powerlines	Water	Listed Sites
Major Roads	Railroads	Pipelines	Superfund Sites	
Contour Lines	Study Boundary	Fault Lines	Indian Reservations BIA	
Wetlands	100-Yr Flood Zones	Federal DOD Sites		

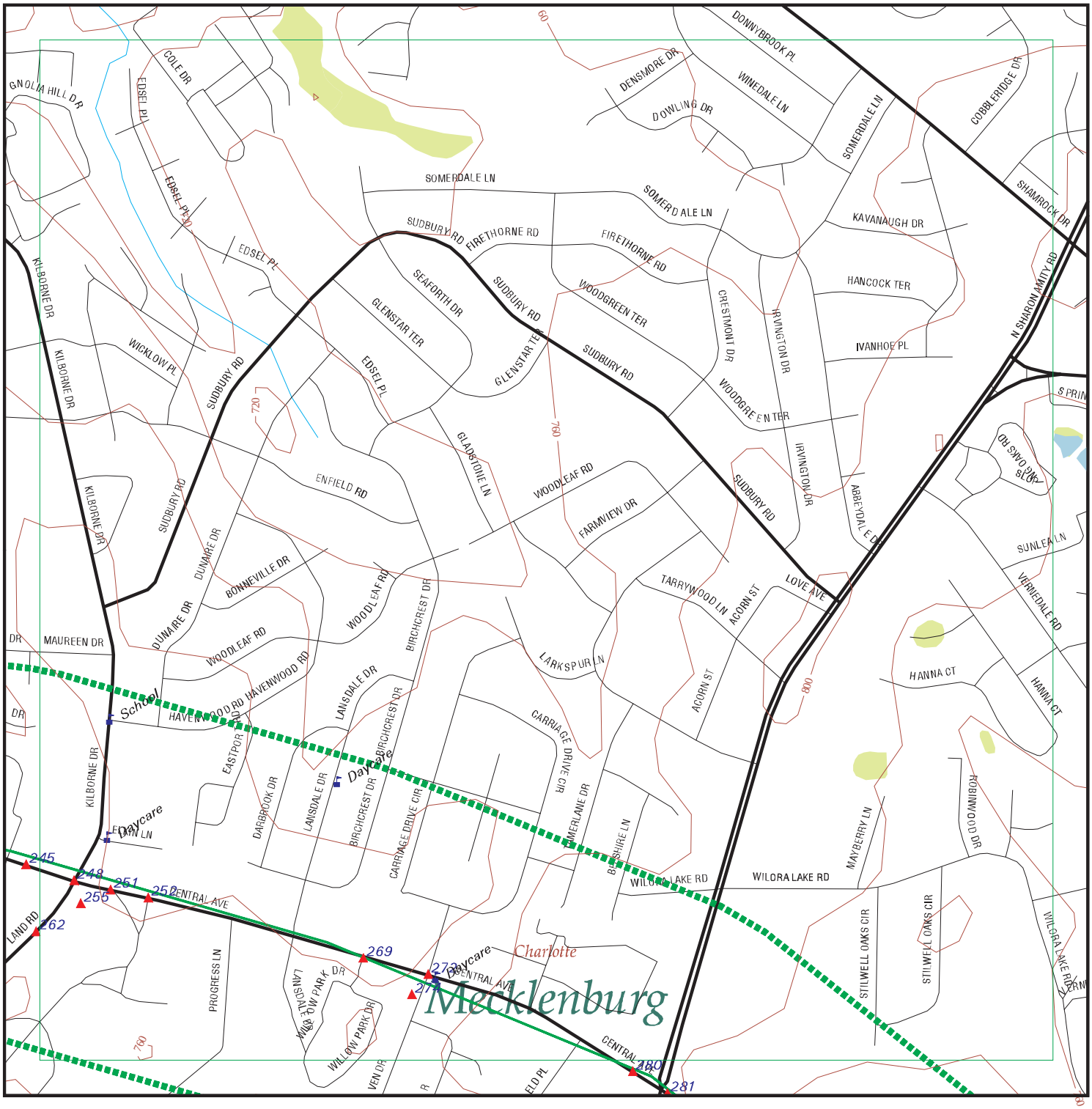
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Scale in Miles

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Focus Map 10



EDR DataMap −Environmental Atlas

Charlotte Center City Streetcar Project

Legend

- Roads
- Major Roads
- Contour Lines
- Wetlands
- Waterways
- Railroads
- Study Boundary
- 100-Yr Flood Zones
- Powerlines
- Pipelines
- Fault Lines
- Federal DOD Sites
- Water
- Superfund Sites
- Indian Reservations BIA
- Listed Sites

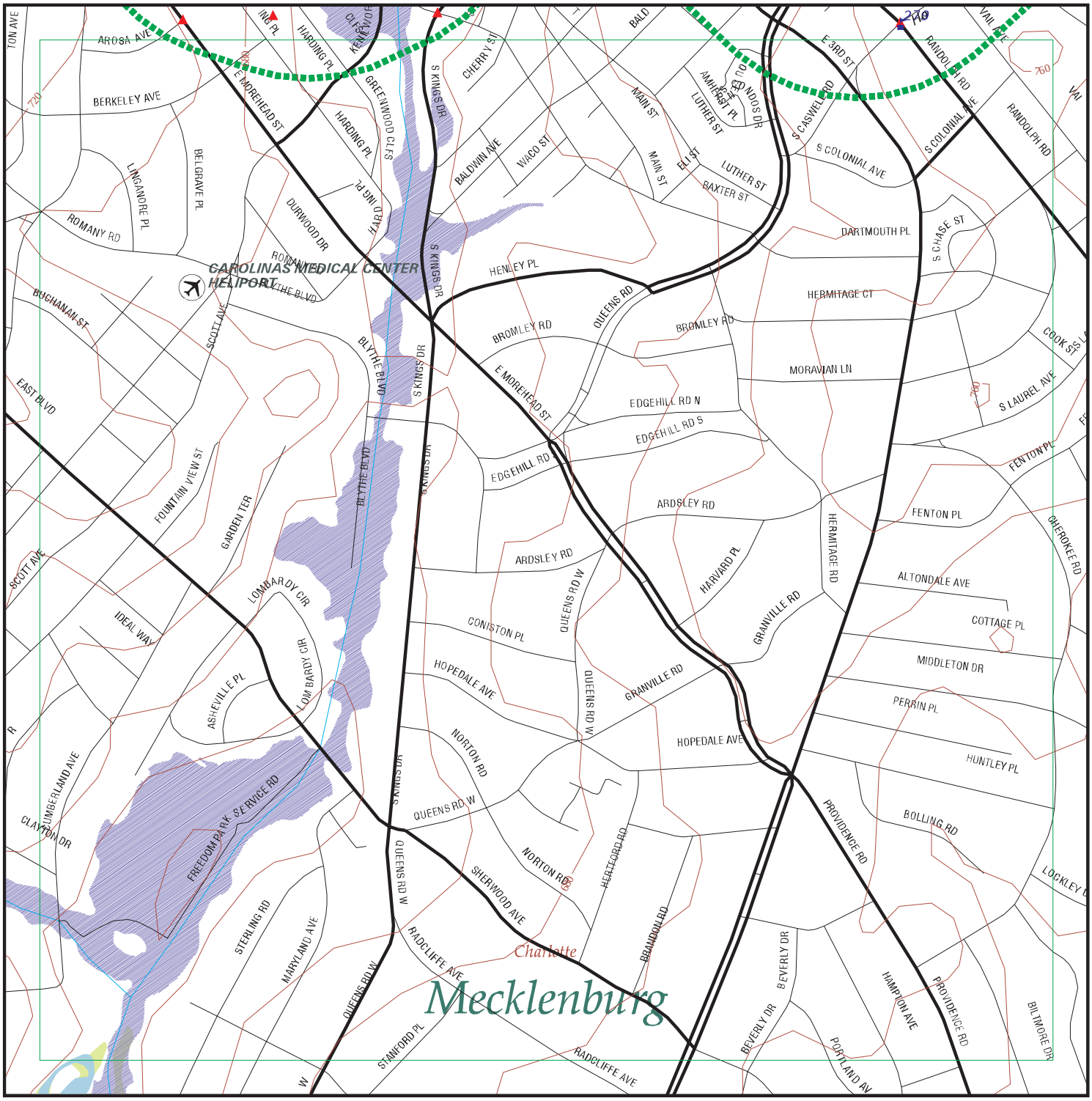
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Scale in Miles

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Focus Map 11



EDR DataMap −Environmental Atlas

Charlotte Center City Streetcar Project

Legend

- Roads
- Major Roads
- Contour Lines
- Wetlands
- Waterways
- Railroads
- Study Boundary
- 100-Yr Flood Zones
- Powerlines
- Pipelines
- Fault Lines
- Federal DOD Sites
- Water
- Superfund Sites
- Indian Reservations BIA
- Listed Sites

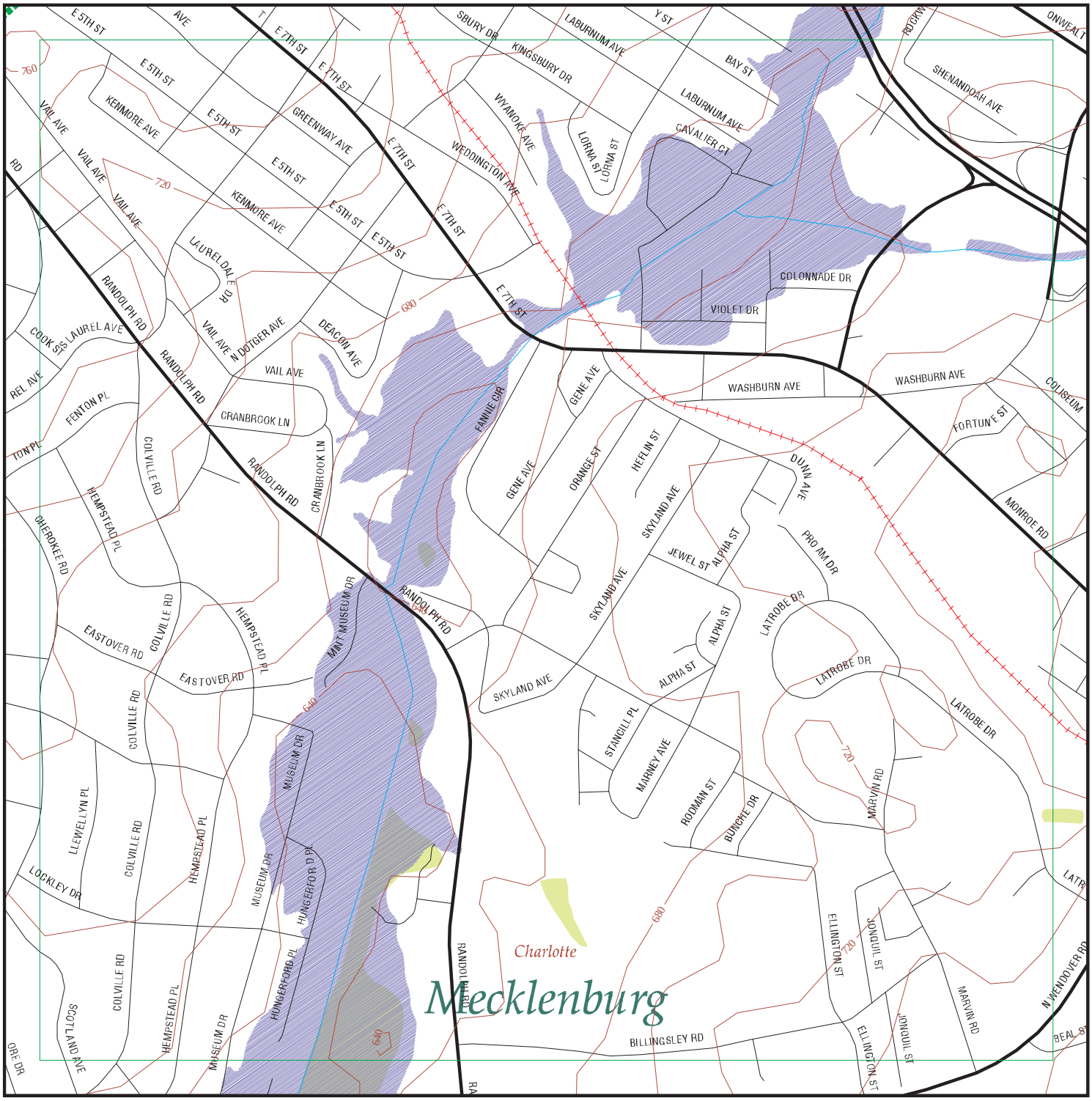
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Scale in Miles

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Focus Map 12



EDR DataMap −Environmental Atlas

Charlotte Center City Streetcar Project

Legend

- Roads
- Major Roads
- Contour Lines
- Wetlands
- Waterways
- Railroads
- Study Boundary
- 100-Yr Flood Zones
- Powerlines
- Pipelines
- Fault Lines
- Federal DOD Sites
- Water
- Superfund Sites
- Indian Reservations BIA
- Listed Sites

N

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Scale in Miles

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Focus Map 13



EDR DataMap −Environmental Atlas

Charlotte Center City Streetcar Project

Legend

- Roads
- Major Roads
- Contour Lines
- Wetlands
- Waterways
- Railroads
- Study Boundary
- 100-Yr Flood Zones
- Powerlines
- Pipelines
- Fault Lines
- Federal DOD Sites
- Water
- Superfund Sites
- Indian Reservations BIA
- Listed Sites

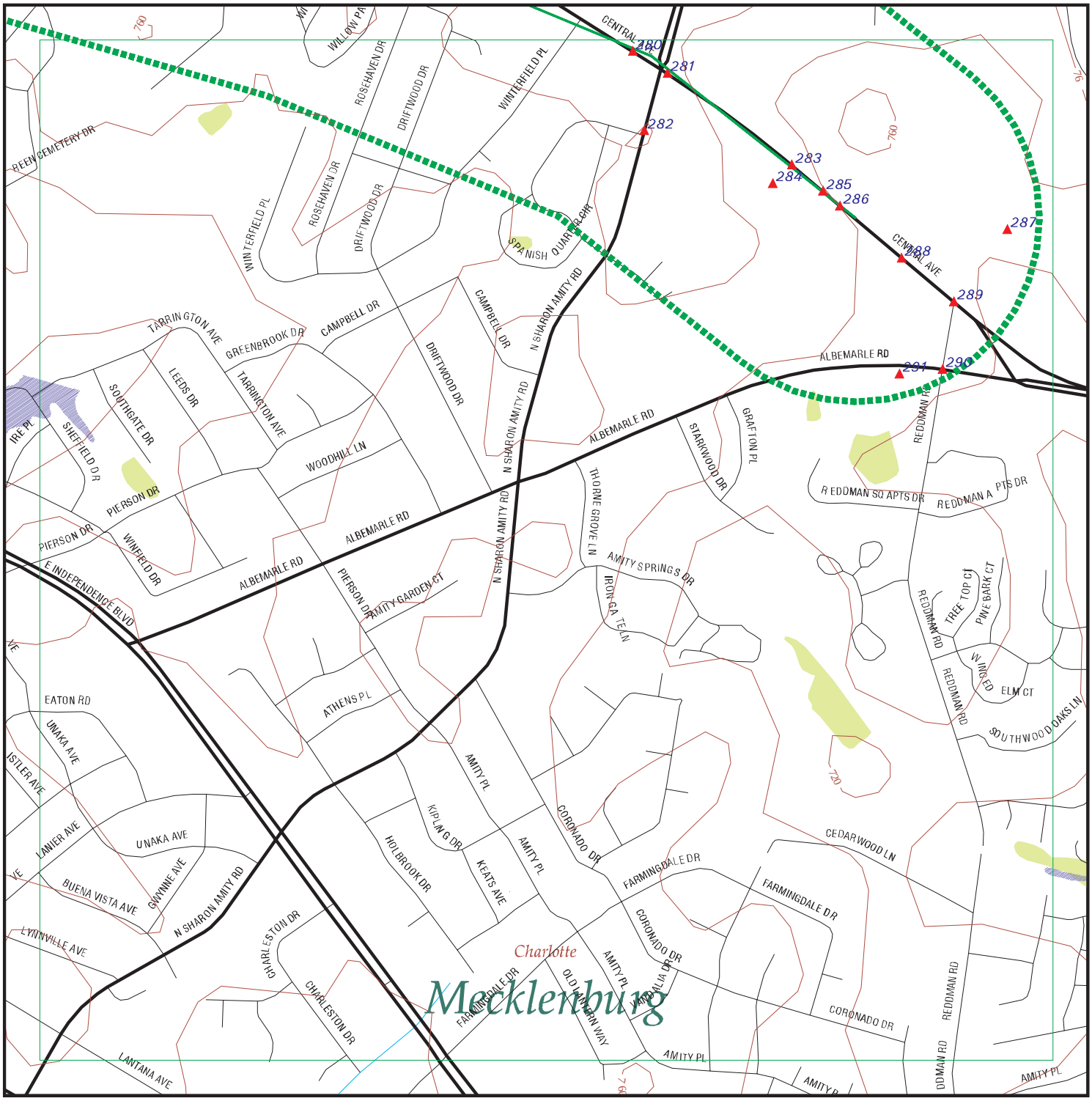
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Scale in Miles

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Focus Map 14



EDR DataMap −Environmental Atlas

Charlotte Center City Streetcar Project

Legend

- Roads
- Major Roads
- Contour Lines
- Wetlands
- Waterways
- Railroads
- Study Boundary
- 100-Yr Flood Zones
- Powerlines
- Pipelines
- Fault Lines
- Federal DOD Sites
- Water
- Superfund Sites
- Indian Reservations BIA
- Listed Sites

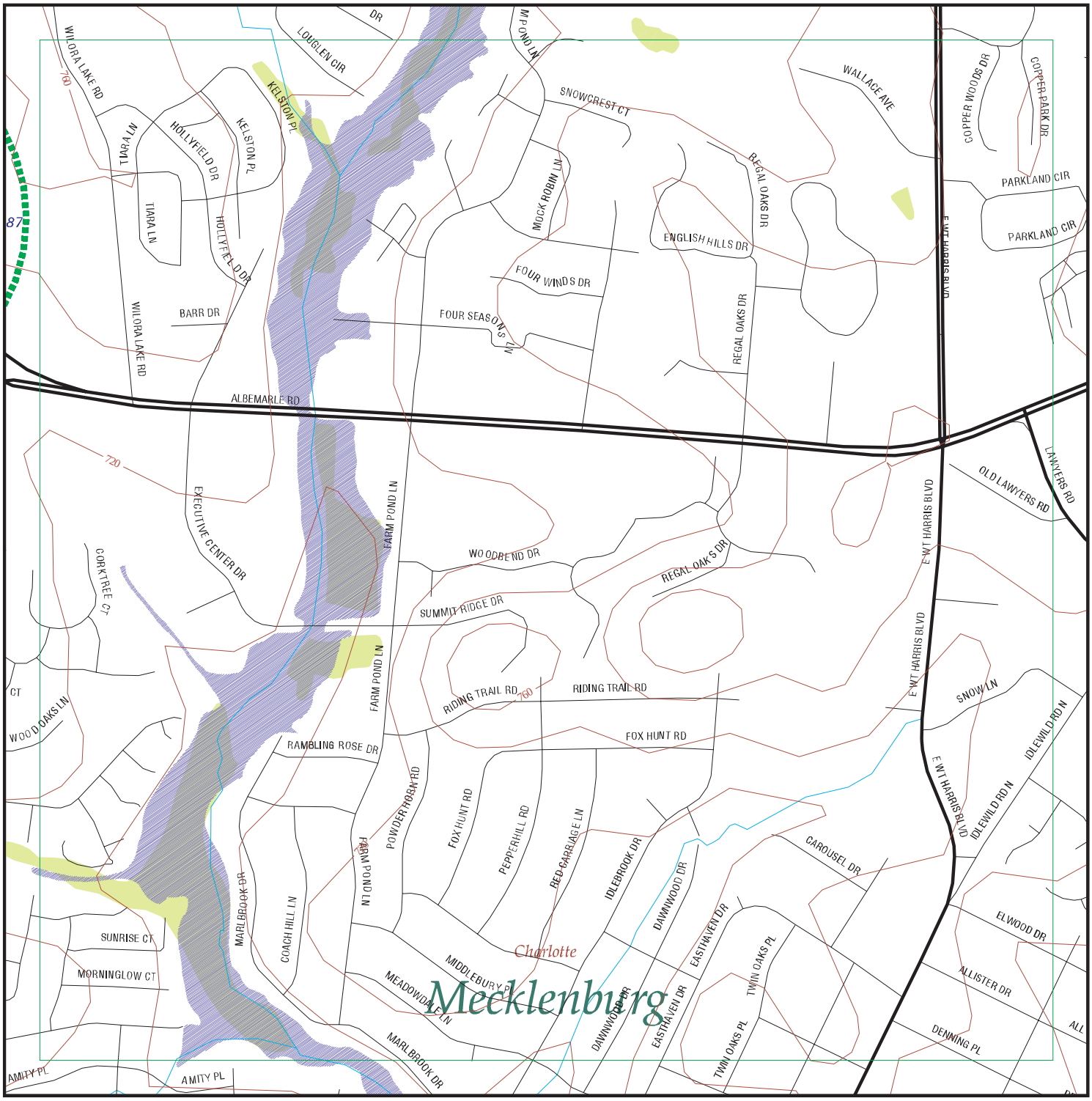
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Scale in Miles

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Focus Map 15



EDR DataMap −Environmental Atlas

Charlotte Center City Streetcar Project

Legend

- Roads
- Major Roads
- Contour Lines
- Wetlands
- Waterways
- Railroads
- Study Boundary
- 100-Yr Flood Zones
- Powerlines
- Pipelines
- Fault Lines
- Federal DOD Sites
- Water
- Superfund Sites
- Indian Reservations BIA
- Listed Sites

N

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Scale in Miles

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Appendix B
Public Involvement Materials

Appendix B-1
Advisory Board Meeting Summaries

CATS Center City Streetcar Project

Meeting: Charlotte Center City Streetcar Project
Advisory Board Meeting – Trade Street Sub-Area Group
Gantt Huberman Architects, PLLC
February 1, 2005
6:00pm – 7:00pm

Team Attendees:		
	Willie A. Noble	Charlotte Area Transit System (CATS)
	Kiera Terrell	CATS
	Stan Leinwand	CATS
	Dave Dickey	URS Corporation (URS)
	Brain Piascik	URS
	Brock LaForty	URS
	Brett Wallace	URS
	Harvey Gantt	Gantt Huberman Architects, PLLC (GHA)
	Grace Mayfield	GHA

I. Introductions

Harvey Gantt opened the meeting with introductions, and welcomed participants. He stated the purpose of the Advisory Board was to act as a sounding board for the Trade Street Streetcar leg. While their input and comments would be given every consideration, the meeting was off-the-record.

Willie A. Noble introduced his team and stated CATS has been charged with reviewing alternate routes for the Streetcar Project.

Dave Dickey introduced the URS team and stated the Advisory Board is a sounding board for ideas and concepts concerning the Trade Street Streetcar project.

II. Agenda

Dave Dickey led the discussion session.

A. Update on current work progress

- Dave Dickey informed the Advisory Board that the public meetings scheduled for the following week had been postponed.
- CATS has requested a review of alternate routes in addition to the Trade Street options

B. Design and Cost Issues

- URS' design philosophy to install the a streetcar system that will have minimal impact from construction and to minimal impact from cost

C. Alternative Options

- The Streetcar team is currently looking at 3rd, 4th, 5th and 6th Streets as couplets
- Early analysis is implying a 4th and Trade Streets couplet has merit

D. Potential Stops

- Two Multi-modal Centers (Graham Street and the Transportation Center)
- Presbyterian Hospital
- Johnson C. Smith University
- CPCC stop located near Elizabeth and Kings
- Elizabeth stop in Grubb Properties Development

III. Question and Answer Session

Question: What is the rationale for creating a couplet on 4th and Trade Streets?

Response: It is primarily a question of due diligence. The couplet analysis will provide a greater defense for placing the streetcar on Trade Street.

Comment: There was concern that 4th Street was too big and too fast.

- The rationale for considering 4th Street was to connect the two transportation centers on either side of the Multi-modal Center.

Comment: Central Piedmont Community College's approved traffic plan is to replace the median with two lanes of traffic and add bike lanes on Elizabeth Street to accommodate the campus.

Question: Is there a preference between curb running and median lane travel?

Response: Parking would be impacted on Trade Street with either system, although more likely with a curb running streetcar. Planted medians are beautiful; would prefer to keep them. Delivery drop-offs and pick-ups would have to reviewed

Question: What will happen with parking on Trade Street?

Response: On-street parking can invigorate Trade Street and surrounding neighborhoods.

- It is worth discussing eliminating parking on Trade Street
- Parking cut-outs may be an alternate to save some parking

- Eliminating parking on Trade would dispose of approximately 100 parking spaces
- On-street parking helped bring Tryon Street back to life. Be mindful to hinder the growth of Trade Street by eliminating all parking options.

  Question: Can the streetcar be curb running in some areas and median running in others?

  Response: Yes. The streetcar may alternate between the two loading options, where necessary. However, this could also confuse auto drivers from a driver expectancy perspective.

IV. Potential Stops

- Stops should remain on Trade Street for safety reasons
- There will be two mandatory stops at the two Multi-modal Centers
- Johnson C. Smith University and Presbyterian Hospital may be initial terminus points
- Potential stops reviewed included:
  - Travis and Elizabeth (in Elizabeth redevelopment area)
  - Kings and Trade (at CPCC)
  - McDowell and Trade Streets
  - Davidson and Trade Sts.
  - In addition to the Trade Street discussion the group also discussed potential stops along 4th Street in case a couplet configuration became the preferred alternative. Couplet stop locations included:
  - On Alexander St.
  - 4th and Davidson
  - Between Tryon and Church Streets.
  - A stop near Trade and Tryon Streets
  - A stop between Graham and Tryon Streets (maybe near Mint and Poplar)
  - A stop at Johnson & Wales University (at the Doubletree)
  - A stop at Sycamore and Trade Streets near I-77

- A stop west of I-77 near the Bo Jangles
- Rozelle Ferry (5 Points) and Trade Streets
- A stop at 5th and Trade to accompany the pending development on West Trade Street
- Future stops may include Montgomery and Bruns Street

V. Future discussion topics

- Potential turn-around locations
- Pedestrian and rider safety issues
- Bridge clearance issues
- The Streetcar Loop in Center City
- Further parking options

The meeting adjourned at 7:07pm.

CATS Center City Streetcar Project

Meeting: Charlotte Center City Streetcar Project
Advisory Board Meeting – Hawthorne/Central Avenue Sub-Area Group
Gantt Huberman Architects, PLLC
February 2, 2005
6:00pm – 7:00pm

Hosts:	Willie A. Noble	Charlotte Area Transit System (CATS)
	Jerry Roberson	CATS
	Kiera Terrell	CATS
	Dave Dickey	URS Corporation (URS)
	Brain Piascik	URS
	Brett Wallace	URS
	Harvey Gantt	Gantt Huberman Architects, PLLC (GHA)
	Grace Mayfield	GHA

I. Introductions

Harvey Gantt opened the meeting with introductions, and welcomed participants. He stated the purpose of the Advisory Board was to act as a sounding board for the Trade Street Streetcar leg. While their input and comments would be given every consideration, the meeting was off-the-record. The meeting was designed to last one hour, but the team would stay as long as needed.

Willie A. Noble introduced his team and encouraged an interactive dialogue between the Advisory Board and the design team.

Dave Dickey introduced the URS team and outlined the following topics of discussion.

II. Agenda

A. Update on current work in progress

- Dave Dickey informed the Advisory Board that the public meetings scheduled for the following week had been postponed.
- CATS has requested a review of alternate routes in addition to the Trade Street options

B. Design and Cost Issues

- URS' design philosophy is to install a streetcar system that will have minimal impact from construction and minimal environmental impact by working within the existing right of way

C. Alignment Options

URS

- Dave outlined alignment types as curb and median running routes

D. Potential Stops

- Dave listed proposed stops along the lines as:
  - Eastland Mall would be a terminus point
  - Presbyterian Hospital

E. CSX crossings and the approach to center city

- This is likely to become a major issue in the routing of the connection from Presbyterian Hospital to Central Avenue.

III. Questions and Answer session

Question: Are Amendment One dollars available to fund this project?

Response: The project is being built to Federal Transit Standards (FTA) so that we could apply for those funds in the future. Amendment One funding is also an option. Willie Noble added that funds from the local ½ cent tax are currently set aside to finance the conceptual engineering for the streetcar project.

Question: Will the Trade Street alternate study delay the project completion date?

Response: No. The study will not negatively impact the schedule of the project.

Comment: There were no concerns regarding the routing of the Central-Hawthorne Corridor. It will run through Plaza-Midwood and it will end at Eastland Mall

A. There was excitement due to the potential for further economic development along the corridor

Question: Is there a preference between curb running and median lane travel? There is a four-lane option available for Central Avenue.

Response: Yes, the team will evaluate curb running and median lane running against a large set of criteria to determine the option that best suits the environment.

Comments:

- Curb running would be more attractive for economic development.
- There is a concern that median running streetcars would stop in the passing lane
- Curbside feels more comfortable because sidewalk boarding is perceived to be safer. It also works for better for the handicapped.

Question: Will buses run along with Streetcar?

Response: The Streetcar would likely replace some of the buses on Central Avenue due to increased rider-ship and the ability to move more people via streetcar.

Comment: Concern was expressed about another designated right of way so close to Independence Blvd. It will require public input.

Question: Would residents be opposed to widening the roads and taking away a lane for transit?

Response: The initial reaction may be negative but promoting the economic development and the positive environment along the corridor would eventually convince residents to support a transit lane.

Comment: There was concern about the negative impact of eliminating the left turn lane to accommodate the streetcar.

Question: Would residents be opposed to lowering the speed limit to help calm traffic?

Response: In general, residents would not be opposed to lowering the speed limit to help calm traffic. It was noted that changing the environment in order to change the behavior of the drivers would be most effective.

Question: How will the streetcar cross the CSX railroad crossings?

Response: CATS will try to avoid crossing at-grade, if possible.

- Bridge structure on Central would require a change in right of way
- It may be necessary to hug Independence to cross CSX; this may cut costs if we are able to share the expense with the Southeast Corridor transit system

IV. Potential Stops

- Typically there are a couple of block between stops
- The stops would be close to the corners of intersections as opposed to between blocks
- Additional stops reviewed included:
  - The Plaza and Central Avenue
  - Between Morningside Drive and Briar-Creek Greenway
  - Eastcrest Drive
  - Briarcreek Road

- Merry Oaks and Eastway Drive
- The Sheridan Shopping Center west of Kilbourne
- A stop west of Lansdale and east of Winterfield
- A stop at Eastland Mall

V. Future discussion topics:

- Potential turn-around locations at Eastland Mall and Presbyterian Hospital
- Trees along Hawthorne may need a lot of pruning to accommodate the hot wire that runs the streetcar
- What the new shelter designs will look like?
- Costs needs to be cohesive for optimal funding

The meeting adjourned at 7:07pm.

CATS Center City Streetcar Project

Meeting: Charlotte Center City Streetcar Project
Advisory Board Meeting – Beatties Ford Road Sub-Area Group
Gantt Huberman Architects, PLLC
February 3,, 2005
6:300pm – 7:30pm

Team Attendees:		
	Willie A. Noble	Charlotte Area Transit System (CATS)
	Jerry Roberson	CATS
	Kiera Terrell	CATS
	Stan Leinwand	CATS
	Linda Murdaugh	CATS
	Brain Piascik	URS Corporation (URS)
	Brock LaForty	URS
	Harvey Gantt	Gantt Huberman Architects, PLLC (GHA)
	Grace Mayfield	GHA

I. Introductions

Harvey Gantt opened the meeting with introductions, and welcomed participants. He stated the purpose of the Advisory Board was to act as a sounding board for the Beatties Ford Road Streetcar leg. While their input and comments would be given every consideration, the meeting was off-the-record.

Willie A. Noble introduced his team and special guest, John Howard, of the Planning Commission who has been assigned the Streetcar Project.

Brian Piascik introduced the URS team and described the goals for the design and the engineering work and environmental studies required.

II. Agenda

Brian Piascik led the discussion session.

A. Update on current work progress

- Brian Piascik informed the Advisory Board of CATS request to review alternate routes in addition to the Trade Street options

B. Design and Cost Issues

- The Streetcar system will be developed within the current right of ways, minimizing disruption to current traffic and businesses and eliminating right of way acquisitions costs.

C. Alignment Options

URS

- Brian spent some time explaining the options of alignment – curbside versus Central Avenue. A heavy discussion ensued with a consensus placed on curbside.

D. Potential Stops

- Johnson C. Smith University
- The end of the line has not yet been determined
- Project Team is fairly certain that phase one will end at Johnson C. Smith Univ.

III. Questions and Answer session

Comment: It is important to maintain and improve the streetscape in order to keep the streetcar beautiful for the long term.

Comment: Curb running supports the idea of beautiful streetscape.

Question: Is the cost of the project comparable to the Light Rail Transit system?

Response: We are still in the conceptual design stages of this project and do not have cost figures at this time.

Question: There was concern about the heavy truck movement to and from Brookshire Freeway and I-85. How will they co-exist?

Response: The same as they do currently. Truck traffic will not be impacted.

Question: How is the Streetcar powered?

Response: The Streetcar is electric and will operate with an overhead wire 18’ above the street.

Comment: There was concern expressed about the safety of the power lines being on the street.

Question: How will the elderly cross a road that has a streetcar on it?

Response: Streetlight control buttons can be placed to safely assist the elderly across busy streets.

Question: What is the timetable for the Streetcar to reach the Beatties Ford Road corridor?

Response: it is not clear when the extensions of the Trade Street Streetcar system will be completed.

Question: What happens when the electrical lines freeze in the winter?

Response: This line is a hot line and doesn't freeze easily.

Question: Is there an opportunity for site visits to completed systems?

Response: Site visits are not within our current budget.

Question: Is there a preference between curb running and median lane travel?

Response: Curb running would leave the new turning lane in place on Beatties Ford Road.

Question: Will it be safe to make left turns onto Beatties Ford Road if the Streetcar uses the middle lane?

Response: Traffic will need to turn right onto Beatties Ford Road until a U-turn can be safely made in designated turning lanes to go in the opposite direction.

Question: What happened to the original streetcar in Charlotte?

Response: People favored their cars, which significantly reduced streetcar ridership. This decline eliminated the use of streetcars. New technology, increased population and traffic issues have caused a resurgent interest in the streetcar and other public transportation options.

Comment: The system of previous years used the curb lane.

Question: Will the stops be programmed into the streetcar or will you have to pull a cord to notify the driver of a stop?

Response: The streetcar will stop at every stop.

Comment: What is the maintenance plan for the streetcar? How often does the system breakdown?

Response: There will be a good, comprehensive maintenance plan in place for the streetcar system. Breakdown experience is different from system to system and is heavily dependent on age of the vehicle, local weather patterns and maintenance practices.

IV. Potential Stops

- Stops should remain on Beatties Ford Road for safety reasons
- Potential stops reviewed included:
    - Five Points (CMC Medical Center)

- Dixon Street
- French Street
- Booker/Oaklawn Streets
- Russell Avenue (near Northwest School of the Arts High School)
- LaSalle Avenue
- Holly Street (near the Library)
- Rosa Parks Place (NW Meck. Medical Facility)

V. Future discussion topics

- Potential turn-around locations: Cindy Lane is the preferred turn around point
- Potential stops if the line is extended out to Cindy Lane
- The end of the line will need to be discussed in depth
- Pedestrian and rider safety issues
- Bury the utility lines along Beatties Ford Road for beautification
- Potential issues with the bridge spanning I-85, specifically the possibility that it cannot accommodate the streetcar.
- Project includes a maintenance facility site evaluation and the group was informed about the public works storage lot just south of Brookshire Freeway and north of French Street as a possible location.

The meeting adjourned at 7:47pm.

SUMMARY OF ADVISORY GROUP MEETING
TRADE STREET CORRIDOR

Date: April 19, 2005

To: Mr. Harvey Gantt

From: Ms. Grace Mayfield

Re: Charlotte Center City Streetcar Project
Advisory Board Meeting – Trade Street/Elizabeth Sub-Area Group
Gantt Huberman Architects, PLLC
6:30pm – 7:30pm

Team Attendees:

Mr. Willie A. Noble, Senior Project Manager; Charlotte Area Transit System
Mrs. Kiera Terrell, Public Information Specialist; Charlotte Area Transit System
Mr. Stan Leinwand; Charlotte Area Transit System
Ms. Linda Murdaugh, Coordinator Assistant; Charlotte Area Transit System
Mr. Howard Landers; City of Charlotte
Mr. Dave Dickey, Vice President; URS Corporation
Mr. Brain Piascik, Transportation Planner; URS Corporation
Mr. Harvey Gantt; Gantt Huberman Architects, PLLC
Ms. Grace Mayfield; Gantt Huberman Architects, PLLC

I. Advisory Board Participants

Seven Advisory Board participants attended the meeting. All participants were informed of the Community Meeting scheduled for Thursday, April 28, 2005, at the Carole Hoeffner Center at 6:30pm.

II. Introduction

Mr. Harvey Gantt opened the meeting with greetings and introductions. He restated the purpose of the Advisory Board as being a sounding board for the Trade Street Streetcar leg. He thanked everyone for their continued support and invited all present to attend and bring friends to the Community meeting scheduled for next Thursday, April 28, 2005 at the Carole Hoeffner Center.

Mr. Willie A. Noble introduced his team and recapitulated the information from the February 1, 2005 Advisory Board Meeting. He, too, invited all to attend the Community meeting next Thursday, April 28, 2005.

Mr. Dave Dickey introduced the URS team and thanked all for attending. He re-oriented the participants to the boards on the wall and on the table. He, too, invited all to attend the Community meeting Thursday, April 28, 2005.

III. Agenda – Mr. Dickey led the discussion session

A. Update since the last Advisory Board meeting

1) CATS and URS studied couplet options running along Trade and 4th Streets as well as Trade and 5th Streets.

2) The investigations focused on curb or median running Streetcars with special attention focused on curb cuts and the difficulties of linking multiple cars, causing traffic issues along the corridors.

3) Considerations for the two 'end of line' conditions had been reviewed and were ready for discussion with the Advisory Board.

B. Design Issues

URS' stated CATS 2025 Plan envisioned the first phase of the Center City Streetcar Project to run out to The Plaza.

End of line conditions were discussed for Presbyterian Hospital and Johnson C. Smith University. The 2025 Plan indicates the east terminus for the first phase would be Central and The Plaza. The west terminus is shown as Johnson C. Smith University.

The East terminus point options include:

1. Turning left onto Hawthorne at Presbyterian Hospital looping around 5th Street back to Elizabeth Avenue.

2. Turning right onto Hawthorne at Presbyterian Hospital looping around 4th Street back to Elizabeth.

3. Central and The Plaza options included:

a. A loop around Commonwealth to The Plaza to Central Avenue

b. Following Hawthorne Avenue to a designated rail lane hugging the north side of Independence Avenue looping around The Plaza back to Central Avenue.

The challenges facing the East terminus locations include the inability to cross the CSX tracks at grade in the Elizabeth Community. This difficult situation could push back the project completion date as well increase the budget by a considerable amount.

Major Elizabeth Avenue tenants such as Grubb Properties and Central Piedmont Community College support traffic calming designs along Elizabeth Avenue.

The West end of the first phase is Johnson C. Smith University. The west end terminus option is to provide a sleeve or "Y" configuration turn-around point in a three lane cross section along Beatties Ford Road.

Boards were presented to display the transit stops along the Elizabeth/Trade Street Corridor that the Advisory Board selected in the February 1, 2005 meeting. Computer graphics were shown to introduce how the Streetcar would run along Trade Street with existing vehicular traffic.

Phase one is expected to be complete in 2009. Dave Dickey reminded the Advisory Board that crossing the CSX lines will remain a major issue for the Streetcar until it is resolved.

All stops will have shelters to protect from the elements and provide riders with a safe place to wait for the next Streetcar.

IV. Question and Answer session

Comment: It will be important to have a signal at every stop for the disabled or physically challenged riders.

Response: Every consideration is being made to accommodate the disabled and physically challenged riders.

Comment: It will be important to graphically show the Public how the Streetcar running using the couplet option would impact their neighborhood.

Comment: Will the buses be moved off Trade Street?

Response: That is unclear at this time. It is not likely that ALL bus traffic will be removed from Trade Street.

Comment: People evaluating this information will ask for information not shown in the drawings. Please try to include the warmth of the human scale in future presentations. Currently the information is very technical and has more engineering aspects than rider-ship vantage points.

V. Future discussion topics

- End of line turn-around options
- CSX crossing issues
- The Streetcar Loop in Center City

The meeting adjourned at 7:37pm.

End Memo

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SUMMARY OF ADVISORY GROUP MEETING
BEATTIES FORD ROAD CORRIDOR

Date: April 21, 2005

To: Mr. Harvey Gantt

From: Ms. Grace Mayfield

Re: Charlotte Center City Streetcar Project
Advisory Board Meeting – Beatties Ford Road Sub-Area Group
Gantt Huberman Architects, PLLC
6:30pm – 7:30pm

Team Attendees:

Mr. Willie A. Noble, Senior Project Manager; Charlotte Area Transit System
Mr. Jerry Roberson, Assistant Project Manager; Charlotte Area Transit System
Mrs. Kiera Terrell, Public Information Specialist; Charlotte Area Transit System
Mr. Stan Leinwand; Charlotte Area Transit System
Ms. Linda Murdaugh, Assistant Coordinator; Charlotte Area Transit System
Mr. Dave Dickey, Vice President; URS Corporation
Mr. Brain Piascik, Transportation Planner; URS Corporation
Mr. Harvey Gantt; Gantt Huberman Architects, PLLC
Ms. Grace Mayfield; Gantt Huberman Architects, PLLC

I. Advisory Board Participants

Nine Advisory Board Members attended the meeting. Two participants were new and were representatives of Johnson C. Smith University. All present were invited to attend the Community meeting scheduled for May 4, 2005 at Johnson C. Smith University's Grimes Lounge at 6:30pm.

II. Introduction

Mr. Harvey Gantt opened the meeting with introductions, and welcomed participants. He reminded all present to attend the Community Meeting scheduled for Wednesday, May 4, 2005. He encouraged the Advisory Board members to bring their neighbors and friends.

Mr. Willie A. Noble reiterated his gratitude to the participants of the Advisory Board and introduced his team. He reminded the members that the project will

proceed within FTA funding guidelines. He, too, invited everyone to the Community Meeting mentioned earlier.

Mr. Dave Dickey reintroduced the project and its impact to the Beatties Ford Road Corridor. He invited everyone to the community Meeting to be held on Wednesday, May 4, 2005 in Johnson S. Smith University's Grimes Lounge.

III. Agenda

Mr. Dickey led the discussion session.

A. Update on current work progress

- Turn-around options at the terminus point at Johnson C. Smith University is currently being investigated. The Pocket option seems to work best on Beatties Ford Road.

- Though the decision to run the streetcar on the couplet alignment has not yet been resolved but it has little impact on the Beatties Ford Road corridor.

B. Alignment Options

- The following three alignment options, along with their pros and cons, are available along the Beatties Ford Road corridor

1. Median Running Option:

Pro – less impact on the curb cuts along Beatties Ford Road

Con – more utilities would have to be moved underground which would be costly.

2. Curb Running Option:

Pro – this option is comparable to existing bus service

Con – The streetcar would run in the turning lane, posing some challenges for right turning vehicles.

3. Three-Lane Option:

Pro – pedestrian friendly environment, promoting traffic calming and reduction. This could also maintain the planted median.

Con – the elderly would still have to cross one lane of traffic to board the streetcar.

D. Potential Stops

- Johnson C. Smith University is definitely a terminus point for Phase I.
- Stops are approximately 1200-1500 feet apart along this corridor.

IV. Questions and Answer session

Question: What's the structural integrity of I-85 overpass at Beatties Ford Road?

Response: The Willie J. Stratford Bridge currently cannot withstand the weight of a streetcar.

Comment: Computer generated pictures are better than the aerial drawings. More photo quality pictures would be helpful.

