

**CHARLOTTE,
NORTH CAROLINA
INDEPENDENCE BOULEVARD BUSWAY
(BRIEF)**

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CHARLOTTE, NORTH CAROLINA (USA)

Independence Boulevard Busway

SUMMARY

The 2.1-mile [3.4-km], Independence Boulevard Busway was opened in 1998 after more than 25 years of expanding road capacity. The two-way busway (which has no stations) is located in an unused HOV lane, which is being extended another mile. It includes a queue jumper at the first outbound traffic signal that allows buses to bypass congestion. January 2000 ridership was estimated at 15,700, a 55% increase from the previous year. During the morning and evening peak periods, there is a bus every 4 minutes in each direction. Express buses using the busway save 2 to 5 minutes on inbound trips in the A.M. peak period and 10 to 15 minutes on outbound trips in the P.M. peak period, compared with previous trend times. A Major Investment Study (MIS) is in progress to analyze various alternatives for extending either bus rapid transit or light rail transit to the Mecklenburg County line.

CITY CONTEXT

Charlotte is North Carolina's largest urban area, with a Metropolitan Area population of over 1.4 million, of which 650,000 live in the City-County. The City and Mecklenburg County cover the same geographic area. The estimated City-County population for 2025 is 953,000, almost a 50% increase. Approximately 50,000 people work in Charlotte's Center City (downtown area). There are about 50,000 trips per day on the Charlotte Area Transit System (all routes).

PLANNING AND IMPLEMENTATION BACKGROUND

Charlotte-Mecklenburg County contains five major transit corridors that focus on the city center. These are (1) the 10.5-mile [17-km] south corridor to Pineville and extending to Rock Hill in York County, (2) the 10-mile [16-km] West (Airport) Corridor extending to the Airport and to Gastonia in Gaston County, (3) the 23-mile [37-km] North Corridor extending to Davidson and to Moorville in Iredal County, (4) the 15.5-mile [25-km] Northeast (University) Corridor extending to the county line and beyond, and, (5) the Independence Corridor extending southeasterly to Matthews and to Monroe in Union County.

SYSTEM PLANNING

Major Investment Studies (MIS) are underway in the various transit corridors to help develop the locally preferred alternatives in each corridor. Results of the MIS process in the South Corridor led to light rail transit as the preferred mode. The MIS studies were completed, and locally preferred alternatives were selected in 2002. BRT was selected as a preferred alternative for the Southeast Corridor although LRT will also be studied in preliminary engineering.

HISTORY

In the 1950s, construction began on a major section of road. Initial plans called for two travel lanes each way plus on-street parking. In the mid-1950s, the plans for curbside parking were abandoned to allow three lanes in each direction.

In the mid-1960s, the roadway was re-striped to provide a seventh (left-turn) lane at intersections; trucks began using curb lanes because of the narrowness of the other lanes.

In the mid-1970s, a consultant report for the state recommended that Independence Boulevard be rebuilt as a freeway with a busway. The upgrade was necessary in view of continued traffic growth and the narrow lane widths (many were around 8 feet and the narrowest lanes were between 7 and 8 feet wide).

The Charlotte-Mecklenburg County Integrated Transit Land-Use Plan for 2020:

This plan envisions concentrated residential and commercial developments around transit stations. The City-County is developing transit overlay districts to achieve this objective.

Independence Boulevard Corridor ⁽²⁾:

The Independence Boulevard (US 74) Corridor has a long history of roadway and transit development. The corridor contains approximately 33,000 households and 64,000 jobs.

BUSWAY/HOV DEVELOPMENT

In 1987, North Carolina DOT upgraded Independence Boulevard from a signal-controlled arterial to a freeway, from I-277 in downtown Charlotte for about 3 miles. An expressway was created for an additional mile to Albemarle Road. Right-of-way acquisition began for the rest of the corridor. Daily traffic volumes had increased from about 45,000 in 1977 to 65,000 in 1985.

In 1987, the Urban Mass Transportation Administration (now Federal Transit Administration) approved nearly \$18 million to add a barrier-separated single reversible lane in the freeway-median. The HOV lane was never placed in service.

