The Greater New Brunswick Area Corridor Study

Middlesex County / Rutgers University

FINAL REPORT

URBITRAN

Submitted to

County of Middlesex

Transportation Policy Institute
Alan M. Voorhees Transportation Center
Edward J. Bloustein School of Planning and Public Policy
Rutgers - The State University of New Jersey

Submitted by

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In association with

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THE GREATER NEW BRUNSWICK AREA CORRIDOR STUDY

Final Report

Prepared for

County of Middlesex
New Brunswick, New Jersey

and

Transportation Policy Institute
Alan M. Voorhees Transportation Center
Rutgers – The State University of New Jersey
New Brunswick, New Jersey

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Executive Summary

Introduction

The ***Greater New Brunswick Area Corridor Study*** examines the purpose and need as well as alignment options and ridership forecasts for a proposed fixed guideway transit system to serve the greater New Brunswick area. For the purpose of this study, "fixed guideway transit system" is defined as a high-capacity transit system – either light rail or bus rapid transit – that operates on a fixed route, primarily on an exclusive right-of-way, serving a limited number of stations/stops. The study area includes the City of New Brunswick; Townships of Piscataway, North Brunswick, and East Brunswick; and the Borough of Milltown. The 10-mile planning corridor roughly parallels the proposed Route 18 extension from I-287 in Piscataway Township, continues through downtown New Brunswick, and ends in East Brunswick Township.

The need to study the establishment of a fixed guideway transit system and alignment in this corridor was prompted by a number of factors, including:

- Significant existing population and employment and projected growth in the City of New Brunswick and surrounding areas (the city added 6,000 jobs between 1991 and 1997);

- Continued growth in travel demand in the Route 18 Corridor, and limitations on future expansion of the greater New Brunswick roadway network to accommodate future economic growth and travel demand; and

- Increased traffic in the corridor that has seriously compromised the reliability of the Rutgers University intercampus bus system, which currently serves more than six million riders per year.

The purpose of the study was to assess the feasibility of establishing a fixed guideway transit system as a complementary element of the already multi-modal greater New Brunswick area transportation system. More specifically, the study was undertaken to:

1. Determine whether projected travel demand, population and employment growth, population density, and other demographic and socioeconomic characteristics of the greater New Brunswick area justify the need for establishing a fixed guideway transit system;
2. Identify a Concept Alignment and termini for a fixed guideway transit system within the target greater New Brunswick area that could connect the New Brunswick Central Business District, Northeast Corridor rail line, existing regional and local bus routes, employment and retail centers, Rutgers University's five New Brunswick area campuses, government offices, cultural and recreational facilities, regional healthcare facilities and other activity centers in the greater New Brunswick area;

3. Determine whether identified physical barriers would make construction of a system along this Concept Alignment impossible, and to identify the major construction or engineering challenges that must be overcome in building such a system;
4. Determine ridership potential from numerous segments of the local and regional travel market, including trips made by Rutgers students, faculty, and staff, local non-Rutgers work trips, regional trips to New Brunswick's Northeast Corridor train station, as well as non-work trips; and
5. Build consensus among elected officials and other local stakeholders that a fixed guideway transit system was needed and should be built in the Greater New Brunswick Area.

Purpose and Need

The proposed fixed guideway transit system is intended to:

1. Increase transportation mode choice in the corridor by providing an alternative to the automobile for accessing New Brunswick's Central Business District, regional transit facilities, governmental offices, area employment centers and other activity centers in the greater New Brunswick area;
2. Expand the capacity of the greater New Brunswick area transportation system to meet the needs of existing development and accommodate additional growth and economic development while lessening projected impact on regional and local roadways and demand for additional parking; and
3. Facilitate more efficient travel within and between Rutgers University's five New Brunswick area campuses, while reducing demand for intercampus automobile usage and parking.

As previously stated, this study was undertaken, in part, to determine whether existing and projected travel demand, population and employment, population density and other demographic and socioeconomic factors in the greater New Brunswick area justify the need for a fixed guideway transit system. Given existing land use and demographic characteristics and the projected growth of downtown New Brunswick, the need for a fixed guideway transit system to augment the existing transportation network is probable.

Concept Alignment

In addition to determining whether a need exists to support the establishment of a fixed guideway transit system in the greater New Brunswick area, this study was undertaken to identify a Concept Alignment that could form the basis for preliminary engineering feasibility analysis and ridership forecasting. It is important to note that this study is an

early step in the planning process, and that the alignment chosen for analysis in this study is preliminary and conceptual in nature. It is not intended to represent the final alignment or even a preferred alignment. It is simply one option that demonstrates it would be feasible to construct a fixed guideway transit system in the greater New Brunswick area. The Concept Alignment also highlights a number of physical design issues, which are detailed later in report. While not insurmountable, these design issues will require additional study prior to selecting a final or preferred alignment. For ease of reference, the Concept Alignment has been divided into three segments: the Northwest Segment (I-287 to John Lynch Bridge), the Downtown New Brunswick Segment (south of the John Lynch Bridge to the Cook/Douglass Campus), and the Southeast Segment (south of Route 1 to the East Brunswick terminus).