Question: In the three-lane option, what is the distance on Beatties Ford road that cars will have to exclusively travel behind the streetcar?

Response: Cars will travel behind the streetcar without being able to pass the vehicle one quarter mile near Johnson C. Smith University. This inconvenience will occur for a short period of time while the streetcar loads and unloads passengers.

Question: Are the end-of-the line schemes prioritized?

Response: Not really. They are not ranked.

Question: A strong appeal for CATS to send 3-5 selected members of the Beatties Ford Road Community to experience the ride on the new Portland streetcar system was made by one Advisory Board member.

Response: Mr. Willie Noble clearly stated CATS Streetcar budget simply does not allow for research of that kind. Mr. Gantt recommended videotaping the streetcar experience in Portland and suggested showing the video at the next Advisory Board meeting. This seemed to be widely accepted.

Comment: Please interview the people riding the streetcar so that members of the Advisory Board could hear from the riders.

Comment: It was suggested that we not show all the pictures on the board. One Advisory Board member pointed out that the construction picture may alarm the community unnecessarily regarding lengthy demolition and construction processes.

V. Future discussion topics

- Further study on alignment options
- Turn-around options at Johnson C. Smith University
- Timetable for implementation of the streetcar along this corridor

The meeting adjourned at 7:42pm.

End Memo

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SUMMARY OF ADVISORY GROUP MEETING
HAWTHORNE/CENTRAL AVENUE CORRIDOR

Date: June 14, 2005

To: Dave Dickey

From: Harvey Gantt

Re: Charlotte Center City Streetcar Project
Advisory Board Meeting – Hawthorne/Central Avenue Sub-Area Group
Gantt Huberman Architects, PLLC
6:30pm – 7:30pm

Team Attendees:

Mr. Willie A. Noble, Senior Project Manager; Charlotte Area Transit System
Mr. Stan Leinwand, Transit Planner/Urban Design; Charlotte Area Transit System
Mrs. Kiera Terrell, Public Information Specialists; Charlotte Area Transit System
Ms. Linda Murdaugh, Coordinator Assistant; Charlotte Area Transit System
Mr. Corey Bell; Center City Streetcar Corridor Intern; Charlotte Area Transit System
Mr. Dave Dickey, Vice President; URS Corporation
Mr. James Williams. Planner/Landscape Architect; Neighboring Concepts
Mr. Harvey Gantt, FAIA; Gantt Huberman Architects, PLLC
Ms. Grace Mayfield; Gantt Huberman Architects, PLLC

I. Presentation by CATS/URS Team

Willie Noble opened the meeting with greetings and introductions. The Advisory Board was encouraged to attend and bring neighbors and other concerned citizens to the Sub-Area Public Meeting scheduled for Wednesday, June 22, 2005 at 6:30pm in the Activity Room located in the Eastland Mall.

He thanked everyone for coming out to this very important Streetcar Advisory Board meeting. He then introduced Dave Dickey of URS Corporation who also thanked everyone for attending.

Following introductions, Noble, Dickey, Stan Leinwand and James Williams made presentations. The following is a general description of the presentation.

A. Update on current work in progress

- Willie Noble reviewed again the project scope, the agenda, and updated the group on current work. He noted that no decision had been made regarding the Trade Street Corridor couplet options.

- Stan Leinwand described the agenda and framework for next weeks' Sub-Area Public Meeting.

- He also solicited opinions and ideas on the streetscape, amenities to be located at each stop, and street furniture along the Hawthorne/Central Avenue corridor.

- James Williams' presentation focused on land use ¼ mile radius around each stop, connectivity, traffic calming techniques, station types and development potential. He is currently working with CDOT to address concerns of the surrounding neighborhoods. Land use evaluations and possible changes will not extend into existing single family neighborhoods. The focus will be on areas along the Central Avenue corridor including:

    - Veterans Parks
    - Morningside
    - Briar Creek (The Plummer Property)
    - Eastway

B. Alignment Options

- Dave Dickey reviewed the alignment options discussed in previous Advisory Board meetings. He also noted that CATS is investigating a curb-running alignment option for the Hawthorne/Central Avenue corridor in consideration of maintaining the existing landscaped median.

C. Streetscape Options

- Leinwand presented an overall look at the amenities and street furniture possibilities along the Hawthorne/Central Avenue corridor. The presented styles were Traditional, Contemporary and Historic.

- Streets furniture was described as benches, bollards, lights, trash receptacles, clocks, bike racks and tree planters located along streets that help define its character.

- Examples of street furniture were presented from many Charlotte areas, including:
    - Tryon Street
    - The Government Center Area
    - The Southpark Area
    - CPCC-Elizabeth Avenue Area
    - Gateway Village Area
- Noble made it clear that it is not in the budget to do extensive streetscaping. Trade Street will be awarded most of the streetscaping budget but there will be some funds for the extensions.
- Noble mentioned CATS' "Art in Transit" program where local artists are selected and contracted to provide public art at stops along the CATS transit lines.

II. Questions/Answer with Advisory Board

Question: What is CATS redevelopment geography? How far around the stop or down the street will redevelopment occur?

Response: CATS will focus on one quarter mile radius from the transit stops. The bulk of the streetscape budget will be awarded to Trade Street.

Question: Will "ped-head" (pedestrian-head) signals and detectable warning signals be present at each stop?

Response: Pedestrian signals will be present at most stops.

Question: How would you incorporate culture into a corridor with street furnishings?

Response: The CATS Art in Transit Program artists would try to incorporate the culture of the neighborhood into the art work that would present at designated stops.

Question: Will shelters be covered?

Response: Yes, the shelters will be covered.

Question: Can we partner with the planners of the proposed Greenway to revise Veterans Park?

Response: Yes, we should be able to work with developing plans for the Greenway to improve the Old National Guard Base.

Question: Will the telephone poles in the middle of the sidewalk (visual pollution) be removed?

Response: The Center City Streetcar Project will not bury existing utility lines. There is a petition to City Council to make improvements due to poles and wiring.

Question: Can you e-mail the information out so that we may distribute the information more effectively.

Response: Yes.

Question: Can the presentation be presented in Spanish so that Latino riders can feel more in tune?

Response: Yes. All the literature is offered in Spanish and interpreters will be available subsequent meetings. Many efforts have been made to engage the Latino community in this pre-conceptual process.

Comments:

- Street furniture, i.e., lamp post, benches, receptacles, need to be placed in a straight line. Misaligned placement poses dangers for the vision impaired.
- Please allow for adequate spacing of street furniture for the disabled.
- If the streetscape furniture varies too much there may be no unifying theme along the transit line.
- There is concern as the Plummer Property seeks rezoning it may have a negative impact on the streetcar route.
- Due to poor walk-ability along Central Avenue near Eastland Mall, please provide a safe ramp or pedestrian way to and from the proposed Transit Center.

- Chain pharmacies like Eckerds, and other “faux-pedestrian” entrances, are not preferred along the Hawthorne/Central Avenue corridor. Stores need to be approachable and pedestrian friendly.

- It is important that CATS remain in communication with CDOT as re-zoning is considered for the 13 acres between the Renfro and Plummer properties.

- Eastland Mall needs to be more pedestrian friendly. Please pull it more toward the street.

The meeting adjourned at 7:35pm.

End Memo

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SUMMARY OF ADVISORY GROUP MEETING
TRADE STREET CORRIDOR

Date: June 15, 2005

To: Dave Dickey

From: Harvey Gantt

Re: Charlotte Center City Streetcar Project
Advisory Board Meeting – Trade Street Sub-Area Group
Gantt Huberman Architects, PLLC
6:30pm – 7:30pm

Team Attendees:

Mr. Willie A. Noble, Senior Project Manager; Charlotte Area Transit System
Mr. Stan Leinwand, Transit Planner/Urban Design; Charlotte Area Transit System
Mrs. Kiera Terrell, Public Information Specialists; Charlotte Area Transit System
Ms. Linda Murdaugh, Coordinator Assistant; Charlotte Area Transit System
Mr. Corey Bell; Center City Streetcar Corridor Intern; Charlotte Area Transit System
Mr. Howard Landers; Transportation Planner; Charlotte Department of Transportation
Mr. Dave Dickey, Vice President; URS Corporation
Mr. Francis Reiner; Senior Urban Designer; HNTB
Mr. Harvey Gantt, FAIA; Gantt Huberman Architects, PLLC
Ms. Grace Mayfield; Gantt Huberman Architects, PLLC

I. Presentation by CATS/URS Team

Willie Noble opened the meeting with greetings and introductions. The Advisory Board was encouraged to attend and bring neighbors and other concerned citizens to the Sub-Area Public Meeting scheduled for Tuesday, June 21, 2005 at 11:30am in the St. Francis Auditorium located in the Main Branch of the Public Library 301 N. Tryon Street. He thanked everyone for attending and being active participants as Advisory Board Members. He then introduced Dave Dickey of URS Corporation.

Following introductions, Noble, Stan Leinwand, Fran Reiner made presentations. The following is a general description of the presentations.

A. Update on current work in progress

- Willie Noble reviewed again the project scope, the agenda and updated the group on current work. He noted that no decision had been made regarding the Trade Street corridor couplet alternatives.

- Stan Leinwand described the agenda and framework for next weeks' Sub-Area Public Meeting.

- Following a Power Point Presentation, there will be five break-out sessions designed to address concerns on a smaller block-by-block scale along the Trade Street corridor. The five segments were identified as important areas within the I-77 and the 277 loop. There will be facilitators and a recorder located in each break-out session.

B. Streetscape Options

- Fran Reiner encouraged the public to express their interest and concerns on the two major components of the Trade Street corridor:

    1. Building development – land use along Trade Street

    2. Physical appearance – street furniture and amenities

- What's the great idea about Trade Street? Trade Street has the ability to become a "great southern street". It could have open spaces and small parks with lush landscaping. He then introduced the concept of reactivating the green space in front of City Hall on Trade Street.

- Side streets will have some connectivity to Trade Street in that they may have some of the streetscape features to create a visual connection.

- Leinwand introduced three types of street furniture:

    1. Historic

    2. Traditional (combination with historical and contemporary)

    3. Contemporary

- He stated Howard Landers is working on a way-finding system for Center City Charlotte

II. Question/Answers with Advisory Board

Question: What is the reaction of the Advisory Board if the street furniture were to be the same throughout the corridor and matches up with what's used on Tryon Street?

Answer: We don't want a homogenized theme. We'd want something different and unique for each neighborhood.

Question: The Streetcar Team posed the question is there such a thing as too many trees?

Answer: An Advisory Board member replied, 'yes, when site lines are blocked as driver's approach intersections or when a street is too narrow and the tree canopies block sunlight.

Question: Has CATS investigated the development of the Multi-modal station? Could they investigate restaurants overlooking the Multi-modal station?

Response: The Center City Streetcar Project will have very little to do with the development of the Multi-modal station.

Questions: Are funds allocated for the concepts of lighting and street furniture?

Response: Yes, CATS has funds for these design components.

Question: Will CATS bury the utility lines along the Trade Street corridor?

Responses: It is not part of Center City Streetcar Project budget to bury utility lines.

Question: Will there be outdoor cafes in Third Ward? Will the type of street furniture depend upon the type of foot traffic on the street?

Response: Yes. The street furniture will have to take into account the type of businesses along the corridor. A great southern street is certainly capable of developing establishments that may have sidewalk cafes.

Question: Are their competing philosophies of wide sidewalks and building out to the curb?

Response: No. A Charlotte Center City Planners study focused on three types of streets and sidewalks varying in size and width. The buildings will still have an urban setting. The buildings will be taller to offer the street a

'landscaped room' feeling. Charlotte has uniqueness with its tree-lined streets.

Question: What if all the furniture was the same along the corridor which gains CATS the ability to gain volume discount?

Response: There was no opposition to this idea but all seemed in favor of representing their neighborhoods' uniqueness.

Question: What will happen when a streetcar breaks down?

Response: Streetcars will be transported to the maintenance facility for repairs.

Question: If buses and streetcars operate on the same street, how will buses pick up their passengers?

Response: The buses will accommodate its passengers. If necessary, there are buses that load passengers from both sides of the bus.

Comments:

- The amenities and features designed to make each neighborhood uniquely identifiable is very pleasing.
- Trade Street currently does not have a planned streetscape but we are encouraged to use the amenities we do possess.
- Please square the corners from 4th Street to Trade (i.e., eliminate the connectors). It isolates everyone in the area.
- It should be noted that the handicapped are strongly opposed to the median running streetcar. There is a consistent pattern of *not* delivering on promises to the handicapped.
- CATS will spend time educating the handicapped on the many safety options designed to keep all riders safe.

The meeting adjourned at 7:30pm.

End Memo

SUMMARY OF ADVISORY GROUP MEETING
BEATTIES FORD ROAD CORRIDOR

Date: June 16, 2005

To: Dave Dickey

From: Harvey Gantt

Re: Charlotte Center City Streetcar Project
Advisory Board Meeting – Beatties Ford Road Sub-Area Group
Gantt Huberman Architects, PLLC
6:30pm – 7:30pm

Hosts:

Mr. Willie A. Noble, Senior Project Manager; Charlotte Area Transit System
Mr. Stan Leinwand, Transit Planner/Urban Design; Charlotte Area Transit System
Mrs. Kiera Terrell, Public Information Specialists; Charlotte Area Transit System
Ms. Linda Murdaugh, Coordinator Assistant; Charlotte Area Transit System
Mr. Corey Bell; Planning/Urban Designer Intern; Charlotte Area Transit System
Mr. Dave Dickey, Vice President; URS Corporation
Mr. Chris Ogunrinde, AIA; Neighboring Concepts
Ms. Kelly Miller; Neighboring Concepts
Mr. Luke Volkmar; Neighboring Concepts
Mr. Harvey Gantt, FAIA; Gantt Huberman Architects, PLLC
Ms. Grace Mayfield; Gantt Huberman Architects, PLLC

I. Presentation by CATS/URS Team

Willie Noble opened the meeting with greetings and introductions. After thanking all for attending, he encouraged the Advisory Board members to be open in their feedback. He reminded everyone of the Sub-Area Public Meeting scheduled for Thursday, June 23, 2005 at 6:30pm to be held at Northwest School of the Arts located on Beatties Ford Road. He then introduced Dave Dickey of URS Corporation.

Dave Dickey thanked everyone for attending then spoke briefly about the conceptual design process. Noble added that 10% of design process will be complete at the conclusion of this phase.

Following brief statements, Noble, Stan Leinwand and Chris Ogunrinde made presentations. The following is a general description of the presentations.

A. Update on current work in progress

Stan Leinwand gave an overview of next weeks' Sub-Area Public Meetings. His presentation focused on the streetscape amenities, which includes shelters, benches, trash receptacles and lighting. He briefly described the Power Point presentation which will review the history of the Streetcar in Charlotte and provide a description of the technology to be used with the new streetcar system.

Chris Ogunrinde presented concepts on the land use one quarter mile around the stops. The streetcar is a catalyst for economic development. The connectivity of the stops, sidewalks and pedestrian safety all play integral roles in the planning process of the streetcar.

Willie Noble mentioned the "Art in Transit" program where local artists are selected and contracted to provide public art at stops along the CATS transit lines.

II. Question/Answers with Advisory Board

Question: We have historical and traditional amenities in the area of Johnson C. Smith University, will we maintain that design or will CATS increase the amenities that are already present?

Response: We will listen to all opinions and strive to preserve as much possible. We will continue to work with the community on these decisions.

Question: Will CATS increase the existing streetscape to the cross streets that connect to Third Ward Park?

Response: It is possible. We will discuss these elements more in depth at the Sub-Area Public Meeting.

Question: When will the streetcar actually be in service?

Response: The Streetcar is scheduled to run from Johnson C. Smith University to Presbyterian Hospital or Central and The Plaza in 2009.

Question: Will there be a stop located between West Trade (at the BoJangles) and Gateway Village?

Response: The technology of a stop in that area is challenging but this work is underway.

Question: What accessible features are at each stop?

Response: Pedestrian signs to get people across the street will be located at each stop.

Question: Will these features only be installed at intersections where the streetcar stops?

Response: Where there are no intersections, we will accommodate safe street crossing.

Comments

- Please dignify the icons we've had all our lives by continuing the historic theme of amenities. It spans over time.
- Please consider brightening the I-77 bridge area so that it may become more pedestrian-friendly.
- There is concern of how to mix young urban college students with the "sophisticated urban street people" and the existing elderly of Biddleville.
- The pedestrian scope project is a different project and is already underway for the Beatties Ford Road corridor.
- There is concern about crossing the street at some stops, for example Dixon Street and Beatties Ford Road.
- Please do not put things in the middle of the sidewalk; it's obtrusive to the visually impaired.

The meeting adjourned at 7:30pm.

End Memo

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SUMMARY OF ADVISORY GROUP MEETING
TRADE STREET CORRIDOR

Date: October 31, 2005

To: Dave Dickey

From: Harvey Gantt

Re: Charlotte Center City Streetcar Project
September 20, 2005 Advisory Board Meeting
Trade Street Sub-Area Group
Gantt Huberman Architects, PLLC
6:30pm – 7:30pm

Attendance List:

Mr. Willie A. Noble, Senior Project Manager; Charlotte Area Transit System
Mr. Stan Leinwand, Transit Planner/Urban Design; Charlotte Area Transit System
Mrs. Kiera Terrell, Public Information Specialists; Charlotte Area Transit System
Mr. James ; Transportation Planner; Charlotte Department of Transportation
Mr. Dave Dickey, Vice President; URS Corporation
Mr. Paul Pattison; URS Corporation
Mr. Chad Chandler; URS Corporation
Mr. Dan Thilo; Charlotte Department of Transportation
Mr. Harvey Gantt, FAIA; Gantt Huberman Architects, PLLC
Ms. Grace Mayfield; Gantt Huberman Architects, PLLC

I. Presentation by CATS/URS Team

Willie Noble opened the meeting with greetings and introductions. The Advisory Board was encouraged to attend and bring neighbors and other concerned citizens to the Public Meeting scheduled for Tuesday, September 27, 2005 at 6:30 pm to be held in the new location of the Council's Chambers at the Government Center. He thanked everyone for attending and being active participants as Advisory Board Members.

He informed the Advisory Board of the major milestone the Streetcar Project experienced since the June meetings. It has been determined that bi-directional operation on Trade Street will best suit the Center City Streetcar Project. The Key Business Executives (KBE) concurred with these findings. Furthermore, the

Streetcar will operate a hybrid alignment, that is, curb-running and median running operations.

Noble explained the third phase of the project had been renamed. Formerly known as 'the circulator or spider', the new name for the third phase will be referred to as 'the spokes'. There will be four spokes emanating from the Trade Street Streetcar. Each of the spokes is designed to connect surrounding downtown neighborhoods with Center City. The five spokes are:

i. 1st ward to Belmont

ii. 2nd Ward to Midtown

iii. Third Ward

iv. Fourth Ward (on Graham Street)

He also explained that CATS is investigating numerous sites for the location of a maintenance facility. CATS would need a two and one-half acre site to accommodate a facility for the streetcar system. The maintenance facility will be designed to park, house cars, clean and repair streetcars. The facility will be designed specifically for streetcars and will not be designed to accommodate light rail vehicles. It would be desirable if this facility could be accessed within a quarter-mile distance of the main line of track.

It is still not determined which of the two extensions, Hawthorne/Central Avenue and Beatties Ford Road will be built first.

Conversations with landowner, Monty Richie, are progressing. Monty Richie is the land owner who may assist the Streetcar project in its dilemma of cross the CSX lines on the Hawthorne/Central Avenue corridor.

Noble then explained in detail CATS intention to apply for Small Starts funding. Congress recently passed a new program for the funding of transit projects that are less capital intensive. The Center City Streetcar Project is in great shape to apply for these funds. There are currently four criteria for Smart Starts qualifications:

1. Streamline process for applying for a shorter timeframe for response

2. Cost effectiveness

3. Land use

4. Local economic development.

Noble stated Ron Tober is committed to positioning CATS to be among the first applicants for Smart Starts funds. He noted the maximum amount of funds for which CATS may apply from the Small Starts Program is $250 million. Regulations for the program have not yet been completed but will be implemented by the end of 2006. CATS' application will be submitted for process in 2006.

He reviewed the process of the Public Meeting scheduled for September 27, 2005. The meeting will be held in Council's Chambers where a 25-30 minute Power Point presentation will take place followed by a question and answer session immediately following the presentation. The public will then be invited to visit three break-out rooms that will have boards displaying all three phases of the project. Mr. Noble then introduced Dave Dickey of URS Corporation.

Mr. Dickey informed the Advisory Board that the public meeting will be the forum for unveiling the draft for the conceptual design for all three phases of the Center City Streetcar Project. He introduced a new Trade Street stop near Davidson. He confirmed that the Streetcar will be curbside running on Beatties Ford Road and Central Avenue. The Streetcar will be median running in the area of Johnson & Wales University.

He then introduced many of the boards which will be present to display the conceptual design to date. Many comments and questions were raised regarding the display boards and the type of information that would be depicted in the final presentation. Many of those questions and comments are shown below.

Harvey Gantt recapitulated the purpose and role of the Advisory Board's role in the process of bringing the streetcar back to Charlotte. He asked that all Advisory Board members please attend the public meeting and bring as many interested neighbors and friends as they would like.

II. Question/Answers with Advisory Board

Question: Is it possible to use the light rail facility for maintenance on the streetcars?

Answer: No. The light rail maintenance facility is designed to accommodate the repair and maintenance of the light rail vehicles for the South Corridor and possibly the Northeast Corridor as well.

Question: Will Trade Street (Phase I) be operational before the extensions have been installed?

Answer: Yes. The Red Line will be up and running before construction begins on either extension in Phase II.

Question: Being that we only parallel the CSX tracks ¼ mile, how likely is it that the Phase 1 will go out to Plaza-Midwood in the first Phase? Can't we go over the tracks?

Response: There will be no structure erected on Central Avenue to transport the streetcar over CSX tracks. However, a new bridge over the CSX is being explored and it is still likely that Phase I could make it out to Plaza-Midwood.

Questions: What if the Southeast Transit line wants to use Trade Street?

Response: Trade Street cannot accommodate everything. If the Southeast Transit line wants to use Trade Street, then we will have to reconsider where the Streetcar will run. The Southeast light rail line is one year out from making that decision. We will not wait, we will proceed.

Question: Can the maintenance facility be built along the 'Spoke' configuration route, though it is the last phase?

Responses: Yes, the maintenance facility can be located along the 'Spoke' route. CATS is investigating several sites throughout the transit corridors that may accommodate this type of facility.

Question: Is the Streetcar project working with the West Corridor Project?

Response: Yes. The Streetcar and West Corridor are sharing information and collaborating.

Question: Will there be audible announcement on the streetcar?

Response: Yes, there will likely be audible announcements on the streetcar.

Question: What amenities are different at a streetcar stop then a bus stop?

Response: There are no steps on a streetcar. There are extra wide doors and a level bridge plate designed to accommodate wheelchairs and strollers. There will likely be fare-boxes on the platforms where passengers will pre-pay their fare to board the streetcar.

Question: What is the decision regarding a traffic circle at CPCC?

Response: The traffic operations study concluded that the proposed roundabout does not work well from the streetcar standpoint. The streetcar would operate better through the roundabout as apposed to

deflecting around the roundabout. As a result, the proposed statue/green space in the middle of the roundabout concept would conflict with the better streetcar alignment.

Question: How long does it take to run from one end of the line to the other?

Response: That has yet to be determined. The streetcar will stop at every stop whether someone is waiting to board or exit the streetcar or not.

Question: Will there be a new signal re-introduced at Pease Lane and Elizabeth Streets?

Response: The signal at Pease Lane will return as a pedestrian signal only.

Comments:

- Hawthorne will continue the road diet from Elizabeth.
- Please illustrate the end points better for next week's Public Meeting.
- Please show the audible signals and traffic signals at next week's Public Meeting.
- Color contrasting might help the public read the boards better.

The meeting adjourned at 7:50pm.

End Memo

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SUMMARY OF ADVISORY GROUP MEETING
HAWTHORNE/CENTRAL AVENUE CORRIDOR

Date: October 31, 2005

To: Dave Dickey

From: Harvey Gantt

Re: Charlotte Center City Streetcar Project
September 21, 2005Advisory Board Meeting
Hawthorne/Central Avenue Sub-Area Group
Gantt Huberman Architects, PLLC
6:30pm – 7:30pm

Team Attendees:

Mr. Willie A. Noble, Senior Project Manager; Charlotte Area Transit System
Mr. Jerry Roberson; Assistant Project Manager; Charlotte Area Transit System
Mr. Stan Leinwand, Transit Planner/Urban Design; Charlotte Area Transit System
Mrs. Kiera Terrell, Public Information Specialists; Charlotte Area Transit System
Ms. Linda Murdaugh, Coordinator Assistant; Charlotte Area Transit System
Mr. Dave Dickey, Vice President; URS Corporation
Mr. Chris Ogunrinde; Partner; Neighboring Concepts
Mr. Eric Orozco; Planner/Landscape Architect; Neighboring Concepts
Mr. Harvey Gantt, FAIA; Gantt Huberman Architects, PLLC
Ms. Grace Mayfield; Gantt Huberman Architects, PLLC

I. Presentation by CATS/URS Team

Willie Noble opened the meeting with greetings and introductions. The Advisory Board was encouraged to attend and bring neighbors and other concerned citizens to the Public Meeting scheduled for Tuesday, September 27, 2005 at 6:30pm in Council's Chambers located in the Government Center.

He updated the Advisory Board on the latest developments regarding the Trade Street operations for phase one. He informed the Board that the Center City Streetcar will operate bi-directionally on Trade Street. Now that CATS has established how and where the streetcar will operate, it will finalize the conceptual design and prepare to apply for federal funding through the Federal Transit Administration's (FTA) Small Starts program. The Small Starts program is a federally funded program created for projects for like the Center City Streetcar Project. Designed to encourage cities to expand and improve their existing transit

programs, Small Starts is ideal for low-cost improvement projects like the streetcar.

Noble then introduced Dave Dickey of URS Corporation who encouraged Advisory Board Members to attend next Tuesday's Open House to review the Conceptual Design phase of the project. He reviewed the format of the Public Meeting which would include a 25-minute Power Point presentation followed by a question and answer session. The public will then be invited to visit three break-out rooms that will have boards displaying all three transit corridors along the project. The CATS team will be present to answer any questions and will be seeking feedback from all who attend either by answering questions or filling out comment cards.

Dickey informed the Advisory Board that CATS has not finalized the end of the line for the Hawthorne/Central Corridor. It is still unclear as to whether the line will end at Presbyterian Hospital or Plaza-Midwood. However, he did mention that an additional stop will be added to the Trade Street corridor as suggested by the Key Business Executives (KBE). The additional stop will be located at McDowell Street, and the Alexander Street stop will be moved to the west near Davidson Street.

Willie Noble explained the process of how the funding through Small Starts program will be installed. The Small Starts program doesn't have regulations in place to date. CATS is poised to apply immediately for these funds when the regulations are implemented. They are working with a Community Streetcar Coalition to prepare the application. There are three criteria that FTA will be looking for in all applications:

i. Cost effectiveness of the project

ii. Land use surrounding the project

iii. Local economic development potential associated with the project

CATS anticipates the Center City Streetcar Project will be used a model project for East Coast projects applying for FTA funding. Charlotte was recently mentioned in all the transit expansion workshops in a nationwide transit convention in Salt Lake City, Utah.

Dave Dickey showed the Advisory Board Members the boards that will be displayed in the break-out sessions in the public meeting. He mentioned that the third phase of the project, formerly referred to as the "circulator" has been renamed the "Spokes" portion of the project. There are four spurs that will take originate in the Uptown area:

i. First Ward to the Belmont area

ii. Second Ward to the Midtown area

iii. Third ward to the Morehead area

iv. Fourth Ward to the Graham Street area

He displayed a board showing three alternatives that may be possible for the end of the line that may loop around at the Plaza-Midwood terminus point. He also stated that stops were designed to occur between traffic lights. There is one exception along the Trade Street corridor; Johnson and Wales University's stop is at the traffic light.

Stan Leinwand interjected that the names for the stops on the boards are 'place-holders' only. Official names will be assigned through a naming process at CATS.

Chris Ogundrinde of Neighboring Concepts reviewed boards that graphically displayed the streetcar stops. The boards depicted areas that had potential for redevelopment or future opportunities for redevelopment surrounding the stops. He pointed out areas that lacked sidewalks and expressed the desire to fit sidewalk improvements in the streetcar project budget. He showed how bike lanes maneuver around the loading platforms of the streetcar. Please note the boards show future development opportunities and be out as far as twenty years.

Willie Noble ended the meeting with an updated calendar stating we will come back to the public in early 2006 with the completed conceptual design. Immediately following those meetings CATS will prepare their application for FTA funding. He noted CATS will get this right the first time; there is no room for errors in this new process.

II. Questions/Answer with Advisory Board

Question: Will there be an audible button with lights around it for the handicapped?

Response: Yes, there will be audible buttons with lights for the handicapped.

Question: Will the sidewalks be torn up to accommodate loading platforms for board the streetcar?

Response: Yes. The sidewalks will be reconstructed to accommodate the 4" differential in the platform and sidewalk needed to board the streetcar.

Question: Was the 'spurs' or 'spoke' plan created after the original plan was implemented?

Response: There was always a last phase to the project, it was once referred to as the 'circulator'. The 'spoke' plan is the 'circulator' plan further developed.

Question: Were there political conversations that took place that sparked the 'circulator' plan to spread out to a 'spoke' plan?

Response: No, there was no political input in regards to improving the circulator plan. Further research showed that a closed loop plan did not meet the needs of the citizens.

Question: Are there accessible pedestrian signals?

Response: Yes, we are doing all we can to address the required ADA design requirements. If we are to receive federal funding, we would have to be ADA compliant.

Question: The audible voices on the buses are loud. Will the streetcar audible features be quieter?

Response: Yes. The volume on the audible features of the streetcar can be lowered.

Question: Will ALL the stops have the assistance aides for the handicapped?

Response: Yes, the system will be uniform from one end to the other.

Question: Is there a price break for which we must follow to qualify for the federal funding?

Response: Yes. Small Starts project cannot exceed $250M. FTA will only fund a portion of the total cost of the project.

Comments:

- One Advisory Board member likes the streetcar stop that will take place in front of her property.
- Citizens of the Central Avenue area doubt that the streetcar will actually be built.
- Lansdale is misspelled on the map.

- Please note: ADA compliance is not federally controlled or required. The city would have to make the choice to be compliant. Federal dollars would not require all that is needed to make the streetcar accessible.

- Please improve the graphic spacing of the wording on the boards.

The meeting adjourned at 7:35pm.

End Memo

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SUMMARY OF ADVISORY GROUP MEETING
BEATTIES FORD ROAD CORRIDOR

Date: October 31, 2005

To: Dave Dickey

From: Harvey Gantt

Re: Charlotte Center City Streetcar Project
September 22, 2005Advisory Board Meeting
Beatties Ford Road Sub-Area Group
Gantt Huberman Architects, PLLC
6:30pm – 7:30pm

Hosts:

Mr. Willie A. Noble, Senior Project Manager; Charlotte Area Transit System
Mr. Jerry Roberson; Assistant Project Manager, Charlotte Area Transit System
Mr. Stan Leinwand, Transit Planner/Urban Design; Charlotte Area Transit System
Mrs. Kiera Terrell, Public Information Specialists; Charlotte Area Transit System
Ms. Linda Murdaugh, Coordinator Assistant; Charlotte Area Transit System
Mr. Dave Dickey, Vice President; URS Corporation
Mr. Chris Ogunrinde, Partner; Neighboring Concepts
Ms. Kelly Miller; Neighboring Concepts
Mr. Harvey Gantt, FAIA; Gantt Huberman Architects, PLLC
Ms. Grace Mayfield; Gantt Huberman Architects, PLLC

I. Presentation by CATS/URS Team

Willie Noble opened the meeting with greetings. The Advisory Board members were encouraged to attend the Public Meeting scheduled for Tuesday, September 27, 2005 at 6:30pm at the new location of Council's Chamber's in the Government Center.

In his opening remarks, Noble informed the Advisory Board members that the streetcar will operate bi-directionally on Trade Street. CATS, CDOT ad Key Business Executives agreed that this would be the most efficient operation of the streetcar through Center City Charlotte.

He stated, the federal government passed a long awaited transportation bill where funding will be available from the Federal Transit Administration (FTA) for small transportation projects. The program, named the Small Starts program, is

designed to fund smaller transit capital investments. The funding break down for the Center City Streetcar Project will look like this:

- 50% of the funding would be federal funding through Small Starts funds
- 25% of the funds will come from local funding
- 25% of the funds will be state funds

The Small Starts Program under the FTA has not completed its regulation process but CATS will have some input on the regulatory process. Currently, there are only three cities that are in a position to apply for these funds. Charlotte is in an outstanding position to receive federal funding. CATS will apply for these funds in 2006. At that time, 10% of the design process will be completed.

Willie Noble then introduced Dave Dickey of URS Corporation. Mr. Dickey thanked everyone for attending then provided an overview of the presentation boards that will be on display in the public meeting. He stated that the primary objective of the public meeting is to provide feedback on the proposed final alignment. The streetcar team is looking for feedback as to whether the proposed concept is well received by the public. If the answer is positive, then CATS can go into the next design phase with the confidence that they are meeting the community's needs for this project.

The next public meeting will be held in mid-January 2006. At that time, CATS will present a cost estimate for the project and confirmed timeline for engineering design and installation of the streetcar. The buy-in at the time will signal full support from the community.

Chris Ogunrinde presented boards that showed the stops, potential redevelopment sites and the sidewalks within one quarter mile of the stops. The streetcar is a catalyst for economic development. The connectivity of the stops, sidewalks and pedestrian safety all play integral roles in the planning process of the streetcar.

II. Question/Answers with Advisory Board

Question: Will this budget allow for the Beatties Ford corridor to extend out to Cindy Lane?

Response: No, funding is based off the conceptual design that in currently in place. The Beatties Ford Road tracks are designed to stop at Rosa Parks Drive near I-85.

Question: Does better ridership and lower cost advance the argument that Beatties Ford Road corridor would be built first?

Response: In determining priority, affordability will be a criterion. Both extensions want to be accelerated but this cannot be determined in the conceptual design phase. The project is phased due to economical constraints.

Question: When will the streetcar actually be in service?

Response: Phase 1 of the Streetcar is scheduled to run from Johnson C. Smith University to Presbyterian Hospital or Central and The Plaza in 2009.

Question: What areas are being considered for the maintenance facility?

Response: There is some state owned land near I-77 that CATS is looking into purchasing for future use. The most attractive area identified today is acreage located near I-277 off Cedar Street. However, other sites are also being considered.

Question: What accessible features are at each stop?

Response: Pedestrian signs to get people across the street will be located at each stop. Ramps and pavement texture changes will also assist those who are visually challenged.

Question: Has CATS incorporated the city approved pedestrian-scape plan for the Beatties Ford Road corridor?

Response: No, not yet. CATS will investigate that report at the appropriate time.

Question: Will there be cameras on the streetcar for security?

Response: Yes, it is likely that cameras will be on the streetcar.

Question: Will federal funds be available from Homeland Security for the security component of the project?

Response: CATS is not sure about that will look into the possibilities.

Question: Will the streetscape be consistent throughout the project?

Response: Yes, it is the intent of CATS to make sure the streetscape is consistent throughout the project.

Comments:

- Beatties Ford residents were very clear that CATS should not look to use the water treatment plant as a location for the maintenance facility for the streetcar.

- It was concern that the quality of the streetscape would differ from one side of town to the other and may not be equally distributed. CATS' representatives replied that the amenities will be consistent throughout the corridor.

- There is solid support for this project, as planned, from the Biddleville and Smallwood communities, as well as other neighborhoods in the Beatties Ford Road corridor.

The meeting adjourned at 7:45pm.

End Memo

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Appendix B-2
Community Workshop Summary

Gantt Huberman Architects PLLC 500 North Tryon Street, Charlotte, NC 28202 704.334.6436 tel 704.342.9639 fax www.gantthuberman.com

SUMMARY REPORT – FIRST COMMUNITY WORKSHOP
CATS CENTER CITY STREETCAR PROJECT

To:	Dave Dickey, PE, Project Coordinator; URS Corporation
From:	Harvey B. Gantt, FAIA; Gantt Huberman Architects
Workshop Date:	November 18, 2004
Location:	Charlotte Government Center
Time:	6:00 p.m. – 8:00 p.m.
Prepared:	November 29, 2004

I. Public Notification

The community was notified of the initial streetcar workshop primarily through notices in the newspaper and post card mail outs. The stakeholders who participated in the interview sessions held in October, were contacted by personal letters and invited to attend. We also made selected phone calls to business and neighborhood leaders. Approximately 1,500 post cards, 42 personal letters, and 30 direct phone calls were made in an eight-day period prior to November 18.

II. Attendance

The workshop attendance was approximately 80 persons including consultants, city officials and media. The sign-up sheet totaled 56 persons representing business, institutional and neighborhood leaders. Twenty-eight (28) of the signees to the workshop identified themselves as living in the four (4) primary sub-areas that are impacted by the proposed streetcar route. Non sub-area citizen attendees expressed a general interest in the overall development of the city – or the overall development of the CATS transit program. All attendees expressed some interest in attending follow-up meetings related to the streetcar development. (See attached attendance list).

III. Meeting Format

The workshop was structured with an opening introductory session, followed by four breakout sessions set up around the geographical and phasing projected for the streetcar route. A concluding joint session with

all attendees summarized the work of the four breakout groups. The overall time was approximately two hours starting at 6:00 p.m.

IV. Introductory Sessions

The attendees were greeted with an introduction and general description of the streetcar project by Willie Noble, project manager for CATS. Dave Dickey of URS Corporation introduced consultant design team members and followed with an historical perspective on streetcar development in the U.S. describing generally the changing technology and cities around the country that were using, or planning to build, streetcars as a part of their transit network. Mark Dorn, of URS, described in some detail the Portland, Oregon streetcar project.

A question and answer period followed in which audience participants raised issues on streetcar technology, i.e. lane-of-travel, mixing with autos, streetscape improvements, and burial of utilities.

Willie Noble concluded the session with instructions for breakout sessions.

Visual Support: Power Point Presentation

V. Breakout Sessions

The workshop structured four (4) breakout sessions based on route of streetcar travel and sub-area neighborhood. The four sub-areas were:

Beatties Ford Road – from I-85 to I-77 / Trade Street

Trade Street – from Gateway Village (I-77) to Government Center

Elizabeth Avenue – from CPCC to Hawthorne Lane (Presbyterian Hospital)

Hawthorne Lane to Central Avenue (Eastland Mall)

A facilitator who was assisted by an assistant to record the comments of the audience led each sub-area. All sub-area groups used visual support material that defined the route of the proposed streetcar, identified land uses along the corridor and showed issues, opportunities, and constraints to real estate development that might be influenced by the streetcar addition.

In summary, in all four breakout sessions, the participants reported positive feedback and support for the streetcar project. Notwithstanding the clear support, each session raised its own unique set of issues and citizens seemed to make it clear that they wanted to protect their

neighborhoods from any future circumstances where transportation (by auto or transit) or real estate development would negatively impact their communities. A description of sub-area concerns recorded in the meeting is given in sections VI through IX below.

Visual Support: Power Point Presentation
30 x 42 colored maps

VI. Beatties Ford Road Corridor

Ten members of the Beatties Ford Road community came out to voice their opinions on the streetcar system. Streetcar stops, historic landmarks, the maintenance facility and predictability and safety of the streetcar system were the primary issues discussed.

The stakeholders are concerned about the phasing of the project. They do not want the Beatties Ford Road phase to be last. These stakeholders are willing to participate in the design process so the streetcar system can directly serve their community's needs. Several safety concerns were raised, i.e., job training, related to the operation of the streetcar, appropriate buffers to protect residents, and their property and traffic merge problems at the Interstate and interchange points.

Stakeholders recognize there may be rezoning required for redevelopment of certain areas along their corridor and would like to be involved in these decision making discussions. However, it has been requested that the streetscape and land uses remain consistent with what is planned for the area.

Johnson Smith University welcomes the first terminus point of the streetcar and is most interested in the infrastructure of the streetcar system as it has a fiber optic network operating under Beatties Ford Road.

VII. Trade Street Corridor

The sixteen Stakeholders representing the Trade Street Corridor sub-area group discussed parking, the multi-modal station, the Gold Rush service and traffic pattern issues.

Residents of the Third and Fourth Wards expressed concern in maintaining the integrity of the historic buildings located in these neighborhoods throughout the redevelopment and construction of the project. The aesthetics of these historic neighborhoods is not to be comprised with overhead wiring and other unsightly changes.

The stakeholders of the Trade Street Corridor had an overall concern in the improvements of the transit system. Transit oriented questions included the distance between rails, the distance between stops, and the number of streetcars that will run simultaneously and the location of the multi-modal station. Stakeholders spoke favorably of the Gold Rush and suggested that the Gold Rush system operate as the connecting loop for the Streetcar System. There was also a desire to have ADA compliant streetcars.

There is concern that implementing traffic calming measures on Trade Street will cause unsolicited traffic problems on the adjacent thoroughfares, i.e., 4th and 5th Streets. As redevelopment and retail shopping increase, stakeholders insist that the parking component not be neglected. Special attention will need to be paid conflicting loading zones with curbside loaded streetcars.

Most stakeholders expressed concern about the existing streetscape being altered or removed. There is a general consensus that the streetscape should not be altered to accommodate new development.

VIII. Elizabeth Avenue Corridor

Approximately eleven Elizabeth Avenue stakeholders attended the workshop. Connectivity, prominent stops, safety and development were the major concerns of this sub-area group.

The Elizabeth Avenue redevelopment project will benefit most from the streetcar system. There should be a stop in this area as well as Central Piedmont Community College, Presbyterian Hospital with connectivity to Mercy Hospital near 5th and Hawthorne.

Safety concerns included the overhead wiring, the streetcar turnaround and accessible pedestrian signage for the corridor. This sub-area group prefers a curb-loading streetcar for safety and accessibility reasons. On board information system for ease of use was also requested.

Park-and-Ride parking lots would be welcome along this corridor. Overall the Elizabeth Avenue stakeholders are enthusiastic about the implementation of the streetcar as a part of their neighborhoods overall growth and development.

IX. Hawthorne/Central Corridor

Approximately fifteen people represented the stakeholders of the Hawthorne/Central sub-area group. The issues discussed focused

primarily on the positive impact the streetcar would have on their community. Among these issues were locations of important stops, streetscape concerns, pedestrian safety.

Among the stops discussed, Flynwood, Plaza Road and the Briar Creek Greenway system are favored as primary streetcar stops.

There is currently a new streetscape along the Central Avenue corridor and there is concern how the addition of the streetcar may negatively impact this improvement. Culvert Avenue may also prove to be challenging for construction along this corridor.

Stakeholders of this corridor expressed an interest in the connectivity with the Bus Rapid Transit system, designed to run along Independence Avenue, and the Southwest Corridor Light Rail Transit system. This connection would be viewed as a catalyst for traffic calming, increasing pedestrian safety. Well lit, universal street crossing signs should also be added to increase safety at all intersections.

The potential redevelopment and reconfiguration of Eastland Mall was discussed, as well as the possibility of Internet connectivity on the streetcar.

Overall, the eastside residents and stakeholders are excited about the Center City Streetcar Project and would like to bring the system to their area ahead of the proposed schedule presented by CATS.

X. Concluding Session

Willie Noble reconvened the workshop at approximately 7:15 p.m. He reiterated the schedule of upcoming events, stressing the sub-area workshops to be brought to the various neighborhoods in 2005. He identified key contacts in CATS, namely Kiera Terrill, public information officer.

Each sub-area group chose a citizen representative to report on the discussion of their respective group. Little in the way of discussion followed these presentations.

The workshop adjourned at approximately 8:00 p.m.