In 1997, a phased approach to Bus Rapid Transit (BRT) was initiated. The busway demonstration project recommended a 3.9-mile [6-km] busway with five stations. However, consensus regarding busway alignment and station locations was not reached, and no stations were built.

Accordingly, in December 1998, when average daily traffic numbers (ADTs) approached 170,000 vehicles, express bus lanes were opened in the 2.9-mile [5-km] segment of unused High Occupancy Vehicle (HOV) lane. In 2001, construction began on the next mile of HOV lane. [Figure 1](#) shows the busway location along Independence Boulevard.

BRT IMPROVEMENTS

The Proposed BRT improvements include retrofitting 3.9 miles [6 km] of Independence Boulevard into a busway facility with five new stations and adding intelligent transportation systems (ITS) technology such as automated vehicle locators (AVL), automatic passenger counters (APC), and real-time information on the buses.

The Charlotte Area Transit System's (CATS's) long-range goal is to extend rapid transit the entire 13.5 miles [22 km] to Matthews. In 2000, the Metropolitan Transit Commission (MTC) began a Major Investment Study (MIS) to study the entire Southeast (Independence) Corridor and evaluate various forms of transit including Bus Rapid Transit and Light Rail Transit. The

MTC completed the study in 2002. BRT was selected as a preferred alternative for the Southeast Corridor although LRT will also be studied in preliminary engineering..

Three alignments are being studied: (1) along Independence Boulevard, (2) along parallel streets to the south (7th, Monroe, and John Streets), and (3) a new alignment for the easternmost 5 miles combined with either alternatives 1 and 2.

The MIS will determine the cost of the next phase. Federal, state, and local funding is planned for the project with the local share coming from a sales tax approved in a countywide referendum in 1998 by 58% of the voters. The Charlotte Area Transit System (CATS) will fully dedicate this revenue source to public transportation expenditures. In 2000, the sales tax generated about \$53 million.

PROJECT DESCRIPTION

In 1998, Charlotte opened a 2.9-mile [5 km] two-way busway along Independence Boulevard. The busway (without stations) extends in an unused HOV lane that cannot be opened to car pools until 2006 when the next phase of the Independence Freeway project is opened.

DESIGN FEATURES

The busway consists of two 10-foot lanes within a 24-foot (minimum) total barrier-separated roadway. It is flanked on each side by three or four parallel general-purpose lanes. [Figure 2](#) gives a view of the busway. [Figure 3](#) shows the plan view of the busway. [Figures 4](#) and [5](#) show the western terminus where the bus lanes are integrated into a freeway-to-freeway interchange.

The busway includes an eastbound queue jumper lane at its eastern terminus (see [Figure 6](#)). This lane on the approach to the first outbound traffic signal allows buses to bypass congestion in the general-purpose lanes.

BUS SERVICE AND RIDERSHIP

Four express bus routes use the busway. The four bus routes make 32 trips in the morning peak period and 29 during the afternoon peak period—one bus every 4 minutes. This compares with 18 and 17 trips, respectively, in the previous year.

Service is operated by conventional transit buses. There are no special vehicles or features found in many BRT systems (e.g., stations, off-vehicle fare collection).

The Charlotte Area Transit System (CATS) estimated that January 2000 ridership on the busway was 15,700 as compared with about 10,100 during January 1999. This represents a 55% increase in daily riders.

TRAVEL TIMES

CATS reports a 2- to 5-minute travel time savings inbound in the AM peak. The BRT service saves 10 to 15 minutes outbound in the PM peak. These savings correspond to a savings of 0.7 to 1.7 minutes per mile in the AM and 3.4 to 5.7 minutes per mile in the PM peak. Time savings are greater when accidents occur along Independence Boulevard. As a result of these time savings, each express route using the lanes was able to add an additional peak hour trip without increasing the bus fleet.

SAFETY

Two accidents have occurred in the busway since it began operation in December 1998. Both involved cars that entered the busway and were struck by oncoming buses. One resulted in serious injuries.