Northwest Segment

The Northwest Segment of the Concept Alignment, depicted in Figure 2, includes the portions of the alignment located in Piscataway Township – the Hoes Lane link and the Rutgers University links to Livingston Campus and Busch Campus. As proposed, the Northwest Segment of the system will be anchored by a park & ride/shared parking facility in the vicinity of Hoes Lane and Centennial Avenue or Knightsbridge Road. Further study is needed to determine the exact location of the terminus and park & ride facility in this location.

From the Centennial Avenue/Knightsbridge Road terminal station, the single-track Concept Alignment joins the planned fourteen foot median of the proposed Route 18 Extension (Hoes Lane) to a point just north of Rutgers University's Busch Campus. One stop along this link is proposed in the vicinity of the Piscataway Township municipal building and library.

The Busch Campus link of the Concept Alignment utilizes University-owned land for two-way exclusive right-of-way operation, and serves student housing, academic buildings and other activity centers in the core area of the campus. It is also proximate to the University of Medicine and Dentistry of New Jersey's (UMDNJ) Piscataway campus. There are proposed stops at the Richardson Apartments, which is less than a 5-minute walk to UMDNJ, and at the Busch Campus Center. Finally, the alignment serves both Rutgers Stadium and nearby satellite parking for commuting students with a stop in the vicinity of Sutphen Road.

In addition to serving Busch Campus, the Concept Alignment also serves the University's Livingston campus. The Livingston Campus link begins at the intersection of Bartholomew Road and Bevier Road on the Busch campus, utilizes existing right-of way on Bevier Road, Metlars Lane, and Davidson Road/Avenue E for two-way, exclusive right-of-way operation and enters Livingston Campus at the intersection of Rockafeller Road. Stops are proposed at the Janice H. Levine Building, Livingston Student Center, and the Quad Residences Halls. This link will improve connectivity between Livingston Campus and the other University campuses. The Livingston Campus link can also be used to serve an existing 2,000 +/- space satellite parking lot for commuter students and the Louis Brown Athletic Center. Finally , the link also provides access to underutilized university property that could be used as an operations, maintenance, and storage facility

for the fixed guideway system; however, it should be noted that further study will be needed to determine the specific location for such a facility.

The Busch Campus link connects with the College Avenue Campus link via a new bridge crossing of the Raritan River. The study assumes that a new bridge will be built adjacent to and immediately north of the existing bridge, as close to the existing structure as possible. Building a new bridge structure in this location appears to be feasible from an engineering perspective; however, additional studies will be needed to determine the impact of a new structure on Johnson Park and known historic and archeological resources in this location.

Downtown Segment

The Downtown Segment of the Concept Alignment includes the College Avenue Campus link, Downtown Area #1 – North of the NEC, Downtown Area #2 – Albany Street to New Street, and Downtown Area #3 – Entrance to Douglass Campus.

Downtown Area #1 - After crossing the Raritan River in the vicinity of the existing John Lynch Bridge, the Concept Alignment connects with the College Avenue Campus at the College Avenue intersection with Huntington Street. The Concept Alignment utilizes a portion of the existing College Avenue cartway for two-way exclusive right-of-way operation to Somerset Street where it turns east. This link includes proposed stops at Alexander Library and adjacent to the Voorhees Mall. The Concept Alignment then turns east onto Somerset Street and south again onto George Street toward the downtown central business district and proximate to the New Brunswick train station on the elevated NEC rail line. The Concept Alignment crosses under the NEC rail line utilizing the existing George Street underpass. Based on the consultant team's analysis, the College Avenue – Somerset Street –George Street alignment appears to be the most practical.

This segment includes one stop located on George Street between Somerset Street and Albany Street adjacent to the north end of the NEC New Brunswick Station platforms. A column on the NEC George Street underpass that does not appear to be bearing a structural load may need to be removed or reconfigured. While deemed the most practical option, this alignment raised a number of design and operational issues including: turning radii, vertical clearances, and shared operation with vehicular traffic. In the two-block segment between College Avenue and Albany Street, the system operates with an exclusive right-of-way track/BRT lane traveling southeast and a shared-use lane (transit and vehicular traffic) traveling northwest.

Downtown Area #2 - Traversing downtown New Brunswick is challenging for a variety of reasons, including the density and pattern of existing downtown development, narrow streets, and heavy volumes of vehicular traffic. The consultant team investigated three options for locating the concept alignment in the downtown segment, including:

- Alternative #1: George Street, closed to vehicular traffic with two-way transit
- Alternative #2: Neilson Street, one-way vehicular traffic with two-way transit
- Alternative #3: George Street and Neilson Street, One-Way Pair

While the study made no selection between the alternatives, Alternative #3, which was suggested by officials from the City of New Brunswick, emerged as very promising.