Enclosure: Attachment "A" – Citizen Attendance List

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Appendix B-3
Interview Questions and Summary

Stakeholder Interview

Date: _____ Time: _____

INTERVIEW WITH:

Name: _____

Company/Neighborhood: _____

Address: _____
_____

I. CHARLOTTE ISSUES

1. **Compared to other cities, how would you rate your ability to move around/travel within Charlotte?**
   _____ very easy
   _____ easy
   _____ same as other comparable cities
   _____ difficult
   _____ very difficult

II. BUSINESS LEADERS OR GOVERNMENT OFFICIALS

2. **In general, how do you/your employees travel to work?**
   _____ Auto
   _____ Public Transportation
   _____ Other

3. **Are there incentives offered by your company/agency for alternative commute options?**
   _____ yes
   _____ no
   If yes, what type_____

III. NEIGHBORHOOD LEADERS

4. **In your opinion, how has your neighborhood been affected by public transportation? Would you describe your neighborhood as one that has been affected positively, negatively or remained stable?**
   _____
   _____
   _____
   _____

5. **In your opinion, would increased public transportation services benefit your neighborhood?**
   _____ yes
   _____ no
   If yes, what would these increased services be?
   _____
   _____

Stakeholder Interview

Date: _____ Time: _____

IV. PUBLIC TRANSPORTATION

6. **How would you rate the city's traffic condition on a scale of 1 to 5, with 1 being very poor and 5 being very good?**
   _____ 1 very poor
   _____ 2 poor
   _____ 3 average
   _____ 4 good
   _____ 5 very good

7. **What do you think are the biggest transportation needs to support future growth in Charlotte? (Transit; Streets and roads; Parking; Pedestrian Facilities; Bicycle Facilities)**
   _____
   _____
   _____

8. **What means of transportation do you use to get to work?**
   _____ Auto
   _____ Public Transportation
   _____ Other

9. **How much time does it take to travel to work?**
   _____

10. **Would you consider alternate means of transportation for your commute?**
    _____ yes
    _____ no
    _____ maybe

11. **What characteristics of a transit system would make it more appealing to you?**
    _____ type of transit vehicle
    _____ speed
    _____ destinations (routes traveled)
    _____ convenience (stop locations, schedule, flexibility, user-friendly, frequency of stops)
    _____ comfort
    _____ cleanliness
    _____ safety

V. TRADE STREET STREETCAR PLAN

12. **CATS is planning a new streetcar system to run from I-85 & Beatties Ford Road at the west end to Eastland Mall at the east end using Trade Street, Elizabeth Avenue, and Central Avenue. Do you view this development as a positive for Charlotte?**
    _____ yes
    _____ no, why? _____
    (If no, skip to last question)

13. **What concerns do you have about building a streetcar along Trade Street?**
    _____
    _____
    _____

Stakeholder Interview

Date: _____ Time: _____

14. Would you use the streetcar?
_____ yes
_____ no
If yes, for what purposes?
_____ work
_____ special events
_____ daily activities (lunch, dinner, etc.)
_____other

15. How much time does it take to travel to work?
_____

16. How important is it to improve the sidewalk environment along the Trade Street corridor? (Lighting, Sidewalks, Landscaping and Streetscape, etc)
_____
_____
_____

17. Should the streetcar stops differ from the bus stops in density (stops/mile) and/or appearance?
_____ yes different appearance
_____ no same appearance
_____ more stops per mile
_____ fewer stops per mile

18. Any specific areas where you would like to see streetcar stops (e.g. Government District, Arena)
_____

19. Do you think the fare should be different fromother transit systems in Charlotte?
_____ yes
_____ no
If yes, how much should the fare be? _____

20. Are there any other areas or major destinations that could support Streetcar? If so, what roads should be included in the Streetcar system?
_____
_____

VI. COMMITMENT TO PARTICIPATE

21. There will be several more opportunities for input to the Trade Street Streetcar Study. Would you like to be included in those?

Community workshop _____Yes _____No

Sub-area workshops _____Yes _____No

Would you like to be on our mailing list? _____Yes _____No

What is the best way to keep you informed? _____E-mail _____Fax _____Mail

Stakeholder Interview

Date: _____ Time: _____

INTERVIEW WITH:

Name: _____

Company/Neighborhood: _____

Address: _____
_____

I. TRADE STREET STREETCAR PLAN

1. **CATS is planning a new streetcar system to run from I-85 & Beatties Ford Road at the west end to Eastland Mall at the east end using Trade Street, Elizabeth Avenue, and Central Avenue. Do you view this development as a positive for Charlotte?**
   _____ yes
   _____ no, why? _____
   (If no, skip to last question)

2. **What concerns do you have about building a streetcar along Trade Street?**
   _____
   _____
   _____

3. **Would you use the streetcar?**
   _____ yes
   _____ no
   If yes, for what purposes?
   _____ work
   _____ special events
   _____ daily activities (lunch, dinner, etc.)
   _____other

4. **How much time does it take to travel to work?**
   _____

5. **How important is it to improve the sidewalk environment along the Trade Street corridor? (Lighting, Sidewalks, Landscaping and Streetscape, etc)**
   _____
   _____
   _____

6. **Should the streetcar stops differ from the bus stops in density (stops/mile) and/or appearance?**
   _____ yes different appearance
   _____ no same appearance
   _____ more stops per mile
   _____ fewer stops per mile

7. **Any specific areas where you would like to see streetcar stops (e.g. Government District, Arena)**
   _____

Stakeholder Interview

Date: _____ Time: _____

8. **Do you think the fare should be different from other transit systems in Charlotte?**
   _____ yes
   _____ no
   If yes, how much should the fare be? _____

9. **Are there any other areas or major destinations that could support Streetcar? If so, what roads should be included in the Streetcar system?**
   _____
   _____

II. COMMITMENT TO PARTICIPATE

10. **There will be several more opportunities for input to the Trade Street Streetcar Study. Would you like to be included in those?**

Community workshop	_____Yes	_____No
Sub-area workshops	_____Yes	_____No
Would you like to be on our mailing list?	_____Yes	_____No

What is the best way to keep you informed? _____E-mail _____Fax _____Mail

SUMMARY REPORT – STAKEHOLDERS INTERVIEWS

Date: November 11, 2004

To: Dave Dickey, PE, Project Coordinator; URS Corporation

From: Harvey B. Gantt, FAIA; Gantt Huberman Architects

Re: CATS Center City
Streetcar Corridor

I. INTRODUCTION

Stakeholder interview sessions were included as a major part of the public involvement process. The interview instrument was a questionnaire designed to gather as much information from key business, civic, and neighborhood leaders who lived, in the area and were likely to be impacted by the streetcar project. These interviews were the initial thrust of the Streetcar project into the community, so the questionnaire was structured to gage initial support for broad based city initiatives such as growth management, transportation, and public transportation. The final part of the interview was oriented to the streetcar corridor and issues associated with its development.

Our list of interviewees was derived from a variety of sources, including the Chamber of Commerce, Center City Partners, the Planning Commission, and by indigenous sources in the neighborhoods along the streetcar route. The list of key stakeholders numbered more than 150 persons, representing a good cross section of leaders who either lived, or worked within five minutes distance of the streetcar route.

From that list we selected and interviewed 42 persons in 31 sessions. The interviewees represented the following leadership categories:

Category	
Business	23
Civic/Institutional	4
Neighborhood	15

On average the interviews lasted approximately 45 minutes to one hour. Our team included myself, and Grace Uitenham-Mayfield from our office, and Kiera Terrell from CATS. On occasion, we were joined by Dave Dickey of URS.

II. SUMMARY OF RESPONSES:

A. Charlotte as a Livable City

It was noteworthy that more than two-thirds of the stakeholders had lived in Charlotte more than 15 years. Almost all of the stakeholders (99%) believed that Charlotte was an aggressively growing city that had good features to support livability. Most of them defined livability in terms of transportation and movement – particularly the ability to get to and from work and major activities. Quite a few of our interviewees suggested that the city could achieve greater livability with more sidewalks, more bike trails, and more green ways and parks. Some stakeholders (about 20%) mentioned social issues that needed improvements such as affordable housing, more focus on seniors, improved education, etc.

While most stakeholders were upbeat on Charlotte, they all expressed concern about things that might inhibit livability. The lack of public investment in education, and physical infrastructure (i.e. roads, public transportation, parks) was a common response from business as well as neighborhood leaders. But a majority of responses also felt that the community could suffer from uncontrolled growth and sprawl, and neglecting social issues like housing decay, building affordable housing, and environmental degradation.

B. Transportation

Most of the respondents (54%) gave Charlotte good marks for ease of movement to and from work. Almost 90% of stakeholders used their automobiles to commute to work. The average commuting time was between 15 and 30 minutes. More than 55% rated Charlotte traffic conditions to be from average to very good.

Public transportation was not a highly used service by most respondents. Nevertheless, 40% said they would consider it as a real alternative to the automobile. When asked what features or characteristics of a public transportation system would entice greater ridership by people with options, they listed a variety, ranging from the novelty and comfort of the vehicle (streetcar, light rail, fancy bus) to features of convenience and preferred destinations. An aggregate of 70% of the stakeholders listed convenience, safety, cleanliness, comfort and key destinations as important characteristics for good public transportation.

C. The Streetcar in Center City

The streetcar project was unanimously and positively received by the stakeholders. Almost all of them had some elementary knowledge of streetcar technology. It was noteworthy that no one questioned the proposed route of the streetcar, and many thought that various of the neighborhoods along the route could experience enhanced economic development.

Even with overwhelming support, stakeholders across the board, expressed mild concerns about its chances of successful implementation. A variety of opinions were expressed. The most common concerns heard were:

Some neighborhood leaders expressed concerns about additional takings for rights-of-way, and yet did not wish to give up automobile lanes to streetcar.
Will the streetcar cause more auto traffic on other streets – i.e. 3rd, 4th, and 5th streets.
Streetcar should not be a novelty – must move people efficiently.

While there seems to be an understanding that the streetcar must be made to work within existing right-of-way, most stakeholders (93%) were very open to the notion of expansive changes in the streetscape, to include more trees, streetcar stops that were well-designed, wider sidewalks, etc.

The most important stops along the streetcar route was almost unanimously agreed upon. Most respondents identified well-known locations like Johnson C. Smith University, Gateway Village, the Square, CPCC, and Presbyterian Hospital What did not seem clear to most was how many stops were "appropriate" and how might that impact convenience, time of travel, and traffic safety.

What was most encouraging was the fact that 88% of those interviewed said they expected to use the streetcar, primarily because of its convenient route and connection to key destinations in the City. Of those who would ride, 30% felt that the fare should be uniform across CATS, with no distinction made for the type of transit used.

All of the stakeholders interviewed expressed interest in following the streetcar project as it developed and wanted to be contacted for future workshop sessions.

Appendix B-4
Public Meeting Summaries

SUMMARY OF CENTRAL/ HAWTHORNE AVENUE
SUB-AREA COMMUNITY MEETING

Date: April 26, 2005

To: Mr. Dave Dickey – URS Corporation

From: Mr. Harvey Gantt – Gantt Huberman Architects, PLLC

Re: Charlotte Center City Streetcar Project
Hawthorne/Central Avenue Sub-Area Community Meeting
Eastland Mall - Activity Room
Time: 6:30pm

Team Attendees:

Mr. Willie A. Noble, Senior Project Manager; Charlotte Area Transit System
Mr. Jerry Roberson; Assistant Project Manager; Charlotte Area Transit System
Mrs. Kiera Terrell, Public Information Specialist; Charlotte Area Transit System
Mr. Stan Leinwand; Charlotte Area Transit System
Ms. Linda Murdaugh, Coordinator Assistant; Charlotte Area Transit System
Mr. Dave Dickey, Vice President; URS Corporation
Mr. Mark Dorn; URS Corporation
Mr. Craig Amundsen; URS Corporation
Mr. David Showalter; URS Corporation
Mr. Williams Jones; URS Corporation
Mr. Brain Piascik, Transportation Planner; URS Corporation
Ms. Jan Anderson; RS & H
Mr. Vince; RS & H
Mr. Chris Oginrunde; Neighboring Concepts
Mr. Fran Reiner; HNTB
Mr. Harvey Gantt; Gantt Huberman Architects, PLLC
Ms. Grace Mayfield; Gantt Huberman Architects, PLLC

I. Introduction:

The meeting was called to order by Mr. Willie A. Noble, the CATS team leader for the Center City Streetcar Project. He extended greetings to the audience, introduced the project team members and reviewed the agenda and purpose of the meeting.

II. Presentation of the Central Avenue Corridor:

A brief review of the overall streetcar project was given by Willie Noble which included an historical reference to Charlotte's earlier experience with the streetcar. Noble also reviewed the fact that Charlotte was a part of a new trend in streetcar development – and outlined the number of cities that had, or were developing streetcars a part of their mass transit plans.

He reviewed the schedule for development and the phasing currently projected; (1). Trade Street Corridor from Johnson C. Smith University to Presbyterian Hospital or The Plaza projected for completion 2009; and (2). Beatties Ford Road from I-85 to Johnson C. Smith University – and The Plaza Central Avenue to Eastland legs projected for completion in 2017.

Mr. Noble then introduced Mr. Dave Dickey of URS Corporation who then proceeded in describing the routes, stops, and alignment options of the streetcar within the street right of way as curb running and median running. Dickey also spent some time discussing the end-of –line alternatives including the Presbyterian/Hawthorne Street area, The Plaza/central Avenue and Eastland Mall.

III. Audience Participation:

Following the presentation, the audience engaged in a lively discussion. Recorded below are a sampling of the many questions raised and the team responses.

Question: Why isn't Central prioritized for streetcar installation since it has the heaviest bus traffic? It is clear that Central/Hawthorne Avenue residents believe this leg should be installed first.

Response: The 2025 plan called for Trade Street to be the first Phase I of the Center City Streetcar Project. CATS funds must be spread out over a period of time and Trade Street will be the first Phase.

Question: A Charlotte Chamber member representing the East side asked was the project delayed or backed up at all?

Response: It appears that the member may have mixed up the Southeast and West Corridor Light Rail projects with Center City Streetcar Project.

Question: Will the buses remain on Central Avenue?

Response: Yes, it is likely that buses will remain on Central Avenue. It was noted that buses and streetcars on the same route may become redundant, and if so, CATS will evaluate.

Question: What is the fare of the new streetcar?

Response: That has yet to be determined.

Question: What is the impact of a dedicated lane on traffic?

Response: The studies are inconclusive.

Question: How often will the streetcar run? What is the frequency?

Response: The streetcar will run very frequently. As rider-ship increases, the number of streetcars in service will increase to accommodate passengers.

Question: Will there be platforms to wait for the streetcar?

Response: Yes, all stops will have shelters to protect from the elements and provide riders with a safe place to wait for the next Streetcar.

Citizen Comments:

Comments: Please do not destroy the Central Avenue median. It is a project that was recently funded and is not yet complete. This median was designed to beautify the neighborhood and boost traffic calming in these areas.

Comments: The community would like to see the bike lane preserved as well.

Comments: A native Los Angeles resident stated the median lane running streetcar works best in a streetcar setting.

Comment: Wherever the streetcar can have a designated lane, it should have it.

Comment: Attendees seemed to agree that The Plaza would be favored as a terminus point.

The meeting finally adjourned at approximately 8:15p.m. However, it is noted that numerous citizens engaged the project team members well past 8:30p.m.

There were 63 people in attendance for the Central Hawthorne Public Meeting. The attendance sheet for this Community Meeting is attached.

End Memo

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SUMMARY OF TRADE STREET SUB-AREA COMMUNITY MEETING

Date: April 28, 2005

To: Mr. Dave Dickey – URS Corporation

From: Mr. Harvey Gantt - Gantt Huberman Architects, PLLC

Re: Charlotte Center City Streetcar Project
Trade Street/Elizabeth Street Sub-Area Group
Carole Hoeffner Center
Time: 6:30pm

Team Attendees:

Mr. Willie A. Noble, Senior Project Manager; Charlotte Area Transit System
Mrs. Kiera Terrell, Public Information Specialist; Charlotte Area Transit System
Mr. Stan Leinwand; Charlotte Area Transit System
Ms. Linda Murdaugh, Coordinator Assistant; Charlotte Area Transit System
Mr. Dave Dickey, Vice President; URS Corporation
Mr. Mark Dorn; URS Corporation
Mr. Craig Amundsen; URS Corporation
Mr. David Showalter; URS Corporation
Mr. Williams Jones; URS Corporation
Mr. Brain Piascik, Transportation Planner; URS Corporation
Ms. Jan Anderson; RS & H
Mr. Vince; RS & H
Mr. Chris Oginrunde; Neighboring Concepts
Mr. Fran Reiner; HNTB
Mr. Harvey Gantt; Gantt Huberman Architects, PLLC
Ms. Grace Mayfield; Gantt Huberman Architects, PLLC

I. Introduction:

The meeting was called to order by Mr. Willie A. Noble, the CATS team leader for the Center City Streetcar Project. He extended greetings to the audience, introduced the project team members and reviewed the agenda and purpose of the meeting.

II. Presentation of the Trade Street Corridor:

A brief review of the overall streetcar project was given by Mr. Willie Noble which included an historical reference to Charlotte's earlier experience with the streetcar. Noble also reviewed the fact that Charlotte was a part of a new trend in streetcar development – and outlined the number of cities that had, or were developing streetcars a part of their mass transit plans.

Willie Noble notified the Trade Street Community members the circulator may extend outside of the I-277 loop.

Mr. Noble then introduced Mr. Dave Dickey of URS Corporation who presented the following couplet options for the Trade Street Corridor:

Trade Street - bi-directional curb side running
Trade Street – bi-directional median running
Trade Street – 4th Street curbside running
Trade Street – 5th Street curbside running

Dickey then reviewed the end of the line options for the Trade Street Corridor as follows:

1. Presbyterian Hospital
2. The Plaza and Central Avenues

Mr. Dickey assured the audience that the frequency of the service on Trade Street promises to be often. He further listed the potential amenities that may be found at each stop along this corridor as:

1. Platforms with shelters at all stops
2. Ramping for easy ADA access
3. Pedestrian operated stop lights for friendly use of the streetcar

III. Audience Participation:

Following the presentation, comments and questions were posed by the audience, and the responses are as follows:

Question: Is it the intention of CATS to replace the Gold Rush service?

Response: Possibly but it wouldn't happen until 2025 when the circulator is completed.

Question: What is the order of magnitude for funding for the project?

Response: It is too early to guess at funding amount at this time. At the end of conceptual design we will have a better idea of cost and possible funding avenues. All corridors include and assume we will get 50% federal funding. The conceptual design process is being funding by the ½ cent sales tax.

Question: Is the South Corridor project competing for the same funds as the Streetcar Project?

Response: Light-rail and Streetcar are not in competition for the same funds. CATS has six corridors and they are advancing them simultaneously, usually funding one corridor at a time. However, we are competing at a national level for federal funding.

Question: What other Streetcar systems has URS worked on?

Response: Portland, Seattle, Tampa, San Diego Salt Lake City. URS has had extensive experience in dealing with utilities.

Question: If there is a median running streetcar near Gateway Village would it interfere negatively with established and blossoming retail business along the corridor?

Response: Not necessarily. The median is being explored in the Gateway Village area to minimize conflicts with the right turning vehicle lanes and utilities.

Question: What is the projected population growth for the Uptown community?

Response: Preliminary studies indicate the population will double by 2025.

Citizen Comments:

Comments: There is so much going on on Trade Street that a couplet might make more sense and would be embraced by the community. The 4th Street couplet is preferable to the 5th Street couplet.

Comment: The curb running option may not be a good option for Trade Street.

Comment: Willie informed the community of the intent to go after “Small Starts” funding with the FTA. It is a new process, earmarked for smaller projects.

There were 15 people who attended the Trade Street Public Meeting. The meeting adjourned at approximately 7:45p.m. Individual concerns and additional conversations took place well with citizens and team members until after 8:00p.m.

End Memo

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Public Meeting Summary
Beatties Ford Road Corridor
Center City/ Streetcar Corridor
Johnson C. Smith University
Grimes Lounge
100 Beatties Ford Road
May 4, 2005

1. Purpose and Intent

The purpose of this meeting was to update the public and receive input on the following items:

- Alignment options(curb or median)
- What a stop may look like
- Project Elements
- Streetcar Team's approach to building/analyzing the system
- Concerns/Issues along the corridor
- Proposed end of the line treatments

2. Meeting Date, Time, and Location

The Center City Streetcar team held this meeting at Johnson C. Smith University on May 4, 2005. The meeting room was located in Grimes Lounge from 6:30-8:45 p.m.

3. Public Notices

3.1 Mailings

A total of 1,403 notices announcing the meetings were mailed on April 11, 2005 to people who are listed in the Center City Streetcar database. The list consists of council members, city wide employees, neighborhood leaders, media representative, churches, and other citizens who have an interest in the streetcar project.

3.2 Newspaper Announcements

An ad was placed in the local newspapers persuading interested citizens to come out and learn more about the project and to provide input. Below you will find a list of newspapers and dates that were used to publicize the meeting:

Charlotte Observer	Sunday, April 17 & Wednesday April 20 of 2005
The Charlotte Post	Thursday, April 21, 2005

3.3 Other Communications

Meeting notices were placed on the following websites, brochures, and bulletin boards:

- Center City website (www.charlottecentercity.com)
- Johnson & Wales University student/faculty newsletter(Charlotte Campus Update) and information center
- YMCA Charlotte's bulletin board
- Northwest Community Development Corporation newsletter
- First & Third Ward neighborhood informational boards/distribution list
- Elizabeth Avenue Neighborhood Association Distribution list
- Businesses, libraries, churches, and schools along the corridor
- Rider Alerts brochures were placed on the Gold Rush, Trolley, and local buses 9, 7, 17, and 39

The City of Charlotte uses a cable government channel to inform its citizens of events and decisions. The channel uses an electronic billboard (also known as Electronic Bulletin Board) to post information for public meetings, road closings, employment opportunities, etc. These series of announcements air several times a day. Notifications for the public meeting were placed on the board from March 30, through May 4, 2005.

A press release from CATS Marketing Department was sent via email/fax to newspapers, radio, and television stations (WCCB-FOX Charlotte, WSOC-ABC Charlotte, WBTV-Charlotte, NBC6) throughout the Charlotte area. The initial press release was sent on April 20, 2005. A follow-up media advisory was also transmitted on April 24, 26, and May 4, 2005. In addition, a meeting announcement was placed on the City of Charlotte and CATS websites.

An electronic version of the meeting notice was emailed to all CATS employees, citizens, and organizations that are listed in the database on April 6, 2005. This meeting notice was also included in Corporate Communications C-Mail on April 13, 2005.

Media Stories:

- Charlotte Observer- April 23, 2005
- Charlotte Observer-April 24, 2005
- Mecklenburg Neighbors-May 1, 2005

4. Meeting Procedure

4.1 Presentation

Mr. Willie Noble reviewed the overall scope of the project and its various phases. He noted that the proposed Trade Street segment would run from Presbyterian Hospital area to Johnson C. Smith University, and is scheduled to be completed by 2009. Mr. Noble also pointed out that the Beatties Ford Road extension to I-85 and the Central Avenue extension to Eastland Mall are slated to be completed by the year 2017. Mr. Noble also

revealed that the fact that historically Charlotte had streetcars in the earlier half of the twentieth century and in large part the new proposed streetcar system tracks will follow the historical routes. Other points of discussion are as follows:

- Possible stop locations, alignment options and routes
- Pros and cons of median vs. curb running lanes
- Possible end of the line treatments

Following the question and answer period, the attendees were invited to take a closer look at the presentation boards to provide feedback on the project elements.

5. Summary of Public Input

Following the presentation, the audience engaged in a lively discussion. Recorded below are a sampling of the many questions raised and the team's response.

1. Question: How much will the project cost?

Response: It is too early to tell. This portion of the work covers 10% of the design and we will have an estimate of likely cost at the end of the year.

2. Question: Will the No. 7 bus be replaced?

Response: Buses will continue to serve the neighborhoods. It is likely that if the streetcar is successful then No. 7 may not be needed eventually.

3. Question: Can you provide us with more details about the maintenance facility and its location?

Response: The maintenance facility will provide the means and place for servicing the streetcars and should ideally be located near the streetcar route. A location for the maintenance facility has not been determined.

4. Question: How much will the fare be to ride a streetcar? Will it differ from the current bus fares or the light rail system?

Response: The streetcar fare has not been determined. Fare pricing for bus and light rail has been determined, but for streetcar various factors has to be considered including travel distance, convenience, consistency, etc. before we can determine a cost per ride.

5. Question: Will this project be funded to cover all phases?

Response: The intent of CATS is to request funding to complete all phases of the system. However, funding availability from federal and state sources is not a guarantee.

6. Question: How will Charlotte pay its portion of the streetcar funding?

Response: The ½ cent sales tax that is set aside for transit will be used for the local share of all CATS transit development.

7. Question: How many new jobs will be created?

Response: We believe that the streetcar project will stimulate economic development in the long term. It is difficult to determine the number of jobs that will result from development activity or construction work associated with the building the system.

8. Question: What is the environmental impact of the streetcar project?

Response: As a part of seeking federal funding, we are required to complete an environmental impact assessment. Once this phase is completed, we will be able to know exactly what sort of an impact the system will have on the environment. Furthermore, with more people riding transit (i.e. streetcars, light rail, buses, commuter rail, etc.) and with fewer cars on the street it is more likely that the air quality will become better.

9. Question: Is the streetcar going to get enough ridership? Is it truly a form of mass transportation?

Response: The streetcar has proven to be popular in other cities, and given the current ridership on the No. 7 we believe it will get substantial increases in ridership. Streetcars are considered one part of the layer mass transportation system CATS is building/

Citizen Comments

1. Comment: The second phase of this project should be definitely accelerated. 2017 is too long to wait for the system.

2. Comment: The turnaround should be located at the new bus transit center on the opposite side of the I-85 Bridge.

3. Comment: I am very concerned that if the project is not funded entirely, then our community will not get the benefits of the streetcar.

4. Comment: I see little change of the environment improvement because people will not abandon their cars.

There were 40 members of the community in attendance. The meeting adjourned at approximately 8:10 p.m. A number of citizens stayed afterwards to review the drawings and provide feedback with the project team members.

Public Meeting Summary
Trade Street/Elizabeth Avenue Corridor
Center City/ Streetcar Corridor
Charlotte-Mecklenburg Public Library
St. Francis Auditorium
310 N. Tryon Street
June 21, 2005

1. Purpose and Intent

The purpose of this meeting was to update the public and receive input mainly on urban design and on the following items:

- Streetcar operations on Trade Street
- Alignment Options-curb running streetcar stops are at the curbside(right lane) or median running streetcar stops are in the left lane
- Land use and development opportunities
- Urban Design(Contemporary, Traditional, Historic streetscape elements)
- Concerns/Issues along the corridor

2. Meeting Date, Time, and Location

The Center City Streetcar team held this meeting at the Charlotte-Mecklenburg Public Library on June 21, 2005. The meeting room was located in the St. Francis Auditorium from 11:30 a.m.-1:30 p.m.

3. Public Notices

3.1 Mailings

A total of 1, 462 notices announcing the meetings were mailed on June 10, 2005 to people who are listed in the Center City Streetcar database. The list consists of council members, city wide employees, neighborhood leaders, media representative, churches, and other citizens who have an interest in the streetcar project.

3.2 Newspaper Announcements

An ad was placed in the local newspapers persuading interested citizens to come out and learn more about the project and to provide input. Below you will find a list of newspapers and dates that were used to publicize the meeting:

Charlotte Observer Sunday, June 12, 2005

The Charlotte Post Thursday, June 16, 2005
The La Noticia Wednesday, June 15, 2005

3.3 Other Communications

Meeting notices were placed on the following websites, brochures, and bulletin boards:

- Center City website (www.charlottecentercity.com)
- Johnson & Wales University student/faculty newsletter(Charlotte Campus Update) and information center
- Northwest Community Development Corporation newsletter
- First & Third Ward neighborhood informational boards/distribution list
- Elizabeth Avenue Neighborhood Association Distribution list
- Businesses, libraries, churches, and schools along the corridor
- Eastland Area Strategies Group distribution list
- Art & Science Council distribution list
- City Council Members distribution list

The City of Charlotte uses a cable government channel to inform its citizens of events and decisions. The channel uses an electronic billboard (also known as Electronic Bulletin Board) to post information for public meetings, road closings, employment opportunities, etc. These series of announcements air several times a day. Notifications for the public meeting were placed on the board from June 6-23, 2005.

A press release from CATS Marketing Department was sent via email/fax to newspapers, radio, and television stations (WCCB-FOX Charlotte, WSOC-ABC Charlotte, WBTV-Charlotte, NBC6) throughout the Charlotte area. The initial press release was sent on June 17, 2005. A follow-up media advisory was also transmitted on June 21-23, 2005. In addition, a meeting announcement was placed on the City of Charlotte and CATS websites.

An electronic version of the meeting notice was emailed to all CATS employees, citizens, and organizations that are listed in the database on June 16, 2005. This meeting notice was also included in Corporate Communications C-Mail on June 8th and 22nd and City Page June 17th.

Media Stories:

- Charlotte Observer- June 20 & 22nd, 2005
- Metro Monitor, Inc.-(WSOC-ABC)-June 21, 2005
- Progressive Railroading.com-June 21, 2005
- Carolina Clean Air Coalition Weekly Air Updates
- News 14

4. Meeting Procedure

4.1 Presentation

Mr. Willie A. Noble extended greetings and invited the attendees and stakeholders to enjoy the lunch provided for this meeting. He allowed time for participants to get their lunch underway before thanking everyone for attending this lunchtime Sub-Area Public Meeting. He introduced the project team members and reviewed the agenda and purpose of the meeting.

I. Presentation of the Trade Street Corridor:

A brief review of the overall streetcar project was given by Mr. Willie Noble which included a Power Point presentation highlighting the history on where CATS derived the streetcar system idea. The system is designed to improve bus routes, create a more pedestrian friendly city and will investigate an east-west transit corridor that may eventually provide a transit line to the airport.

He described the project elements of the four phases of the streetcar project. The final phase known as the Uptown Circulator will have legs leading to the other transit corridors. He briefly reviewed the project schedule.

After acknowledging the design team and other city representatives who were present, Noble then introduced Mr. Craig Amundsen of URS Corporation.

Amundsen reviewed the approach of how the streetcar would function on Trade Street. He noted the five components for a successful streetcar project:

1. Simple and inexpensive
2. Minimize the impact on parking
3. Minimize construction
4. Blend with the existing neighborhoods
5. Create a pedestrian oriented environment

He also discussed the possible alignment options for Trade Street. The two options are:

1. Curb running – streetcar and stops are at curb side (right lane)
2. Median running – streetcar and stops are in left lane

Fran Reiner discussed land use and development opportunities surrounding the streetcar. He stated there would be primary and secondary redevelopment opportunities involving future and existing land use.

Members of the community were invited to attend one or more of five discussion groups that were located throughout the room. The discussion groups covered five neighborhoods along the Trade Street corridor:

1. The Government Center
2. Gateway Village
3. Arena

4. Tryon & Trade Street (The Square)
5. Charlotte Gateway Station

Participants were encouraged to discuss the following topics to optimize input from the community:

1. Future land uses
2. Great Southern Streets (Trade Street)
3. Median versus curb running streetcars
4. Unique design or Tryon Street model
5. Continuity or district diversity
6. Historical/Traditional/Contemporary Identity through street furniture

Each break-out session had several members of the community at each table. Facilitator recorded the thoughts and ideas of the participants and presented an overall view of the each groups' discussion.

5. Summary of Public Input

Following the presentation, the audience engaged in a lively discussion. Recorded below are a sampling of the many questions raised and the team's response.

Following are the comments and questions recorded by each facilitator for each of the discussion groups:

Multi-modal Station

- The multi-modal station is located in the wrong place Uptown
- The name of the station should be changed. It is easily confused with Gateway Village
- There is a major concern with safety for the median running streetcar
- The frequency of the streetcar should not exceed ten minutes
- The area surrounding the station should be heavily landscaped
- The community favors the variation of district furniture and amenities though the opinions differ on contemporary versus traditional schemes
- Make the streetcar and multi-modal stations convenient

Gateway Station

- If there is a streetcar running in the median, how will the streetcar pass under the bridge on Trade Street near Graham?

- Future land use issues included:

    - growth on 5th Street

    - on-street retail access to increase density and business to area

    - there should be a historic use of Trade Street as a Boulevard

    - this area is a historic gateway; should use Johnson and Wales Way and surrounding parcels as a gateway

- These were the ideas and concepts discussed for a 'Great Southern Street'

    - trees are critical; it creates the southern environment

    - family identity

    - distinguish Trade from Tryon Street (promote the history of Trade Street)

    - create opportunities that activate the street (copier stores, dry cleaners)

    - Create outdoor rooms where people want to dwell, i.e., pockets parks filled with activity that insures security.

    - There is concern that if the streetcar is median running riders might only be commuters rather than retail customers

    - Curb running streetcars limit the use of valet parking for restaurants and deliveries for businesses

    - The streetcar could be a traffic calming measure

    - Severe grades on Trade Street at Sycamore limit retail opportunities

- Trade Street versus Tryon Street

    - Creating a unique identity, moving from station to station (shelters should signify a difference)

    - Use history to determine the different areas throughout the corridor

    - A "front porch neighborhood" creates a welcoming atmosphere

- Pockets of green space linked together creates a unique Boulevard

- Amenities of Trade Street

  - Historic and Traditional were the preferred street furniture choices

  - Trade should use the existing amenities from Gateway and J&W Way and build on it

  - Functional art makes people comfortable. A chess park could be a focal point

  - Increased lighting near the I-77 bridge could better connect Gateway Village to Wesley Heights. This area currently acts as a barrier.

Trade and Tryon Street

- Enhance station identity as it is the center of the city
- Median running streetcar preferred
- Stop location should be a block away from Trade/Tryon intersection
- A high priority should be placed on on-street retail

Government Center

- Pedestrian safety is a priority especially crossing at Elizabeth Avenue
- Based on history – trolley line used to run on Elizabeth Avenue
- Stop amenities could include coffee shops and newspaper stands
- The streetscape should keep its uniqueness reflecting the district's purpose
- Combine taste with utility when choosing street furniture
- The streetcar itself could be the unifying element
- In favor of curb running for curb side boarding and safety

Arena

- Access for the visually impaired community and understanding of the system for the handicapped
- There are advantages to median running in the arena area

- Parking and circulation on game days are a concern
- There should be a unique quality for the arena district

There were a total of 70 members in attendance. The meeting adjourned at approximately 1:30p.m.

Public Meeting Summary
Central/Hawthorne Avenue Corridor
Center City/ Streetcar Corridor
Eastland Mall
Activity Room
5471 Central Avenue
June 22, 2005

1. Purpose and Intent

The purpose of this meeting was to update the public and receive input mainly on urban design on the following items:

- Pros and Cons of curb and median running operations
- Possible streetcar furnishings
- Design teams' concerns for visually and hearing impaired commuters
- Urban Design(Contemporary, Historic, Traditional streetscape elements)
- Concerns/Issues along the corridor

2. Meeting Date, Time, and Location

The Center City Streetcar team held this meeting at Eastland Mall on June 22, 2005. The meeting room was located in the Activity Room from 6:30-8:00 p.m.

3. Public Notices

3.1 Mailings

A total of 1,402 notices announcing the meetings were mailed on June 10, 2005 to people who are listed in the Center City Streetcar database. The list consist of council members, city wide employees, neighborhood leaders, media representative, churches, and other citizens who have an interest in the streetcar project.

3.2 Newspaper Announcements

An ad was placed in the local newspapers persuading interested citizens to come out and learn more about the project and to provide input. Below you will find a list of newspapers and dates that were used to publicize the meeting:

Charlotte Observer Sunday, June 12, 2005
The Charlotte Post Thursday, June 16, 2005

La Noticia Wednesday, June 15, 2005

3.3 Other Communications

Meeting notices were placed on the following websites, brochures, and bulletin boards:

- Center City website (www.charlottecentercity.com)
- Johnson & Wales University student/faculty newsletter(Charlotte Campus Update) and information center
- Northwest Community Development Corporation newsletter
- First & Third Ward neighborhood informational boards/distribution list
- Elizabeth Avenue Neighborhood Association Distribution list
- Business, libraries, churches, and schools along the corridor
- Eastland Area Strategies Group distribution list
- Art & Science Council distribution list
- City Council Members distribution list
- Spanish translator present(project materials were available in Spanish)

The City of Charlotte uses a cable government channel to inform its citizens of events and decisions. The channel uses an electronic billboard (also known as Electronic Bulletin Board) to post information for public meetings, road closings, employment opportunities, etc. These series of announcements air several times a day. Notifications for the public meeting were placed on the board from June 6-23, 2005.

A press release from CATS Marketing Department was sent via email/fax to newspapers, radio, and television stations (WCCB-FOX Charlotte, WSOC-ABC Charlotte, WBTV-Charlotte, NBC6) throughout the Charlotte area. The initial press release was sent on June 17, 2005. A follow-up media advisory was also transmitted June 21-23, 2005. In addition, a meeting announcement was placed on the City of Charlotte and CATS websites.

An electronic version of the meeting notice was emailed to all CATS employees, citizens, and organizations that are listed in the database on June 16, 2005. This meeting notice was also included in Corporate Communications C-Mail on June 8th and 22nd and City Page June 17th..

Media Stories:

- Charlotte Observer- June 20 & 22, 2005
- Metro Monitor, Inc.-(WSOC-ABC)-June 21, 2005
- Progressive Railroading.com-June 21, 2005
- Carolina Clean Air Coalition Weekly Air Updates
- News14

4. Meeting Procedure

4.1 Presentation

The meeting was called to order by Mr. Willie A. Noble, the CATS team leader for the Center City Streetcar Project. He extended greetings to the audience, introduced the project team members and reviewed the agenda and purpose of the meeting.

Approximately 35 members of the community attended the workshop.

I. Presentation of the Central Avenue Corridor:

A brief review of the overall streetcar project was given by Willie Noble. The streetcar will fulfill many roles as the Charlotte transit system continues to grow and improve.

He reviewed the project elements of the three corridors for which the streetcar is scheduled to run and the Uptown Circulator. They are listed as follows:

1) Trade Street Corridor will run from Johnson C. Smith University to Presbyterian Hospital or The Plaza projected for completion 2009

2) Beatties Ford Road extension to I-85 from Johnson C. Smith University

3) The Plaza/Central Avenue to Eastland Mall extensions

4) The Uptown Circulator which has changed since the initial concepts of the Streetcar system. It will no longer be designed to be a closed loop but will have legs leading to other transit corridors.

All work is scheduled to be complete in 2025.

The purpose of the streetcar is to improve efficiency and quality of CATS' two most heavily traveled bus routes. The installation of the streetcar system supports the 2010 Center City vision. It will be designed to serve and support the neighborhoods of Charlotte.

Noble explained the scope of the conceptual design phase and stated the project will be 10% complete when the conceptual design phase is completed in December 2005. The final design phase is scheduled to be completed in December 2006. Completion of the construction phase of the Trade Street Corridor is scheduled for summer 2009.

At this time it is still uncertain where the terminus for the Hawthorne/Central Avenue extension will be located. The choices are still Presbyterian Hospital or Central Avenue and The Plaza area. The design team has not completed the drafts of the analysis as of yet. The CSX line crossing is still an issue and viable options are still being investigated.

Mr. Noble then introduced Mr. Dave Dickey of URS Corporation who described the process in which URS Corporation will develop, design and install the streetcar. Their five design goals are:

1) Keep it simple and inexpensive
2) Minimize the loss parking
3) Minimize the impact of construction
4) Blend with the existing neighborhoods
5) Create a pedestrian oriented environment

Dickey then discussed the pros and cons of a curb-running and median-running streetcar. He informed the public that at this time, CATS is considering a curb-running alignment for the Hawthorne/Central Avenue corridor. This decision is not final but comments made in previous community meetings regarding the newly installed median have been considered.

Chris Ogunrinde presented a comparison of streetcar versus light-rail. He stated that he will focus on the quality of the built environment and the connectivity of existing neighborhoods with the new streetcar.

He then used each of the presentation boards to explain the design teams' concerns for the handicapped, wheel-chair accessible, visually and hearing impaired.

Stan Leinwand discussed ideas on street furniture and amenities. The Urban Design components define the quality and aesthetics of a neighborhood as well as the redevelopment possibilities as we move forward through the project.

Noble stated that CATS will work diligently not to destroy the existing streetscape but to enhance what is already present. It is not part of the Center City Streetcar budget to destroy and rebuild any of the existing amenities.

He also informed the public that CATS' "Art in Transit" program assigns artist to each stop to reflect that particular neighborhood's characteristics. The art work at each stop should reflect the culture and characteristic of the neighborhood.

Following the question and answer period, the attendees were invited to take a closer look at the presentation boards to provide feedback on the project elements.

5. Summary of Public Input

Following the presentation, the audience engaged in a lively discussion. Recorded below are a sampling of the many questions raised and the team responses.

Question: Are you looking in terms of land use when you speak in terms of redevelopment for 2017?

Response: Yes. We are looking at redevelopment in terms of land use. We are strictly focusing on the land use around the stops. Some land use alternatives are conducive to development from the streetcar.

Question: If CATS runs a curbside streetcar, will the bike lanes be maintained?

Response: Yes. We CATS will work to preserve them by diverting the bike lanes around the stops.

Question: How fast will the streetcar run on the city streets?

Response: The speed of the streetcar will not exceed 35 miles per hour.

Question: When the streetcar is installed, bus stops will be reduced. What will bus riders do to catch a bus? How will they get to it?

Response: Bus riders may have a little longer walk to the stops. Bus operations will be supplemented or eventually replaced.

Question: Traffic lights are integrated with the buses. Will the streetcar also be integrated with the traffic lights?

Response: Streetcars operate in the same lanes as cars; it will sit in traffic just as cars sit in traffic.

Question: Could you go over the funding and budget process again?

Response: Though we haven't applied yet, 50% of the funding will come through the Federal Transit Authority (FTA); 25% will come from the state of North Carolina and 25% will come from the local taxes. We have a definitely advantage with the transit growth and land use.

Question: Do streetcars qualify for federal funds?

Response: Yes, the streetcar qualifies for federal funds through the Small Starts program. It is new funding through a rewritten program designed to fund smaller transit projects.

Question: At one time funding for the streetcar was to be funding left over from the light rail funds, is this no longer the case?

Response: This is no longer the case. CATS seeks federal funds for all the transit corridors.

Question: What can neighborhood leaders do to help implement the streetcar project?

Response: Interact with your City Council representatives to let your wishes be known regarding development and land use surrounding the stops.

Question: What type of density is expected for this corridor?

Response: Density will likely increase along the corridor. Please keep in mind that Central Avenue is currently the heaviest traveled transit corridor.

Question: What type of development should we expect within a ¼ mile radius of a streetcar stop?

Response: Please keep in mind that the reference to the ¼ mile radius is intended to show how far people are willing to walk to the streetcar stop. It is not intended to focus on land use.

Questions: During construction how will CATS manage traffic and bus routes along the corridor?

Response: At the time of construction CATS will maintain access to and from businesses and neighborhoods at all times. CATS will also create a through-way for bus operations.

Question: How will the disabled use the system and sidewalks?

Response: When developing the streetcar system, CATS will gladly comply with all ADA requirements in order to accommodate all riders. This is necessary in order to qualify for federal funding.

Citizen Comments:

- We would like to see the first phase of the streetcar go out to The Plaza-Midwood neighborhood.
- The community would like to see the median remain.
- Please know that Rosehaven and Winterfield are high density areas.

There were a total of 35 members from the community in attendance. The meeting adjourned at approximately 8:00p.m. However, it is noted that numerous citizens engaged the project team members well past 8:30p.m.

Public Meeting Summary
Beatties Ford Road Corridor
Center City/ Streetcar Corridor
Nortwest School of Performing Arts
Old Cafeteria
1415 Beatties Ford Road
June 23, 2005

1. Purpose and Intent

The purpose of this meeting was to update the public and receive input mainly on urban design and on the following items:

- Pros and Cons of curb and median running operations
- Possible streetcar furnishings
- Design teams' concerns for visually and hearing impaired commuters
- Urban Design (Contemporary, Traditional, Historic streetscape elements)
- Concerns/Issues along the corridor

2. Meeting Date, Time, and Location

The Center City Streetcar team held this meeting at Northwest School of Performing Arts on June 23, 2005. The meeting room was located in the Old Cafeteria from 6:30-8:00 p.m.

3. Public Notices

3.1 Mailings

A total of 1,462 notices announcing the meetings were mailed on June 10, 2005 to people who are listed in the Center City Streetcar database. The list consists of council members, city wide employees, neighborhood leaders, media representative, churches, and other citizens who have an interest in the streetcar project.