VEHICLES

Charlotte transit plans to use low-floor vehicles on its various bus routes including the existing and extended BRT service. About 100 of the 165-bus fleet are currently low floor. Buses are equipped with automatic vehicle location (AVL) and voice annunciators.

ASSESSMENT

The Independence Boulevard Busway represents an innovative interim use of available road space. The two-way, 2.9-mile [5-km] median busway, located in an unused reversible HOV lane, has achieved dramatic reductions in travel times and substantial increases in ridership.

This system is really an elongated “queue bypass” rather than an integrated BRT system. It is not a clear indication to the public of what a BRT system can achieve, for it has no stations, no ways to expedite passenger boardings, and no clear identity.

The state of North Carolina has completed design plans for the future widening of Independence Boulevard. One important issue as the MIS process continues is how well BRT service can be integrated into the design.

Charlotte/Mecklenburg County is completing major investment studies in four additional corridors, including Independence Boulevard. A study, which includes a locally preferred alternative, has been completed for a fifth corridor. The desire to better structure land use is an important reason for developing BRT (and LRT) in Charlotte. Accordingly, land use policies are being revised to encourage growth in transit corridors, especially around stations. A “transit overlay district” is being prepared for areas around stations in each corridor. This concept has important transferability to other cities planning BRT Systems.

PERSONS INTERVIEWED

February 8, 2001	Terry Lathrop	Charlotte Dept. of Transportation
March 12, 2001	Garet A. Walsh	Charlotte Mecklenburg Planning Commission