This alternative involves splitting the transit right-of-way between George Street and Neilson Street and operating a one-way transit pair separated by a city block – north bound transit service in the middle of Neilson Street and southbound transit service on the west side of George Street. This alternative would maintain one-way traffic traveling south on George Street and potentially permit parking on one side of the street in the lower George Street area between New Street and Commercial Avenue. On Neilson Street, two-way vehicular traffic could be maintained sandwiched around the exclusive guideway in the middle. Alternative #3 anticipates no change to existing sidewalk widths throughout this segment and includes four stops, two in each direction. Additional traffic and engineering studies are required to verify superiority of this routing.

Downtown Area #3 - This segment of the Concept Alignment includes the transition from downtown New Brunswick across Commercial Avenue and onto Rutgers University's Douglass Campus. To accommodate the Concept Alignment as it enters Douglass Campus, the study assumes that George Street will be incrementally widened, south of either Commercial Avenue or Bishop Street. Preliminary analysis indicates that the existing George Street cartway would need to be widened approximately eight to ten feet to permit two-way exclusive transit right-of-way operation from Bishop Street to Hickman Hall. From a point in the vicinity of Hickman Hall, the Concept Alignment turns to the south on University property and connects with Clifton Avenue/Ryders Lane in the vicinity of Neilson Dining Hall. From this location the alignment continues south alongside Ryders Lane to Route 1. There are two proposed stops in this segment – one located in the vicinity of Chapel drive and the Douglass Campus Center, and one located in the vicinity of the Dudley Road-Ryders Lane intersection. While the Concept Alignment passes nearby key Cook Campus activity centers, an intra-campus jitney service will be necessary to connect the exclusive fixed guideway system to additional Cook Campus locations.

The composition of the Concept Alignment transition from downtown New Brunswick onto the Douglass campus depends, in large part, on which alternative from Downtown Area #2 is selected; therefore the analysis of this segment of the alignment was framed around the Area #2 alternatives. Once again, Alternative #3, which derives from the "one-way pair" option previously described, emerged as very promising. This alternative assumes that an exclusive right-of-way transit lane will be provided on the west side of George Street running southbound. In addition, the remaining lane on George Street would operate with one-way vehicular traffic in the same direction. Under this alternative, the southbound lane of the Concept Alignment crosses Commercial Avenue at George Street and may require a shared use lane for a short distance before entering the Douglass Campus at Bishop Street. Further detailed study is needed to determine if George Street between Commercial Avenue and Bishop Street can be incrementally widened to accommodate two-way vehicular traffic and an exclusive right-of-way transit lane.

Under this alternative, the northbound lane of the Concept Alignment would utilize the Bishop Street right-of-way as it exits Douglass Campus from George Street. Preliminary analysis indicates that there is adequate turning radius to accommodate movement of an articulated transit vehicle from George Street onto Bishop Street. With an exclusive

transit track/BRT lane, Bishop Street could remain open to one-way vehicular traffic, but on-street parking would be eliminated.

Southeast Segment

The Southeast Segment of the Concept Alignment will be anchored by a new multi-modal transportation center and park & ride terminal facility in the Harts Lane industrial district located in East Brunswick Township. For the purpose of this study, it was assumed that access to the proposed transportation center could be provided through an improved intersection/interchange at the intersection of Route 18 and West Ferris Street. This would allow potential riders to access the system prior to reaching the most congested segment of Route 18. Further study is needed to determine the exact location of the terminus and park & ride facility.

Between the Rutgers University Cook Campus (south of Route 1) and the Harts Lane area of East Brunswick this segment covers portions of North Brunswick Township, Milltown Borough, and East Brunswick Township. Given an identified system terminus on Harts Lane in East Brunswick, two potential alignments emerged as feasible. Both alternatives assume single track/BRT lane operation from Route 1 to the terminal station and have similar ridership characteristics. It should be noted that Milltown Borough officials expressed objections to Alternative A.

Alternative A: Sayreville Running Track Right-of-Way **-** The first alternative investigated utilizes a portion of the Sayreville Running Track freight rail right-of-way, owned by Conrail Shared Assets. To access this right-of-way the Concept Alignment proceeds in a southerly direction along the west side of Route 1 to a point close to the existing College Farm Road underpass in North Brunswick. After crossing Route 1, the Concept Alignment joins the Sayreville Running Track right-of-way, passes through Milltown Borough and connects with the Harts Lane industrial district in East Brunswick. This alternative includes a proposed park & ride stop in the vicinity of DeVry College in North Brunswick (that could intercept travelers heading north on Route 1) and a stop in the vicinity of the Milltown Borough municipal complex on Washington Road. For this alternative, it was assumed that the existing right-of-way could be shared between freight users and the proposed transit system.