3.2 Newspaper Announcements

An ad was placed in the local newspapers persuading interested citizens to come out and learn more about the project and to provide input. Below you will find a list of newspapers and dates that were used to publicize the meeting:

Charlotte Observer Sunday, June 12, 2005

The Charlotte Post Thursday, June 16, 2005
La Noticia Wednesday, June 15, 2005

3.3 Other Communications

Meeting notices were placed on the following websites, brochures, and bulletin boards:

- Center City website (www.charlottecentercity.com)
- Johnson & Wales University student/faculty newsletter(Charlotte Campus Update) and information center
- Northwest Community Development Corporation newsletter
- First & Third Ward neighborhood informational boards/distribution list
- Elizabeth Avenue Neighborhood Association Distribution list
- Business, libraries, churches, and schools along the corridor
- Eastland Area Strategies Group distribution list
- Art & Science Council distribution list
- City Council Members distribution list

The City of Charlotte uses a cable government channel to inform its citizens of events and decisions. The channel uses an electronic billboard (also known as Electronic Bulletin Board) to post information for public meetings, road closings, employment opportunities, etc. These series of announcements air several times a day. Notifications for the public meeting were placed on the board from June 6-23, 2005.

A press release from CATS Marketing Department was sent via email/fax to newspapers, radio, and television stations (WCCB-FOX Charlotte, WSOC-ABC Charlotte, WBTV-Charlotte, NBC6) throughout the Charlotte area. The initial press release was sent on June 17, 2005. A follow-up media advisory was also transmitted June 21-23, 2005. In addition, a meeting announcement was placed on the City of Charlotte and CATS websites.

An electronic version of the meeting notice was emailed to all CATS employees, citizens, and organizations that are listed in the database on June 16, 2005. This meeting notice was also included in Corporate Communications C-Mail on June 8 and 22nd and City Page June 17th .

Media Stories:

- Charlotte Observer- June 20 and 22, 2005,
- Metro Monitor, Inc.-(WSOC-ABC)- June 21, 2005
- Progressive Railroading.com-June 21, 2005
- Carolina Clean Air Coalition Weekly Air Updates
- News 14

4. Meeting Procedure

4.1 Presentation

The meeting was called to order by Mr. Willie A. Noble, the Senior Project Manager for the Center City Streetcar Project. He extended greetings to the audience, introduced the project team members and reviewed the agenda and purpose of the meeting.

I. Presentation of the Beatties Ford Road Corridor:

Noble reviewed the overall scope of the project and its various phases. He noted that CATS has met with other city entities including CDOT, City Planning and Charlotte City Center Partners to seek their input on the streetcar project. CATS will continue to seek input from the public to ensure that the streetcar system is an asset to the community.

The streetcar system will be implemented in four phases:

1. The Trade Street segment will run from Johnson C. Smith University to the Presbyterian Hospital area or Central and The Plaza area. The terminus for this route has yet to be determined.
2. Beatties Ford Road extension will run from Johnson C. Smith University to the I-85.
3. Central/Hawthorne Avenue extension will run from Presbyterian Hospital or Central and The Plaza area out to Eastland Mall.
4. The Uptown Circulator, whose design has recently expanded, will no longer operate as a closed loop but will operate in the form of a 'spider' reaching out to the different areas of transit connecting riders back to the streetcar system.

We are in the initial phase of planning the streetcar system. This phase is known as Conceptual design. This phase is scheduled to conclude in December 2005. At that time only 10% of the project design will be complete. We will then move into Preliminary Design of the first phase of the Trade Street segment followed by Final Design which is scheduled to conclude in December 2006. The Construction phase will run from 2007 and is scheduled to conclude in 2009. The Trade Street phase of the streetcar system will be up and running in summer 2009. Project schedules are subjected to change.

Portland, Oregon is the streetcar model CATS is using for the Center City Streetcar Project. The approach taken will be similar in that we will keep it simple and inexpensive. Our goal is to minimize impacts to parking and minimize construction. CATS will work diligently to blend with existing neighborhoods and create a pedestrian oriented environment.

Noble noted the alignment options as curb running and median running. No decisions had been made on which option which would be used on the Beatties Ford Road corridor.

Chris Ogunrinde addressed the urban design portion of the streetcar project. He states the streetcar will be new and simple. In a continued effort to consider accessibility issues the streetcar system will be friendly and passenger-oriented. The stops will be developed as

amenities to each community. The quarter mile radius walk to each stop should be reflective and memorable.

Mr. Stan Leinwand introduced the streetscape elements that will be present at each stop. The stop amenities will be attractive and comfortable. There will be more amenities in the Center City but the extensions will have them as well. The design choices are historical, traditional and contemporary. Examples of amenities were displayed on Power Point and on display on boards throughout the room. Examples of amenities were shown from Tryon Street South Park Area and Gateway Village.

Following the question and answer period, the attendees were invited to take a closer look at the presentation boards to provide feedback on the project elements.

5. Summary of Public Input

Following the presentation, the audience engaged in discussions with various Team members. Many residents reviewed the boards and asked question regarding land use and redevelopment options. Recorded below are a sampling of the many questions raised and the team responses.

Question: Upon completion of phase one, what will happen to transit options on Beatties Ford Road to I-85?

Response: Bus operations will continue without interruption during the first phase.

Question: What is the time frame for implementation of the streetcar?

Response: The Trade Street corridor will be completed first in 2009. The extensions are scheduled to be complete in 2017. It is unclear which extension will be first. Eventually the streetcar will replace buses.

Question: What will be the impact on residences and businesses during construction?

Response: One lane will be shut down during construction but access to homes and businesses will be maintained throughout the construction phase.

Question: Will artist be considered for the Beatties Ford Road corridor?

Response: Yes. CATS Arts in Transit program will choose an artist for each stop along the corridor.

Question: Once the streetcar is running, will bike lanes be implemented?

Response: Bike lanes have not been addressed for the Beatties Ford Road corridor primarily because they are not present now.

Question: Will handicapped accessibility concerns be accommodated?

Response: Yes. The streetcar system is totally accessible.

Question: What if we don't receive federal funding will CATS still build the streetcar with accessibility issues in mind?

Response: Yes, the system will be completely accessible even if federal funds are not available.

Question: Will there be shelters to keep riders dry?

Response: Yes. The streetcar system has stops not stations but they will be protected.

Question: Why does Johnson C. Smith University have a median running streetcar lane?

Response: The median running streetcar near Johnson C. Smith University is designed more as a traffic calming measure.

Question: Will there be monitors to address safety issues at each stop?

Response: CATS has not gotten that far in the design process.

Question: Will there be lights to give people time to cross near the stops?

Response: Yes. CATS will utilize existing stops and will add and improve where necessary.

There was a total of 35 members from the community in attendance. The meeting adjourned at approximately 7:30p.m. A number of stakeholders stayed afterwards to review drawings and ways and to discuss the design with the project team members.

Public Meeting Summary
Center City/ Streetcar Corridor
Charlotte-Mecklenburg Government Center
Chamber Room
600 East 4th Street
September 27, 2005

1. Purpose and Intent

The purpose of this meeting was to update the public and receive input mainly on the proposed conceptual alignment and the following items:

- Role of the Streetcar
- CATS approach to the streetcar project
- Streetcar operations
- Urban Design-amenities along the corridor
- Concerns/Issues along the corridor

2. Meeting Date, Time, and Location

The Center City Streetcar team held this meeting at the Charlotte-Mecklenburg Government Center on September 27, 2005. The meeting room was located in the Chamber Room (main room), CH-14 & 18 from 6:30 p.m.-8:30 p.m.

3. Public Notices

3.1 Mailings

A total of 1, 567 notices announcing the meetings were mailed on September 9, 2005 to people who are listed in the Center City Streetcar database. The list consists of council members, city wide employees, neighborhood leaders, media representative, churches, and other citizens who have an interest in the streetcar project.

3.2 Newspaper Announcements

An ad was placed in the local newspapers persuading interested citizens to come out and learn more about the project and to provide input. Below you will find a list of newspapers and dates that were used to publicize the meeting:

Charlotte Observer	Sunday, September 18, 2005
The Charlotte Post	Thursday, September 22, 2005
The La Noticia	Wednesday, September 21, 2005

3.3 Other Communications
Meeting notices were placed on the following websites, brochures, and bulletin boards:

- Center City website (www.charlottecentercity.com)
- Northwest Community Development Corporation distribution list
- First & Third Ward neighborhood informational boards/distribution list
- Elizabeth Avenue Neighborhood Association Distribution list
- Business, libraries, churches, and schools along the corridor
- Eastland Area Strategies Group distribution list
- City Council Members distribution list
- Spanish Translator was present(project materials were available in Spanish)
- Rider Alert brochures were placed on the Gold Rush, Trolley, and local bus service 9, 7, 17, 39.

The City of Charlotte uses a cable government channel to inform its citizens of events and decisions. The channel uses an electronic billboard (also known as Electronic Bulletin Board) to post information for public meetings, road closings, employment opportunities, etc. These series of announcements air several times a day. Notifications for the public meeting were placed on the board from September 13- 27, 2005.

A press release from CATS Marketing Department was sent via email/fax to newspapers, radio, and television stations (WCCB-FOX Charlotte, WSOC-ABC Charlotte, WBTV-Charlotte, NBC6) throughout the Charlotte area. The initial press release was sent on September 21, 2005. A follow-up media advisory was also transmitted on September 27, 2005. In addition, a meeting announcement was placed on the City of Charlotte and CATS websites.

An electronic version of the meeting notice was emailed to all CATS employees, citizens, and organizations that are listed in the database on September 19, 2005. This meeting notice was also included in Corporate Communications C-Mail on September 13, 2005 and City Source September 14, 2005.

Media Stories:

- Metro Monitor, Inc.
- Carolina Clean Air Coalition Weekly Air Updates
- Charlotte Observer-October 24, 2005

4. Meeting Procedure

4.1 Presentation
The meeting was called to order by Mr. Willie A. Noble, Senior Project Manager for the Center City Streetcar Project. He extended greetings to the audience, introduced the project teams, including URS Corporation, RS&H, Neighboring Concepts, HNTB, Elcon Associates and Gantt Huberman Architects. He then reviewed the agenda and purpose of the meeting.

It is the goal of CATS that the public, specifically this audience, will become thoroughly familiar with the Center City Streetcar project. Mr. Noble reviewed how the streetcar will operate and asked for the public to provide input and comments in the question and answer session immediately following the presentation. Comments were welcomed on the proposed alignment, proposed streetcar stops and the next step in the process. Attendees were invited to three break-out rooms to review the display boards showing all three corridors. He encouraged everyone to complete and return the comment cards.

The maps in the break-out rooms displayed all of the proposed stops. Mr. Noble stated, "Please note the names of the stops are "working" or temporary names. There is a naming process in which CATS performs to name all stops. The Streetcar project will go through the naming procedure for the streetcar stops."

PRESENTATION OF THE CENTER CITY STREETCAR PROJECT

Mr. Noble introduced the project to the audience. He listed the key steps of progress of the project to date. He described the role of the Advisory Board members and stated their purpose and role in helping CATS decide what would be most acceptable in each neighborhood affected by the streetcar. He then acknowledged all Advisory Board members that were present. Mr. Noble discussed the following:

The role of the streetcar

- The streetcar will increase efficiency on the top two utilized bus routes
- The streetcar is more efficient because it's a larger vehicle and able to carry more passengers on less trips
- The streetcar supports the 2010 Center City Vision Plan
- It supports various neighborhoods and sparks economic development potential
- Eventually an East-West spine will link all five (5) corridors to Uptown

The streetcar is one of six (6) CATS transit corridors being advanced at once. The Conceptual Design of the project will be finalized in December 2005. At the end of this phase ten (10) percent of the project will be complete. The next two (2) phases are Preliminary Engineering and Final Engineering.
The Trade Street corridor is the critical element of the project in that it is designed to connect Johnson C. Smith University and Johnson & Wales University to Presbyterian Hospital while servicing both transportation centers, i.e., that is the existing transportation center and the proposed center to be located on Graham near Trade Street.

Elements of the project

- The first portion of the project will operate along Trade Street running from Johnson C. Smith University to Presbyterian Hospital or to The Plaza and Central Avenues. This phase of the project is to be completed and running in the year 2009.
- The second portion of the project will be to add the extensions of the Beatties Ford Road and the Hawthorne/Central Avenue corridors. This work is scheduled to be completed in 2017.
- The final phase of the project will be the Center City "spokes" which are extensions off the new streetcar routes, revised through analysis, to create a connection through the neighborhoods. This work is tentatively scheduled to be complete in the year 2025.

CATS approach to Center City Streetcar Project

- CATS will seek to keep construction and implementation simple and inexpensive
- CATS will seek to minimize the loss of parking along the corridors
- CATS will seek to minimize the impact of lengthy and complex construction. The goal will be to build and install approximately 700 feet of track in a three week timeframe
- The streetcar stops and street furniture will blend with the neighborhoods it services
- The streetcar will hopefully enhance a pedestrian-oriented environment

Noble noted that the installation of the streetcar track is a relatively quick process. Even so, CATS will build temporary bridges to allow access to driveways and parking lots affected by the construction.

Streetcar Operations

- The streetcar will possesses a higher passenger capacity than a bus
- The cost to build and operate a streetcar system is less than the cost of light rail
- The streetcar will be only one element of a larger system of buses and light rail.
- Other vehicles will be able to operate in the streetcar lanes
- The streetcar will operate in a curb running lane on Beatties Ford Road and Hawthorne/Central Avenues
- It will operate in a median running lane in selected areas along the Trade Street corridor
- It will operate in a three lane section in some areas

There will be six (6) stops along the Beatties Ford Road corridor. There will be 12 stops along the Hawthorne/Central Avenue corridor. And there will be thirteen (13) stops along Trade Street. Streetcar stops are more frequent than light rail but less stops than an average bus route. The locations of the stops chosen are to compliment pedestrian oriented-environments.

Amenities Along the Stops

- There will be ticket machines to administer tickets located at the stops as well as signage to display schedule information
- All stops will have ADA accessible ramps for boarding
- There will be ample lighting and well marked pedestrian crossing zones to promote safety
- Each stop will have a shelter, benches, leaning rails and trash receptacles
- All stops will be landscaped and display art work

Mr. Noble then showed computer simulated slides of what the streetcar system could look like in Center City Charlotte.

He noted that there were project elements that have yet to be resolved. For example, CATS has not found a location for the maintenance facility for the streetcar project. This element is important because the vehicles will need to be serviced, maintained and stored when necessary. It is still unresolved on how and where to terminate the first phase. And a major unresolved issue of the project is the implementation and funding of the project.

Funding

Noble discussed the funding of the project. A portion of the projects' funding will come from the half-cent sales tax and a portion of it will come from funding that CATS will apply from the Federal Transit Administration (FTA) funding. CATS is poised to apply for funds from the Small Starts Program. He noted that all phases of the streetcar project cannot be built at once because Small Starts Projects cannot exceed a $250M project total in order to qualify for these funds.

Schedule

The proposed project schedule is as follows:

- 2005 – Completion of Conceptual Design
- 2006 – Submit FTA Small Starts application for proposed funding
- 2017 – Complete two major phases of the project
- 2025 – Complete all phases of the project

Upcoming activities

Following are the next steps or activities that CATS will be performing for the forward progress of the Center City Streetcar Project:

- Continue coordination with Elizabeth Avenue streetscape
- Wrap-up the planning and urban design effort
- CATS will complete the environment documented study
- Complete the operation and implementation plans, including funding

If more information is desired please go to the CATS website at:
www.ride.tranist.org

AUDIENCE PARTICIPATION

Question: How will bike lanes be impacted by the streetcar?

Response: Along the streetcar corridors, curb-side running bike lanes will be maintained. The bike lanes will be moved behind the streetcar stops. It may not be safe to ride bikes along the tracks.

Question: When service begins will it at least run from Johnson C. Smith University to Presbyterian Hospital?

Response: Yes. The Trade Street line will operate between those two destinations.

Question: Will overhead wiring be integrated into the existing plan for the streetcar?

Response: New power poles and buried power lines will be in the Elizabeth Avenue area. The Grubbs plan has allotted for the cost of poles and underground wiring in their plan. CATS has not budgeted a cost for this work.

Question: Is the Center City Streetcar Project working in conjunction with the West Corridor transit line?

Response: Yes, the Center City Streetcar project is advancing at a different schedule than the West Corridor but they are working together.

Question: What will be the noise levels of the streetcar as it runs through the neighborhoods?

Response: Streetcars are relatively quiet vehicles, on straight tracks. Curves and bends may generate some noise. Overall the system is relatively quiet.

Question: Is it possible to place the power lines underground while the ground is being dug up for the tracks?

Response: The funding mechanism is not in-place for this type of work. CATS committed to look into this possibility further.

Question: Charlotte has serious traffic problems will the streetcar help in this area?

Response: It is believed from transit modeling that the streetcar will help alleviate some of the traffic and transit challenges Charlotte faces.

Question: What are the demographics of the streetcar riders?

Response: The streetcar may replace the existing bus lines along Central Avenue and Beatties Ford Road. Therefore, many streetcar riders may be former bus riders on these two major transit corridors.

Question: Will the streetcar eliminate the bus routes along Central Avenue permanently?

Response: No, the streetcar will not eliminate the buses altogether. Buses still serve a great deal of the community off the main corridors.

Question: Will the streetcar impact traffic on Independence Blvd?

Response: No, the streetcar will not impact traffic on Independence Blvd at all.

Question: Will the streetcar be handicapped accessible?

Response: Yes, the streetcar will be handicapped accessible. There will be a bridge-plate to accommodate wheelchair and stroller users.

Question: What is the major decision factor regarding whether the streetcar will stop at Presbyterian Hospital or the Plaza?

Response: Real Estate. Rail lines are the major issue to overcome. CATS must bridge the existing rail in order to get out to the Plaza.

ADDITIONAL CITIZEN COMMENTS

Comments were transcribed from comment cards collected by CATS.
Comments: Please start the meetings no earlier than 7:00 PM.

Comments: Please do not use transit dollars for unnecessary power conduit. Other funding sources will be needed if this work is done at this time.

Comments: The presentation was excellent!

Comment: Many citizens were concerned about the cost of riding the streetcar.

Comment: Please be mindful of the cyclist needs. Please include bike racks at the stops.

SUMMARIZED COMMENTS AND CONCERNS

Comments have been divided into six subject categories:

- Alignment Considerations
- Platform Comfort and Aesthetics
- Bicycle Issues
- Costs and Operations
- Construction, Traffic, and Phasing
- Transportation System Integration and Routes

Alignment Considerations:

- How does The Plaza stop work, does it go around one way on Central, Thomas, Morningside, and The Plaza?
- Consider closing Sunnyside Avenue, moving the development over, and creating a wider transit road north of Independence Blvd.
- Could the streetcar ever extend to South Park?
- Why not use Davidson Street instead of McDowell for the Belmont Spur?
- Reconsider a spur going through Belmont neighborhood (to Davidson).
- Consider an alternative alignment from Presbyterian Hospital to The Plaza area (Hawthorne to 5th or 7th Street to Caswell to Pecan)

Platform Comfort and Aesthetics:

- Install safety features at all curbside stops such as timed crossing, crosswalks, pedestrian crossing signals, lighting.
- Will the streetcar be handicapped accessible?
- Provide prettier trashcans than Portland did with landscaping.
- Provide emergency phones / panic buttons at shelters.
- Will the landscaping still be there for median stops?
- What determines the size of shelters? They need to fit at least 10-12 people.

- There will be a greenway at the creek in between Arnold Dr. and Masonic Dr. This would be a good pedestrian route to the stop from the Merry Oaks and Commonwealth neighborhoods. Maybe incorporate the platform closer to where the greenway crosses Central.
- Central & Briar Creek development and the development of Renfrow-Plummer properties needs to be pedestrian oriented with at-sidewalk buildings, vertical elevations to provide both residential and retail density to support the streetcar. These developments also need pedestrian access to the platforms.
- Why is the placement of the end-of-line platform at Eastland Mall so far from the mall? Why can't it be incorporated adjacent to the mall itself?
- Will the streetscape improvement be part of the project?

Bicycle Issues:

- How many bikes could fit on the streetcar?
- Can you put bikes on during rush hour?
- Would you have to get your bike off the streetcar if a handicapped person gets on and needs the space or will there be separate wheelchair and bicycle facilities?
- Will there be covered bike parking / lockers at stops in case a bike cannot get on at any time?
- How will the bikes be safely routed on the portion of Elizabeth Avenue that will have no bike lanes and that have curb-side alignment? How will they be incorporated into the idea of switching from median to curbside running for Trade & Tryon?
- The map shows no bike lane bypass around the platform at Landsale Dr. / Rosehaven Dr. and Eastway, or any stop on Briar Creek, Arnold, Morningside, Veterans, and The Plaza. Will there be a safe way for bikes to get around the streetcar there?
- Central between Wembly and Morningside is narrow, and might restrict a bicycle lane, but re-development of the properties between these roads would provide room for a bike lane on Central Avenue, particularly from the greenway to Wembly. If there is not room for a bike lane, then safe access for bikers to leave Central and get onto the greenway and down to Commonwealth should be created for bicyclists to connect to Uptown.

Costs and Operations:

- What will be the fare system?
- What is the operation plan for serving end-to-end?
- Where will the maintenance facility be?
- What will the hours of operation be?

- Will the fare be the same as the bus or LRT?
- Will the redevelopment of Hawthorne to include the turn lanes/bike lanes/and curbside alignment affect the Sunday street parking on Hawthorne for church services?
- Be careful where you place the maintenance facility.

Construction, Traffic, and Phasing:

- Can overhead power lines be put under ground as part of the streetcar project?
- What will be the noise levels of the streetcar as it runs through the neighborhoods?
- Make the Beatties Ford section happen sooner.
- Make the Central Avenue section happen sooner.
- Why could it not make it to The Plaza in the first phase?
- What will be the phasing on Center City Spokes?
- Will there be traffic impacts at the Trade/Tryon intersection with the road diet/change of alignment?
- Will streetcar ridership help alleviate traffic conditions on Independence?
- How long will construction take?

Transportation System Integration and Routes:

- Will it integrate with the West LRT corridor?
- Will it connect to North Commuter Line?
- Will there be connections to Southern LRT?
- Will there be connection to Southeastern LRT?
- Will there be connection to Northeastern LRT?
- Will the light rail be in Trade Street?

There were 100 members of the community present for this very important Public Meeting. The meeting adjourned at approximately 7:45p.m. Most of the attendees moved to the breakout rooms to review drawings to discuss the project further with CATS team members.

CATS Center City Streetcar Project

Meeting: March 7, 2006
6:30 PM – 8:00 PM

Trade Street Corridor Sub Area Advisory Group Meeting

Attendees:

Robert Bischoff	Advisory Board Member
Dennis Marsoun	Advisory Board Member
Wanda Towler	Advisory Board Member
Virginia Woolard	Advisory Board Member
Willie Noble	CATS
Dave Dickey	URS
Brian Piascik	URS
Stan Leinwand	CATS
Jerry Roberson	CATS
Keira Terrell	CATS
Linda Murdaugh	CATS
Harvey Gantt	Gantt Huberman Architects

Willie Noble, CATS Senior Project Manager, opened the meeting and welcomed the attendees. He noted that it had been some time since Advisory Meetings were held last fall. The delay in meeting was to ensure that they had new information to share, and the need to further define the concept design. In his remarks, Noble covered the following items:

(a) Announced the date of the public meeting on March 16, and encouraged the advisory group to come out and bring their neighbors.

(b) Described a new initiative by the Federal Transportation Administration "The Small Starts Program." He believes the program funding criteria fits well with the Streetcar project (under 250 million dollars) and indicated that CATS would be pursuing funding.

(c) Outlined the agenda for the meeting:

- Review streetcar manufacturers.
- Presentation of urban design program and principles.
- Presentation of concept design for shelters.
- An analysis of potential location for the Streetcar maintenance facility.

(d) He concluded his remarks by outlining the steps that would lead to final design and construction. He noted that the streetcar project would go before the MTC, and key decisions would have to be made on priorities of funding. The streetcar project competes as one of five major corridors.

URS

Mr. Noble completed his presentation, and turned the meeting over to Dave Dickey of URS. Dickey reviewed adjustments made in stop locations in the Rozzelle's Ferry / Wesley Heights area along Trade Street.

Stan Leinwand followed with an extensive discussion of the urban design principles along the Trade Street corridor.

Dave Dickey and Harvey Gantt presented the proposed concept design for the shelters along the corridor.

Dave completed the presentation with a discussion of five potential locations for a maintenance facility, and a review of the various models for streetcars.

A discussion followed, primarily centered on the potential location of a maintenance facility in the Gateway area. Even though the URS team felt that they could camouflage the maintenance operations in a structure housing parking and other functions, some members of the Advisory Committee strongly objected.

In general, the balance of the discussion period indicated solid approval for all of the proposals related to urban design, shelters, and streetcar manufacturer's models of potential cars.

The meeting ended at approximately 8:00 PM.

Distribution: Attendees
File

CATS Center City Streetcar Project

Meeting: March 8, 2006
6:30 PM – 8:00 PM

Hawthrone/Central Avenue Sub-Area Advisory Group Meeting

Attendees:

Debra Gilbert	Advisory Board Member
John Nichols	Advisory Board Member
Tom Poston	Advisory Board Member
Josh Saah	Advisory Board Member
Michael Smith	Advisory Board Member
Marvin Snyder	Advisory Board Member
Jerry Roberson	CATS
Kiera Terrell	CATS
Linda Murdaugh	CATS
Stan Leinwand	CATS
Brian Piascik	URS
Harvey Gantt	Gantt Huberman Architects

Jerry Roberson noted in opening the meeting that Willie Noble would not be in attendance and that he, as associate project manager, would be substituting. He proceeded to give an outline on the meeting's agenda and purpose and reviewed the following:

(a) Announced the date of the public meeting on March 16, and encouraged attendance by neighborhood group members.

(b) Described the Small Starts Program newly introduced by the FTA. The program's funding criteria addresses small transit projects in the 250 million dollar range. CATS is looking into pursuing streetcar funding under this program.

(c) Roberson discussed next steps in the process. He noted that the project would soon be reviewed by the MTC in June/July with hopes that a decision would be made to move forward in September.

Stan Leinwand of CATS followed Roberson and reviewed the urban design concepts and principles for the Trade Street Corridor. This was followed by a discussion of the uniqueness of Trade Street when compared to other important "signature" streets like Tryon Street. It was pointed out that some aspects of the urban design standards may be appropriate in the extensions to Central Avenue and Beatties Ford Road.

Leinwand and Harvey Gantt then reviewed the concept design for the streetcar shelters. They traced the evolution of the design and pointed out that the concept embraced the need to be distinctive, compatible with other shelters previously built (like Tryon Street), and adaptable to both median running and curbside stops. The shelter design was received favorably.

Brian Piascik reviewed changes in the stop locations in the Five Points / Wesley Heights Area. He also reviewed the survey of streetcar manufacturers and the models of various streetcars that might be selected.

Piascik concluded the presentation by reviewing the sites for the proposed maintenance facility. One site located in the vicinity of the Plaza/Central Avenue area was favorably received by the Advisory Board members. That site had the benefit of extending the first phase to the Central Avenue area, which was seen as beneficial.

During the question/answer period, the following questions arose:

Q: Will the shelter design on Trade Street extend to the extensions?

A: The team responded "Yes." The modifications may come in the size or length of shelters and in minor adjustments between curb and median running stops.

Q: How do you incorporate public art?

A: Public art may be incorporated in elements of the shelters - such as at wind screens, paving, seating, etc.

Q: Will the streetcar design be modern or traditional?

A: The design is likely to be modern, rather than traditional. Traditional design would limit the passenger capacity of the streetcar, making them less attractive for maximizing ridership.

The meeting ended at approximately 8:00 PM.

Distribution: Attendees
File

CATS Center City Streetcar Project

Meeting: March 8, 2006
6:30 PM – 8:00 PM

Beatties Ford Road Sub-Area Advisory Group Meeting

Attendees:

Kelly Alexander	Advisory Board Member
Calvin Banks	Advisory Board Member
Sarah Heinrich	Advisory Board Member
Gwenarda Isley	Advisory Board Member
William Lisk	Advisory Board Member
Aaron McKeithan	Advisory Board Member
Jerry Roberson	CATS
Stan Leinwand	CATS
Kiera Terrell	CATS
Linda Murdaugh	CATS
Brian Piascik	URS
Harvey Gantt	Gantt Huberman Architects

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Leinwand and Harvey Gantt then reviewed the concept design for the streetcar shelters. They traced the evolution of the design and pointed out that the concept embraced the need to be distinctive, compatible with other shelters previously built like Tryon Street, and adaptable to both median running and curbside stops. The shelter design was received favorably.

Brian Piascik reviewed changes in the stop locations in the Five Points / Wesley Heights Area. He also reviewed the survey of streetcar manufacturers and the models of various streetcars that might be selected.

URS

Piascik completed his presentation by reviewing the potential sites for the streetcar maintenance facility. One of the sites, Beatties Ford Road at the Brookshire Freeway, was of great interest to the Advisory Board members. They asked questions related to the size of the building, the architecture, the amount of investment, and the potential extension of the line for an additional stop on Beatties Ford Road. The Advisory Committee was enthusiastic on locating the vehicle maintenance on the Beatties Ford Road site. Some members expressed a desire to "lobby" for location to the site - seeing its placement there as an asset for improving the appearance at the entrance to the interstate/gateway.

Following a lively, but positive Q & A.

The meeting ended at approximately 8:05 PM.

Distribution: Attendees
File

CATS Center City Streetcar Project

Meeting: March 16, 2006
6:30 PM
Charlotte Government Center
Room 267
Community Meeting

Attendees:

Willie Noble	CATS
Jerry Roberson	CATS
Stan Leinwand	CATS
Kiera Terrell	CATS
Linda Murdaugh	CATS
Dave Dickey	URS
Brian Piascik	URS
Tom Furmaniak	LTK Associates
Harvey Gantt	Gantt Huberman Architects

Introduction and Project Update

Willie Noble, CATS project manager, called the meeting to order following introduction of key staff. He proceeded to give an update of the project's timeline, route adjustments and re-alignments since the last community meeting in September 2005. He noted that CATS was seeking to initiate the federal portion of the funding for the Streetcar project through the new "Small Starts" program for small projects up to $250,000,000 project cost. He thought that the project had an excellent chance of being favorably considered.

Noble then proceeded to outline next steps. Most immediate would be presentation in May to the Metropolitan Transit Commission (MTC) where the Streetcar concept design would be evaluated and a priority for moving forward would be up for consideration. He reminded the audience that the Streetcar project competed with the other five corridors for priority in funding and implementation.

Noble then closed his introductory comments by outlining the agenda for the balance of the meeting:

- A review of vehicle maintenance sites
- A survey of models and manufacturers of streetcar vehicles.
- A description of the Trade Street Urban Design Vision
- A presentation of the prototype streetcar shelter design

He noted that following the presentation the audience would have opportunity for questions and answers and to interact with CATS and URS team members.

Brian Piascik of URS Corporation reviewed the potential sites that had been studied or will be studied for a vehicle maintenance facility. Sites identified were:

- Brookshire Freeway and Beatties Ford Road.
- 1-77 Ramp at Fifth Street in Gateway Area

URS

- Gateway Site in Third Ward
- Clement Avenue Site in the Plaza/Central Area
- Lamar Avenue Site 17

Piascik outlined the assets and liabilities associated with each site, noting that size of land area, surrounding land uses, and neighborhood support could impact their viability or chance of selection.

He then showed slides of the potential aesthetics and architectural features that a maintenance facility might have to meet the measure of compatibility with the surrounding neighborhood.

Tom Furmaniak of LTK Associates made a presentation on the various streetcar models that may meet CATS standards for passenger capacity, accessibility, design, and other amenities. All of the manufacturers of streetcar models were European or Asian companies. There were eight (8) models shown.

Stan Lienwand followed with a presentation of the urban design vision for Trade Street. He noted that Trade Street was a very important street and the urban characteristics should be reflective of the area's history. Characteristics of the streetscape design might extend to the routes out Beatties Ford Road and Central Avenue.

Harvey Gantt of Gantt Huberman Architects presented the evolution of the streetcar shelter concept design. He noted that the design needed to have its own unique character, and yet not seem "foreign" to the existing "signature" shelters built along North Tryon Street. The shelters also had to be readily adaptable to the size and passenger requirements for routes beyond the Center City-Trade Street Corridor. Also noted was the degree to which each shelter and station could accommodate public art.

Gantt invited the audience to come for a closer look at the design concepts.

Following Gantt's presentation, Willie Noble fielded a few questions then adjourned the meeting and invited more informal review of the presentation boards with CATS and the URS staff. During this time, the following typical questions/discussions arose:

- What will the VMF look like?
- How much will the VMF cost?
- Was there a single favored VMF site yet?
- Will the streetcar design be modern or traditional?
- Will the streetscape amenities proposed for Trade Street be included on Beatties Ford Road and Central Avenue alignments as well?
- Will the shelter design on Trade Street extend to the extensions?
- How will public art be incorporated?

The meeting ended at approximately 8:30 PM.

Distribution: Attendees, File

METROPOLITAN TRANSIT COMMISSION

METROPOLITAN TRANSIT COMMISSION
June 28, 2006
Charlotte Mecklenburg Government Center
Room 267
5:30 p.m.

AGENDA

5:30 p.m. I. Call to Order Parks Helms
II. Approval of May 24, 2006 Meeting Summary Parks Helms

III. Special Recognition

IV. Report from the Chairs of the
Citizens Transit Advisory Group Jerry Fox

V. Report from the Chairman of the
Transit Services Advisory Committee Paul Edmunds

VI. Public Comment on Agenda Items

VII. Action Item
a. Northeast Corridor Refined Locally
Preferred Alternative David Leard/John Muth

VIII. Information Item
a. Streetcar Project Study Results
and Alignment Alternatives Willie Noble
b. Art-in-Transit Program Annual Update & FY07 Plan Pallas Lombardi

IX. Chief Executive Officer's Report Ron Tober

X. Other Business Parks Helms

XI. Public Comment on General Items

7:30 p.m. XII. Adjourn

June 28, 2006
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Item No. Item Description Attachment No.

I. Call to Order

II. Approval of May 24, 2006 Meeting Summary 1

III. Special Recognition

IV. Report from Chairs of the Citizens Transit Advisory Group

V. Report from Chairman of the Transit Services Advisory Committee

VI. Public Comment on Agenda Items

VII. Action Item
a. Northeast Corridor Refined Locally Preferred Alternative 2

VIII. Information Items
a. Streetcar Project Study Results and Alignment Alternatives 3
b. Art-in-Transit Program Annual Update & FY07 Plan 4

IX. Chief Executive Officer's Report
May Ridership Analysis Appendix A
Upcoming MTC Agenda Items Appendix B

X. Other Business

XI Public Comment on General Items

XII. Adjourn

METROPOLITAN TRANSIT COMMISSION
Meeting Summary
June 28, 2006

DISCUSSION SUMMARY

Presiding: Parks Helms, Chair (Mecklenburg County)

Present:
Mayor Pat McCrory (Charlotte)
Mayor Lee Myers, (Matthews)
Ralph Messera (Matthews)
Mike Rose (Pineville)
Mayor Randy Kincaid (Davidson)
Bill Coxe (Huntersville)
Marion Cowell (NCDOT)
Paul Edmunds (TSAC)
Brian Welch (Mint Hill)
Jerry Fox (CTAG)
Andrew Grant (Cornelius)

CHIEF EXECUTIVE OFFICER: Ron Tober

I. Call to Order
The regular meeting of the Metropolitan Transit Commission was called to order at 5:30 p.m. by Chairman Parks Helms.

II. Review of the May 24, 2006 Meeting Summary
The meeting summary was amended to include Mayor Kim Phillips, Town of Huntersville, as present. The meeting summary was then approved.

III. Special Recognition
Betsy Bailey, Executive Director of the North Carolina Public Transportation Association (NCPTA), presented Ron Tober with NCPTA's 2006 Distinguished Service Award.

IV. Citizens Transit Advisory Group Chairman's Report
Jerry Fox, CTAG chairman, reported that CTAG met on June 20, 2006 and heard a presentation on the Northeast Corridor's Options and Alternatives. The group recommended and unanimously adopted the following items:

- CTAG recommended the adoption of the lower cost NCRR designed option in the Locally Preferred Alternative and that further study and evaluation be conducted during Preliminary Engineering for both the adopted NCRR option and the alternative Sugar Creek/North Tryon Street alignment option. If the Sugar Creek/North Tryon Street alignment is ultimately chosen for economic development reasons, any additional cost associated with it should be covered from sources other than transit funds.
- CTAG recommended the adoption of the UNCC design option in the Locally Preferred Alternative.
- CTAG also recommended the adoption of the I-485 South design option in the Locally Preferred Alternative.

Discussion
Chairman Parks Helms asked if CTAG discussed where the additional funds would come from to pay for the Sugar Creek/North Tryon alignment. Mr. Fox said no, but the recommendation states that funding would have to come from sources other than transit funds.

Mr. Helms asked what the additional costs would be. Ron Tober said the current estimate is $26 million. He noted that number is not a net total because some of the land acquired for the alignment may be available for resale thereby reducing the net cost of the alternative.

Mayor Myers asked if CTAG voted unanimously not to get the line across of I-485. Mr. Fox said it was unanimous because of the additional cost of $30 million to extend the line north of I-485 and the low initial ridership potential.

Mayor Pat McCrory noted that in the budget recently approved by the Charlotte City Council, $17 million was taken out of future capital funding for transit corridors, leaving just $2 million for transit projects. Mayor McCrory said he thinks that decision will have severe consequences on any future transit decisions inside of Charlotte's city limits. He also said he will continue to work on getting that $17 million back into transit projects and said he will need the support of all the towns to get it done.

V. Transit Services Advisory Committee Chairman's Report
Paul Edmunds reported that TSAC met on June 8, 2006. The group heard presentations on Northeast Corridor Options and Alternatives, the County-wide Transit Services Plan and hybrid buses. The group also discussed service issues.

Mr. Tober noted that CATS will start using fleet-wide ultra low sulfur diesel fuel in fiscal year 2007, starting in October of 2006.

VI. Public Comment on Agenda Items

Ed Garber, Vice President of Eastway/Sheffield Neighborhood Association, spoke in support of streetcar coming to East Charlotte. He said that East Charlotte has really developed over the years with its first high rise apartment building and office building on Central Avenue as well as the diversity of the area between Midwood and Eastland Mall. He added that he thinks the Streetcar would help spawn an economic boom on the eastside.

Calvin Banks of Johnson C. Smith University also showed his and the University's support of the Center City Streetcar. He said there are several benefits of the streetcar that directly impact the University such as improved safety for students and staff who must cross Beatties Ford Road to get from one side of campus to the other by slowing traffic and easing congestion, as well as giving students, staff and visitors another transportation options. He also added that the Streetcar has the potential to enhance economic development along the corridor.

Dixon Flemming, partner with CASTO Property Group, spoke in support of light rail in the Northeast Corridor. He said that about a year ago his company bought Shops at University Place with the specific idea of being able to redevelop the area, which is why they want light rail to come to the Northeast sooner rather than later.

George Maloomiam, vice-chair of University City Partners, also spoke in support of light rail in the Northeast Corridor. He said with the significant growth the University area has experienced over the past 15 years along with the $80 million in economic development along the area that light rail is an ideal option.

Nancy Carter, Charlotte City Council member, spoke in support of streetcar in East Charlotte. She said that riders of Route 9 Central Avenue are the greatest supporters of transit in the area, which is evident by their ridership numbers, and that streetcar would be another transportation choice for them.

Michael Barnes, Charlotte City Council member, spoke in support of light rail in the Northeast Corridor. He said he would prefer the alignment at North Tryon and Sugar Creek because it would allow for development of the entire corridor from Sugar Creek north to UNCC. He noted that the Hidden Valley Community would benefit from light rail because there are a number of businesses along that area that need redevelopment and light rail would provide opportunities for further economic development and added tax base to the City. He added that both the North Tryon Business Development Group and the Hidden Valley Community Group supports the alignment and as the area develops economically and structurally having light rail through that part of the City will create a new Charlotte and will improve the economic vitality of the area.

Mayor McCrory told the speakers that they need to let the State know that they support transit in the Charlotte region so the City can get funding for transit projects because right now the State has no designated matching funds to help match the City's money on any other corridor projects.

VII. Action Items
a. Northeast Corridor Refined Locally Preferred Alternative*
David Leard, Senior Project Manager for the Northeast Corridor gave a presentation on staff's recommendations for the Northeast Corridor.

Mr. Leard gave the MTC an overview of the project, which is a dual-track light rail that is an extension of the South Corridor, running 11 miles from Center City Charlotte and Seventh Street to I-485 with 12 proposed stations and service from 5 a.m. to 1 a.m. with 7.5 minutes service in each direction during rush hour and every 15 minutes during the off peak. Fare will be equal to the local bus fare at that time. He said there are 13 stations identified about ¾ miles apart from the NoDa district out to I-485, which is very similar to the South Corridor and consistent with light

rail around the country.

Staff recommends the adoption of the NCRR design option with the provision that the Sugar Creek/North Tryon alignment be included in the DEIS and evaluated further during preliminary engineering, focusing on the economic development piece. Mr. Leard said another design option is the UNC-Charlotte or North Tryon Alternative. Both options travel up North Tryon Street past Harris Boulevard with a Station at J. W. Clay.

The UNC-Charlotte alignment would dip into the campus with a station very near the new Student Union then come back out, following the greenway to the North Tryon/Mallard Creek Church area where the North Tryon alignment stays in the median. He said staff recommends the UNC-Charlotte alignment with an additional station on campus.

Mr. Leard said the final design option would stop short of I-485 with a station and probably a parking garage just south of I-485 or a similar option that would cross I-485 with a station and facility to the north. He said staff recommends that the line stay south of I-485 due to the high cost of bridge construction over I-485 and the low daily ridership projection for a station north of I-485.

Mr. Leard said staff's recommendations for the Locally Preferred Alternative with the three options identified, NCRR, UNC-Charlotte and stopping south of I-485, would cost an estimated $585 million, with an estimated ridership of 17,500 riders per day.

Mr. Tober pointed out that the $585 million number is in 2006 dollars. It is not an escalated number because staff hasn't laid out a schedule for when the project would be implemented. He noted that when an implementation plan is developed the projected cost may change to reflect the expected time of construction.

John Muth gave a presentation on the project's Preliminary Project Evaluation, which includes an evaluation of system plan principles, land-use, mobility and operations, environmental impacts and financial impacts. He said that the project has high user benefits and strong land use potential and that its potential for Federal funding was medium-high and for state funding was medium.

Mayor Myers said he did not follow Mr. Fox's comment about funding during his CTAG presentation and asked if the Sugar Creek Alignment was chosen would the City have to come up with an alternative funding source. Mr. Tober said CTAG thought that the funds should come from either the City or from real estate that could be sold to the development community. He added that there may be some economic development grants available either through the State or the Federal Government.

Mayor McCrory said he needed more clarification on why staff needs to further study the Sugar Creek/North Tryon option if it is obvious that it cost more than the other options staff recommended. Mr. Leard said from a technical perspective, because staff has identified it as an option it will continue to be carried forward in general discussion. He also noted that the City will lead a study on the economic development portion of the alignment.

Mr. Tober said CATS' staff along with the City's Economic Development Department and the Planning Commission staff also feel that there is a significant potential for redevelopment in that section of North Tryon and the opportunity to do that would be in conjunction with the transit investment in that area. He also said that the reason staff is still studying that option is to get better information on costs to determine if the actual difference in cost is $26 million, $10 million or $35 million. He noted that the City is also looking into that area's economic development

potential with the North Tryon Street Economic Development Study.

Mr. Tober said the stations in the Sugar Creek area and the stations that are in the Old Concord Road area are very close together, about ¼ mile away from each other, and from a transit ridership perspective, the station location on the two different alignments are so close together that the modeling shows no difference in ridership. The difference is the cost of the alignments and that cost is primarily driven by real estate costs and the need to widen North Tryon. He said there is a 100-foot right-of-way in that area and the state is requiring the purchase of additional right-of-way if the project is built in the medium with a 36-foot transit right-of-way. Mr. Tober said the purchase of that additional 18 feet on either side is the primary reason the cost goes up with the North Tryon alignment.