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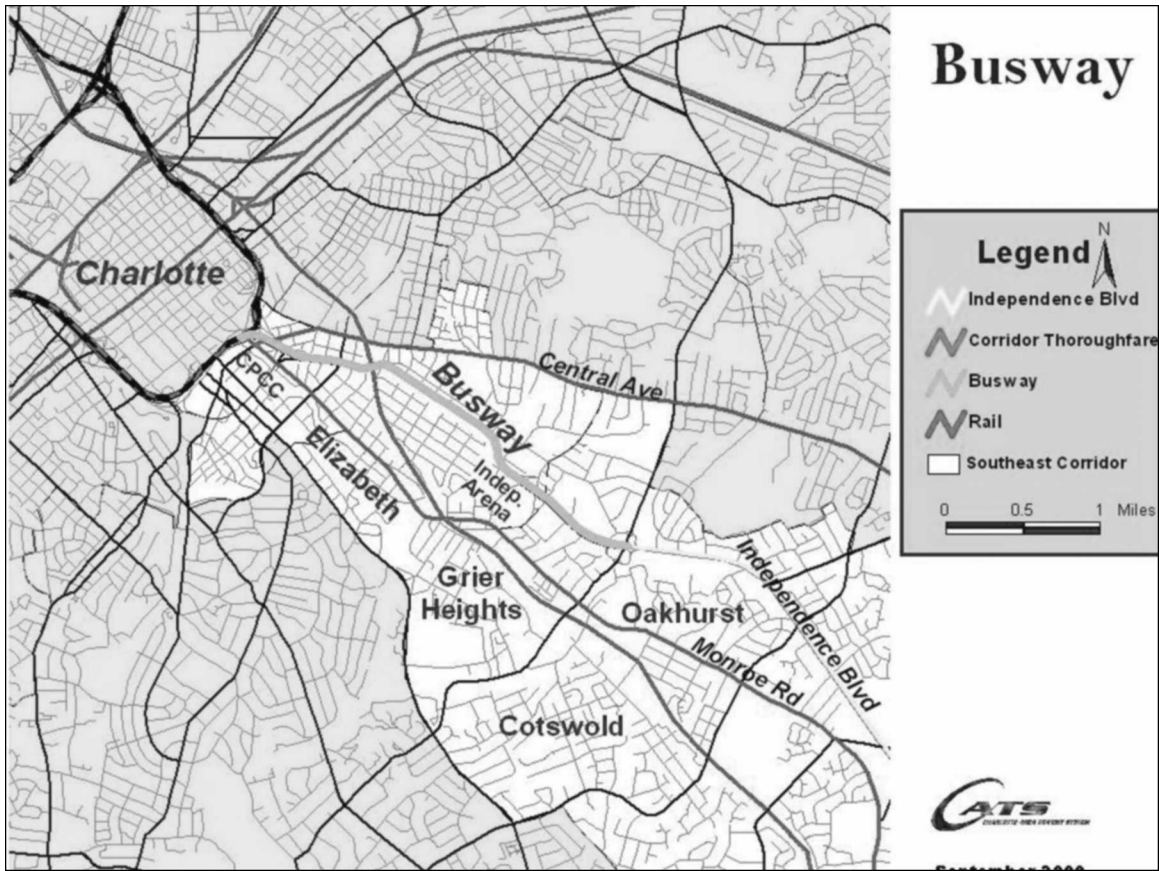
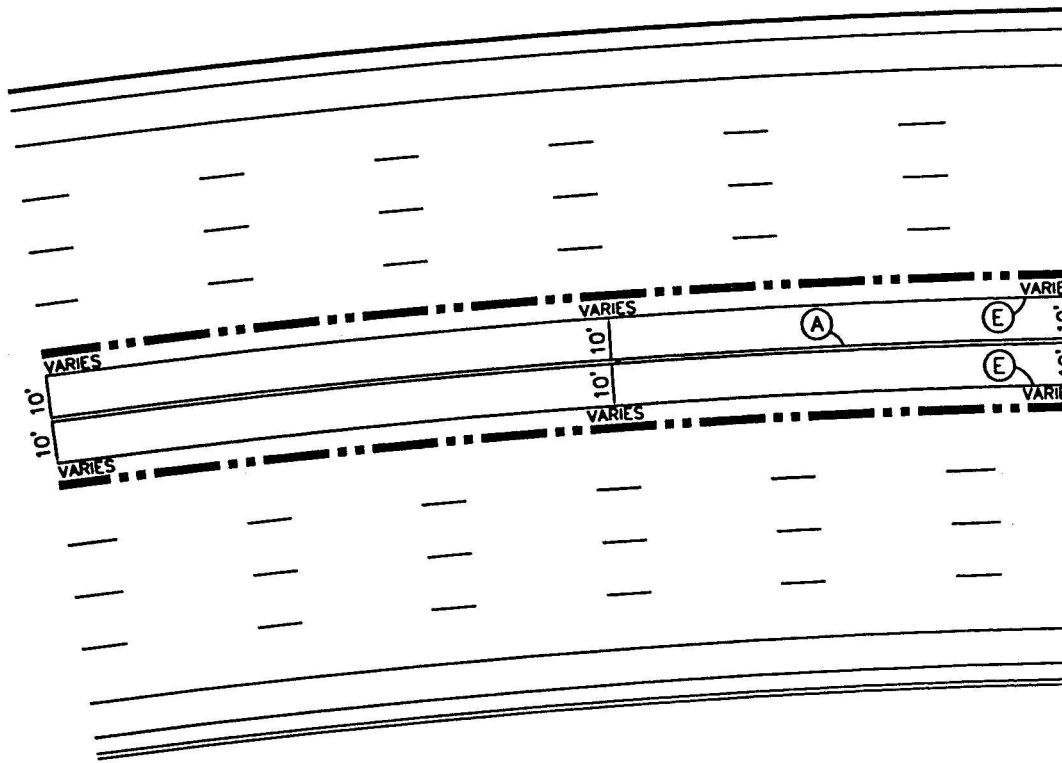


Figure 1: Busway Location Along Independence Boulevard



Figure 2: Busway View



Note: From Sta. 94+00 to Sta. 141+00 the width of the shoulders varies from 2 feet to 4 feet. Between these stations, the centerline should be laid out prior to laying out the lane lines. The centerline should be placed halfway between the bus lane barriers. The lane lines should be offset 10 feet each side of the centerline.

Figure 3: Busway Plan View



Figure 4: Western Terminus with Downtown Charlotte in Distance



Figure 5: Western Terminus Showing Queue Jumper Lane



Figure 6: Queue Jumper Lane