Alternative B: Ryders Lane/Tices Lane **-** The second alternative investigated utilizes portions of the Ryders Lane right-of-way and land adjacent to Ryders Lane and Tices Lane to access the Harts Lane industrial district. This alternative proceeds on the west side of Route 1, crosses Route 1 on an overpass south of the Ryders Lane interchange, and rejoins the Ryders Lane east of Route 1 on its southern edge. The existing Ryders Lane right-of-way appears to be wide enough to accommodate a single-track exclusive transit right-of-way until it reaches a point approximately 100 feet north of the Tices Lane/Washington Road intersection. At that point, the right-of-way narrows, and additional land acquisition will be required to fit a single track exclusive right-of-way and the existing vehicular lanes. An additional stop is proposed in the vicinity of the Washington Road/Tices Lane intersection.

From this point, the Concept Alignment turns east onto the south side of Tices Lane (either at grade, over, or under Ryders Lane), and passes under the NJ Turnpike (using space within the existing underpass). In that segment it crosses entrances to numerous

business and civic facilities and the edge of a municipal park. Across Tices Lane for some of this distance is a residential community. Finally, it turns south again onto Harts Lane to its terminus at the proposed multimodal transit center.

The primary advantages of this alternative include: shorter travel distance (approximately one mile shorter), one less stop (cumulatively saving some running time), and fewer potential impacts on residential neighborhoods in the Borough of Milltown. Disadvantages include: the need to take more land on Ryders and Tices Lanes, as well as Township of East Brunswick park land located at the corner of Tices Lane and Harts Lane, to build an additional bridge to cross over Westons Mill Pond, to reconfigure entrances along Tices Lane, and to be proximate to residences across the road, in East Brunswick Township.

Ridership Analysis

The final component of this study was to forecast the potential ridership that a fixed guideway transit system in the greater New Brunswick Area might attract. In part, the feasibility of the proposed fixed guideway transit system is dependent on the ridership attracted to the system. In addition, financial support for planning, constructing and operating the proposed system will be allocated from scarce resources. The higher the forecast ridership, the greater the competitive justification there will be for investing in the proposed system. Ridership forecasts for the proposed fixed guideway transit system were based upon the characteristics of the Concept Alignment described in Chapter 2.

Analytical procedures developed by New Jersey Transit were applied to identified market segments for the proposed fixed guideway system. The resulting forecast for year 2020 daily ridership is 55,000 daily boardings. The proposed system compares favorably to other light rail transit systems in operation elsewhere in the United States and, thus, the proposed system is feasible from the standpoint of total ridership. Despite being 10 miles in length as opposed to 15 to 38 miles in length for the comparison systems, the proposed system will carry in general more than double the daily ridership of each of these systems. Further, the analysis demonstrates that the unique nature of the markets to be served by the proposed system leads to relatively uniform ridership throughout the service day, which results in a high degree of equipment utilization, and therefore efficiency and effectiveness.

Findings and Conclusions

The *Greater New Brunswick Area Corridor Study* feasibility analysis has shown that the development of a fixed-guideway transit system for the study corridor is physically feasible, operationally beneficial, and supported by projected ridership levels. The high level of local interest and support exhibited in the outreach program indicates that efforts

should be undertaken to secure funding for the next phase of more detailed investigations. The following is a summary of key findings and conclusions:

1. **Construction of a fixed guideway system is physically feasible.**
   - A crossing of the Northeast Corridor can be accomplished.
   - Other design issues are manageable.
2. **The proposed system is operationally beneficial.**
   - There is minimal need for shared-roadway operation.
   - There could be significant travel time advantages for users.
3. **Expected ridership levels support investment in the system**
   - The system would benefit New Brunswick and surrounding communities
   - The system would benefit the operation of Rutgers University
   -
4. **The project should be moved to the next level of development**

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Mayor William P. Neary, Township of East Brunswick
Mayor David Spaulding, Township of North Brunswick
Mayor Brian C. Wahler, Township of Piscataway

Chapter 1: Purpose and Need

Introduction

The ***Greater New Brunswick Area Corridor Study*** examines the purpose and need as well as alignment options and ridership forecasts for a proposed fixed guideway transit system to serve the greater New Brunswick area. For the purpose of this study, "fixed guideway transit system" is defined as a high-capacity transit system – either light rail or bus rapid transit – that operates on a fixed route, primarily on an exclusive right-of-way, serving a limited number of stations/stops. The study area includes the City of New Brunswick; Townships of Piscataway, North Brunswick, and East Brunswick; and the Borough of Milltown. The 10-mile planning corridor roughly parallels the proposed Route 18 extension from I-287 in Piscataway Township, continues through downtown New Brunswick, and ends in East Brunswick Township.

The need to study the establishment of a fixed guideway transit system and alignment in this corridor was prompted by a number of factors, including:

- Significant existing population and employment, and projected growth, in the City of New Brunswick and surrounding areas;

- Continued growth in travel demand in the Route 18 Corridor, and limitations on future expansion of the greater New Brunswick roadway network to accommodate future travel demand; and

- Increased traffic in the corridor that has seriously compromised the reliability of the Rutgers University intercampus bus system, which currently serves more than six million riders per year.