Mayor McCrory said he is hearing a lot of negatives regarding the Sugar Creek/North Tryon option and is trying to determine if it is worth more study because he doesn't want to waste resources if staff already knows what they are going to do. He asked if staff is continuing to study that alignment to satisfy FTA requirements. Mr. Tober said that is part of the reason, but if CATS were to drop the Sugar Creek/North Tryon alignment now and the City were to later complete its economic development studies and say they would like to do go with that alignment, staff would have to go back and take the time and money to do a supplemental Environment Impact Statement, so by continuing to study this alignment we can avoid that.

Mayor McCrory said he's not sure where the City would get resources to help fund the Sugar Creek/North Tryon alignment. He also wanted to know what impact the North Tryon alignment would have on the automobile. He said what he doesn't want to do is interfere with a road that is a major relief to I-85.

Bill Coxe asked if the timeframe for the Economic Development Study and the timeframe for whatever additional information staff needs coincide with the MTC's decision making this fall. Mr. Tober said no and that the decision on which alignment would be chosen would come once staff has completed the Draft Environment Impact Statement.

Laura Harmon said the City should have the Economic Development Study complete by the end of the year.

Mr. Tober said if the MTC decided it wanted to go ahead and push the Northeast Corridor into the New Start Process and request an FTA evaluation on it, staff would present both of these as two alternatives. However, he noted that staff prefers the NCRR alignment because of its lower cost.

Mr. Coxe said he thinks the additional cost should be discussed later this fall when the MTC is dealing with the financial realities rather than trying to determine it now.

Ralph Messera asked what the $26 million of additional cost for the Sugar Creek/N. Tryon alignment will do to CATS rating with the FTA. Mr. Leard said it would push the cost-effectiveness number from a medium-low to the low category which hurts its chances for Federal funding.

Mayor McCrory said he supports staff's recommendation along the railroad and is extremely pleased that the Chancellor of UNC-Charlotte is supporting the line through the campus. He noted that it is good news that the line will serve the students, while reducing the project's cost if staff can get an agreement from the University to not charge for the right-of-way through the university. He noted that this is an extremely positive step for the entire region to tie the campus to the mass transit system.

Mike Rose asked if UNCC has given any indication as to what its position concerning the right-of-way. Mr. Tober said there have been some positive talks. Dennis Rash, UNC-Charlotte Representative, said it is fair to say that the University has encouraged the conversation and is eager to continue to work with CATS on this process, but that decision is one that has to be made by UNC-Charlotte Board Members.

Mr. Messera asked how much of a time penalty would be incurred for going onto the UNC-Charlotte campus. Mr. Leard said maybe three minutes at the most, but it is factored into the user benefit and includes the time to go in and out of the campus. He noted that the overall runtime is about 25 minutes from the end of the line to Center City.

Mr. Helms asked for a discussion of the I-485 Terminus. Mayor Myers said by making this decision the MTC is essentially eliminating the possibility of extending the line into Cabarrus County, to which Mr. Tober said no because at some future time the line could be built across I-485.

Mayor Myers said it is realistic to think that sometime in the future the line could reach Cabarrus County, but he has a concern about stopping the line south of I-485 because at some point people on the other side of the County line are going to realize this is a good thing. Mr. Tober said staff is trying to present the best project that has the best possibility of getting funding and this project is within striking distance of the cost-effectiveness criteria and it has good land-use. He said that by going into UNCharlotte we have more riders at less cost, by staying on the NCRR we have less cost and by staying inside I-485 we are saving $30 million. He noted that the benefit of crossing I-485 to get those couple hundred riders is just not there.

Mayor Myers said he is concerned about the future and where transit is going to be in 2030 and beyond, but he understands what staff is saying and maybe it is better to get the line built today than have it rejected by the Federal government.

Mr. Helms said the MTC probably received the e-mail from Humpy Wheeler in which he expressed his support for bringing the line across I-485. Mr. Helms said by extending the line past I-485 it will take riders up to Lowe's Motor Speedway and Verizon Amphitheater into Cabarrus County. However, he agrees with Mr. Tober.

Mr. Messera asked how many of the 17,500 estimated riders are estimated to ride the full length to the I-485 station. Mr. Leard said staff has the number of riders that might get on at the end of the line, but not a projection of how the train would load and where individual riders would get on and off.

Motion was made by Mayor McCrory and seconded by Mayor Lee Myers to approve the staff recommendations for the Northeast Corridor. The vote was recorded as unanimous.

VIII. Information Items
a. Streetcar Project Study Results and Alignment Alternatives*

Willie Noble, Senior Project Manager for the Center City Streetcar gave a presentation on the Streetcar Project.

Kent May, City Planning, spoke about the development opportunities with the project on Trade Street as well as Beatties Ford Road and Central Avenue. He pointed out the number of units planned and/or under construction as well as the number that are in the short-term and mid to long-term opportunities which indicate a very strong future for the development and

redevelopment.

Mr. Noble continued his presentation with the corridor ridership. He pointed out that there would be a public meeting on July 18th to present this information to the public. He said staff expects to the have the conceptual design completed this summer. He noted that there is more work needed to finale ridership, an implementation plan and cost estimates. Staff also has to complete a draft of the Environmental Assessment Statement.

Discussion:

Mr. Edmunds asked how many vehicles will be in this system, to which Mr. Noble said 16.

Mr. Edmunds asked if the Barnhardt location would meet CATS' needs. Mr. Noble said yes and the West Corridor is also anticipating looking at the potential for streetcar service. However, he noted that the Barnhardt location would not be big enough for both corridors.

Responding to another question from Mr. Edmunds, Mr. Noble said staff could get both sites and put the vehicle maintenance facility on one site and have storage capacity on both sites and that would accommodate future expansions to include the West Corridor. Mr. Edmunds said I assume the CMUD site was paid for by enterprise funds. Mr. Tober said I think there would have to be some transaction involved in compensating CMUD for that site, but how much remains to be seen.

Mr. Coxe asked if development on Hawthorne is compatible with a maintenance facility site. He wanted to know if it is the same issue CATS have in downtown with the terminus of the North Corridor and its compatibility with Third Ward. Mr. Noble said he hasn't seen their final development plans, but they came to staff and are asking us to locate the vehicle maintenance facility close to their existing facility, which is a manufacturing and industrial type facility. He noted that the VMF should be compatible.

Mr. Tober said staff has been told by Barnhardt and Grubb that they would not be in a position to proceed with that redevelopment on those 25 acres of land without this project being built. He noted that they are prepared to say to the Federal Government that there is a direct economic development connection between this alignment and their ability to make their development work.

Mayor McCrory said we are seeing very similar dynamics along the Central Avenue Corridor that we have seen during the past decade along the South Boulevard Corridor. What is interesting is the potential for real eastside revitalization and valuations going up as opposed to down and is occurring along the Central Avenue Corridor partly because of the vision for the streetcar. He said it is an extremely important economic development issue along that corridor with City Council, especially out toward Eastland Mall.

Mayor Kincaid asked what the fare for streetcar is. Mr. Noble said a fare hasn't been set yet, but it will be comparable to the local bus service.

Mr. Tober said this will be back as an Action Item next month. Staff will come back with recommendations on some of the alternatives that are out there for the MTC to consider and a side by side evaluation on those items.

IX. Chief Executive Officer's Report

a. Ridership Report - CATS will end the year with about an 8 percent ridership increase, which is a very strong increase and one of the biggest year-end increases CATS has seen. He also noted

a number of service changes, including a change on the 77X which has gotten some complaints from Duke Energy employees.

b. Recertification of STS Customers. Mr. Tober said there are about 5,000 people who are currently certified to use STS and staff in conjunction with Carolinas Medical Center will be recertifying them. He said they will undergo a functional assessment to make sure that the people we are transporting on Special Transportation Services are in fact eligible for it under the American's with Disabilities Act. Some individuals are likely to be decertified which may bring some complaints to officials.

Mr. Tober noted that the first light rail vehicle arrived and staff will schedule a time for the MTC members to view it and that the Huntersville-Northcross Park and Ride lot opened successfully. He also informed the group that today is Brad Miller, Manager of Operations for CATS for almost six years, is leaving to become the General Manager and Chief Executive Officer of the Des Moines, Iowa Transit System. He also introduced John Trunk, the newest addition to the CATS Senior Management Team, as Manager of Procurement or Chief Contracting Officer.

X. Other Business
None.

XI. Adjourn
Chairman Helms adjourned the meeting at 7:30.

NEXT MTC MEETING: WEDNESDAY JULY 26, 2006, 5:30 PM

CATS Center City Streetcar Project

Meeting: ADVISORY BOARD MEETING SUMMARY Trade Street - Elizabeth Avenue Corridor
July 11, 2006
6:30 pm
Gantt Huberman Architects Offices

Attendees: Ms. Tanaya Walters, Johnson & Wales; Advisory Board Member
Mr. Todd Williams, Grubb Properties; Advisory Board Member
Mrs. Ginny Woolard, 3rd Ward Representative; Advisory Board Member
Mr. Robert Wade Kimrey; Advisory Board Member
Mr. Martin Wheeler; Advisory Board Member
Ms. Lisa Gray; Advisory Board Member
Mr. William List; Advisory Board Member
Mr. Robert Ferrin; Advisory Board Member
Mr. Willie Noble, Senior Project Manager; CATS
Mr. Jerry Roberson, Asst. Project Manager; CATS
Mr. Stan Leinwand, Transit Planner/Urban Design; CATS
Mrs. Kiera Terrell, Public Information Specialist; CATS
Ms. Linda Murdaugh, Coordination Assistant; CATS
Mr. Dave Dickey, URS Corporation
Mr. Brian Piascik; URS Corporation
Mr. Harvey Gantt; Gantt Huberman Architects

Mr. Willie Noble opened the meeting and expressed his gratitude for the interest and attendance record of the Advisory Board Members over the period of the project's development process in the concept design phase.

He then updated the group on the overall work of the design team - reviewing the streetcar routing, the proposed changes in routing to accommodate the comments of citizens, and the preferred location of the vehicle maintenance facilities on Beatties Ford Road and the Barnhardt site near Central Avenue.

Subsequently, Mr. Noble discussed preliminary cost projections for the streetcar. The estimate is 246 million dollars, or about 25 million dollars per mile. Mr. Noble pointed out that this cost projection was considerably below the cost of light rail - and because the overall project cost was below 250 million dollars, it could likely qualify for the FT A's "Small Starts" Project, which made federal funding more likely. There was even the possibility now that the project might be funded as a single-phase development rather than the three discussed in previous meetings over the past two years.

Mr. Noble reviewed the "next steps" in the progress of the Streetcar Project. He first encouraged attendance at the upcoming community meeting at the Government Center on Tuesday, July 18. Then, he indicated that MTC meetings

would occur in late July and in September. These meetings would ultimately determine the priority rankings of the Streetcar Project and the other five corridors in the transit pipeline.

It was acknowledged by Mr. Noble, other CATS representatives, and URS team members that the Streetcar Project had been favorably received to this point. Its service area (urban population base with much-used bus route), the relatively lower project cost, along with almost consensus community support, would all be strong factors in getting to the top of the priority list.

Following Mr. Noble's presentation, URS team members presented detail evaluations of the preferred vehicle maintenance sites, and reviewed the cost estimate and issues related to the completion of an environmental assessment for the Project.

The Advisory Board responded positively to the presentation, and most questions raised related to the fact that the project might stand a chance of being treated as a single-phase development - which was significant and would speed implementation in the Beatties Ford Road and Central Avenue corridors.

Mr. Noble adjourned the meeting at approximately 8:10 p.m. and asked that Advisory Board Members encourage their neighbors to attend the July 18 community meeting.

Footnote: Similar advisory meetings were held on successive nights at Gantt Huberman's office with the agenda and substance of the meetings being similar to those referenced in the Trade Street minutes. A listing of the attendees for those meetings is attached.

ADVISORY BOARD MEETING Central Avenue Corridor
Meeting Date: July 12, 2006

Attendance List:

- Mr. Marvin Snyder, Eastland Mall; Advisory Board Member
- Mrs. Patsy Kinsey, Charlotte City Council; Advisory Board Member
- Mrs. Debra Gilbert, Briar Creek Neighborhood; Advisory Board Member
- Mr. Robert Bishoff; Advisory Board Member
- Ms. Molly Prime; Advisory Board Member
- Mr. Michael Smith; Advisory Board Member
- Mr. Tom Poston; Advisory Board Member
- Ms. Alice Galvin; Advisory Board Member
- Mr. Willie Noble, Senior Project Manager; CATS

- Mr. Jerry Roberson, Asst. Project Manager; CATS
- Mr. Stan Leinwand, Transit Planner/Urban Design; CATS
- Mrs. Kiera Terrell, Public Information Specialist; CATS
- Ms. Linda Murdaugh, Coordination Assistant; CATS
- Mr. Dave dickey; URS Crporation
- Mr. Brian Piascik; URS Corporation
- Mr. Larry Walters, AlA; Gantt Huberman Architects

ADVISORY BOARD MEETING Beatties Ford Road Corridor
Meeting Date: July 13, 2006

Attendance List:

- Mr. Kelly Alexander; Advisory Board Member
- Mr. Aaron McKeithen; Advisory Board Member
- Mr. Calvin Banks; Advisory Board Member
- Mr. Willie Noble, Senior Project Manager; CATS
- Mr. Jerry Roberson, Asst. Project Manager; CATS
- Mr. Stan Leinwand, Transit Planner/Urban Design; CATS
- Mrs. Kiera Terrell, Public Information Specialist; CATS
- Ms. Linda Murdaugh, Coordination Assistant; CATS
- Mr. Dave Dickey; URS Corporation
- Mr. Brian Piascik; URS Corporation
- Mr. Larry Walters, AlA; Gantt Huberman Architects

CATS Center City Streetcar Project

Meeting: July 18, 2006
6:30 PM
Charlotte Government Center
Room 267
Community Meeting

Team Attendees:

Willie Noble	CATS
Jerry Roberson	CATS
Stan Leinwand	CATS
Kiera Terrell	CATS
Linda Murdaugh	CATS
Dave Dickey	URS
Brian Piascik	URS
Jeff Weisner	URS
Paul Pattison	URS
Harvey Gantt	GHA
Chris Ogunrinde	NC
Vincent Howard	RS&H
Rick Grochushe	RS&H

Introduction and Project Update

Willie Noble, CATS project manager, called the meeting to order and proceeded to give an update of the project. His presentation generally followed four major elements:

- Project Description
- Project Benefits
- Project Costs
- Next Steps & Activities

Willie gave a quick overview of the project approach and streetcar operations, discussing briefly streetcar capacity, stops and construction. Willie presented the latest alignment and compared it against the Charlotte streetcar system that existed in 1928. Willie transitioned into development opportunities along the alignment highlighting major redevelopment opportunities and attractions, then summed the redevelopment opportunities along Beatties Ford Road and Central Avenue be development type and magnitude of development. Willie then presented information regarding the likely future ridership of the streetcar and some of the quirky facets of the modeling process. Willie discussed the operations efficiencies the streetcar would provide as well. Next came an overview two end points of the alignment followed by a discussion of the vehicle maintenance facility: the top two locations, conceptual site layout, and relevant characteristics. Willie concluded his presentation with a summary presentation of the capital costs and next steps.

Jeff Weisner then gave a presentation of the environmental analyses conducted

for the project. Jeff began with an overview of NEPA (the National Environmental Policy Act), what it meant in terms of the types of analyses that were conducted and how the public was involved and the fact that it guided important decisions for the project. Jeff concluded with a draft set of environmental findings, noting that this project was very environmentally friendly with many positive effects (e.g. land use; displacements; neighborhood and community features; historic, archeological and cultural resources; and, secondary and cumulative impacts. In contrast, only a couple of environmental categories were anticipated to have relatively minor adverse impacts on the environment (e.g. visual and aesthetics, and noise and vibration).

Willie Noble then opened up the floor to answer questions.

Questions and Answers

Question: What is the length of time it will take a person traveling from the Rosa Parks Transit Center to the Eastland Community Transit Center?

Response: The commute time will be approximately 48 minutes assuming the streetcar will run at 7 minute headways.

Question: You mentioned the estimated costs for Portland and Seattle. Do you have exact numbers?

Response: We don't have exact numbers here at this meeting, but we believe the numbers our engineers estimated was within 1/10th of the range of the actual construction cost.

Question: You mentioned the cost of the project is $250 million. Are we looking to seek funds for the entire amount from the federal government? If not, can you explain the breakdown for local funding?

Response: We are planning to apply for funds through Federal Transit Administration's (FTA) Small Starts program. In order to qualify for these funds, the cost of the project has to fall within the $250 million cap. The FTA will only provide 75 million dollars to a qualifying corridor/agency. In addition to the 75 million dollars from the FTA, we are seeking funds from the sales tax and some matching funds from NCDOT. The Small Starts program was designed for smaller scale projects such as the streetcar project. The FTA is working on the rules and regulations of the program. A draft was submitted earlier this year, but the plan won't be finalized until some time next year.

Question: You mentioned the streetcar will operate on Central Avenue and Beatties Ford Road. At what point will the streetcar operate in Center City?

Response: The Trade St. portion of the streetcar project will serve as a connector piece to the extensions (Central Avenue & Beatties Ford Road) from

one end of the alignment to the other. There have been some delays to our schedule, but we believe the Trade Street portion will be operational by 2009 or 2010.

Question: Will the bus routes change on the Beatties Ford Road and Central Avenue corridors?

Response: The existing bus routes will change. Operations for those routes will be modified so that they act as feeders beyond the Center City area connecting commuters to the streetcar line so that they will be able to travel to destinations within the Center City.

Question: What happened to the Center City Spokes concept?

Response: The spokes are not shown on this alignment because it won't be operational until 2025. We will be asking the Metropolitan Transit Commission (MTC) to approve the Beatties Ford Road, Central Avenue, and Trade Street portions as one alignment without the spokes concept at the end of this month. However, we will have to present to the MTC at a later date for an approval of the Spokes concept which will be built so that it will operate within the four wards and neighborhoods immediately outside of the I-277 loop.

Question: Will the Spokes concept be built after the Beatties Ford and Central Avenue portions?

Response: Yes.

Question: If the new alignment is approved, what would be the estimated time of completion?

Response: We won't know this until after the MTC decision in late October/November. Once the decision is made, and if streetcar gets the approval to move forward, then we will have to apply for federal funding. Once the funding process is complete, the design team will be able to put together an anticipated schedule of operation.

Question: Is there anything the neighborhood associations can do to influence the MTC's decision to vote in favor the streetcar corridor?

Response: We encourage any of you who are interested to attend the meeting. We can't guarantee that large numbers in attendance or public comments will affect the decisions that are made. However, they are very interested in public comment. The members of the MTC will weigh each of the corridor projects on an individual basis.

CATS Center City Streetcar Project

Question: Is the $250 million cost in 2006 dollars? If so, what would the cost be in 2012?

Response: Yes. The cost of the project is in 2006 dollars. We will have to project the cost, but the FTA has a schedule of increment costs which outline different figures over a 20 year period. The estimated cost in future dollars is about $271 million, which plans construction beginning in 2010 and finishing in 2012.

Question: If or when the streetcar alignment is approved by the MTC, how will the FTA evaluate this project knowing that the North Corridor has a line going out to Mooresville? Is it possible for them to fund both projects? Is it a separate program because they're asking for 300 million dollars?

Response: The FTA will look at each project separately unless they are applying for funds at the same time within the same program.

Question: Aren't they applying for the same funds?

Response: No. The North Corridor is planning to apply for funds under the FTA's New Starts program. We will apply for funding under the Small Starts program and we are the only project whose capital cost doesn't exceed the Small Starts cap. An interesting point for clarification is that the FTA looks very favorably to communities that have dedicated local funding sources for transit. It helps the financial evaluation of the projects.

Question: Have you looked into cost savings as it relates to the Beatties Ford Road corridor linking to the West Corridor?

Response: The decision hasn't been made as to if they will operate a streetcar vehicle or not. If they decided to operate a streetcar on the West Corridor, then it will tie into the Center City Corridor alignment so that they will have access to our maintenance facility. The West Corridor will gain a cost savings by not having to build a vehicle maintenance facility.

Question: I attended a meeting where discussions took place regarding the Elizabeth Avenue streetscape project. I was told construction would begin and track work would be put in place last year. What is the hold up on this project?

Response: The city has been working on finalizing the designs for this project. There were a couple of delays in the project, but the streetcar team is in the process of reviewing the plans which are at a 90 % design. Construction for this project should begin in the Fall and we've ordered the rails which should be shipped to Charlotte by October of this year. In an effort to eliminate interruption on the corridor, we have partnered with the project team to have the rails installed while they are constructing the streetscape on Elizabeth Avenue.

Question: Will the bridge that's being constructed for the South Corridor line have to be demolished so that the streetcar vehicle is able to pass under it?

Response: No. We will not remove or rebuild any of the bridges located on the streetcar corridor. We will be able to operate under the bridge with the overhead wire connection.

Question: Describe the Hawthorne Lane alignment.

Response: There is a stop on the Hawthorne Lane alignment located at the Barnhardt site facility. The alignment intersects the facility and connects to Clement Avenue. Adding a stop at the Barnhardt facility is beneficial for both the commuter and the project. It will be a mixed use development with great potential for ridership within the Belmont Community. Other stops along this portion of the alignment are located at Central Avenue, Independence Park, and Presbyterian Hospital. We were considering two different alignments, a northern and southern alignment. The results of the technical analysis revealed that it was cheaper to build the northern alignment because there were considerable modifications that had to be done to the bridge on Independence Boulevard and above the CSX railroad, whereas the northern alignment eliminates the need for a new CSX elevated crossing since it crosses under the existing railroad line, but will likely require some roadway modifications to address the low clearance of the structure. Also, we would have to make a sharp right turn which hugs Independence Boulevard in order to get to Commonwealth to proceed onto Central Avenue.

Question: In terms of construction, where would the streetcar alignment begin and end?

Response: Construction phasing is something that we will determine in the next phase of study-Preliminary Engineering. More than likely the Trade Street portion of the project would be built first so that it connects the outer extensions.

Question: Does the location of the maintenance facility determine which of the extensions (Central Avenue or Beatties Ford Road) is built first?

Response: No. It does not.

Question: Can you speak to some of the drivers or key factors in terms of development or traffic that will impact our neighborhoods? Also, what are some of the things that persuade you to make decisions to tweak the plans?

Response: From a traffic standpoint, the impacts to neighborhoods will be negligible because the streetcar project is replacing the existing bus service with the same frequency. In terms of the economic development, the empirical data that we have states that Portland has had $2 billion in economic development.

We are not saying that this will necessarily happen at the same magnitude in this corridor, but we are saying that the project will have a positive impact, both in terms of development/redevelopment potential and value (net increase) of the development. Impacts during construction will be minimized through a proactive process engaging businesses and home-owners along the corridor and a relatively quick construction process that minimizes the disruption.

The phasing of the project has potentially changed within the past two weeks. After completing the analysis for the cost estimates, we were able to come up with a revised concept for the alignment that may include constructing the entire alignment between Rosa Parks Place on Beatties Ford Road to Eastland Mall on Central Avenue.

Question: What type of mixed use development is planned for the Beatties Ford Road corridor, and how will it integrate with the streetcar project?

Response: Friendship Baptist Church has plans for a development called Friendship Village. This 100 acre area is located only a quarter of a mile past the terminus point for Beatties Ford Road. The plan calls for a sports complex, residential, and commercial development. We have met with the community and we are willing to continue to discuss future plans to connect to the village. We have also met with various committee members and private consultants who are working on the West Pedscape Plan and the New Brooklyn Initiative.

Comment: Sooner is better than later. For our neighborhoods, the economic opportunity could be lost so we think it's necessary for the project to move forward. Please send a strong message to the MTC from the neighborhoods along the corridor.

Comment: There should be more study around adding stops that provide access to the greenways (Little Sugar Creek) along the corridor.

Response: We have identified the conceptual streetcar stops based on many considerations such as driveway locations, major trip generators, on-street parking, as well as parks and greenways, and will definitely take these and additional public input into consideration as we move into the Preliminary Engineering phase. There will be opportunities to tweak the stop locations during this phase as we re-examine all of the stops to address changes in the corridor.

Question: If you are only installing rails in the existing traffic lanes, how much of an impact will the streetcar project have on local neighborhoods and businesses along the corridor?

Response: Not very much. We invite you to take a look at the boards which outlines the environmental impacts.

Question: How are you planning to cross the railroad using the Hawthorne Lane alignment?

Response: We will not have to cross the railroad at grade. We will operate under the old bridge North of Central Avenue, loop around the Barnhardt Manufacturing site, connect to Clement Avenue, then Central Avenue, and continue on to the Plaza.

Question: Earlier in the study, you all were looking at constructing a bridge at Independence Boulevard in order to continue to operate on Central Avenue. How much was it going to cost to construct the bridge?

Response: $3 million.

Question: I believe the trolley has a lot to do with the support that you are getting from the public. What are the options for the streetcar vehicle?

Response: There is a difference between the historic and modern vehicle. There are 6 to 8 potential candidates for the modern streetcar vehicle, and photos of these candidate manufacturers can be found on the CATS web page. Both the modern vehicles and the historic vehicles are attractive. One of the main factors contributing to why this vehicle was chosen (modern) for this project is the carrying capacity. The modern vehicle has 30 seats, and room for 90 to 120 people to stand. The streetcar has a greater carrying capacity than a bus and a vintage trolley. If we were to choose a vintage streetcar for this project, we would have less carrying capacity than the existing bus and the modern streetcar. For this project, we have decided to go with a modern vehicle. There will be many opportunities for the public to provide feedback on the design of the vehicle in the Preliminary Engineering phase. Also, once the South Corridor construction is completed, the trolley will be able to operate as it did in the past.

Question: Could the trolley operate on Trade Street?

Response: Yes, our design of the project will permit both vintage and modern streetcars (trolley pole and pantagraph) to operate on the alignment.

Question: What is the status of the streetcar stop shelters?

Response: What has been presented is just a concept and will be furthered refined/defined during the next phase of the project. The team is very conscious of the potential cost of the shelter and is exploring off-the-shelf shelters versus custom fabricated shelters and the possibility of slightly modifying off-the-shelf shelters to look like custom shelters.

Question: What will it take to convince the MTC to select the streetcar project?

Response: MTC will weigh each project based on the individual merits, public support and overall system considerations.

Question: Is there a way to accelerate the Beatties Ford Road and Central Avenue extensions?

Response: We have recently explored building the entire alignment in a single phase in contrast to the Beatties Ford Road and Central Avenue segments following the Trade Street component. This, however, is really a financial discussion and will be made by the MTC. If, however, the MTC decides to push forward with only the Trade Street portion initially, there are a few funding sources the City could examine more closely that could be used to accelerate the extensions, including TIF, Municipal Service Districts and Certificates of Participation.

Question: Will you be able to see the MTC located on Beatties Ford Road from Beatties Ford Road?

Response: You will likely see only the top portions of the building since the parcel of land on which the facility will be located is about 20 feet below Beatties Ford Road.

Comment Cards Summary

The following summarizes the 13 responses from the submitted comment cards:

1. **What issues are you particularly concerned about or wish to be addressed?**

   In general, the following broad topics of concern were articulated:

   - Timing
   - Funding
   - Capital costs
   - Would like greater headways of service
   - Location of streetcar stops
   - Pedestrian/bicycle access
   - Phasing of the project
   - Maintenance of the system, particularly the streetcar vehicles
   - Aesthetics

2. **Do you think a streetcar would be most responsive to transportation needs along the proposed alignment?**

   100% of the respondents answered yes.

3. **Why are you interested in this project?**

   The overwhelming majority (53%) responded they live nearby, followed by work nearby (21%), other (16%), and own property in the vicinity (11%).

4. **Do you view streetcars as a positive addition to the existing public transportation system?**

   100% of the respondents answered yes.

5. **On a scale of 1-4 please rate the information presented by using the following scale: 1 = very difficult to understand, 2 = somewhat difficult to understand, 3 = fairly easy to understand, 4 = easy to understand.**

   The overwhelming majority (75%) responded the material was easy to understand (number 4), followed by fairly easy to understand (number 3) at 25%. None of the respondents answered “difficult” or “somewhat difficult to understand”.

6. **How did you find out about the public meeting?**

   31% of the respondents answered they found out about the meeting via postcard, 85 via the newspaper, with the majority responding (61%) the received notice of the meeting through “other” sources, such as neighborhood associations or personal contacts.

7. **What would be the best way to keep you informed?**

   The overwhelming majority (85%) responded the best way to keep informed was through e-mail, followed by phone at 15%.

Attendees

Approximately 50 persons attended the public meeting, but not all signed the attendance sheets.

Bob Szymkiewicz
Deborah Cox
Nancy Carter
Karen Henning
Nancy Plummer
Gail Getz (spelling?)
Marion Terrell
John Middleton
Louise Woods
James McLeod
Calvin Banks
Philip Cardaci
Heather Mitsapoulos
Ginny Woolard
Robert Bischoff
Kenneth Forester
Beth Doovey
Damon Gregory
Joey Anderson
Keith Bowker
A.J. Forlidas
Philip Forlidas
Harry Lichter
Aaron McKeithan
John Albert
Wendy Albert
Celina Mineey
Eric Bahrs
David Brodendorp
Deborah Gilhert
Martin Wheeler
Veronica Wallace
Brian McKean

The meeting ended at approximately 8:30 PM.

METROPOLITAN TRANSIT COMMISSION

July 26, 2006
Charlotte Mecklenburg Government Center
Room 267
5:30 p.m.

AGENDA

5:30 p.m. I. Call to Order Parks Helms
II. Approval of June 28, 2006 Meeting Summary Parks Helms

III. Report from the Chairs of the
Citizens Transit Advisory Group Jerry Fox

IV. Report from the Chairman of the
Transit Services Advisory Committee Paul Edmunds

V. Public Comment on Agenda Items

VI. Action Item
a. Streetcar Project Final
Locally Preferred Alternative Willie Noble/John Muth

VII. Information Item(s)
a. Southeast Corridor Study Results and
Alignment Alternatives Danny Rogers
b. West Corridor Study Results and
Alignment Alternatives Danny Rogers

VIII. Chief Executive Officer's Report Ron Tober

IX. Other Business Parks Helms

X. Public Comment on General Items

7:30 p.m. XI. Adjourn

METROPOLITAN TRANSIT COMMISSION
July 26, 2006
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Item No. Item Description Attachment No.

I. Call to Order

II. Approval of June 28, 2006 Meeting Summary 1

III. Report from Chairs of the Citizens Transit Advisory Group

IV. Report from Chairman of the Transit Services Advisory Committee

V. Public Comment on Agenda Items

VI. Action Item
a. Streetcar Project Final Locally Preferred Alternative 2

VII. Information Items
a. Southeast Corridor Study Results and
Alignment Alternatives 3
b. West Corridor Study Results and
Alignment Alternatives 4

VIII. Chief Executive Officer's Report
June Ridership Analysis Appendix A
Upcoming MTC Agenda Items Appendix B

IX. Other Business

X Public Comment on General Items

XI. Adjourn

METROPOLITAN TRANSIT COMMISSION
Meeting Summary
July 26, 2006

DISCUSSION SUMMARY

Presiding:
Parks Helms, Chair (Mecklenburg County)

Present:
Mayor Kim Phillips, Vice-Chair (Huntersville)
Pat McCrory (Mayor Charlotte)
Pamela Syfert (Charlotte)
Mayor Lee Myers, (Mayor Matthews)
Ralph Messera (Matthews)
Harry Jones, (Mecklenburg County)
John Woods, (Mayor Pro Tem Davidson)
Leamon Brice (Davidson Town Administrator)
Mike Rose (Pineville, Asst. Town Manager)
Jerry Cox (Huntersville Town Manager)
Anthony Roberts, (Cornelius, Town Manager)
Jerry Fox (CTAG)
George Fowler, (Mayor Pineville)
Marion Cowell (NCDOT)
Paul Edmunds (TSAC)
Brian Welch (Mint Hill, Interim Town Manager)

CHIEF EXECUTIVE OFFICER: Ron Tober

I. Call to Order
The regular meeting of the Metropolitan Transit Commission was called to order at

5:40 p.m. by Chairman Parks Helms.

II. Review of June 28, 2006 Meeting Summary
The June 28, 2006 Meeting Summary was approved as written.

III. Citizens Transit Advisory Group Chairman's Report
Gerald Fox, CTAG Chairman, gave a report on CTAG's July 18, 2006 meeting. At the meeting, the group heard presentations on the West and Southeast Corridors Study and Alignment Alternatives, the status of negotiations with Norfolk Southern for the North Corridor, and the Center City Streetcar Project.

Concerning the Streetcar Project, CTAG recommended that the MTC approve the Streetcar Project's Locally Preferred Alternative (LPA) as presented by staff, specifically expressing support for the alignment of Beatties Ford Road to Eastland Mall, as well as the continued study for both the CMUD and Grubb/Barnhardt locations for a vehicle maintenance facility.

The group also unanimously adopted to recommend that CATS' CEO notify the Charlotte Center City Partners of the importance of its and its members support in funding the Gold Rush in the uptown area.

IV. Transit Services Advisory Committee Chairman's Report
Paul Edmunds reported that TSAC did not meet in June.

V. Public Comment on Agenda Items
Parks Helms opened the floor up for public comment; however, Mayor Pat McCrory suggested that the staff presentation be given first since most of the speakers were present to speak about the Southeast Corridor. He believed it makes more sense to hear the report and then hear the public comments.

Ron Tober said the order of the agenda could be reversed so presentations could be given first, followed by public comment.

VI. Information Items
a. Southeast Corridor Study Results and Alignment Alternatives*
Danny Rogers, Southeast and West corridor's Senior Project Manager, gave a presentation on the Southeast Corridor Study Results. He presented the three technology choices for the corridor, which include light rail, bus rapid transit (BRT) and BRT with HOV. The proposed cost of the project depends on which technology is chosen. Light rail is the most expensive choice at $585 million followed by BRT with HOV at $350-$360 million and BRT at $315-$325 million. He noted that while staff continues to work on the Draft Environmental Impact Statement (DEIS), which is scheduled to be complete this fall, NCDOT is working on the highway portion of the project, which will make improvements to Independence Boulevard. 4

Garet Johnson, Charlotte Mecklenburg Planning Commission gave an overview of the project's land-use.

Kathy Ingrish, Planning Director for the Town of Matthews, continued the presentation on development opportunities in the Southeast Corridor.

Ron Tober pointed out that the cost numbers shown are 2006 dollars and staff won't be escalating those numbers until as they have a set time for when the project will be implemented.

Mayor Kim Phillips asked for more information about the managed lanes with the BRT and HOV

option. Mr. Rogers said there would be no toll booths, instead when commuters enter the lanes a device will charge/deduct the toll for their accounts.

Mayor Phillips asked how commuters would know when they entered the lanes. Mr. Rogers said there would be signs prior to each entry point so they would know how much to pay.

Mayor Phillips asked if the toll would be deducted from their account at the end of the month. Mr. Rogers said most of the systems will deduct the toll at the time they enter the lanes.

VII. Public Comment

Councilmember Nancy Carter spoke in support of the Southeast Corridor light rail and Central Avenue streetcar project. She said CATS' partnerships with NCDOT and N.C. Department of Economic Development provides unique funding opportunities and cost savings for CATS. She noted that over the years, more than 113 businesses have vacated Independence Boulevard and because of that, there is land available for development and people ready to do just that.

Ms. Carter also said to increase development, particularly on the north side of Independence between Eastway and Albermarle Road, the transitional setback of 175 feet will need to be addressed and she believes transit could help with that, as well as the problems that have been created by freeway development.

Wanda Towler, representing Central Piedmont Community College (CPCC), said CPCC has 70,000 people that come to its six campuses with its Levine and Central campuses accounting for 25,000 of those people. Because of all the people and activity that occur at the Levine Campus, she urged the MTC to extend the line beyond I-485 to the serve the campus. Concerning the Central Campus, she said it's already heavily supported by the use of the Streetcar project. She said adding bus rapid transit (BRT) on the same street as the Streetcar would negatively impacted pedestrian access as well as be a deterrent to the use of the system because of the slow path it would create in that area. She noted that CPCC is running out of parking space and the streetcar would help with that problem.

Louise Woods, a resident of East Charlotte, strongly supports light rail for Independence and the streetcar in the Beatties Ford/downtown/central corridor. She said the area needs the streetcar to help stabilize East Charlotte neighborhoods and spur needed development. She said if CATS chooses the streetcar in East Charlotte as its next project it will be a win/win situation for both parties because CATS would immediately have a high ridership base and East Charlotte would have the leverage it needs to increase its economic development.

Ed Garber, V.P. of Eastway/Sheffield Neighborhood Association, said that although numbers show cost-savings by choosing BRT over light rail, looking at long-term development of the Southeast Corridor the permanence of light rail has significant advantages. He said choosing BRT has more risks because it doesn't have the tried and true performance in other cities as light rail does. He said the tax base that light rail would generate would encourage development in the Southeast, which would more than compensate for the cost-savings of BRT.

Ray Kluth, who lives within three blocks of Independence Boulevard, said he hopes full consideration is given to the proposed station at Sharon Amity and Independence in conjunction with the new interchange that is being built there. He also showed his support for light rail in the corridor. He noted that there are several benefits that make light rail a better choice for the corridor than BRT such as light rail is quieter, it reduces air pollution, and its rails will last longer than asphalt or concrete. He also noted that rail offers faster acceleration compared to motor or hybrid buses. In closing he said, the Eastside is on the way up due to the constant efforts of

Councilmember Nancy Carter and many other people and the initiation of light rail will keep up that momentum.

Gene Steward urged the MTC to take the light rail line all the way to CPCC's campus, and possibly further. He said he's in favor of the train and was thrilled when he and his family moved here in 2002 and heard about the possibility of trains being built toward Matthews.

Susan Lyndsey, an East Charlotte resident, said no expense should be spared to make East Charlotte a great place to live and work. She said her and her fellow East Charlotte residents feel that light rail is the right decision for their area, no matter how long it takes. She noted that the combination of businesses lost and the availability of land as you leave East Charlotte offers a unique opportunity to develop and redevelop quality projects, residential, commercial and retail. She continued by saying rail offers the best chance to attract investments needed to sustain growth and return dollars to the City of Charlotte, Matthews and Mint Hill.

Louise Barton, a light rail supporter, said on July 14, Seattle made the same decision that the MTC is being asked to make and they chose rail. She said they looked at the whole road and transportation system, including the marketability of rail to the eastside of Seattle. She asked the board to look at the long-term affects of its choice.

Steve Martin, an East Charlotte, resident, said he is a real fan of public transportation no matter what it is. He encouraged Mr. Tober to increase public transit for people in Matthews so they can easily go uptown, transfer and go out to the University.

Claude Shaw, President of the Eastway/Sheffield Neighborhood Association, said the Southeast Corridor is strongest for light rail based on jobs within a ½ mile radius, households within a ½ mile radius, riders per day and long-term relief of congestion. He noted that transit officials studied light rail versus BRT in Dallas, Denver, LA, Pittsburg, San Diego and San Jose and found return on its investments. He said based on the statistics, an overwhelming number of people in this area are pro-light rail and nothing fits this area better. He added that the Southeast Corridor has the ridership, the strongest base of supporting factors and the need for economic development.

Kyle Woodstra, co-chair of the Eastland Area Strategy Team, said that mass transit is not a short-term deal; it is more like a 50 to 100 year plan. He said the perception is that light rail is better than buses, therefore people are more apt to spend their dollars and redevelop an area that is known to have light rail even if it is in the future. He noted that he has received calls from businesses in New York, California and even China, asking when he will know if there is going to be light rail because they have an interest in spending money for development, but only if light rail is coming.

Clay Grubb, president of Grubb Properties, said his company worked on the Elizabeth Avenue Project five or six years ago when it was first announced that streetcar was coming to the area. He said the announcement of streetcar had a significant impact on development in that area, pushing the value of development to more than $400 million over the next six or seven years. He added, counting what Presbyterian and CPCC are doing, the total economic development over the next five to six years will be over ½ billion in that area alone. He noted that the streetcar has a significant role in driving that. In addition, he said as the streetcar has plans to move down Hawthorne, his company has worked with Barnhardt Manufacturing to create a larger mixed-use community, which would create an economic opportunity for the City as well as create an opportunity for connectivity between the Belmont Neighborhood and Plaza/Midwood Neighborhood. He said without the streetcar going onto their property, none of that economic development would occur and that site would remain as an underutilized industrial site.

Beth Poovy, member of the Commonwealth/Morningside Neighborhood Association, said she

and her neighbors are very excited about the opportunities streetcar will bring to their community. She said they have already heard the recommendations and are very supportive of them, but they do ask that the MTC prioritize the funding for this project and make it happen sooner rather than later.

VIII. Action Items
a. Streetcar Project Final Locally Preferred Alternative*
Willie Noble gave a presentation on the Streetcar Project. He pointed out that staff recommends the adoption of the alignment along Beatties Ford Road, Trade Street, Elizabeth Avenue, Hawthorne Lane, Clement Avenue/Barnhardt and Central Avenue. The eastern terminus would be at the new Eastland Community Transit Center, which is currently under construction and the western terminus would be on Beatties Ford Road at Rosa Parks Community Transit Center, which is also under construction. Staff recommends further study of the two Vehicle Maintenance Facility (VMF) locations, CMUD site and the Barnhardt site.

Mr. Tober said the alignment recommendations does include going into an area of the Barnhardt facility, where they VMF may be located. He said hopefully as a result of that, more development will occur at that location.

David McDonald gave an overview of the Preliminary Project Evaluation, highlighting the system plan principles, land-use, mobility and operations, environment and financial aspects.

A motion was made by Mayor Pat McCrory and seconded by Marion Cowell to adopt the resolution approving the Streetcar Project Alignment, Vehicle Maintenance Facility Options, Terminus and Stop Location recommendations as outlined. The vote was recorded as unanimous.

Discussion:
Mayor McCrory said during the past nine years there hasn't been a day that has gone by where he hasn't gotten a letter or heard a comment criticizing him and even some of the MTC members for supporting the mass transit system, including light rail. He said he will not back down from the original vision that was talked about 10 to 15 years. He noted that there are a lot of people who disagree with mass transit and think the City should build roads only in this community, but he disagrees with that. He said this community needs a combination of new roads and mass transit.

Mayor McCrory said that as people talk about numbers not adding up, the bottom line is the numbers have to match the Federal government's equations, which the City has done and because of that it has received $6 million an unstated line. He noted that the City has received far more funding at this point than expected.

Mr. Helms stated that the MTC will take action on August 23rd on the Southeast and West corridors.

Mayor Lee Myers said having spent almost 20 years on the Metropolitan Planning Organization he recognizes that roads are not the answer. He said he knows the City needs federal funding for these projects, but he said the MTC's decisions should not revolve around that or what the federal government wants. He said another action item should be added for the next meeting that holds off on making any decision right now.

Mayor Phillips noted that what Mr. Myers was proposing wasn't what the MTC was asking us to vote on. She said she would want to know what type of impact "doing nothing" would have on property owners.

Mayor McCrory said before the MTC considers delaying the project, they need to know the

ramifications and how long the delay would last. He said they also need to know what type of impact the delay would have on the State because its been waiting 30 to 40 years to build Independence Boulevard.

Mr. Helms said the board will have the opportunity to decide on August 23rd. He noted that this is a life changing decision that will affect the course and direction of this community, particularly the eastside and Matthews.

b. West Corridor Study Results and Alignment Alternatives*
Mr. Rogers gave a presentation on the West Corridor Study Results and Alignment Alternatives. He presented information about the two technology choices, BRT and streetcar, as well as the pros and cons of both. With the streetcar option, major concerns are the water and sewer lines under the curb lanes on Wilkinson and safety issues with moving the line into the median on Wilkinson. He said CATS continues to work with NCDOT and Char-Meck Utilities department to resolve these issues. The proposed cost for the project is $185 million if streetcar is chosen and $105 million if BRT is chosen.

Kent Main gave an overview of the land-use impacts on the West Corridor.

Anthony Roberts asked about the $35 million for relocation of utilities and asked how many miles that would stretch. Mr. Rogers said about 3 miles along Wilkinson Boulevard.