The purpose of the study was to assess the feasibility of establishing a fixed guideway transit system as a complementary element of the already multi-modal greater New Brunswick area transportation system. More specifically, the study was undertaken to:

1. Determine whether projected travel demand, population and employment growth, population density, and other demographic and socioeconomic characteristics of the greater New Brunswick area justify the need for establishing a fixed guideway transit system;
2. Identify a Concept Alignment and termini for a fixed guideway transit system within the target greater New Brunswick area that could connect the New Brunswick Central Business District, Northeast Corridor rail line, existing regional and local bus routes, employment and retail centers, Rutgers University's five New Brunswick area campuses, government offices, cultural and recreational facilities, regional healthcare facilities and other activity centers in the greater New Brunswick area;
3. Determine whether identified physical barriers would make construction of a system along this Concept Alignment impossible, and to identify the major

construction or engineering challenges that must be overcome in building such a system;

4. Determine ridership potential from numerous segments of the local and regional travel market, including trips made by Rutgers students, faculty, and staff, local non-Rutgers work trips, regional trips to New Brunswick's Northeast Corridor train station, as well as, non-work trips; and
5. Build consensus among elected officials and other local stakeholders that a fixed guideway transit system was needed and should be built in the Greater New Brunswick Area.

The study was guided by two separate groups that worked in close collaboration. First, a project Steering Committee was formed. The Steering committee consisted of key client and consultant staff members, including representatives from Middlesex County, the Transportation Policy Institute and Urbitran Associates, Inc. In addition, a Study Advisory Committee of key stakeholders was formed to provide the Steering Committee with input on issues important to the study. Appendix A provides additional detail regarding the membership of these groups and the results of study outreach efforts.

PURPOSE OF THE PROPOSED SYSTEM

Highway capacity deficiencies in the Route 18 corridor were first identified by Middlesex County's Line Haul Study completed in 1975. That study foresaw growing traffic problems along the Route 18 corridor from East Brunswick to Piscataway and recommended consideration of improvements to existing transit services in the form of a priority bus system. More recently, the Middlesex County Strategic Planning Area Study of the Route 18 Corridor indicated that no one strategy alone will provide adequate long term relief for growing traffic congestion in the corridor. The Study recommends that a combination of improvements be implemented to achieve congestion relief and service level improvements beyond current and projected conditions. In addition, the Middlesex County FY 1997 Sub-regional Transportation Planning Study, "Preserving Rail Rights of Way in Middlesex County," cited potential opportunities for conversion of existing freight rail rights of way into future rail passenger services, if acceptable to host communities. One of the rights of way cited is the Sayreville Running Track (formerly the Raritan River Railroad) freight line which runs between New Brunswick and South River Borough, through North Brunswick Township, Milltown Borough and East Brunswick Township.

The proposed fixed guideway transit system is intended to:

1. Increase transportation mode choice in the corridor by providing an alternative to the automobile for accessing New Brunswick's Central Business District, regional transit facilities, governmental offices, area employment centers and other activity centers in the greater New Brunswick area;
2. Expand the capacity of the greater New Brunswick area transportation system to meet the needs of existing development and accommodate additional growth and

economic development while lessening projected impact on regional and local roadways and demand for additional parking; and

3. Facilitate more efficient travel within and between Rutgers University's five New Brunswick area campuses, while reducing demand for intercampus automobile usage.

NEED FOR THE IMPROVEMENT

As previously stated, this study was undertaken, in part, to determine whether existing and projected travel demand, population and employment, population density and other demographic and socioeconomic factors in the greater New Brunswick area justify the need for a fixed guideway transit system. Given existing land use and demographic characteristics and projected growth, the need for a fixed guideway transit system to augment the existing transportation network is probable.

New Brunswick is a major center of employment, health care, education, and government institutions. The City's employment growth rate between 1991 and 1997 was 26 percent, a rate higher than both Middlesex County and the State. The City has added more than 6,000 jobs in that period, and unemployment has fallen to 6.6 percent, the lowest of any city in New Jersey. More than 1.5 billion dollars in public and private investment has been made in New Brunswick since 1991.

This trend is expected to continue into the foreseeable future. In addition, groundbreaking for the $100 million Heldrich Center complex at the corner of George Street and Livingston Avenue is also awaited. The Matrix Development Group has proposed significant new office space and more than 500 new upscale apartments and townhouses on existing surface parking lots along Neilson Street, in the heart of New Brunswick's downtown. This anticipated growth, coupled with growth in surrounding communities, will continue to bring about increasing demands on the existing New Brunswick area transportation infrastructure, such as Route 18 in East Brunswick and the City's local street system. As such, future growth is expected to further deteriorate levels of service along major area roadways and to further compromise the efficiency of road-based transit services, such as Rutgers University's extensive inter-campus bus system.