Mayor Phillips asked about the streetcar travel time. Mr. Rogers noted that the streetcar's travel time is about the same as BRT, which is equivalent to vehicles.

Mayor Phillips said it is disappointing that neither one of these options goes to the Airport because it will not impact tourism whatsoever or even business travel because travelers are not going to be willing to make that transition.

Mr. Rogers said staff is continuing to work with the Airport trying to find solutions, but everything that we have come up with is extremely expensive. He said the Airport's plans for the "People Mover" worked really well, but then they changed their plans and developed a new model that works better for them, but not for CATS.

Mayor McCrory said this too should come as no surprise because it was recommended not to do this study, but due to wanting to get more facts we did spend several hundred thousand dollars to do this. He did note that the study added to their educational process. He said that the facts are disappointing, but a reality. He added that he cannot support further taxpayer investment in this project in the short-term because the facts show that it won't work. He said a short-term alternative would be a very good bus system going down Wilkinson Boulevard.

IX. Chief Executive Officer's Report

1. Ridership across all services increased 5.7 percent for the month of June 2006 compared to June 2005. Year-to-end ridership for FY2006 was up 7.8 percent over FY2005; marking the eighth consecutive year of ridership increases and representing a 62.1 percent increase since FY1998.

2. CATS Service Development staff held two public meetings to discuss a proposal to adjust the Uptown routing for 11 express routes. If adopted, the proposal would streamline the Uptown routing for Express routes and would reduce travel time in Uptown.

3. On July 17, 2006, CATS added two additional veteran CMPD police officers to its Transit

Liaison Unit, bringing the total number of officers in the unit up to four, including one sergeant.

4. In the South Corridor, CATS' first light rail vehicle, which arrived on June 23, is now being readied for testing on a stretch of test track between Clanton Rd. and Tremont Ave. Acceptance testing will begin in August and should take eight to 10 weeks to complete. Also, plans to build a pedestrian bridge over I-277 to connect pedestrians and bicyclist from South End to Uptown have been abandoned but staff is looking at alternatives involving the Caldwell St./South Blvd. corridor and the South Tryon St. corridor to provide this connection.

5. Finally, the contractor building the station and parking garage at the I-485 terminal station for the LYNX Blue line has run into unforeseen site conditions when drilling to place caissons for the garage's foundation. To date, CATS has approved a $500,000 change order to address the situation. It is likely that additional costs will be incurred to cover the extra work required to create an acceptable foundation for the garage. Staff is continuing to work with the contractor on this problem.

X. Other Business
None

XI. Adjourn
Chairman Helms adjourned the meeting at 8:25.

NEXT MTC MEETING: WEDNESDAY, AUGUST 23, 2006, 5:30 PM

Appendix B-5
Newsletters and Other Public Information Materials

FAST FACTS

- In 1998, Mecklenburg County voters approved a 1/2 cent sales tax for transit based on the 2025 Integrated Transit Land Use Plan.

- The Center City and surrounding neighborhoods offer a variety of higher educational opportunities, including Central Piedmont Community College (CPCC), Johnson & Wales University, and Johnson C. Smith University.

- Center City is home to national corporations such as Bank of America, Wachovia Corporation, and Duke Energy Corporation. These companies are some of the largest employers in the Charlotte area.



- The 2025 Corridor System Plan projected that employment would increase in the central business district by 79% from the year 2000 to 2025. Population is expected to grow by a 146% from the year 2000 to the year 2025.

- An increased interest in living in an urban setting and the desire to live close to work has created a growing demand for residential development in the Center City and surrounding neighborhoods.

- The new arena will be a major stop for the Trade Street Streetcar. Across from the Charlotte Transportation Center, the Arena is the future home to the new NBA expansion team, the Charlotte Bobcats and the WNBA Charlotte Sting.

- A new multimodal station is planned for West Trade Street. The Streetcar will connect to future CATS Commuter Rail, trains and other regional and local transportation services at this location.



- Streetcar operations will enhance service on CATS Route 9 along Central Avenue, which is one of the busiest transit lines in the entire CATS system.

FALL 2004

Newsletter Editor:
Kiera Terrell,
CATS Community Relations Specialist

Center City Corridor
Senior Project Manager:
Willie A. Noble, P.E.

Assistant Project Manager:
Jerry Roberson

To be added to the CATS Center City Corridor mailing list, call (704) 432-3030 or e-mail kterrell@ci.charlotte.nc.us.

For more information on streetcar transit planning, visit the CATS web site at www.ridetransit.org or call CATS at (704) 336-RIDE.

HOW TO GET INVOLVED

Public meetings will be publicized in local newspapers, on Government Channel 16, and on the City of Charlotte – Mecklenburg County website at www.charmeck.org. Also, notices of public meetings (as well as other public information materials) will be sent directly to citizens whose addresses are listed in the CATS Center City Corridor database. To place your name on the mailing list, please contact:

Kiera Terrell
CATS Community Relations Specialist
600 East Fourth Street
Charlotte, NC 28202
(704) 432-3030
kterrell@ci.charlotte.nc.us

CATS staff members are available to speak to neighborhood, business, civic, social, and other interested groups concerning streetcar transit planning on the Center City Corridor. To request a speaker, contact Kiera Terrell at the phone number, street address, or e-mail address listed above. In addition to participation at public meetings, citizens are encouraged to send comments, questions or concerns about Center City Corridor streetcar transit planning to the corridor team.

600 East Fourth Street Charlotte, NC 28202

CENTER CITY TRANSITIONS FALL 2004

Information on the Center City Streetcar Project



CATS INITIATES A NEW TWIST ON AN OLD IDEA FOR TRANSIT SERVICE IN CENTER CITY CHARLOTTE!!

Prior to 1950, many American cities utilized streetcars as a primary method of public transportation. It's ironic that such an old idea – mixed with some new technology - could be such a boon to Charlotte decades later! Center City commuters will be able to leave their cars at home as new-age streetcars similar to those used in Europe, Oregon and Washington will offer a fast and reliable ride to almost anywhere in the Center City.

CATS strives to fully inform citizens on all updates and information regarding transportation projects. The Center City Corridor team will provide opportunities for public input on various components of the streetcar project. We strongly encourage all interested parties to participate in upcoming meetings and workshops throughout the duration of the project. Meetings are tentatively scheduled for: January or February 2005, April 2005 and September 2005. The initial public meeting has been scheduled for:

Thursday, November 18, 2004
6:00 PM to 8:00 PM

Charlotte-Mecklenburg Government Center
600 East Fourth Street, Rm 267
Charlotte, NC 28202

CENTER CITY STREETCAR CORRIDOR

The Center City Streetcar Corridor is a key recommendation of the 2025 Corridor System Plan, and is conceived as a Portland type streetcar system utilizing modern vehicle technology based on the European tram that is a smaller, lighter-weight vehicle than those used for Light Rail Transit and is capable of operating in the street with mixed traffic. The streetcar will fulfill many roles including:

- Establishing an east-west transit spine that links all five rapid transit corridors in downtown an provides easy movement between the existing Transportation Center and the proposed Multimodal Station.
- Enhancing Center City mobility.
- Improving connections for neighborhoods that are immediately outside the freeway loop (I-277).
- Connecting key destinations such as the Square, Central Piedmont Community College, Johnson & Wales University, Johnson C. Smith University, Presbyterian Hospital and the new arena.
- Supplementing CATS' two busiest bus routes improving operating efficiency.

Inside This Issue:

- **Center City Streetcar Corridor**
- **Streetcar Characteristics**
- **Transit Technologies**
- **Fast Facts**

Trade Street Before



Continued on next page

STREETCAR CHARACTERISTICS



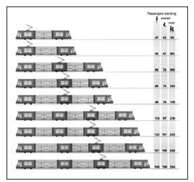
Operates on street with other traffic… Streetcars are generally smaller and more maneuverable than light rail vehicles and operate in traffic lanes on embedded rails in roads with speed limits 45 mph or less.



Transit Stations won't be required… Streetcars operate much more like a local fixed route bus service than traditional light rail transit. Stops are closer together but can have more amenities than the standard bus stop. The streetcar project will also include many improvements to sidewalks and pedestrian crossings in the corridor.



Streetcars have fewer impacts!… Similar to light rail transit, streetcars are powered using overhead electrical power. However, streetcars are less complex, require only one wire, and have fewer visual impacts on streetscape and community character.



All aboard!… By attaching multiple cars – streetcars can carry 2 to 4 times as many passengers as a standard bus.



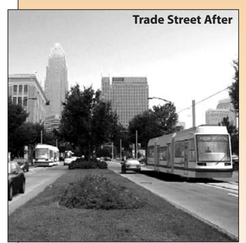
Construction is a Breeze!… A construction technique has been perfected for the installation of the embedded rails. Traffic detours are often unnecessary.

Continued from cover

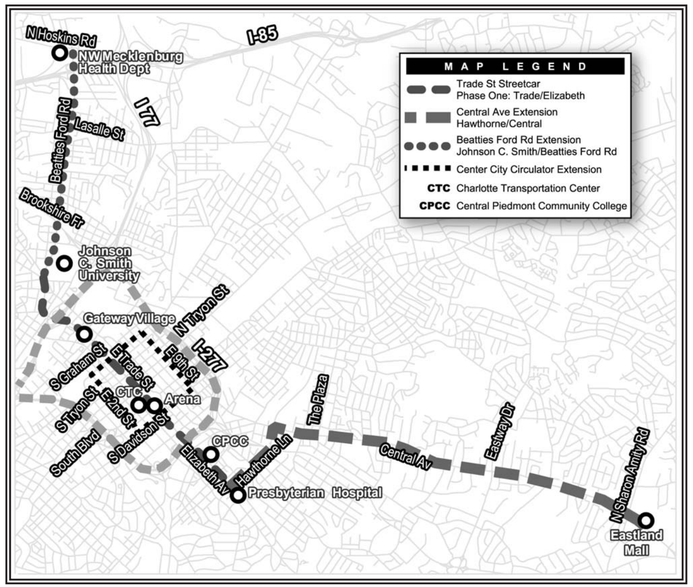
CENTER CITY STREETCAR CORRIDOR

The Streetcar Project consists of four streetcar segments:

- The Trade Street Streetcar extending along Beatties Ford Road, Trade Street and Elizabeth Avenue from Johnson C. Smith University to Presbyterian Hospital.
- The Central Avenue Streetcar extending from the Presbyterian Hospital to Eastland Mall.
- Beatties Ford Road Streetcar extending from the JCSU to I-85.
- A Center City Circulator to distribute passengers throughout Center City.



CENTER CITY STREETCAR CORRIDOR MAP



TRANSIT TECHNOLOGIES

Local Fixed Route Bus service operates along a standard alignment with frequent stops. CATS operates 30 routes that serve the Uptown Transportation Center, 3 crosstown routes, and 16 neighborhood routes.



Express Bus service is designed to transport commuters between suburban communities and major employment centers. CATS provides express bus service on 19 routes throughout Charlotte during the weekday rush hour periods.



Vanpools are ridesharing arrangements where groups of (8 to 15) individuals pool their resources to use one vehicle to commute to work. Employers and/or public agencies usually subsidize the cost of the van.

Heavy Rail Transit systems are electric railways with the capacity for a heavy volume of passengers. These systems operate in exclusive rights-of-way either elevated, underground or at-grade and require an electrified third rail. The carrying capacities of heavy rail cars range from 150 to 190 persons. Examples of heavy rail systems exist in Atlanta, Chicago, New York City, and Washington, D. C.



Light Rail Transit consists of passenger vehicles rolling along steel rails electrically-powered from an overhead wire. Light rail vehicles can accommodate over 200 passengers per rail car and are able to accelerate and decelerate quickly, which allows for more frequent stops. Light rail is capable of operating in mixed traffic or in a separate right-of-way. Houston, Dallas, Denver, and Portland all operate light rail systems. Charlotte's first light rail line will open in the South Corridor in Fall 2006.



Commuter Rail is a train with coaches pulled by a locomotive or motorized coach called diesel multiple units or DMUs. Commuter rail passengers typically use the train to commute from an outlying area into the city for work. Commuter rail systems are located in many cities around the country, including Los Angeles, Chicago, Philadelphia and Long Island.



Intercity Rail, like Amtrak, provides service between cities. Amtrak operates three train lines through Charlotte, the Crescent, the Carolinian and the Piedmont, to destinations along the eastern seaboard and the southeast.



Bus Rapid Transit is a type of limited-stop service developed in the 1990s that relies on technology to help speed up the service. It combines the quality of rail transit and the flexibility of buses. It can operate on exclusive transitways, high-occupancy-vehicle lanes, expressways, or ordinary streets. CATS is exploring BRT in the Southeast and West corridors.

Streetcar is a smaller version of light rail service. It consists of a single or multiple unit cars that operate in mixed traffic receiving power from an overhead wire. Streetcar systems are operated in Portland and Tacoma.

Trolleys are the oldest version of light rail and operate much the same way as a streetcar. Trolleys are generally operated as single streetcars and carry between 40 and 60 passengers. CATS recently introduced new trolley service between the historic South End and Ninth Street in Uptown Charlotte. Other systems are located in Tampa, San Francisco, Memphis and New Orleans.

TEAM CONSIDERS ALTERNATIVES TO TRADE STREET IN CENTER CITY

Within the Center City, several different roadways could be used for Streetcar operations. Each of these alignment options has specific advantages and disadvantages, prompting a detailed analysis to determine the option that operates most efficiently, minimizes negative impacts, and provides effective service to the Center City. This alternative alignment analysis examined a variety of options for streetcar operations extending from Gateway Village to McDowell Street, based on specific criteria that were defined with input from study stakeholders and various city departments.

Detailed analyses were conducted on the following four alignment options:

A. Trade Street (bi-directional / curb-running)
B. Trade Street (bi-directional / median-running)
C. Fourth Street / Trade Street couplet (curb-running)
D. Trade Street / Fifth Street couplet (curb-running)



A & B



C



D

These four alternatives were evaluated with regard to eleven specific performance measures:

- Access and traffic impacts
- Existing on-street parking
- Redevelopment opportunities
- Platforms and pedestrian environment
- Streetcar operations
- Bridge clearances
- Potential utilities impacts
- Relative capital costs
- Ease of construction
- Flexibility to improve future streetcar operations
- Compatibility with Light Rail Transit.

A relative ranking (1st, 2nd, 3rd, 4th) was assigned to each alternative under each performance measure. All criteria were weighted equally to determine a final ranking of alternatives. However, it is important to note that the relative ranking determined through this analysis could change with a prioritization of the performance measures.

Based on evaluation using these eleven performance measures, the Trade Street (median) alternative ranked the highest among the four options studied in depth. This alternative will impact the project in several different ways. It will minimize capital costs and utility impacts, it minimizes negative impacts on the pedestrian environment, it will have the fewest construction impacts, and it will enable effective and efficient streetcar operations. The feedback received from study stakeholders, including input from public participation, is also supportive of a streetcar alignment on Trade Street.

PROJECT SCHEDULE

- Complete Conceptual Design-December 2005
- Complete Final Design-December 2006
- Complete Construction of Trade Street Initial Alignment-June 2009
- Complete Construction of Central Avenue and Beatties Ford Road extensions-June 2017
- Complete Uptown Circulator-June 2025

SPRING 2005

Newsletter Editor:
Kiera Terrell
CATS Community Relations Specialist

Center City Corridor
Senior Project Manager:
Willie A. Noble, P.E.

Assistant Project Manager:
Jerry Roberson, AICP

Transit Planner/Urban Design
Stan Leinwand, AICP

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For more information on streetcar transit planning, visit the CATS web site at www.ridetransit.org or call CATS at (704) 336-RIDE.

HOW TO GET INVOLVED

Public meetings will be publicized in local newspapers, on Government Channel 16, and on the City of Charlotte – Mecklenburg County website at www.charmeck.org. Also, notices of public meetings (as well as other public information materials) will be sent directly to citizens whose addresses are listed in the CATS Center City Corridor database. To place your name on the mailing list, please contact:

Kiera Terrell
CATS Community Relations Specialist
600 East Fourth Street
Charlotte, NC 28202
(704) 432-3030
kterrell@ci.charlotte.nc.us

CATS staff members are available to speak to neighborhood, business, civic, social, and other interested groups concerning streetcar transit planning on the Center City Corridor. To request a speaker, contact Kiera Terrell at the phone number, street address, or e-mail address listed above. In addition to participation at public meetings, citizens are encouraged to send comments, questions or concerns about Center City Corridor streetcar transit planning to the corridor team.

Please visit www.ridetransit.org to view public meeting summaries, presentations, and graphics from the public meetings that were held in April/May 2005.

UPCOMING PUBLIC MEETINGS ON URBAN DESIGN

Trade/Elizabeth Avenue Corridor
June 21, 2005 11:30 a.m.
Charlotte-Mecklenburg Public Library
St. Francis Auditorium
310 North Tryon Street
Charlotte

Central/Hawthorne Avenue Corridor
June 22, 2005 6:30 p.m.
Eastland Mall
Activity Room
5471 Central Avenue
Charlotte

Beatties Ford Road Corridor
June 23, 2005 6:30 p.m.
Northwest School of Performing Arts
Old Cafeteria
1415 Beatties Ford Road
Charlotte

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CHARLOTTE AREA TRANSIT SYSTEM

CENTER CITY TRANSITIONS SPRING 2005

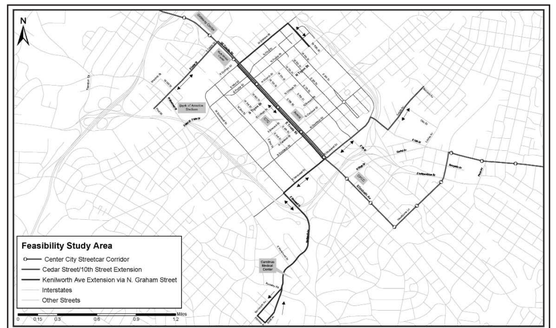
Information on the Center City Streetcar Project



STREETCAR MOVING AHEAD

An opportunity presented itself for the public to take another glimpse at the conceptual design work underway on the CATS Center City Streetcar Project. Moreover, CATS staff and its consultant team met with neighborhood representatives, business owners, and other members of the interested public at three separate community meetings. Held at different venues along the corridor, the meetings were set up to inform the public about the latest ideas for streetcar stops and alignments, and to solicit input on the project. The meetings were well attended with over 100 attendees, and CATS staff received positive feedback from neighborhood residents about the streetcar concept.

In this edition of the newsletter, a primary focus is placed on recent community meetings. This includes an emphasis on informational subject matter as well as feedback the Center City Streetcar team received from persons in attendance.



Proposed Center City Loop

Inside This Issue:

- **Feedback from Public Meetings**
- **Potential Streetcar Stop Locations**
- **Alternatives Considered for Trade Street**

Center City Loop

The Center City Streetcar Team has been busily examining the feasibility of a Center City streetcar loop (Final Phase of the streetcar system). The primary purpose of the streetcar in Center City is to serve travel within the Center City, as well as provide and enhance transit connectivity between all five rapid transit corridors in Uptown. The graphic, depicted above illustrates just one of the many concepts being considered at this time.

CATS CHARLOTTE AREA TRANSIT SYSTEM

BEATTIES FORD ROAD EXTENSION

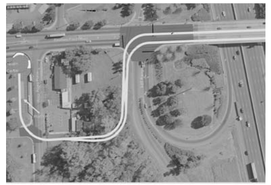
FOCUS OF PUBLIC MEETINGS

The primary focus of the meetings was to show the alternative alignments for the streetcar segments and to discuss the advantages and disadvantages of curbside running versus median running alternatives. Both types of alignment work well depending on the corridor and segment in question. Additionally, it was important for attendees to understand how each alignment type will impact streetscape and traffic patterns. The attendees were pleased to hear that a goal of the project was to minimize the impact to sidewalks, street widths, and landscaping. The meetings were also used to continue the exchange of ideas regarding stop locations and to discuss the end-of-line configurations for each phase of the project. Meeting displays included aerial mapping with potential alignment overlays, renderings of potential stops, and computer generated animations of some of the Trade Street stops.



OPTION 2 –Beatties Ford Road Pocket Track

End-of-Line Alternatives (Beatties Ford Road)
Center City/Streetcar Corridor



OPTION 1 – Rosa Parks Place Pocket Track

End-of-Line Alternatives (Beatties Ford Road)
Center City/Streetcar Corridor



OPTION 3 – I-85 Pocket Track

End-of-Line Alternatives (Beatties Ford Road)
Center City/Streetcar Corridor

POTENTIAL STREETCAR STOPS:

- Rosa Parks Place
- Montana Drive
- LaSalle Street
- Booker Avenue/Oaklawn Avenue
- French Street
- Johnson C. Smith University



Existing Plan

Conceptual Layout at Beatties Ford and Lasalle St
Center City/Streetcar Corridor



Proposed Aerial View

Conceptual Layout at Beatties Ford and Lasalle St
Center City/Streetcar Corridor



Proposed Ground View

Conceptual Layout at Beatties Ford and Lasalle St
Center City/Streetcar Corridor



Proposed Plan

Conceptual Layout at Beatties Ford and Lasalle St
Center City/Streetcar Corridor

TRADE/ELIZABETH AVENUE INITIAL ALIGNMENT



Existing Plan

Median Running Center Median Side Platform at Arena Station
Center City/Streetcar Corridor



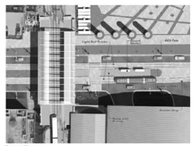
Proposed Aerial View

Median Running Center Median Side Platform at Arena Station
Center City/Streetcar Corridor



Proposed Ground View

Median Running Center Median Side Platform at Arena Station
Center City/Streetcar Corridor



Proposed Plan

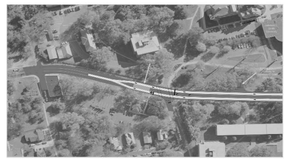
Median Running Center Median Side Platform at Arena Station
Center City/Streetcar Corridor

POTENTIAL STREETCAR STOPS:

- Johnson C. Smith University
- Five Points
- Montgomery Street
- Gateway Village
- Future Charlotte Gateway Station
- Mint Street
- Tryon Street
- Arena/Transportation Center
- Government Center
- Central Piedmont Community College (CPCC)
- Presbyterian Hospital
- Independence Park
- Southeast Corridor

NEIGHBORHOODS EXCITED ABOUT CATS STREETCAR PROJECT

The first meeting was held on April 26th at Eastland Mall which concentrated on the Central Avenue portion of the Streetcar alignment. Attendees expressed support for the project but wanted assurances that the recent streetscape improvements along Central Avenue would be preserved. The second meeting was held on April 28th at the Carole Hoefener Center on 6th Street, where the discussion centered on stop locations and the phasing for the project. The Trade Street segment is scheduled to be operational in 2009 with endpoints at Johnson C. Smith University and Presbyterian Hospital or the Plaza-Midwood area on Central Avenue. The third meeting was conducted at Johnson C. Smith University on May 4th and included dialogue regarding the impact of streetcar operations on bus service, the future terminus of the Beatties Ford Road segment, and a general discussion about the economic impact/job creation potential of streetcar systems.



OPTION 1 – Center Platform/Center Pocket Track
Johnson C. Smith University

End-of-Line Alternatives (Johnson C. Smith)
Center City/Streetcar Corridor



OPTION 2 – Brookshire Off-Street Pocket Track

End-of-Line Alternatives (Johnson C. Smith)
Center City/Streetcar Corridor



OPTION 1 – The Plaza Pocket track

End-of-Line Alternatives (The Plaza)
Center City/Streetcar Corridor



OPTION 2 – The Plaza Loop

End-of-Line Alternatives (The Plaza)
Center City/Streetcar Corridor



OPTION 3 – Thomas Avenue Pocket Track

End-of-Line Alternatives (The Plaza)
Center City/Streetcar Corridor



OPTION 4 – Pecan Avenue Pocket Track

End-of-Line Alternatives (The Plaza)
Center City/Streetcar Corridor

CENTER CITY TRANSITIONS

CENTRAL/HAWTHORNE AVENUE EXTENSION

WHAT'S NEXT

The Center City Streetcar Team will present an update on the project to the Transit Program Steering Team in early June and will meet again with the community to discuss urban design issues around the streetcar stops in late June 2005. The Streetcar Team will work through summer to refine the conceptual design of the streetcar system and return to the community in September to present its refined streetcar design for additional community feedback.



Existing Plan

Curb Side Stop At Morningside & Central Ave.
Center City/Streetcar Corridor



Proposed Aerial View

Curb Side Stop At Morningside & Central Ave.
Center City/Streetcar Corridor



Proposed Ground View

Curb Side Stop At Morningside & Central Ave.
Center City/Streetcar Corridor



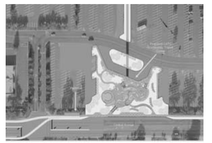
Proposed Plan

Curb Side Stop At Morningside & Central Ave.
Center City/Streetcar Corridor

POTENTIAL STOP AMENITIES:

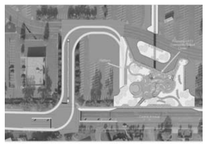
Amenities are being considered along the entire streetcar corridor.

- Shelters
- Lighting
- Ticket Machine
- Seating
- Schedule Information
- ADA Ramps
- Artwork
- Pedestrian Crossing Signals
- Landscaping
- Trash Receptacles



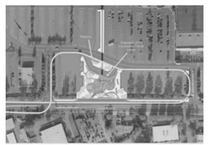
OPTION 1 – Central Avenue Pocket Track

End-of-Line Alternatives (Eastland Mall)
Center City/Streetcar Corridor



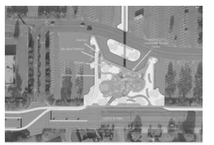
OPTION 2 – Transit Center Pocket Track

End-of-Line Alternatives (Eastland Mall)
Center City/Streetcar Corridor



OPTION 3 – Central Avenue/Mall Loop

End-of-Line Alternatives (Eastland Mall)
Center City/Streetcar Corridor



OPTION 4 – Elevated Pocket Track

End-of-Line Alternatives (Eastland Mall)
Center City/Streetcar Corridor

POTENTIAL STREETCAR STOPS:

- Presbyterian Hospital
- Independence Park
- Southeast Corridor
- Plaza Area
- Veterans Park
- Morningside Drive
- Arnold Drive
- Briar Creek Drive
- Eastway Crossing/ Eastway Drive
- Sheridan Drive
- Derby Acres
- Landsdale Drive/ Rosehaven Drive
- Winterfield Place
- Eastland Mall

kiosks, and other amenities which are designed to create a more comfortable environment for passengers who are waiting for the streetcar to arrive. The platform height will be 4 inches higher than the sidewalk; ramps will be constructed to improve access for persons with disabilities. Streetcar stops at Eastland Mall and the Rosa Parks Place (streetcar termini) will be incorporated into the planned community transit centers, which include more elaborate waiting areas.

Most of the streetcar stops will be designed for curbside service. These platforms will be built into the existing sidewalk for easy access. There are certain locations where the streetcar alignment dictates median operation where platforms in the median of the roadway are being considered. There are 32 proposed streetcar stop locations along the corridor. Six of those stops require median platforms, all of which will be located in Center City on Trade Street. These platforms, like the one shown in the diagram, will be located at signalized intersections or pedestrian crossings. The ramp at one end of the platform will be accessible from the crosswalk, and platforms will be designed as a "safe haven" for commuters waiting for the streetcar. Shelters will back-up to the median curb line to shield patrons from passing traffic. All crosswalks will be equipped with audible and tactile treatments for the visually impaired. These concepts are illustrated on the map located on the inside panels of the newsletter. ■

INSIDE TRACK



Willie Noble, P.E.
Senior Project Manager
Willie Noble, joined CATS in 2004 after working for transit agencies MARTA (Atlanta) and Metro in St. Louis. He has over 26 years of professional experience in engineering, construction management, and project management. **Family:** Married to wife, Rosilyn for over 24 years. Two daughters, Alexia 15, sophomore at Harding University High School and Adrienne, 18 freshman at Xavier University in New Orleans. **Educational background/Certificates:** BS in Civil Engineering-Washington University, St. Louis. **Hobbies:** Photography, listening to music(especially jazz), playing bass, golf,and traveling. **Favorite Charlotte restaurants:** Taste of Havana and Harry and Jean's. **Favorite Music Group/Entertainer and why:** Weather Report "They were a seminal band of the fusion-jazz period during the 1970's when I became interested in jazz music."



Jerry Roberson, AICP
Assistant Project Manager
Jerry Roberson, joined CATS in 2001 as a Planner in the Project Development Division. Currently he is the Assistant Project Manager for the streetcar corridor. Prior to his positions with CATS, he served as the Manager of Project Development with the Metopolitan Tulsa Transit Authority. **Hometown:** Tulsa, Oklahoma. **Educational Background/Certificates:** BA Geography, Oklahoma State University, MS Urban Planning, University of Tennessee Certificate in Project Management, UNCC. **Hobbies:** Visiting Big Cities, Domestic Travel, Architecture, Bowling **Favorite Charlotte Restaurant:** Hotel Charlotte-variety of food and prices, hangouts for locals, extensive selection of beverages. **Favorite Musical Group/Entertainer:** Chicago-38 years, dozens of top 10 hits, horns, horns, and horns. They truly "Make Me Smile!"



Stan Leinwand, AICP
Transit Planner/Urban Design
Stan Leinwand is the newest member of the streetcar team. Stan began working for CATS in winter of '05. He has over 10 years of planning and design experience in the private, public, and non-profit sectors. **Family:** Married to wife, Sara-Lynne with one son, originally from Montreal, Canada. **Education:** BA Political Science, Master of Urban Planning, Master of Architecture(Urban Design) **Hobbies:** Relaxing with family, traveling. **Favorite Charlotte Restaurants:** 300 East and Providence Café **Favorite Musical Group:** Great Big Sea(celtic folk/rock band from Newfoundland), 80's music.



Kiera Terrell
Community Relations Specialist
Kiera Terrell joined CATS in the Fall of '04. Before joining CATS, she worked for the Rhode Island Public Transit Authority (RIPTA) where she designed and implemented marketing strategies for the purpose of creating transit awareness and education. During her tenure at RIPTA, she also created the first transitional program for high school students and persons with disabilities. **Family:** Married to husband Marion, pet maltese named Remington. Born and raised as a "Ragin Cajun" in Louisiana! **Education:** BA in Psychology, minor in Criminology –State University of West Georgia. **Favorite Charlotte Restaurant:** McCormick & Schmidt. **Favorite Musical Groups/Entertiners:** Beyoncé, Frankie Beverly & Maze, Jill Scott, and Michael Jackson because of their unique sense of style and incredible talent.



Linda Murdaugh
Corridor Assistant
Linda Murdaugh is the Corridor Assistant for the streetcar corridor. She is originally from Hampton, S.C. In continuing her education, she plans to pursue a B.A. degree in Journalism/Communications and a Masters of Divinity at UNCC. She enjoys writing poetry, plays, and short stories! Her favorite Charlotte restaurant is Carraba's Italian Grill where she enjoys eating her favorite type of food.

SUMMER 2005

Newsletter Editor:
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CATS Community Relations Specialist

Center City Corridor
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RIDING THE STREETCAR



As shown in the photo, streetcars are designed to be very spacious inside, so it's very easy to maneuver within the vehicle for those in wheelchairs, with strollers or even bicycles. The configuration of seats has not been finalized for CATS streetcars but there will be plenty of seats and areas to secure a wheelchair. Streetcars also have large areas for people to stand, which makes passenger movement to and from the doors more efficient. Streetcars are designed for lower speeds and smooth starts and stops. ■

GETTING ON AND OFF THE STREETCAR



An important design feature of a platform is to construct it to be level with the streetcar floor. Building the platform 4 inches higher than normal curb height will allow a passenger to move to and from the vehicle without navigating stairs or stepping over gutters. Streetcars are equipped with "bridge plates" (shown in the photo) to ensure smooth access entering or exiting the vehicle by wheelchair, bike, etc. In addition to the bridge plate, the doors will be extra wide to allow passengers to exit the streetcar while others are getting on.

We hope that this information provides an insight into CATS' focus on passenger comfort. Future phases of the streetcar design will include more details regarding these efforts. ■

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CENTER CITY TRANSITIONS

SUMMER 2005

Information on the Center City Streetcar Project



STREETCAR TEAM RECEIVES APPROVAL TO PROCEED ON TRADE STREET!

Recently, CATS Center City Streetcar team reached a major milestone when the Program Steering Team approved a conceptual alignment and identified the preferred streetcar stop locations for the route in Center City. An alignment that will provide median stops for many of the Center City locations was selected for Trade Street, in an effort to design a streetcar system that has minimal impacts to streetscape and adjacent properties. This alignment will provide an efficient and convenient system between Johnson C. Smith University and Presbyterian Hospital (possibly Plaza Midwood area) on Trade Street and Elizabeth Avenue.

Moreover, long-range streetcar extensions along Central Avenue to Eastland Mall and Beatties Ford Road to Rosa Parks Place are planned to operate entirely along the curbside lane. Higher traffic volumes and speeds in these corridors prescribe a curbside alignment option that becomes more attractive, due to the streetcar operating in the slower curbside travel lane. Curbside service will also avoid impacts to the recently-planted median strip on Central Avenue.

As an opportunity to determine potential extensions into the future, a preliminary feasibility analysis of service in Uptown has also been completed. Initially conceived as an uptown circulator within the I-277 loop, similar to the Gold Rush service, the concept has evolved into spokes that extend outward from the four corners of Center City. This concept broadens the reach of the streetcar to "break through" the barrier created by I-277 and will provide streetcar service to more residential and commercial areas in and around Uptown, including Carolinas Medical Center, Belmont neighborhood, and Third and Fourth Wards.

Lastly, with the alignment selection process now complete, more detailed planning and engineering can begin in earnest. The Trade Street/Elizabeth Avenue portion of the streetcar project is expected to be fully functioning by 2009, followed by the Central Avenue/Beatties Ford Road corridors to be implemented by 2017, and the final phase of the project (Center City spokes) by 2025. ■

CATS STREETCAR FOCUSES ON PASSENGER COMFORT

One of the major concerns facing designers of the CATS streetcar system is to ensure passenger comfort at waiting areas during streetcar boarding/exiting and while riding the streetcar system. Streetcars are operating in many different cities where the design team has spent considerable resources and effort to address the concerns of system users. Passenger comfort is not only important to the streetcar team when designing the system, but it will also play a major role in whether or not a commuter decides to ride the system. The following paragraphs will explain some of the important design features of the system that will create a service that is Convenient -Easy- and Comfortable! ■

WAITING FOR THE STREETCAR TO ARRIVE

CATS uses a number of considerations that assist in defining the location of streetcar stops and the amenities present on or near each platform. Pedestrian access to and from the platform is a major concern. Most of the platforms that are being considered will be located very close to crosswalks at existing signalized intersections, therefore allowing commuters to cross the street safely to and from the platform. Mid-block stops (stops that cannot be located at an intersection) will have new, signalized pedestrian crossings designed and constructed specifically for the streetcar system. Platforms are typically 12 feet wide and are equipped with shelters, benches, leaning rails, information

Continue on page 5

Inside This Issue:

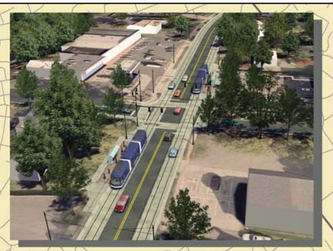
- **Proposed Conceptual Alignment**
- **Inside Track**
- **Riding the Streetcar**
- **Getting On and Off the Streetcar**

PROPOSED CONCEPTUAL ALIGNMENT

CENTER CITY TRANSITIONS

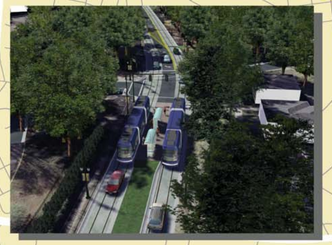








LaSalle Street



Johnson C. Smith



Arena/Transportation Center



The Plaza

Rosa Parks Place
Montana Drive
LaSalle Street
Russell Avenue
Booker Avenue/ Oaklawn
French Street
Johnson C. Smith University
Five Points
Montgomery Street
Johnson & Wales
Sixth & Graham
Ninth & Graham
Tenth & Church
Mint Street
Tryon Street
Seventh Street
Government Center
Third Ward
Charlotte Gateway Station
Cedar Street Design Center
Post Street
Arena/ Transportation Center
Otts Street
Marshall Park
Metro School
Midtown Square
Morehead Street
Carolinas Medical Center
Scott Avenue
McDowell Street
Travis Street
Central Piedmont Community College
Independence Park
Presbyterian Hospital
Plaza Area
Commonwealth Avenue
Lamar Street
Morningside Drive
Veterans Park
Arnold Drive
Briar Creek Road
Eastway Crossing
Eastway Drive
Sheridan Drive
Darby Acres
Landsdale Drive/ Rosehaven Drive
Winterfield Place
Eastland Mall

BEATTIES FORD ROAD
STATESVILLE ROAD
GRAHAM STREET
TRYON STREET
CEDAR STREET
TRADE STREET
CENTRAL AVENUE
INDEPENDENCE BOULEVARD
7TH STREET

0 0.25 0.5 1 Miles
1:28,000

Legend

- Streetcar Stops
- Trade Street - Curb Running
- Trade Street - Median Running
- Central Avenue Extension
- Beatties Ford Road Extension
- Central City Circulator
- Potential Circulator Alternate Alignments

Center City Streetcar FAQs



Frequently Asked Questions about the Center City Streetcar Project

The process for developing the Center City/Streetcar Corridor is heavily dependent on the participation of interested citizens. The streetcar team has compiled a series of questions generated through various public meetings, emails, and phone calls. These questions were documented and taken into consideration for the project. We have provided answers to the following questions below in an effort to keep the public informed.

How is a streetcar powered?



The streetcar is electric and is powered by an overhead wire 18 feet above the street.

Will the stops be programmed into the streetcar or will you have to pull a cord to notify the driver of a stop?

The streetcar will stop at every stop along the corridor.

How will the elderly cross the road that has a streetcar operating on it?

Streetcars adhere to the same type of traffic controls as automobiles and trucks. Streetlight control buttons can be placed to safely assist the elderly across busy streets.

What is the maintenance plan for the streetcar? How often does the system breakdown?

A comprehensive maintenance plan will be developed for the streetcar system. There are a lot of variables that determine the breakdown experience for transit systems, like: age of the vehicle, local weather patterns, and maintenance practices. Streetcars have shown similar durability and reliability of other rail system technologies.

Is the cost of this project comparable to the Light Rail System?

We are still in the conceptual design stages of this project and do not have cost figures at this time. A cost estimate will be prepared at the end of the conceptual design phase.

There is a concern about the heavy truck movement to and from Brookshire Freeway and I-85. How will the streetcar and heavy trucks co-exist?

The streetcar, like a bus, is capable of operating in traffic and would not result in additional impacts to truck traffic.

Is there a preference between curb running and median lane travel?

This is a question on which the Center City Streetcar team is looking for input from you! Curbside running and median lane running will be evaluated against a large set of criteria, including public consensus, to determine the option that best suits the community, operations, and the environment.

CATS
CHARLOTTE AREA TRANSIT SYSTEM

704-336-RIDE • 866-779-CATS • www.ridetransit.org

Continued on reverse side

Center City FAQs

How much does income and population factor in to where transit is placed?

Population, along with employment, connectivity to major activity centers, and existing transit ridership in the corridor are primary factors that are considered when planning transit investments, and can indicate the likelihood for transit use in a particular corridor.

On Trade Street, can the streetcar operate curbside in some areas and median running in others?



Yes. The streetcar is capable of alternating between the two loading options. However, its design will limit the number of times the streetcar changes lanes, because each lane change requires traffic signals to control traffic around the movement of the streetcar.This can cause safety issues because a motorist may not expect the streetcar to change lanes. Also, the project's goal is to minimize any impacts to traffic.

We understand that the Center City Streetcar Team is exploring potential alternative streets for the streetcar to operate on in Center City. What is the rationale for creating a couplet system on 4th and Trade Street?

Coordination between the streetcar project and other CATS projects like the proposed Multi-Modal Station and the Southeast/West Corridor are critical to the successful implementation of the transit system. The couplet analysis will provide a greater understanding of the benefits and drawbacks of alternatives to operating the streetcar solely on Trade Street.

Will the Trade Street Alternatives study delay the project completion date?

No. The assessment will not affect the schedule of the project.

Doesn't Charlotte have poor air quality? How can we better our air quality?

Part of the solution to improve our air quality includes building transit systems that use technology with an improved operating system. Also, the more cars that are taken off of the road, the better the air quality will become.

Can a streetcar transport more passengers than a bus?

Yes. By attaching multiple cars a streetcar can carry 2 to 4 times as many passengers than a standard bus.

What does the streetcar look like?

The streetcar system is conceived as a "Portland" type streetcar system utilizing modern vehicle technology based on the European "tram" that is a smaller and lighter vehicle than those used for "Light Rail Transit", operates on embedded rails, and is capable of operating in streets with other traffic.





Center City Streetcar/Corridor Team

Senior Project Manager-Willie A. Noble, P.E.
Assistant Project Manager-Jerry Roberson, AICP
Transit Planner/Urban Design-Stan Leinwand, AICP
Community Relations Specialist-Kiera R. Terrell

We would like to hear from you! To get involved in the project or to present your concerns directly to the Center City/Streetcar Corridor team, please call 704-432-3030 or kterrell@ci.charlotte.nc.us

Center City Fast Facts

Information on the Center City Streetcar Project



CENTER CITY CORRIDOR DESCRIPTION

The Trade Street Streetcar project is a key recommendation of the 2025 Corridor System Plan. The alignment will serve the central business district and provide connectivity to surrounding communities and institutions. The proposed streetcar route will begin at Beatties Ford Rd (I-85) continuing through Center City (CBD) along Trade St, traveling up Elizabeth Ave, and out to Central Ave (Eastland Mall). The Streetcar is a 21st century version of the early 20th century vehicle. It will introduce a new level of comfort, safety, and convenience for commuters traveling to and from work, special events, and other points of interest. It will also provide a more pedestrian-friendly environment along the corridor with hopes to create a more livable city and a positive addition to the transportation system.

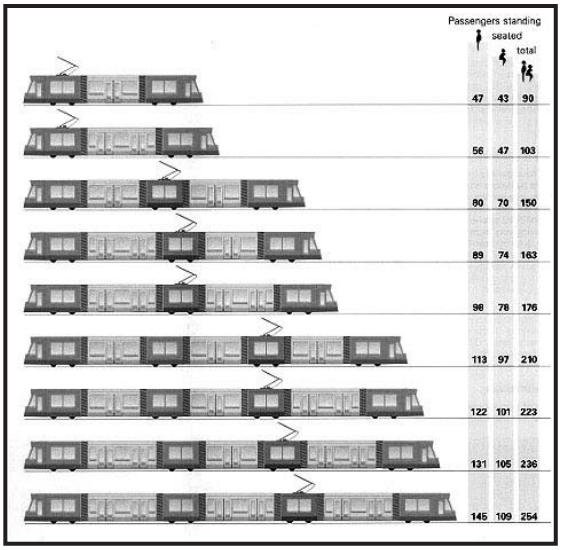
VEHICLE DESCRIPTION

The Streetcar is conceived as a "Portland" type streetcar system utilizing modern vehicle technology based on the European "Tram" that is designed to operate in mixed traffic on urban streets. Each low floor streetcar consists of a three-tier section vehicle with a capacity of 117 passengers and is designed for bi-directional operation with doors on both sides of the carbody. Modern streetcars are smaller and lighter than Light Rail Transit (LRT) vehicles and operate similar to a bus with passengers getting on and off frequent stops along the street rather than at stations, but hold a greater number of passengers than a bus.

Streetcar At A Glance

- Length: 20m (66ft)
- Width: 2.46m (8ft)
- Height: 3.4m (11ft, 3in)
- Double-ended, double-sided, 3 sections, 2 doors
- 30 Seats, 87 Standees
- Space for wheelchairs, bikes, etc.

VEHICLE CAPACITY



CATS CENTER CITY CORRIDOR TEAM

Senior Project Manager:
Willie A. Noble, P.E.

Assistant Project Manager:
Jerry Roberson, AICP

Transit Planner/Urban Designer:
Stan Leinwand, AICP

Community Relations Specialist:
Kiera R. Terrell

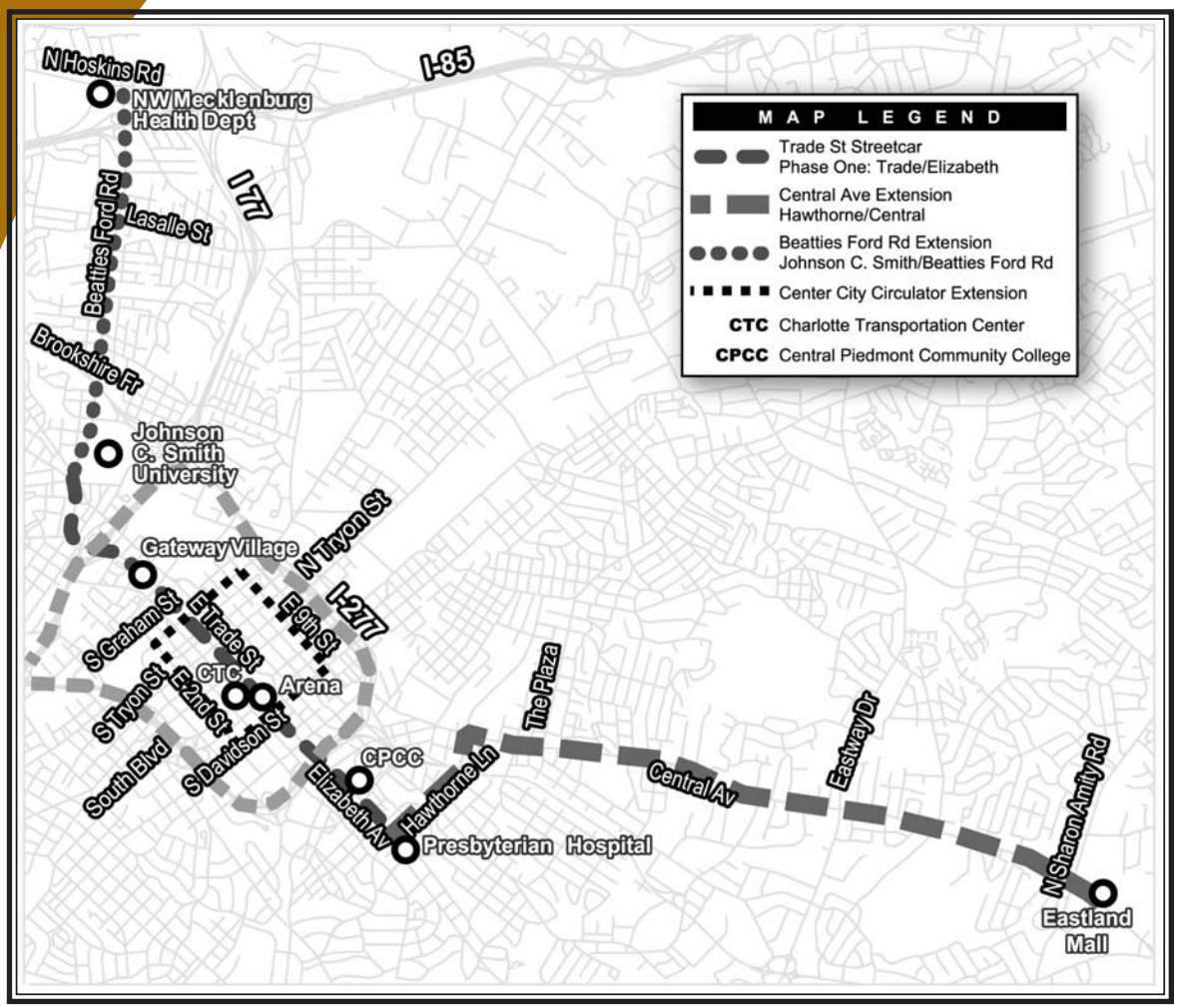
CATS CHARLOTTE AREA TRANSIT SYSTEM

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Center City Fast Facts

MORE MOBILITY! MORE OPTIONS! MORE SOLUTIONS!
A NEW WAY TO COMMUTE TO...

...Colleges & Universities
...Healthcare Institutions
...Entertainment Facilities
...Restaurants
...Place of Work
...Shopping Centers



PROJECT SCHEDULE

- Draft Environmental Impact Statement/Conceptual Design – began September 2004 and will be completed by December 2005
- Preliminary Engineering/Final Design complete by early 2007
- Construction (Phase 1) begin mid-2007 complete by 2009
- Construction (Phases 2 & 3) complete by 2017
- Construction (Phase 4) complete by 2025

Public Meetings/Input:
- February/March 2005
- April 2005
- June 2005
- September 2005

Dates are subject to change.

To receive information on the Center City Streetcar Corridor, call (704) 432-3030 or email kterrell@ci.charlotte.nc.us.

CATS
CHARLOTTE AREA TRANSIT SYSTEM

704-336-RIDE • 866-779-CATS
www.ridetransit.org

CENTER CITY TRANSITIONS

FALL 2004

Information on the Center City Streetcar Project



CATS INITIATES A NEW TWIST ON AN OLD IDEA FOR TRANSIT SERVICE IN CENTER CITY CHARLOTTE!!

Prior to 1950, many American cities utilized streetcars as a primary method of public transportation. It's ironic that such an old idea – mixed with some new technology - could be such a boon to Charlotte decades later! Center City commuters will be able to leave their cars at home as new-age streetcars similar to those used in Europe, Oregon and Washington will offer a fast and reliable ride to almost anywhere in the Center City.

CATS strives to fully inform citizens on all updates and information regarding transportation projects. The Center City Corridor team will provide opportunities for public input on various components of the streetcar project. We strongly encourage all interested parties to participate in upcoming meetings and workshops throughout the duration of the project. Meetings are tentatively scheduled for: January or February 2005, April 2005 and September 2005. The initial public meeting has been scheduled for:

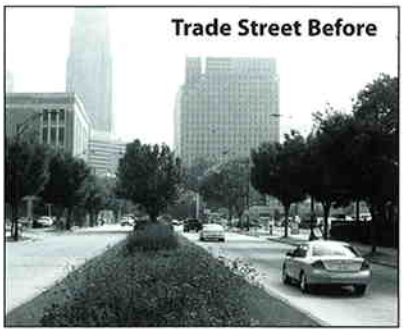
Thursday, November 18, 2004
6:00 PM to 8:00 PM

Charlotte-Mecklenburg Government Center
600 East Fourth Street, Rm 267
Charlotte, NC 28202

CENTER CITY STREETCAR CORRIDOR

The Center City Streetcar Corridor is a key recommendation of the 2025 Corridor System Plan, and is conceived as a Portland type streetcar system utilizing modern vehicle technology based on the European tram that is a smaller, lighter-weight vehicle than those used for Light Rail Transit and is capable of operating in the street with mixed traffic. The streetcar will fulfill many roles including:

- Establishing an east-west transit spine that links all five rapid transit corridors in downtown an provides easy movement between the existing Transportation Center and the proposed Multimodal Station.
- Enhancing Center City mobility.
- Improving connections for neighborhoods that are immediately outside the freeway loop (I-277).
- Connecting key destinations such as the Square, Central Piedmont Community College, Johnson & Wales University, Johnson C. Smith University, Presbyterian Hospital and the new arena.
- Supplementing CATS' two busiest bus routes improving operating efficiency.


Trade Street Before

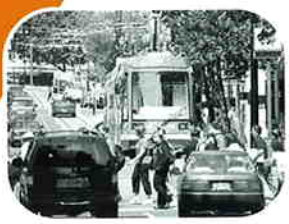
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Inside This Issue:

- **Center City Streetcar Corridor**
- **Streetcar Characteristics**
- **Transit Technologies**
- **Fast Facts**

CATS
CHARLOTTE AREA TRANSIT SYSTEM

STREETCAR CHARACTERISTICS



Operates on street with other traffic... Streetcars are generally smaller and more maneuverable than light rail vehicles and operate in traffic lanes on embedded rails in roads with speed limits 45 mph or less.

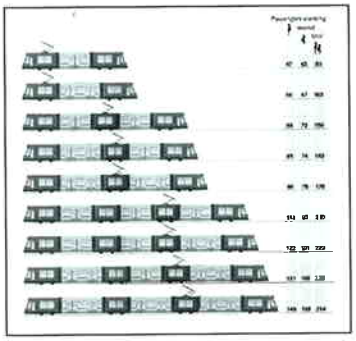
Transit Stations won't be required... Streetcars operate much more like a local fixed route bus service than traditional light rail transit. Stops are closer together but can have more amenities than the standard bus stop. The streetcar project will also include many improvements to sidewalks and pedestrian crossings in the corridor.





Streetcars have fewer impacts!... Similar to light rail transit, streetcars are powered using overhead electrical power. However, streetcars are less complex, require only one wire, and have fewer visual impacts on streetscape and community character.

All aboard!... By attaching multiple cars – streetcars can carry 2 to 4 times as many passengers as a standard bus.





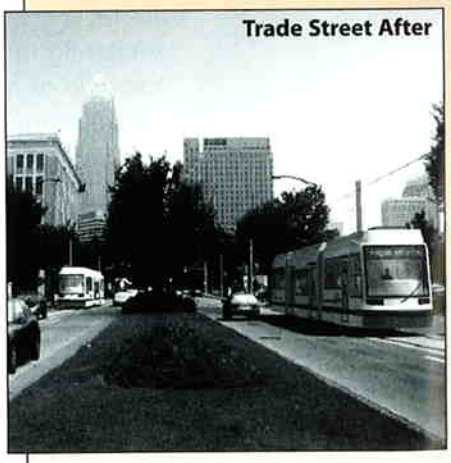
Construction is a Breeze!... A construction technique has been perfected for the installation of the embedded rails. Traffic detours are often unnecessary.

Continued from cover

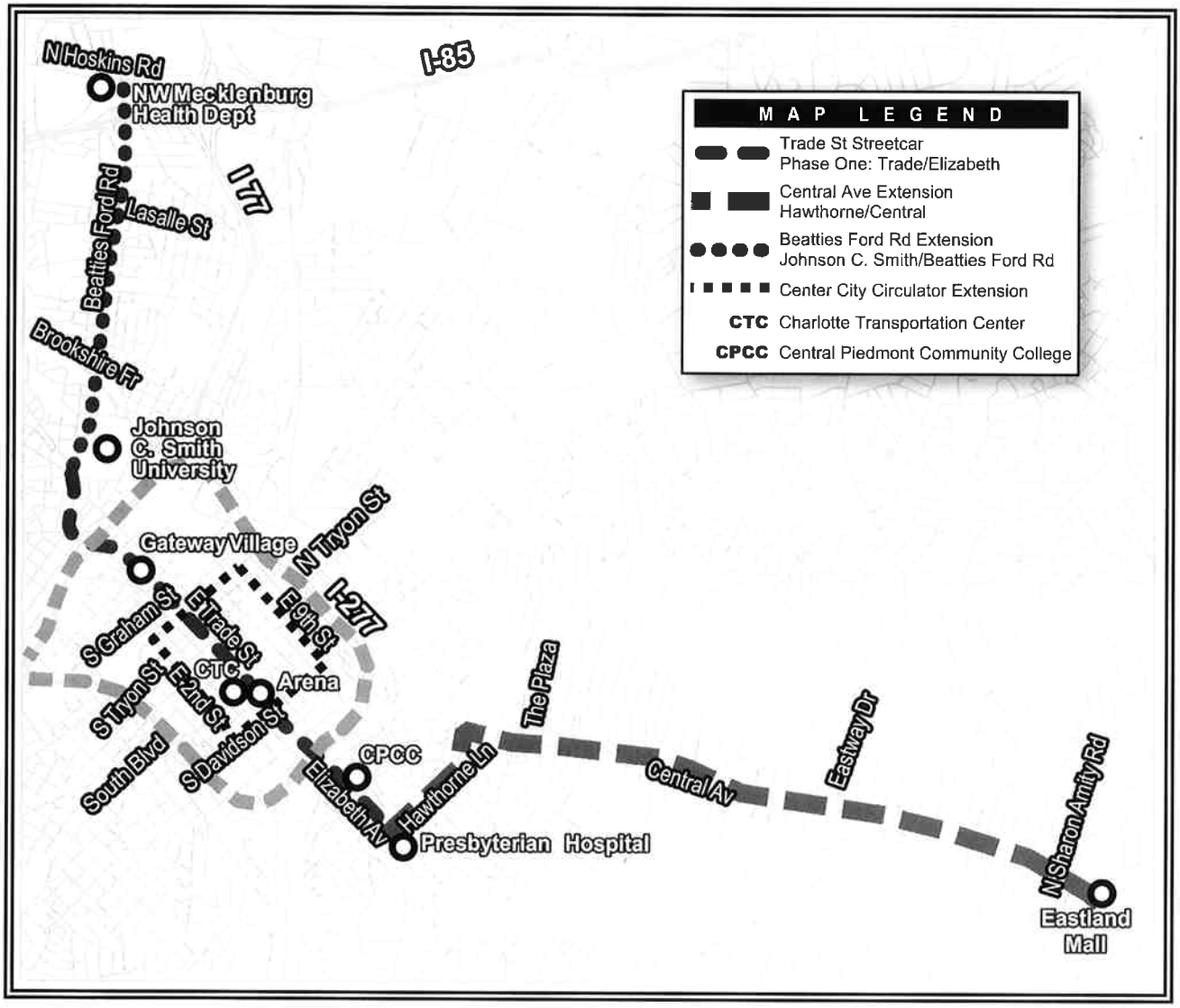
CENTER CITY STREETCAR CORRIDOR

The Streetcar Project consists of four streetcar segments:

- The Trade Street Streetcar extending along Beatties Ford Road, Trade Street and Elizabeth Avenue from Johnson C. Smith University to Presbyterian Hospital.
- The Central Avenue Streetcar extending from the Presbyterian Hospital to Eastland Mall.
- Beatties Ford Road Streetcar extending from the JCSU to I-85.
- A Center City Circulator to distribute passengers throughout Center City.



CENTER CITY STREETCAR CORRIDOR MAP



TRANSIT TECHNOLOGIES

Local Fixed Route Bus service operates along a standard alignment with frequent stops. CATS operates 30 routes that serve the Uptown Transportation Center, 3 crosstown routes, and 16 neighborhood routes.



Express Bus service is designed to transport commuters between suburban communities and major employment centers. CATS provides express bus service on 19 routes throughout Charlotte during the weekday rush hour periods.



Vanpools are ridesharing arrangements where groups of (8 to 15) individuals pool their resources to use one vehicle to commute to work. Employers and/or public agencies usually subsidize the cost of the van.

Heavy Rail Transit systems are electric railways with the capacity for a heavy volume of passengers. These systems operate in exclusive rights-of-way either elevated, underground or at-grade and require an electrified third rail. The carrying capacities of heavy rail cars range from 150 to 190 persons. Examples of heavy rail systems exist in Atlanta, Chicago, New York City, and Washington, D. C.



Light Rail Transit consists of passenger vehicles rolling along steel rails electrically-powered from an overhead wire. Light rail vehicles can accommodate over 200 passengers per rail car and are able to accelerate and decelerate quickly, which allows for more frequent stops. Light rail is capable of operating in mixed traffic or in a separate right-of-way. Houston, Dallas, Denver, and Portland all operate light rail systems. Charlotte's first light rail line will open in the South Corridor in Fall 2006.



Commuter Rail is a train with coaches pulled by a locomotive or motorized coach called diesel multiple units or DMUs. Commuter rail passengers typically use the train to commute from an outlying area into the city for work. Commuter rail systems are located in many cities around the country, including Los Angeles, Chicago, Philadelphia and Long Island.



Intercity Rail, like Amtrak, provides service between cities. Amtrak operates three train lines through Charlotte, the Crescent, the Carolinian and the Piedmont, to destinations along the eastern seaboard and the southeast.



Bus Rapid Transit is a type of limited-stop service developed in the 1990s that relies on technology to help speed up the service. It combines the quality of rail transit and the flexibility of buses. It can operate on exclusive transitways, high-occupancy-vehicle lanes, expressways, or ordinary streets. CATS is exploring BRT in the Southeast and West corridors.

Streetcar is a smaller version of light rail service. It consists of a single or multiple unit cars that operate in mixed traffic receiving power from an overhead wire. Streetcar systems are operated in Portland and Tacoma.

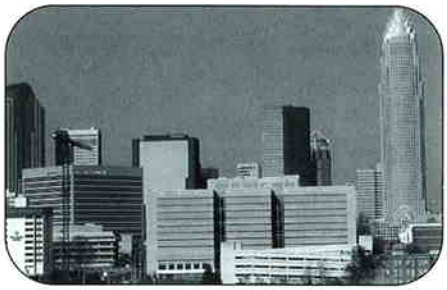
Trolleys are the oldest version of light rail and operate much the same way as a streetcar. Trolleys are generally operated as single streetcars and carry between 40 and 60 passengers. CATS recently introduced new trolley service between the historic South End and Ninth Street in Uptown Charlotte. Other systems are located in Tampa, San Francisco, Memphis and New Orleans.

FAST FACTS

- In 1998, Mecklenburg County voters approved a 1/2 cent sales tax for transit based on the 2025 Integrated Transit Land Use Plan.

- The Center City and surrounding neighborhoods offer a variety of higher educational opportunities, including Central Piedmont Community College (CPCC), Johnson & Wales University, and Johnson C. Smith University.

- Center City is home to national corporations such as Bank of America, Wachovia Corporation, and Duke Energy Corporation. These companies are some of the largest employers in the Charlotte area.



- The 2025 Corridor System Plan projected that employment would increase in the central business district by 79% from the year 2000 to 2025. Population is expected to grow by a 146% from the year 2000 to the year 2025.

- An increased interest in living in an urban setting and the desire to live close to work has created a growing demand for residential development in the Center City and surrounding neighborhoods.

- The new arena will be a major stop for the Trade Street Streetcar. Across from the Charlotte Transportation Center, the Arena is the future home to the new NBA expansion team, the Charlotte Bobcats and the WNBA Charlotte Sting.

- A new multimodal station is planned for West Trade Street. The Streetcar will connect to future CATS Commuter Rail, trains and other regional and local transportation services at this location.



- Streetcar operations will enhance service on CATS Route 9 along Central Avenue, which is one of the busiest transit lines in the entire CATS system.

FALL 2004

Newsletter Editor:
Kiera Terrell,
CATS Community Relations Specialist

Center City Corridor
Senior Project Manager:
Willie A. Noble, P.E.

Assistant Project Manager:
Jerry Roberson

To be added to the CATS Center City Corridor mailing list, call (704) 432-3030 or e-mail kterrell@ci.charlotte.nc.us.

For more information on streetcar transit planning, visit the CATS web site at www.ridetransit.org or call CATS at (704) 336-RIDE.

HOW TO GET INVOLVED

Public meetings will be publicized in local newspapers, on Government Channel 16, and on the City of Charlotte – Mecklenburg County website at www.charmeck.org. Also, notices of public meetings (as well as other public information materials) will be sent directly to citizens whose addresses are listed in the CATS Center City Corridor database. To place your name on the mailing list, please contact:

Kiera Terrell
CATS Community Relations Specialist
600 East Fourth Street
Charlotte, NC 28202
(704) 432-3030
kterrell@ci.charlotte.nc.us

CATS staff members are available to speak to neighborhood, business, civic, social, and other interested groups concerning streetcar transit planning on the Center City Corridor. To request a speaker, contact Kiera Terrell at the phone number, street address, or e-mail address listed above. In addition to participation at public meetings, citizens are encouraged to send comments, questions or concerns about Center City Corridor streetcar transit planning to the corridor team.

600 East Fourth Street Charlotte, NC 28202

CENTER CITY TRANSITIONS

SPRING 2005

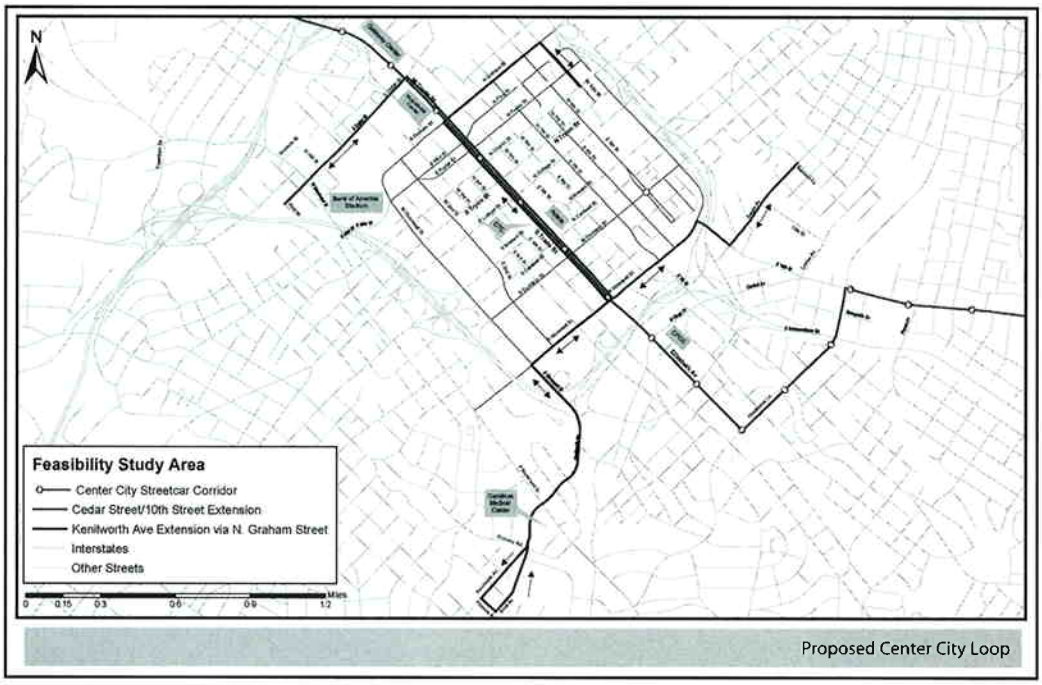
Information on the Center City Streetcar Project



STREETCAR MOVING AHEAD

An opportunity presented itself for the public to take another glimpse at the conceptual design work underway on the CATS Center City Streetcar Project. Moreover, CATS staff and its consultant team met with neighborhood representatives, business owners, and other members of the interested public at three separate community meetings. Held at different venues along the corridor, the meetings were set up to inform the public about the latest ideas for streetcar stops and alignments, and to solicit input on the project. The meetings were well attended with over 100 attendees, and CATS staff received positive feedback from neighborhood residents about the streetcar concept.

In this edition of the newsletter, a primary focus is placed on recent community meetings. This includes an emphasis on informational subject matter as well as feedback the Center City Streetcar team received from persons in attendance.



Proposed Center City Loop

Inside This Issue:

- **Feedback from Public Meetings**
- **Potential Streetcar Stop Locations**
- **Alternatives Considered for Trade Street**

Center City Loop

The Center City Streetcar Team has been busily examining the feasibility of a Center City streetcar loop (Final Phase of the streetcar system). The primary purpose of the streetcar in Center City is to serve travel within the Center City, as well as provide and enhance transit connectivity between all five rapid transit corridors in Uptown. The graphic, depicted above illustrates just one of the many concepts being considered at this time.

CATS CHARLOTTE AREA TRANSIT SYSTEM

BEATTIES FORD ROAD EXTENSION

FOCUS OF PUBLIC MEETINGS

The primary focus of the meetings was to show the alternative alignments for the streetcar segments and to discuss the advantages and disadvantages of curbside running versus median running alternatives. Both types of alignment work well depending on the corridor and segment in question. Additionally, it was important for attendees to understand how each alignment type will impact streetscape and traffic patterns. The attendees were pleased to hear that a goal of the project was to minimize the impact to sidewalks, street widths, and landscaping. The meetings were also used to continue the exchange of ideas regarding stop locations and to discuss the end-of-line configurations for each phase of the project. Meeting displays included aerial mapping with potential alignment overlays, renderings of potential stops, and computer generated animations of some of the Trade Street stops.



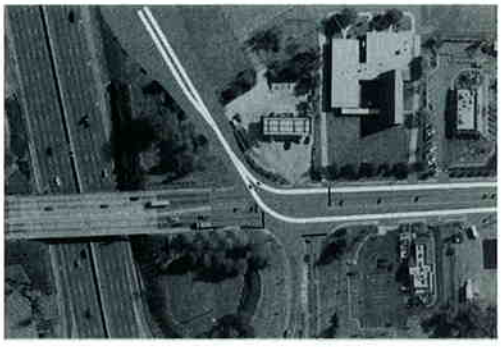
OPTION 2 –Beattles Ford Road Pocket Track

End-of-Line Alternatives (Beatties Ford Road)
Center City/Streetcar Corridor



OPTION 1 – Rosa Parks Place Pocket Track

End-of-Line Alternatives (Beatties Ford Road)
Center City/Streetcar Corridor



OPTION 3 – I-85 Pocket Track

End-of-Line Alternatives (Beatties Ford Road)
Center City/Streetcar Corridor

POTENTIAL STREETCAR STOPS:

- **Rosa Parks Place**
- **Montana Drive**
- **LaSalle Street**
- **Booker Avenue/Oaklawn Avenue**
- **French Street**
- **Johnson C. Smith University**



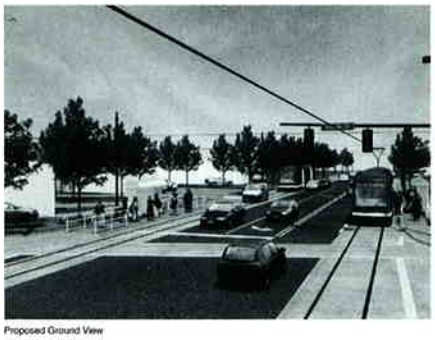
Existing Plan

Conceptual Layout at Beatties Ford and Lasalle St
Center City/Streetcar Corridor



Proposed Aerial View

Conceptual Layout at Beatties Ford and Lasalle St
Center City/Streetcar Corridor



Proposed Ground View

Conceptual Layout at Beatties Ford and Lasalle St
Center City/Streetcar Corridor



Proposed Plan

Conceptual Layout at Beatties Ford and Lasalle St
Center City/Streetcar Corridor

TRADE/ELIZABETH AVENUE INITIAL ALIGNMENT



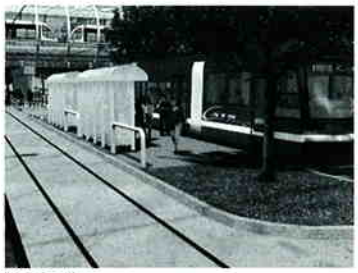
Existing Plan

Median Running Center Median Side Platform at Arena Station
Center City/Streetcar Corridor



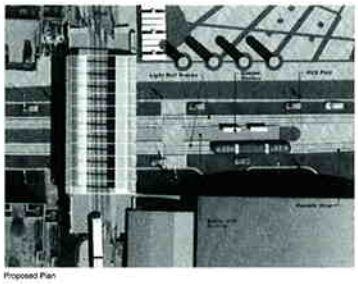
Proposed Aerial View

Median Running Center Median Side Platform at Arena Station
Center City/Streetcar Corridor



Proposed Ground View

Median Running Center Median Side Platform at Arena Station
Center City/Streetcar Corridor



Proposed Plan

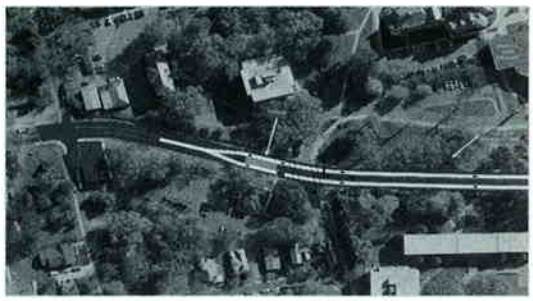
Median Running Center Median Side Platform at Arena Station
Center City/Streetcar Corridor

POTENTIAL STREETCAR STOPS:

- Johnson C. Smith University
- Five Points
- Montgomery Street
- Gateway Village
- Future Charlotte Gateway Station
- Mint Street
- Tryon Street
- Arena/Transportation Center
- Government Center
- Central Piedmont Community College (CPCC)
- Presbyterian Hospital
- Independence Park
- Southeast Corridor

NEIGHBORHOODS EXCITED ABOUT CATS STREETCAR PROJECT

The first meeting was held on April 26th at Eastland Mall which concentrated on the Central Avenue portion of the Streetcar alignment. Attendees expressed support for the project but wanted assurances that the recent streetscape improvements along Central Avenue would be preserved. The second meeting was held on April 28th at the Carole Hoefener Center on 6th Street, where the discussion centered on stop locations and the phasing for the project. The Trade Street segment is scheduled to be operational in 2009 with endpoints at Johnson C. Smith University and Presbyterian Hospital or the Plaza-Midwood area on Central Avenue. The third meeting was conducted at Johnson C. Smith University on May 4th and included dialogue regarding the impact of streetcar operations on bus service, the future terminus of the Beatties Ford Road segment, and a general discussion about the economic impact/job creation potential of streetcar systems.



OPTION 1 – Center Platform/Center Pocket Track
Johnson C. Smith University

End-of-Line Alternatives (Johnson C. Smith)
Center City/Streetcar Corridor



OPTION 2 – Brookshire Off-Street Pocket Track

End-of-Line Alternatives (Johnson C. Smith)
Center City/Streetcar Corridor



OPTION 1 – The Plaza Pocket track

End-of-Line Alternatives (The Plaza)
Center City/Streetcar Corridor



OPTION 2 – The Plaza Loop

End-of-Line Alternatives (The Plaza)
Center City/Streetcar Corridor



OPTION 3 – Thomas Avenue Pocket Track

End-of-Line Alternatives (The Plaza)
Center City/Streetcar Corridor



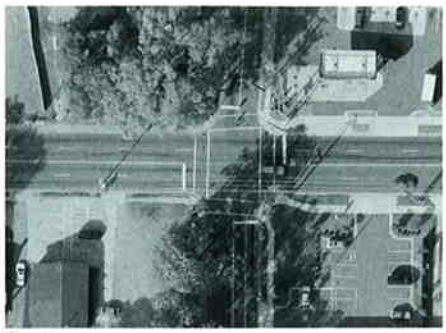
OPTION 4 – Pecan Avenue Pocket Track

End-of-Line Alternatives (The Plaza)
Center City/Streetcar Corridor

CENTRAL/HAWTHORNE AVENUE EXTENSION

WHAT'S NEXT

The Center City Streetcar Team will present an update on the project to the Transit Program Steering Team in early June and will meet again with the community to discuss urban design issues around the streetcar stops in late June 2005. The Streetcar Team will work through summer to refine the conceptual design of the streetcar system and return to the community in September to present its refined streetcar design for additional community feedback.



Existing Plan

Curb Side Stop At Morningside & Central Ave.
Center City/Streetcar Corridor



Proposed Aerial View

Curb Side Stop At Morningside & Central Ave.
Center City/Streetcar Corridor

POTENTIAL STOP AMENITIES:

Amenities are being considered along the entire streetcar corridor.

- **Shelters**
- **Lighting**
- **Ticket Machine**
- **Seating**
- **Schedule Information**
- **ADA Ramps**
- **Artwork**
- **Pedestrian Crossing Signals**
- **Landscaping**
- **Trash Receptacles**



Proposed Ground View

Curb Side Stop At Morningside & Central Ave.
Center City/Streetcar Corridor



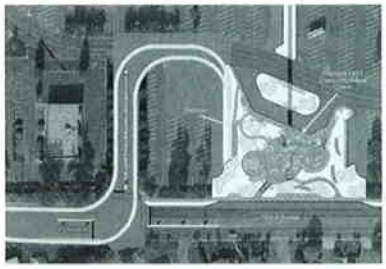
Proposed Plan

Curb Side Stop At Morningside & Central Ave.
Center City/Streetcar Corridor



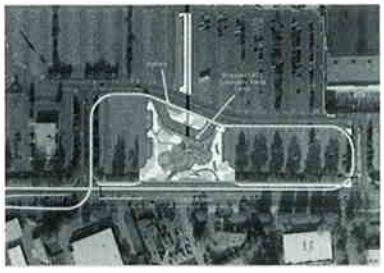
OPTION 1 – Central Avenue Pocket Track

End-of-Line Alternatives (Eastland Mall)
Center City/Streetcar Corridor



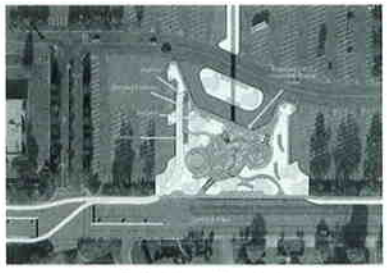
OPTION 2 – Transit Center Pocket Track

End-of-Line Alternatives (Eastland Mall)
Center City/Streetcar Corridor



OPTION 3 – Central Avenue/Mall Loop

End-of-Line Alternatives (Eastland Mall)
Center City/Streetcar Corridor



OPTION 4 – Elevated Pocket Track

End-of-Line Alternatives (Eastland Mall)
Center City/Streetcar Corridor

POTENTIAL STREETCAR STOPS:

- **Presbyterian Hospital**
- **Independence Park**
- **Southeast Corridor**
- **Plaza Area**
- **Veterans Park**
- **Morningside Drive**
- **Arnold Drive**
- **Briar Creek Drive**
- **Eastway Crossing/ Eastway Drive**
- **Sheridan Drive**
- **Derby Acres**
- **Landsdale Drive/ Rosehaven Drive**
- **Winterfield Place**
- **Eastland Mall**

TEAM CONSIDERS ALTERNATIVES TO TRADE STREET IN CENTER CITY

Within the Center City, several different roadways could be used for Streetcar operations. Each of these alignment options has specific advantages and disadvantages, prompting a detailed analysis to determine the option that operates most efficiently, minimizes negative impacts, and provides effective service to the Center City. This alternative alignment analysis examined a variety of options for streetcar operations extending from Gateway Village to McDowell Street, based on specific criteria that were defined with input from study stakeholders and various city departments.

Detailed analyses were conducted on the following four alignment options:

A. Trade Street
(bi-directional / curb-running)
B. Trade Street
(bi-directional / median-running)
C. Fourth Street / Trade Street couplet
(curb-running)
D. Trade Street / Fifth Street couplet
(curb-running)


A & B


C


D

These four alternatives were evaluated with regard to eleven specific performance measures:

- Access and traffic impacts
- Existing on-street parking
- Redevelopment opportunities
- Platforms and pedestrian environment
- Streetcar operations
- Bridge clearances
- Potential utilities impacts
- Relative capital costs
- Ease of construction
- Flexibility to improve future streetcar operations
- Compatibility with Light Rail Transit.

A relative ranking (1st, 2nd, 3rd, 4th) was assigned to each alternative under each performance measure. All criteria were weighted equally to determine a final ranking of alternatives. However, it is important to note that the relative ranking determined through this analysis could change with a prioritization of the performance measures.

Based on evaluation using these eleven performance measures, the Trade Street (median) alternative ranked the highest among the four options studied in depth. This alternative will impact the project in several different ways. It will minimize capital costs and utility impacts, it minimizes negative impacts on the pedestrian environment, it will have the fewest construction impacts, and it will enable effective and efficient streetcar operations. The feedback received from study stakeholders, including input from public participation, is also supportive of a streetcar alignment on Trade Street.

PROJECT SCHEDULE

- Complete Conceptual Design-December 2005
- Complete Final Design-December 2006
- Complete Construction of Trade Street Initial Alignment-June 2009
- Complete Construction of Central Avenue and Beatties Ford Road extensions-June 2017
- Complete Uptown Circulator-June 2025

SPRING 2005

Newsletter Editor:
Kiera Terrell
CATS Community Relations Specialist

Center City Corridor
Senior Project Manager:
Willie A. Noble, P.E.

Assistant Project Manager:
Jerry Roberson, AICP

Transit Planner/Urban Design
Stan Leinwand, AICP

To be added to the CATS Center City Corridor mailing list, call (704) 432-3030 or e-mail kterrell@ci.charlotte.nc.us.

For more information on streetcar transit planning, visit the CATS web site at www.ridetransit.org or call CATS at (704) 336-RIDE.

HOW TO GET INVOLVED

Public meetings will be publicized in local newspapers, on Government Channel 16, and on the City of Charlotte – Mecklenburg County website at www.charmeck.org. Also, notices of public meetings (as well as other public information materials) will be sent directly to citizens whose addresses are listed in the CATS Center City Corridor database. To place your name on the mailing list, please contact:

Kiera Terrell
CATS Community Relations Specialist
600 East Fourth Street
Charlotte, NC 28202
(704) 432-3030
kterrell@ci.charlotte.nc.us

CATS staff members are available to speak to neighborhood, business, civic, social, and other interested groups concerning streetcar transit planning on the Center City Corridor. To request a speaker, contact Kiera Terrell at the phone number, street address, or e-mail address listed above. In addition to participation at public meetings, citizens are encouraged to send comments, questions or concerns about Center City Corridor streetcar transit planning to the corridor team.

Please visit www.ridetransit.org to view public meeting summaries, presentations, and graphics from the public meetings that were held in April/May 2005.

UPCOMING PUBLIC MEETINGS ON URBAN DESIGN

Trade/Elizabeth Avenue Corridor
June 21, 2005 11:30 a.m.
Charlotte-Mecklenburg Public Library
St. Francis Auditorium
310 North Tryon Street
Charlotte

Central/Hawthorne Avenue Corridor
June 22, 2005 6:30 p.m.
Eastland Mall
Activity Room
5471 Central Avenue
Charlotte

Beatties Ford Road Corridor
June 23, 2005 6:30 p.m.
Northwest School of Performing Arts
Old Cafeteria
1415 Beatties Ford Road
Charlotte

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CENTER CITY TRANSITIONS

SUMMER 2005

Information on the Center City Streetcar Project



STREETCAR TEAM RECEIVES APPROVAL TO PROCEED ON TRADE STREET!

Recently, CATS Center City Streetcar team reached a major milestone when the Program Steering Team approved a conceptual alignment and identified the preferred streetcar stop locations for the route in Center City. An alignment that will provide median stops for many of the Center City locations was selected for Trade Street, in an effort to design a streetcar system that has minimal impacts to streetscape and adjacent properties. This alignment will provide an efficient and convenient system between Johnson C. Smith University and Presbyterian Hospital (possibly Plaza Midwood area) on Trade Street and Elizabeth Avenue.

Moreover, long-range streetcar extensions along Central Avenue to Eastland Mall and Beatties Ford Road to Rosa Parks Place are planned to operate entirely along the curbside lane. Higher traffic volumes and speeds in these corridors prescribe a curbside alignment option that becomes more attractive, due to the streetcar operating in the slower curbside travel lane. Curbside service will also avoid impacts to the recently-planted median strip on Central Avenue.

As an opportunity to determine potential extensions into the future, a preliminary feasibility analysis of service in Uptown has also been completed. Initially conceived as an uptown circulator within the I-277 loop, similar to the Gold Rush service, the concept has evolved into spokes that extend outward from the four corners of Center City. This concept broadens the reach of the streetcar to "break through" the barrier created by I-277 and will provide streetcar service to more residential and commercial areas in and around Uptown, including Carolinas Medical Center, Belmont neighborhood, and Third and Fourth Wards.

Lastly, with the alignment selection process now complete, more detailed planning and engineering can begin in earnest. The Trade Street/Elizabeth Avenue portion of the streetcar project is expected to be fully functioning by 2009, followed by the Central Avenue/Beatties Ford Road corridors to be implemented by 2017, and the final phase of the project (Center City spokes) by 2025. ■

CATS STREETCAR FOCUSES ON PASSENGER COMFORT

One of the major concerns facing designers of the CATS streetcar system is to ensure passenger comfort at waiting areas during streetcar boarding/exiting and while riding the streetcar system. Streetcars are operating in many different cities where the design team has spent considerable resources and effort to address the concerns of system users. Passenger comfort is not only important to the streetcar team when designing the system, but it will also play a major role in whether or not a commuter decides to ride the system. The following paragraphs will explain some of the important design features of the system that will create a service that is Convenient -Easy- and Comfortable! ■

WAITING FOR THE STREETCAR TO ARRIVE

CATS uses a number of considerations that assist in defining the location of streetcar stops and the amenities present on or near each platform. Pedestrian access to and from the platform is a major concern. Most of the platforms that are being considered will be located very close to crosswalks at existing signalized intersections, therefore allowing commuters to cross the street safely to and from the platform. Mid-block stops (stops that cannot be located at an intersection) will have new, signalized pedestrian crossings designed and constructed specifically for the streetcar system. Platforms are typically 12 feet wide and are equipped with shelters, benches, leaning rails, information

Continue on page 5

Inside This Issue:

- **Proposed Conceptual Alignment**
- **Inside Track**
- **Riding the Streetcar**
- **Getting On and Off the Streetcar**

CATS CHARLOTTE AREA TRANSIT SYSTEM

PRO



Rosa Parks Place

Montana Drive

LaSalle Street



LaSalle Street

BEATTIES FORD ROAD

Russell Avenue

Booker Avenue/
Oaklawn

16

French Street

Johnson C. Smith
University

Five Points

Joh
Wal

Montgomery
Street

Ced
Des

P

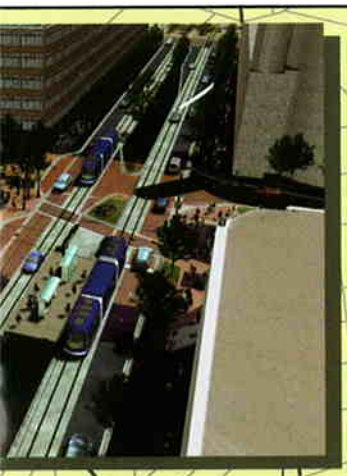


Johnson C. Smith

85

85

POSED CONCEPTUAL ALIGNM







STATESVILLE ROAD
GRAHAM STREET
TRYON STREET
49
277
77
Arnold Drive
Morningside Drive
Veterans Park
CENTRAL AVENUE
Plaza Area
Otts Street
Commonwealth Avenue
Lamar Street
Ninth & Graham
Tenth & Church
Mint Street
Sixth & Graham
Tryon Street
Seventh Street
Independence Park
7TH STREET
Government Center
McDowell Street
Presbyterian Hospital
TRADE STREET
Charlotte Gateway Station
Third Ward
CEDAR STREET
Arena/ Transportation Center
Marshall Park
Travis Street
Central Piedmont Community College
Metro School
Midtown Square
Morehead Street
Carolinas Medical Center
Scott Avenue



Arena/Trans



Landsdale Drive/
Rosehaven Drive

Darby Acres

Sheridan Drive

Eastway Drive

Eastway Crossing

Briar Creek Road

Eastland Mall

Winterfield Place

27



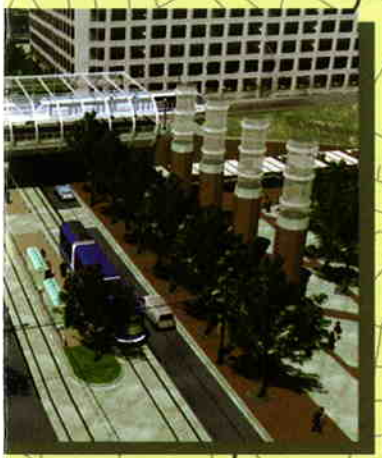
The Plaza

PENDENCE BOULEVARD

74

0 0.25 0.5 1 Miles

1:28,000



portation Center

Legend

- Streetcar Stops
- Trade Street - Curb Running
- Trade Street - Median Running
- Central Avenue Extension
- Beatties Ford Road Extension
- Central City Circulator
- Potential Circulator Alternate Alignments

kiosks, and other amenities which are designed to create a more comfortable environment for passengers who are waiting for the streetcar to arrive. The platform height will be 4 inches higher than the sidewalk; ramps will be constructed to improve access for persons with disabilities. Streetcar stops at Eastland Mall and the Rosa Parks Place (streetcar termini) will be incorporated into the planned community transit centers, which include more elaborate waiting areas.