The need for and appropriateness of establishing a fixed guideway transit system is further evidenced by NJ Transit's recent *2020 Transit: Possibilities for the Future* study. The study forecasts future transit potential throughout the state based on a number of demographic characteristics. In creating its rankings regarding where and at what level transit investment could be supported, NJ Transit developed "Transit Score" ratings based on the interrelationship of household density, population density, employment density and zero-and one-vehicle household density. Using these factors, NJ Transit rated the greater New Brunswick area/Route 18 corridor Medium-High (3-9) – the second highest rating for transit potential, and placed the greater New Brunswick corridor on the list of projects to be defined/studied for light rail or bus rapid transit.

Each of the three primary jurisdictions within the Greater New Brunswick Area Corridor – New Brunswick, East Brunswick and Piscataway – provides individual justification in support of a fixed guideway system:

- The City of New Brunswick, one of the eight designated Urban Centers in the *New Jersey State Development and Redevelopment Plan,* has a concentration of employment, retail, and residential development in its central business district. This, combined with Rutgers University's main campus on College Avenue, Rutgers' Cook and Douglass campuses, two regional medical centers, Johnson & Johnson's world headquarters, county government offices, cultural institutions, and projected future growth throughout New Brunswick's downtown, including significant residential development, provide a strong core travel market to anchor the proposed transit system;
- The Township of Piscataway houses Rutgers University's growing Busch and Livingston campuses, and has experienced extensive corporate and industrial employment growth, especially near I-287, and along Hoes Lane, Centennial Avenue, and Knightsbridge Road; and
- The Township of East Brunswick has experienced considerable residential growth and retail and employment growth along the Route 18 corridor.

Finally, economic development potential in New Brunswick and surrounding communities could be significantly enhanced with a more balanced transportation system, and quality of life could be improved with the enhancement of non-automobile transportation modes in the study area. The Greater New Brunswick Area is ready for and needs a more efficient, safe, pleasant, and reliable transportation system to lessen congestion and provide workable alternatives to the single-occupant automobile to get to work, school, shopping, and recreation.

Chapter 2: Concept Alignment

INTRODUCTION

In addition to determining whether a need exists to support the establishment of a fixed guideway transit system in the greater New Brunswick area, this study was undertaken to identify a Concept Alignment that could form the basis for a preliminary engineering feasibility analysis and ridership forecast. It is important to note that this study is an early step in the planning process and that the alignment chosen for analysis in this study is preliminary and conceptual in nature. It is not intended to represent the final alignment or even a preferred alignment. It is simply one option that demonstrates whether it would be feasible to construct a fixed guideway transit system in the greater New Brunswick Area. The Concept Alignment also highlights a number of physical design issues, which are detailed later in this section. While not insurmountable, these design issues will require additional study prior to selecting a final or preferred alignment some time in the future.

The *Greater New Brunswick Area Corridor Study* builds upon a significant body of previous work conducted by Rutgers University's Transportation Policy Institute (TPI), Middlesex County, and the affected jurisdictions. Two important sources of information were the *Middlesex County Line-Haul Technical Study*, prepared in 1975 by the Middlesex County Planning Board, and the 1978 *Line-Haul Implementation Study*, prepared for Middlesex County by Sperry Systems Consultants. These studies examined the economic, social, and physical feasibility of implementing a line haul-oriented transportation system in the Piscataway-New Brunswick-East Brunswick corridor. A third important document, and the most significant to the identification of the Concept Alignment, was *The Greater New Brunswick Area Transit Study: Preliminary Alignment Study* (hereafter called the Rutgers Study), conducted by the Fall 1999 Graduate Planning Studio at Rutgers University's Edward J. Bloustein School of Planning and Public Policy. The Rutgers study investigated more than 25 possible alignment options for various segments of the study corridor.

DEVELOPMENT OF THE CONCEPT ALIGNMENT

In addition to previous studies, the identification of the Concept Alignment was informed by a number of assumptions related to design criteria, and system operating characteristics as well as an analysis of issues of critical concern. For the purpose of this study, it was assumed that the fixed guideway system should be designed to:

- Maximize ridership potential by serving as many significant activity centers as feasible;
- Maximize use of existing rights-of-way;
- Facilitate intermodal connections; and
- Minimize environmental, community, and traffic impacts.