Most of the streetcar stops will be designed for curbside service. These platforms will be built into the existing sidewalk for easy access. There are certain locations where the streetcar alignment dictates median operation where platforms in the median of the roadway are being considered. There are 32 proposed streetcar stop locations along the corridor. Six of those stops require median platforms, all of which will be located in Center City on Trade Street. These platforms, like the one shown in the diagram, will be located at signalized intersections or pedestrian crossings. The ramp at one end of the platform will be accessible from the crosswalk, and platforms will be designed as a "safe haven" for commuters waiting for the streetcar. Shelters will back-up to the median curb line to shield patrons from passing traffic. All crosswalks will be equipped with audible and tactile treatments for the visually impaired. These concepts are illustrated on the map located on the inside panels of the newsletter. ■

INSIDE TRACK



Willie Noble, P.E.
Senior Project Manager
Willie Noble, joined CATS in 2004 after working for transit agencies MARTA (Atlanta) and Metro in St. Louis. He has over 26 years of professional experience in engineering, construction management, and project management. **Family:** Married to wife, Rosilyn for over 24 years. Two daughters, Alexia 15, sophomore at Harding University High School and Adrienne, 18 freshman at Xavier University in New Orleans. **Educational background/Certifications:** BS in Civil Engineering-Washington University, St. Louis. **Hobbies:** Photography, listening to music(especially jazz), playing bass, golf,and traveling. **Favorite Charlotte restaurants:** Taste of Havana and Harry and Jean's. **Favorite Music Group/Entertainer and why:** Weather Report "They were a seminal band of the fusion-jazz period during the 1970's when I became interested in jazz music."



Jerry Roberson, AICP
Assistant Project Manager
Jerry Roberson, joined CATS in 2001 as a Planner in the Project Development Division. Currently he is the Assistant Project Manager for the streetcar corridor. Prior to his positions with CATS, he served as the Manager of Project Development with the Metopolitan Tulsa Transit Authority. **Hometown:** Tulsa, Oklahoma. **Educational Background/Certificates:** BA Geography, Oklahoma State University, MS Urban Planning, University of Tennessee Certificate in Project Management, UNCC. **Hobbies:** Visiting Big Cities, Domestic Travel, Architecture, Bowling **Favorite Charlotte Restaurant:** Hotel Charlotte-variety of food and prices, hangouts for locals, extensive selection of beverages. **Favorite Musical Group/Entertainer:** Chicago-38 years, dozens of top 10 hits, horns, horns, and horns. They truly "Make Me Smile!"



Stan Leinwand, AICP
Transit Planner/Urban Design
Stan Leinwand is the newest member of the streetcar team. Stan began working for CATS in winter of '05. He has over 10 years of planning and design experience in the private, public, and non-profit sectors. **Family:** Married to wife, Sara-Lynne with one son, originally from Montreal, Canada. **Education:** BA Political Science, Master of Urban Planning, Master of Architecture(Urban Design) **Hobbies:** Relaxing with family, traveling. **Favorite Charlotte Restaurants:** 300 East and Providence Café **Favorite Musical Group:** Great Big Sea(celtic folk/rock band from Newfoundland), 80's music.



Kiera Terrell
Community Relations Specialist
Kiera Terrell joined CATS in the Fall of '04. Before joining CATS, she worked for the Rhode Island Public Transit Authority (RIPTA) where she designed and implemented marketing strategies for the purpose of creating transit awareness and education. During her tenure at RIPTA, she also created the first transitional program for high school students and persons with disabilities. **Family:** Married to husband Marion, pet maltese named Remington. Born and raised as a "Ragin Cajun" in Louisiana! **Education:** BA in Psychology, minor in Criminology –State University of West Georgia. **Favorite Charlotte Restaurant:** McCormick & Schmidt. **Favorite Musical Groups/Entertiners:** Beyoncé, Frankie Beverly & Maze, Jill Scott, and Michael Jackson because of their unique sense of style and incredible talent.



Linda Murdaugh
Corridor Assistant
Linda Murdaugh is the Corridor Assistant for the streetcar corridor. She is originally from Hampton, S.C. In continuing her education, she plans to pursue a B.A. degree in Journalism/Communications and a Masters of Divinity at UNCC. She enjoys writing poetry, plays, and short stories! Her favorite Charlotte restaurant is Carraba's Italian Grill where she enjoys eating her favorite type of food.

SUMMER 2005

Newsletter Editor:
Kiera Terrell
CATS Community Relations Specialist

Center City Corridor
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Assistant Project Manager:
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RIDING THE STREETCAR



As shown in the photo, streetcars are designed to be very spacious inside, so it's very easy to maneuver within the vehicle for those in wheelchairs, with strollers or even bicycles. The configuration of seats has not been finalized for CATS streetcars but there will be plenty of seats and areas to secure a wheelchair. Streetcars also have large areas for people to stand, which makes passenger movement to and from the doors more efficient. Streetcars are designed for lower speeds and smooth starts and stops. ■

GETTING ON AND OFF THE STREETCAR



An important design feature of a platform is to construct it to be level with the streetcar floor. Building the platform 4 inches higher than normal curb height will allow a passenger to move to and from the vehicle without navigating stairs or stepping over gutters. Streetcars are equipped with "bridge plates" (shown in the photo) to ensure smooth access entering or exiting the vehicle by wheelchair, bike, etc. In addition to the bridge plate, the doors will be extra wide to allow passengers to exit the streetcar while others are getting on.

We hope that this information provides an insight into CATS' focus on passenger comfort. Future phases of the streetcar design will include more details regarding these efforts. ■

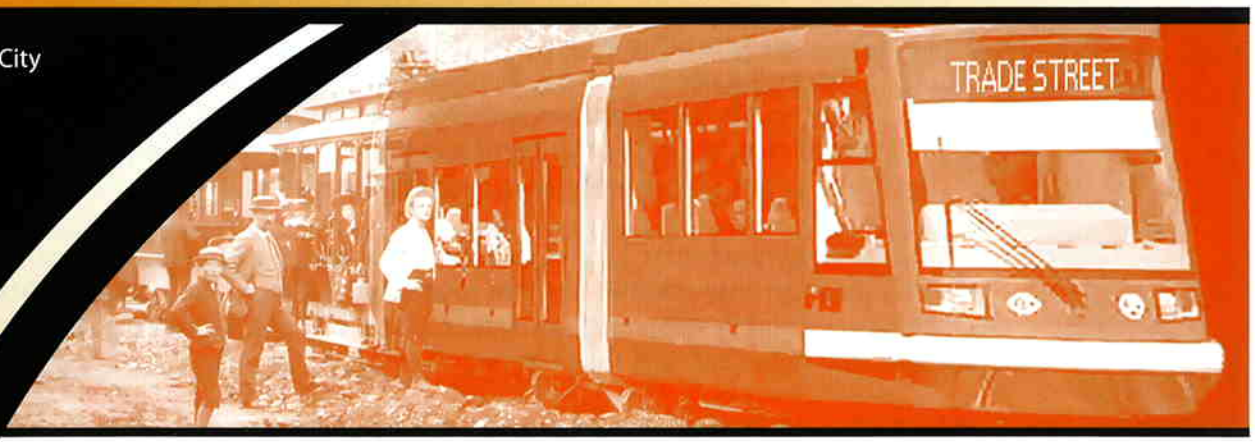
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CENTER CITY TRANSITIONS

FALL 2006

Information on the Center City Streetcar Project



A BRAND NEW SERVICE

A brand is the symbolic embodiment of all the information connected with a company, product or service. It encompasses the set of expectations associated with a product or service which typically arise in the minds of people: employees of the brand owner, people involved with the sale or supply of the service, and ultimately consumers.

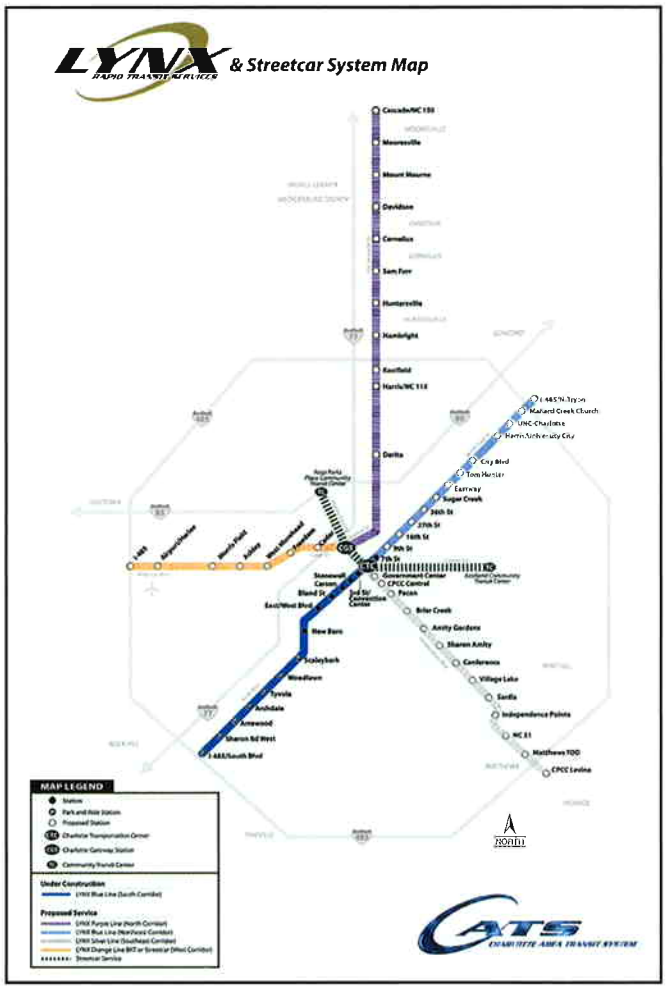
A brand tells your story. It carries the promise of a certain quality or level of service that makes it special or unique. It's what sets Nike® apart from Reebok® and McDonald's® apart from Burger King®. And it will set CATS apart from the rest.

In preparation for operation of the first rapid transit project (light rail in fall 2007), CATS has branded its rapid transit service. The rapid transit service brand complements the successful CATS brand and conveys speed, safety, convenience and connectivity associated with the new service.

Introducing LYNX.

"At its core, CATS' rapid transit service, LYNX, is about connecting people to employment and entertainment and connecting communities to each other," said Ron Tober, CATS' Chief Executive Officer.

LYNX rapid transit services will utilize line colors to easily identify the various modes. Materials associated with the proposed rapid transit projects are being redesigned to support the new brand and the quarterly project newsletters have been renamed. Even though streetcar isn't classified under the rapid transit umbrella, future editions of the Center City Streetcar Corridor newsletter will mirror elements of the LYNX rapid transit newsletters with a new color scheme of green. ■



Inside This Issue:

- **Top Two Vehicle Maintenance Facility(VMF) - 2**
- **Brookshire Freeway & Beatties Ford Road Site -3**
- **Hawthorne Lane & Clement Avenue Site -4**
- **Preliminary Environmental Assessment Findings - 5**

CATS
CHARLOTTE AREA TRANSIT SYSTEM

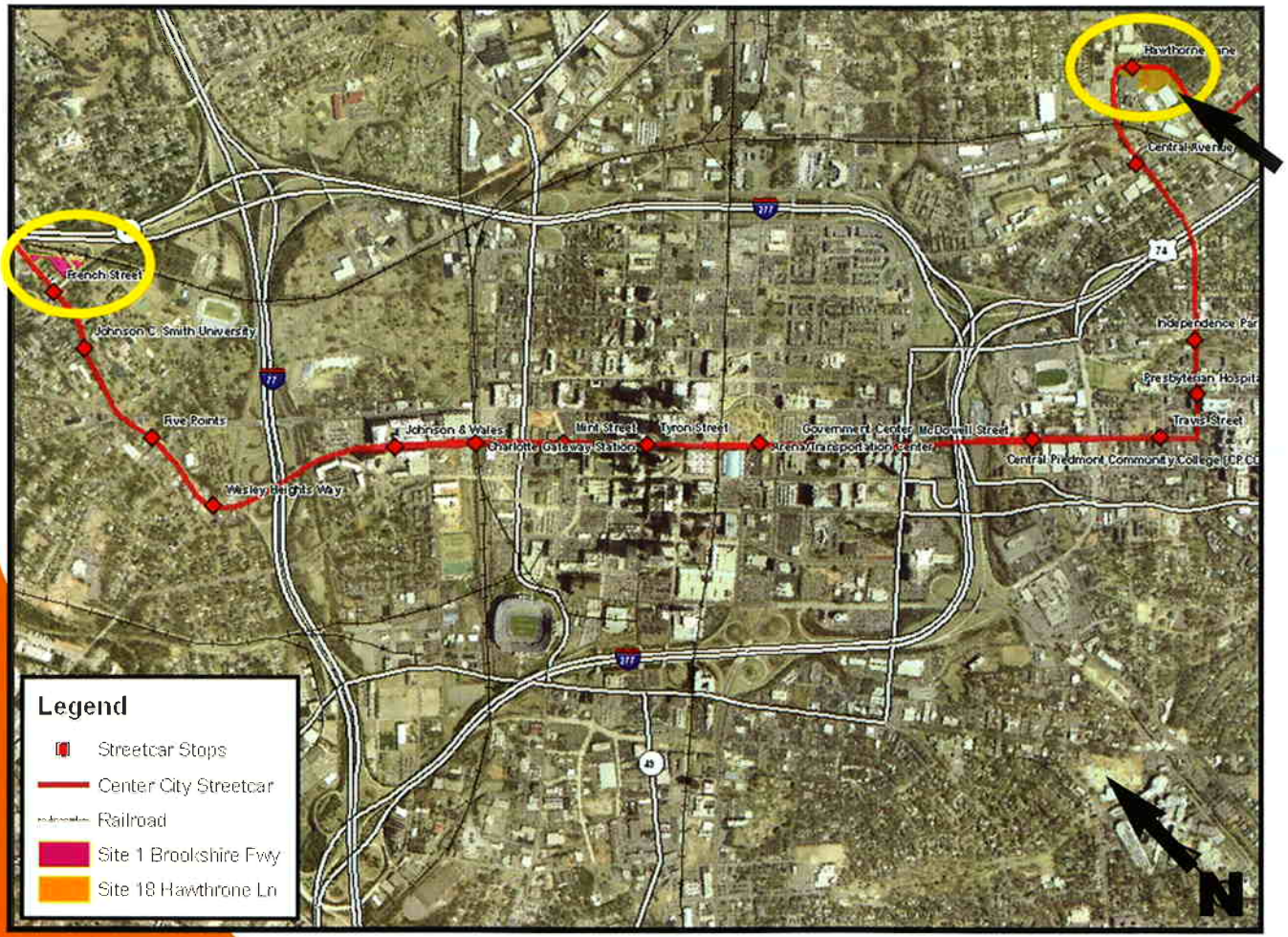
TOP TWO LOCATIONS FOR VEHICLE MAINTENANCE FACILITY IDENTIFIED

In order for the streetcar system to properly function, there must be a facility to both maintain and store the streetcar fleet. The vehicle maintenance facility (VMF) not only needs to adequately accommodate the opening day fleet, but should also be expandable to meet the needs as the system is extended and service increased. The facility must also be as close to the alignment as possible. For more detail, please see our "Planning for Streetcar Maintenance Facility Initiated" article in the Winter 2006 edition of Center City Transitions which can be found on the project website at www.ridetransit.org.

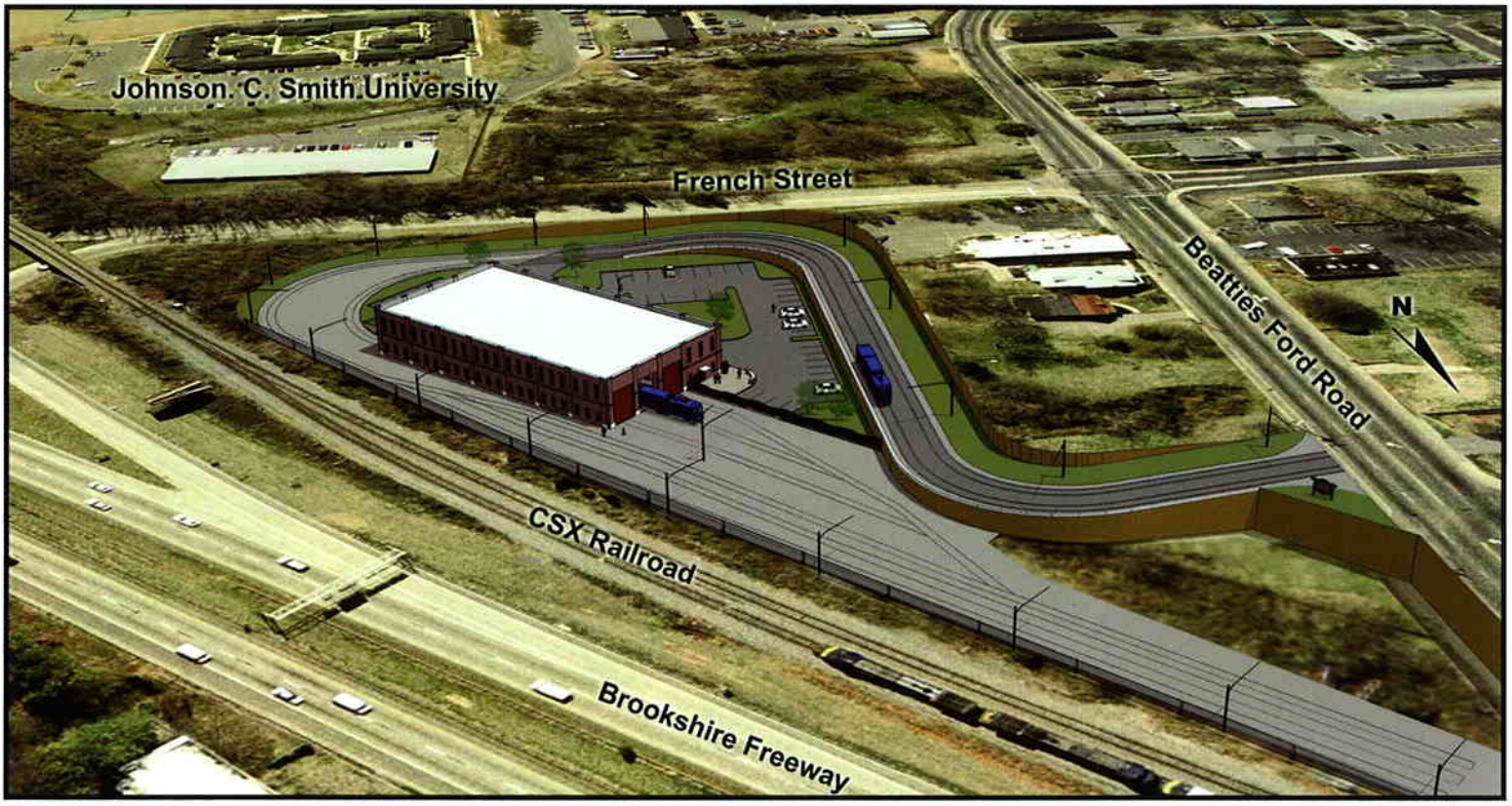
CATS evaluated more than 20 sites to identify the best possible location for the VMF, with the focus on selecting the most cost-effective site that meets the minimum site requirements and provides opportunities for efficiency and development consistent to the City of Charlotte's goals. At the end of the evaluation process, two sites stood out (see map below):

Brookshire Freeway & Beatties Ford Road Site - This site is approximately 2.26 acres in size and is bordered by Beatties Ford Road to the west, Brookshire Freeway and CSX Railroad to the north and French Street to the east. The site generally slopes down and away from Beatties Ford Road and is located adjacent to Johnson C. Smith University and residential neighborhoods with interspersed office and commercial uses. The site is currently used as a storage facility for the Charlotte-Mecklenburg Utilities and is owned by the City of Charlotte. The streetcar will be able to access the site from Beatties Ford.

Hawthorne Lane & Clement Avenue Site - This oddly-shaped site is approximately 2.5 acres in size and is bordered by a potential transit oriented development to the north, Clement Avenue to the west, light industrial development to the south and west. The site is relatively flat and is presently used for surface parking for the Barnhardt Manufacturing facility. The parcel is privately owned, but may be offered to CATS at a nominal cost. The site would be accessed directly from the proposed streetcar alignment. ■



BROOKSHIRE FREEWAY & BEATTIES FORD ROAD SITE



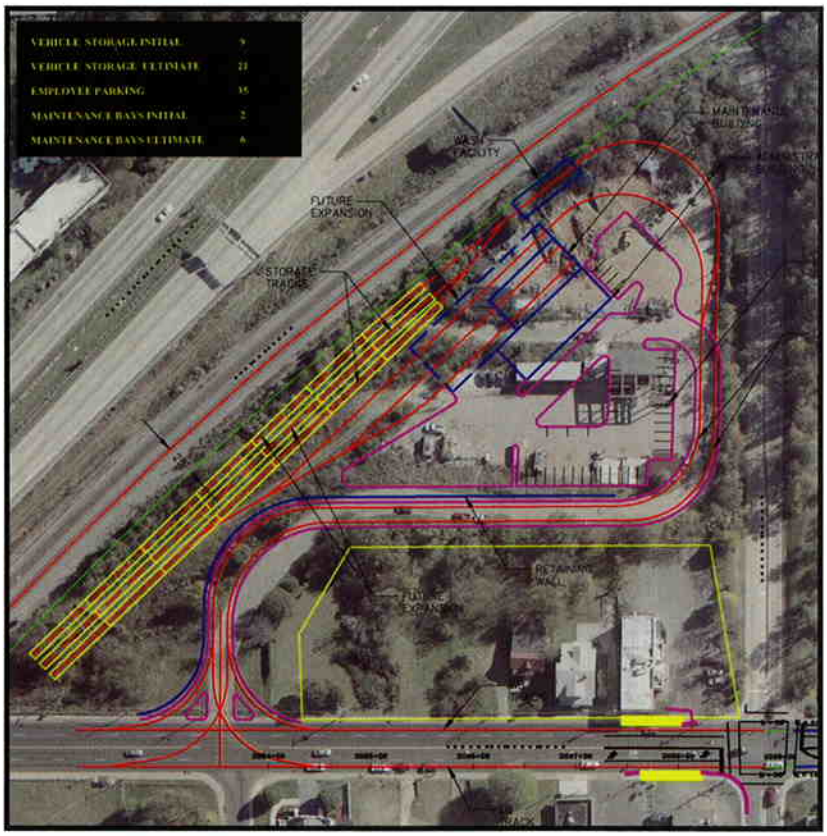
Looking south along Beatties Ford Road. The VMF is proposed to be located on ground lower than Beatties Ford Road. The VMF site is bordered by the Brookshire Freeway/CSX Railroad, French Street and Beatties Ford Road.



Looking at the VMF from the CSX Railroad tracks. The access road will wind down and around from Beatties Ford Road.



Aerial view of the VMF looking north from the Johnson C. Smith University grounds.



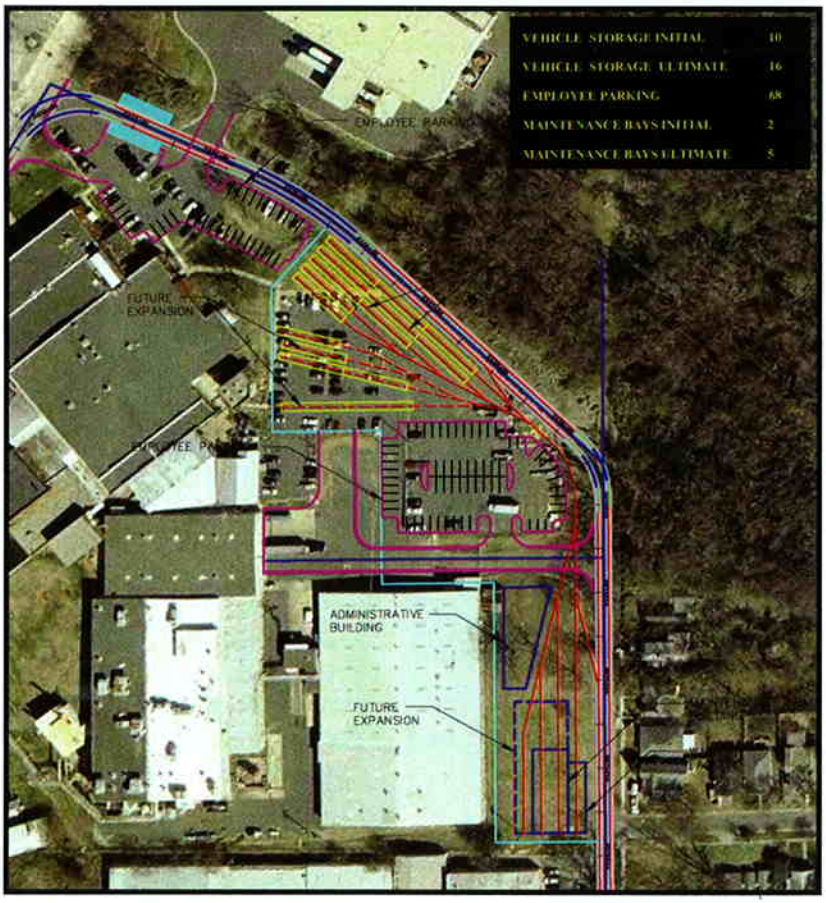
A conceptual site layout of the proposed VMF.

The drawings found on pages 3 & 4 depict a conceptual level of design showing what the proposed VMF sites could look like. The final design of the facility will be performed by architects during the next design phase of the project. Public input and response will be sought before a final design is chosen.

HAWTHORNE LANE & CLEMENT AVENUE SITE



Aerial view of the VMF looking southwest. The VMF will be nestled adjacent to the existing Barnhardt manufacturing facility.



A conceptual site layout of the proposed VMF.



Looking at the VMF from Hawthorne Lane, the streetcar storage area will be surrounded by a wall for security and to improve its integration into the surrounding development.



Looking south towards Central Avenue along Clement Street.

PRELIMINARY FINDINGS OF THE ENVIRONMENTAL ASSESSMENT

As part of the project development process, public transportation agencies such as CATS work with state and federal agencies to consider the social, economic, and environmental consequences and benefits of proposed projects and activities. The environmental review process required by the National Environmental Policy Act of 1969 (NEPA) and related laws includes environmental impact analyses and the preparation of documentation for public review. For larger capital projects like the Center City Streetcar, environmental evaluation typically results in a detailed written assessment on the environmental impacts of the proposed project and alternatives to reduce the harm to the community and the natural environment. Typically, environmental reviews for proposed transit projects address the impact areas of air and water quality, noise and vibration, historic and cultural properties, parklands, contaminated lands, displacement of residences and businesses, and community preservation.

Projects developed under NEPA results in:

- Systematic and interdisciplinary approach
- Coordination of investigations, reviews, consultations and compliance as a single process
- Meaningful evaluation of alternatives
- Decisions made in the best interest of the public
- Early and continuous interagency and public involvement
- Avoidance, minimization, and mitigation of adverse effects

The following table summarizes the preliminary findings of the environmental assessment of the Center City Streetcar:

Environmental Category	Determination of Project Effect	Mitigation
Land Use and Development	High positive effect	None required
Displacements	Minor positive effect	None required
Neighborhood and Community Features	High positive effect	None required
Visual and Aesthetics	Minor adverse effect	None required – design of streetcar will consider environmental context
Air Quality	Minor positive effect	None required
Noise and Vibration	Minor adverse effect	None required
Ecosystems	Negligible effect	None required
Water Resources/Floodplains	Minor positive effect	None required
Energy	Moderate positive effect	None required
Historic, Archeological and Cultural Resources	Not likely to have adverse effect	None required – design of streetcar will consider environmental context
Parklands	Minor positive effect	None required
Economic Impacts	Moderate positive effect	None required
Secondary and Cumulative Effects	High positive effect	None required
Hazardous Materials	Negligible effect	None required

FALL 2006

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CATS Community Relations Specialist

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For more information on streetcar transit planning, visit the CATS web site at www.ridetransit.org or call CATS at (704) 336-RIDE.

The Metopolitan Transit Commission (MTC) will be asked to approve an updated, overall System Plan that will identify investment priorities for each corridor over the next 25 years. In October there will be a public hearing for citizens to voice their opinions on how the community should move forward with the four rapid transit corridors and the Center City/Streetcar Corridor. In November the MTC is scheduled to vote on the 2030 Transit Corridor Plan.

PUBLIC HEARING NOTICE

Wednesday, October 25, 2006 at 5:30 p.m.

Public Hearing on the Revised 2030

Transit Corridor System Plan

This meeting will take place in the Council Chamber at the Charlotte-Mecklenburg Government Center. It will also be carried live on the City's Government Channel-Cable 16.

News From The Charlotte Area Transit System

Featuring The Proposed Center City/Streetcar Corridor project

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CENTER CITY TRANSITIONS

WINTER 2006

Information on the Center City Streetcar Project



A MESSAGE FROM THE SENIOR PROJECT MANAGER

Your opinion is important to the planning of the proposed Center City/Streetcar Corridor. CATS has held several public meetings beginning with our first community wide workshop in November 2004 to gain your feedback and support.

During the first workshop, staff presented the project history, introduced the modern streetcar design philosophy, and discussed the streetcar team's plans for the conceptual design phase of the project. Participants were asked to provide information on neighborhood character, desired land uses, potential stop locations, and redevelopment opportunities.

The second round of public meetings focused on refining the proposed streetcar stop locations and potential amenities at each stop. In addition to discussing stop locations and amenities, we presented potential options illustrating how the streetcar vehicle could change directions at the end of line.

Urban design was the theme of the third round of public meetings. Participants were encouraged to discuss a variety of topics to optimize input from the community, including: future land uses, median versus curb running streetcars, continuity or district diversity, and street furniture.

The streetcar team rolled out the proposed conceptual alignment at our last public involvement meeting where more than 100 persons attended and had an opportunity to engage the urban designers, planners, and engineers who developed the concept. The team received resounding approval and support from the public for the conceptual alignment.

The upcoming public meeting will be used to present new work activities underway including the conceptual design of the streetcar shelter, the design of the streetcar vehicle, and the on-going evaluation of potential sites for the streetcar maintenance facility.

With the progress of the conceptual design phase, we will begin development of detailed capital cost and ridership estimates for the project within the next several months. With ridership estimates the streetcar team will be able to develop a detailed operations plan and complete the assessment of the potential environmental impacts. The streetcar team plans to present this information at the final public meeting for this phase in Summer '06.

We invite you to continue to participate in all upcoming public meetings. It has been the teams' extreme pleasure working with you, and we look forward to working with you throughout the duration of the streetcar project.

Sincerely,

Willie A. Noble

Willie A. Noble, P.E.
Senior Project Manager
Center City/Streetcar Corridor

Inside This Issue:

- **A Vision for Trade Street - 2**
- **Streetcar Shelters Begin to Take Shape - 3**
- **Vehicle Characteristics - 4**
- **A New Funding Source - 5**
- **Planning For A Streetcar Maintenance Facility Initiated - 5**

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CHARLOTTE AREA TRANSIT SYSTEM











A VISION FOR TRADE STREET

The vision statement detailed below was created as a guiding framework for the development of a Vision Plan for future development along the Trade Street corridor. The Trade Street corridor represents the first phase of the project and is planned to have streetcars running in 2009. The plan will provide parameters for how civic identity, neighborhood character, personal experience, connectivity, operational sustainability, and public spaces should be woven with the streetcar project to create a memorable pedestrian environment.

In collaboration with the public and the Urban Design Planning Group which includes the Planning Commission, Charlotte Department of Transportation, Economic Development, and Center City Partners, the streetcar team identified the following seven elements which formed the basis of the Vision:

Role in Uptown -
Trade Street will be the most important east-west street in Uptown.

Accessibility/Connection -
Trade Street will provide circulation for streetcars, buses, automobiles, bicycles, pedestrians, and on-street parking will be optimized. Therefore, it will serve as the east-west connection in Center City for the regional transit system.

Pedestrian Activities -
Trade Street will provide a highly attractive pedestrian experience making it easy to accommodate a wide variety of pedestrian activities with appropriate circulation space, as well as flexibly designed spaces for passive uses.

Identity -
Trade Street will be a memorable signature street. The design identity will be unique to the Uptown streetscape. It will be a safe, comfortable, and inviting space convenient for users. Moreover, it will reflect the heritage and character of the adjacent neighborhoods.

Land Uses -
Trade Street will have a mixture of land uses that support and generate an intense level of pedestrian activity along the street. The ground level uses will be visible and directly accessible from the sidewalk, providing desirable activities such as cafes, restaurants, retail, and entertainment.

Commercial Support -
Trade Street will support commercial activities in a manner which enhances and attracts investments in retail business with convenient delivery, drop-off, and open space for sidewalk vending.

Maintenance and Management -
The amenities will be built with high quality durable materials and will be well maintained. Additionally, Trade Street will be managed to encourage planned as well as unplanned programs.

The photographs illustrate examples of the seven elements from Charlotte and other U.S.cities. ■

STREETCAR SHELTERS BEGIN TO TAKE SHAPE

The streetcar will bring a unique identity to Trade Street, Beatties Ford Road, and Central Avenue corridors. The new streetcar shelters will reinforce the identity of the corridors by providing a transit and pedestrian-friendly envirnonment. The design of the streetcar shelters is an opportunity to relate to the existing and future environments.

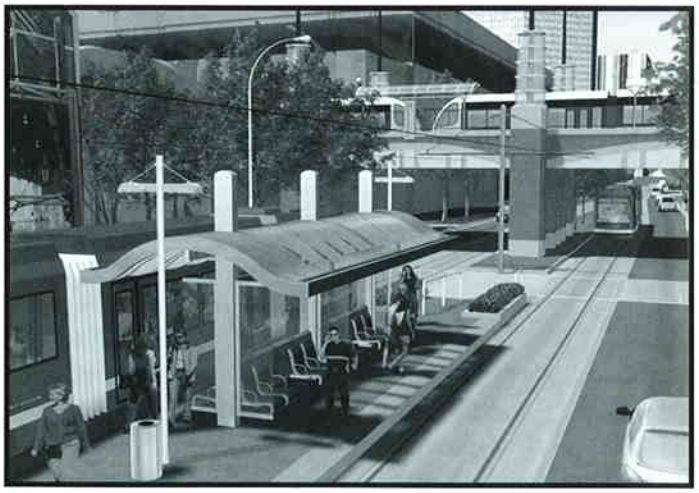
The streetcar team considered a range of factors which guided the development of the streetcar shelter concept, including:

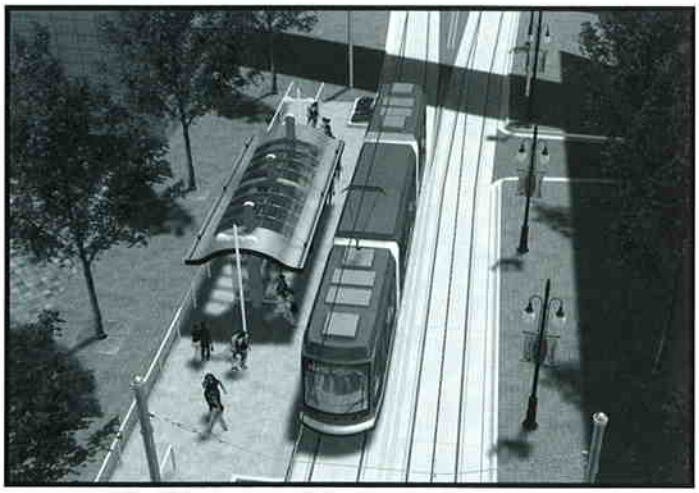
- need for a set of common elements and identity throughout the corridor
- opportunity to establish a signature look
- appropriateness of the design to neighborhoods
- strength and durability of the structure and materials
- resistance of materials and paint treatments to weather conditions, graffiti, fire, and other forms of vandalism
- protection from the environment
- potential greenhouse effect of roof design during hot weather
- lighting and seating to provide maximum comfort for streetcar riders

The process resulted in a series of streetcar shelter concepts that continued to be refined and ultimately concluded with the concepts illustrated on this page. The recommended conceptual design for the streetcar shelter uses the shape of the roof of the Tryon Street transit shelter as a point of departure for its more streamlined roof shape. The past and future are symbolically brought together, visually connected with this shelter design. ■











VEHICLE CHARACTERISTICS

ELEMENTS DEFINED AS STREETCAR CONCEPT ADVANCES



Alstom Citadis car operating in Barcelonea.

One of the important factors of the Center City Streetcar Corridor development process is the design of the streetcar vehicles. Modern streetcars are available in a wide variety of models. The characteristics for CATS' streetcar vehicles will have a considerable impact on the design of the corridor. Design elements such as the streetcar platform stop lengths and heights, boarding methods, and accommodations of people with disabilities will influence the type of vehicle for this corridor. The streetcar specifications must be clearly defined before CATS can initiate the purchase of the fleet.



AnsaldoBreda "Sirio" car operating in Naples, Italy.

To date, only two types of modern streetcars have been supplied in the United States. These two streetcar manufacturers include Inekon and Skoda, both of which are based in the Czech Republic.

It will be challenging to procure a small quantity of streetcars, (8 to 10 initially) without allowing the design modifications of the streetcar to overwhelm the base price of the vehicle. CATS will meet with its partners and the public to discuss the basic streetcar vehicle characteristics. Once the general approach to the type of vehicle is established, design criteria covering these topics can be developed and will fall into four major categories:

- Vehicle Length and its associated platform length at the stops.
- Positioning and the number of doors on each side of the vehicle.
- ADA Compliance-accommodations for persons who use wheelchairs and who have hearing and vision disabilities.
- Vehicle Performance Characteristics – speed, braking, and turning.



Inekon-Skoda Astra car operating in Tacoma, WA.

Most modern streetcars widths range from over 7 feet to slightly more than 8 feet. Vehicle lengths range between 60 feet up to 100 ft or more. All of the candidate vehicles are articulated, with three body sections. Although some of the streetcar vehicles have only two doors per side, most of the vehicles have three doors per side. CATS will look for a streetcar that can operate in both directions, with doors on both sides to allow for curbside and median boarding.



Bombardier Flexity car operating in Austria.

The entry height to the vehicle is typically between 13 and 14 inches above the rail, which is several inches taller than a standard sidewalk or curb. Unless the streetcar stop platforms are raised to provide level boarding, streetcars have bridge plates or other means to provide access to the vehicle for people who use strollers or wheelchairs. ■



Alstom Citadis car operating in Montpelier.



Inekon Trio car scheduled to operate in Portland in late 2006 and Washington in 2007.

A NEW FUNDING SOURCE

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) created a new "Small Starts" program that can provide Federal funding for smaller transit projects. The Small Starts program will set aside $200 million per year, starting in FY 2007, for rail and bus transit projects costing up to $250 million. Project sponsors, in our case the Charlotte Area Transit System (CATS), may seek up to $75 million in capital funding from the Federal government. To be eligible for Small Starts funding:

- a "substantial portion" of the project must operate in a separate right-of-way dedicated for public transit during peak hours, or

- the project must represent a "substantial investment" as demonstrated by such features as park and ride lots, stations, signage, signal priority, off-board fare collection, technology, and other features supporting a long term corridor investment.

Based on these eligibility requirements, Small Starts are likely to include streetcars, bus rapid transit projects, short light-rail extensions, and modest commuter rail projects. CATS Center City Streetcar project is an example of a candidate project which could seek funds under the Small Starts program.

Each transit project seeking Small Starts funding must also be supported by an acceptable degree of local financial commitment. Also, it must be justified based on a review of its public transportation supportive land use policies, cost effectiveness, effect on local economic development, and possibly other factors. Just like the New Starts program,(the program in which CATS received Federal funding for the South Corridor Light rail project), the FTA will rate proposed Small Starts projects at key milestones, and will submit funding recommendations to Congress.

The Streetcar Team continues to develop material that the FTA will review in their assessment of the project and will complete this work, along with the conceptual design in 2006. ■

As of March 2006, The Federal Transit Administration (FTA) has not completed writing the regulations for the Small Starts program.

PLANNING FOR STREETCAR MAINTENANCE FACILITY INITIATED

One of the critical needs for a successful streetcar system is finding a place to maintain and store vehicles. CATS' streetcar team is currently using an evaluation process to identify locations that can accommodate this vital function. Although the evaluation process addresses a number of factors, the primary focus is to identify sites where a facility can be designed to support a streetcar fleet at every stage in its growth and development.

From an operational perspective, the maintenance facility must be as close to the service corridor as possible. Convenient access to the alignment, which extends from Eastland Mall (Central Avenue) to the Northeast Mecklenburg Health Center (Beatties Ford Road), is important because it minimizes the time and expense for operations getting to and from the service area. It will also improve service efficiency through faster response to increased demands for special events or service interruptions along the corridor. The streetcar system will be implemented in phases, with plans to construct the Trade Street segment first. Therefore, the majority of the focus has been geared to the evaluation and identification of potential sites between Johnson C. Smith University and The Plaza-Midwood area.

Another important factor in site selection is choosing a location where the adjacent land uses and development will not be negatively affected by the introduction of a maintenance facility. CATS will balance the need for a good location by evaluating sites in more industrial or commercial areas. "CATS wants to find a site that meets our needs," said Willie Noble, CATS Senior Project Manager for the Center City Streetcar Corridor, "it must be convenient to the corridor, but also fit into its surrounding area and minimize impacts to the community."

At a minimum, the site must be sufficiently sized to accommodate vehicle storage, light maintenance for the vehicles, and administrative activities for the system. ■

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For more information on streetcar transit planning, visit the CATS web site at www.ridetransit.org or call CATS at (704) 336-RIDE.

FREQUENTLY ASKED QUESTIONS

Question: What does the inside of a streetcar look like?



Response: A streetcar can carry more than 100 passengers. Aside from seating, the vehicle has large areas for people to stand, and plenty of room for people using wheelchairs, bicycles, or strollers.

Question: What are the plans for funding the project?

Response: Though we haven't applied yet, 50% of the funding will be sought through the Federal Transit Authority (FTA); 25% will be sought from the state of North Carolina and 25% will be sought from the local taxes. We definitely have an advantage with transit growth and land use.

Question: How much will the project cost?

Response: It is too early to tell. This portion of the work covers 10% of the design and we will have an estimate of likely cost at the end of the 2006.

Question: Will this project be funded to cover all phases?

Response: The intent of CATS is to request funding to complete all phases of the system. However, funding availability from federal and state sources is not a guarantee. ■

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Appendix C

Environmental Effects Matrix

Environmental Category	Summary of Project Effect	Determination of Project Effect	Mitigation
Land Use and Development	• Project is consistent with local planning objectives • Serves high density areas • Project is complementary to existing urban land use densities and is supportive of proposed economic and transit oriented development activities	High positive effect	None required
Displacements	• No displacement of businesses or residences • Minor acquisition of property	Minor positive effect	None required
Neighborhood and Community Features	• Improved access to community features and services • Enhances, high-quality transit services • Increases transit between neighborhoods & employment centers	High positive effect	None required
Visual and Aesthetics	• Project is consistent with existing visual character • Introduction of new visual features into landscape	Minor adverse effect	None required – design of streetcar will consider environmental context
Air Quality	• No exceedance of National Ambient Air Quality Standards • Reduction in particulate matter emissions	Minor positive effect	None required
Noise and Vibration	• Some noise at turns • Normal operations quieter than bus service	Minor adverse effect	None required
Ecosystems	• Project will be generally constructed within existing rights-of-way • Project area is urbanized with intact ecosystems	Negligible effect	None required
Water Resources	• Project supports high density land use, which is beneficial in reducing regional water quality degradation • Project will generally be constructed within existing rights-of-way	Minor positive effect	None required
Energy	• Project is efficient use of energy • No disruption of energy supply	Moderate positive effect	None required
Historic, Archeological and Cultural Resources	• Reintroduction of streetcar in historic streetcar alignments • Potential adverse visual effect from introduction of overhead catenary system and traction power infrastructure	Not likely to have adverse effect	None required – design of streetcar will consider environmental context
Parklands	• Enhances access to parklands in corridor • No direct effects or constructive use of parkland or other publicly owned lands	Minor positive effect	None required
Economic Impacts	• Project is supportive of economic development	Moderate positive effect	None required
Secondary and Cumulative Effects	• Project promotes and supports transit oriented development • Project would not induce unplanned, undesirable growth and development • Project would not contribute to adverse cumulative effects	High positive effect	None required
Hazardous Materials	• Project is not likely to encounter substantial hazardous material or exacerbate existing conditions	Negligible effect	None required