Furthermore, the following operating characteristics were assumed:

- To the maximum extent feasible, the system should operate along a fixed guideway, within an exclusive right-of-way used only by the transit system;
- The alignment should be designed to accommodate the use of high capacity light rail or bus rapid transit vehicles;
- In a limited number of selected locations, the system could require operation within an existing street right-of-way mixed with vehicular traffic; and
- The system should serve a limited number of stations/stops

Finally, prior to identifying the Concept Alignment, the consultant team conducted an intensive evaluation of critical issues of concern that might impact the feasibility of building the proposed system. These issues included:

- **Locating system termini –** An issue of critical concern, especially with regard to ensuring adequate ridership, was the identification of appropriate termini for the proposed system. It is important to situate the termini in locations that minimize the need for potential riders to traverse congested areas when accessing the system by automobile. This issue was specifically problematic relative to using as a terminus the existing East Brunswick Transportation Center, located at the intersection of Route 527 and Tices Lane in East Brunswick. In addition to requiring the alignment to cross Route 18 somewhere in the vicinity of Tices Lane, this location would have forced potential riders to traverse a highly congested segment of Route 18 Northbound in order to access the system. As is discussed in greater detail below, to address this concern, East Brunswick officials suggested that the existing transportation center be relocated to a site in the Harts Lane industrial district, where a new multi-modal transportation center could be constructed. For the purpose of this study, it was assumed that locating a new transportation center in this location was feasible and that this location could be accessed through an improved intersection/interchange from Route 18 in the vicinity of W. Ferris Street. This would allow potential riders to access the system prior to reaching the most congested segment of Route 18.

  For similar reasons, identifying a northern terminus for the system in Piscataway Township is also problematic. Potential riders seeking to access the system by auto from points north and west will need to drive on congested roadways. To minimize this condition, it was assumed that a park-and-ride facility could be located in the vicinity of the Hoes Lane and Centennial Avenue intersection, near the Possumtown Road exit from I-287. Finally, it was assumed that the Livingston Campus link of the proposed system would be anchored by the existing Rutgers University commuter parking lot located near the Rutgers Athletic Center. These three termini provide potential riders with reasonably efficient highway access to the fixed-guideway system from points outside of the Greater New Brunswick Area.

- **Crossing the Raritan River** – One of the more significant physical design issues is connecting Piscataway Township with the City of New Brunswick. This will require a crossing of Johnson Park and the Raritan River. The first option

considered in this regard was to retrofit the existing Route 18 – John Lynch Bridge to accommodate a transit right-of-way. After meeting with representatives from the NJ Department of Transportation, it became clear that the existing structure could not be used for this purpose. Consequently, a new structure will be needed. For the purposes of this study, it was assumed that a new structure could be built adjacent to and immediately north of the existing John Lynch Bridge. Further study will be needed to assess the potential environmental impacts of a new bridge crossing in this location.

- **Crossing the Northeast Corridor rail line** – Another significant physical design issue is crossing the Northeast Corridor rail line (NEC), which is elevated throughout downtown New Brunswick. Four street-level options for passing under the NEC were investigated: utilizing existing underpasses at Easton Avenue, George Street and Johnson Way, as well as tunneling under the NEC. Based on the consultant team's investigation, it was determined that the Easton Avenue underpass does not provide adequate vertical clearance to accommodate the proposed system, and the Johnson Way underpass is too far removed from the New Brunswick train station and other important downtown and University activity centers. It was further determined that the George Street underpass provided adequate vertical clearance, provided the best opportunity for intermodal transfers (a key system design criterion), and was the most efficient means to connect with Rutgers' College Avenue Campus. It was concluded that the George Street option was the most feasible, and effective means of crossing the NEC.

- **Respecting historic resources –** The City of New Brunswick and surrounding communities contain a number of historic sites, districts and buildings. One critical site is the Poile Zedek Synagogue located on Neilson Street in downtown New Brunswick. Other historical districts and sites include parts of Rutgers University's Douglass and Old Queen's Campuses and Johnson Park in Piscataway Township. Care was taken in the Concept Alignment to protect these resources. Future studies will be needed to determine the impact of the proposed system on these and other historic resources.

- **Crossing Route 1 –** The extension of the proposed transit system from Rutgers University's Cook/Douglass campuses into East Brunswick Township requires crossing Route 1. The Rutgers Study identified two potential options for crossing Route 1. These included utilizing the existing Ryders Lane right-of-way and utilizing the Sayreville Running Track (formerly the Raritan River Railroad), a single-track freight rail line owned by Conrail Shared Assets. Each has limitations but both appear to be feasible and were included in the Concept Alignment as alternatives for this segment of the proposed system. Further study of these two options and sub-alternatives is needed, including temporal separation of freight traffic on the Sayreville Running Track.

The consultant team found that there were no "fatal flaws" that would preclude the system from being built; however, as noted above, there are a number of issues requiring further study. Based on this evaluation and using the above stated criteria, the consultant team created annotated aerial base maps. These maps depicted existing land uses, major roadways, key activity centers, the Rutgers Study alignment options; Rutgers University bus routes and stops, and New Jersey Transit bus routes; and, finally, a preliminary Concept Alignment developed by the consultant team.

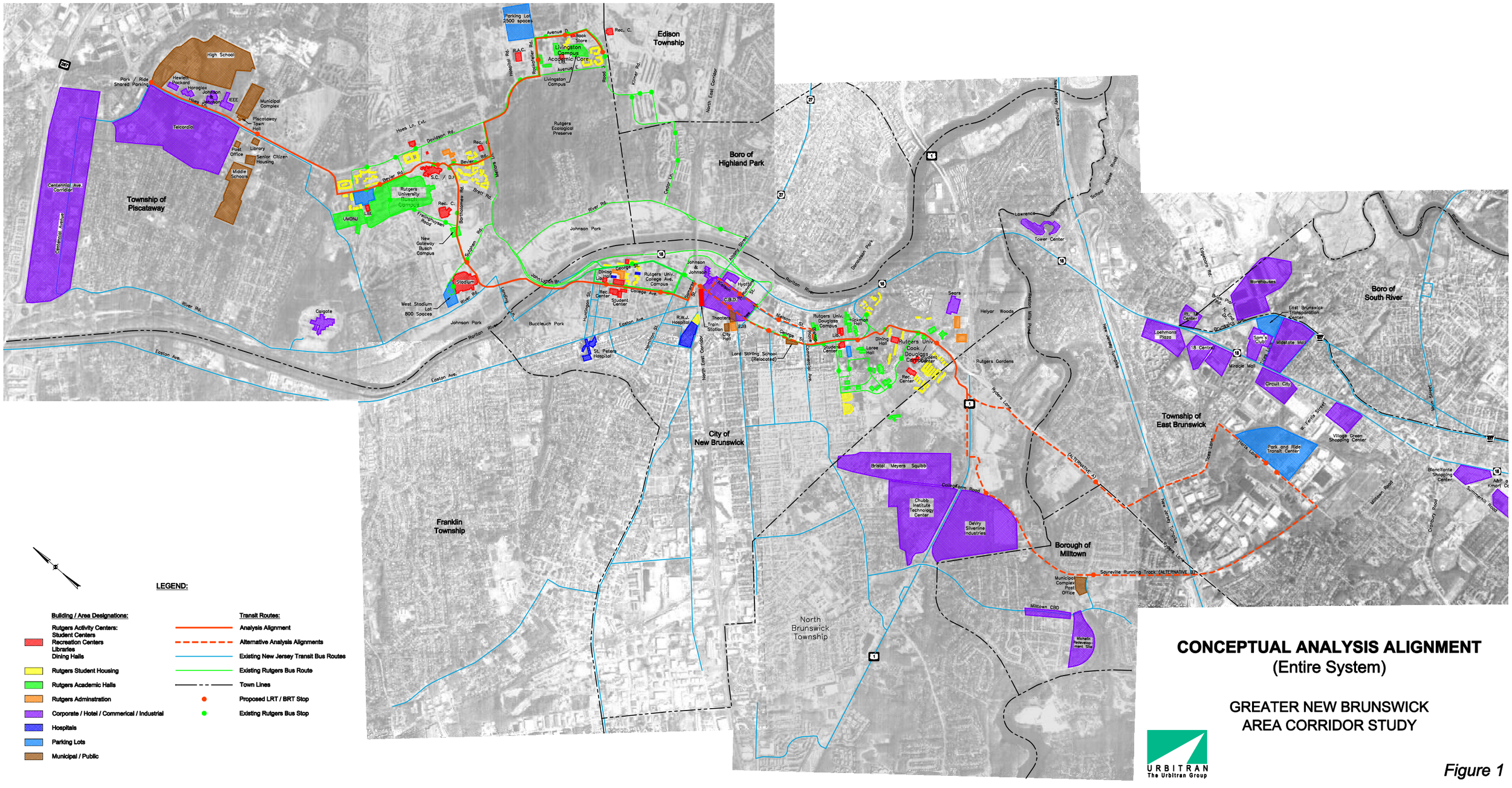
The base maps were used to facilitate focus group meetings with representatives from the City of New Brunswick, Rutgers University, Piscataway Township, East Brunswick Township and the Borough of Milltown. A similar meeting was held with key downtown New Brunswick stakeholders, including Johnson & Johnson, Robert Wood Johnson University Hospital and Saint Peters University Hospital (see Appendix A). The focus group meetings were intended to solicit reactions and ideas regarding the Concept Alignment and to identify issues of concern to the potentially affected communities. The meetings succeeded in gaining a general consensus that the Concept Alignment was acceptable for the purpose of completing the study. However, it should be noted that a major issue remains on the choice of an alignment between Route 1 and the proposed East Brunswick terminus.

OVERVIEW OF THE CONCEPT ALIGNMENT

Figure 1 depicts the Concept Alignment for the entire proposed transit system. For ease of reference, the system has been divided into three segments: the Northwest Segment (I-287 to John Lynch Bridge), the Downtown New Brunswick Segment (south of the John Lynch Bridge to the Cook/Douglass Campus), and the Southeast Segment (east of Route 1 to the East Brunswick terminus). The Concept Alignment is discussed segment-by-segment in the following sub-sections.

Northwest Segment

The Northwest Segment of the Concept Alignment, depicted in Figure 2, includes the portions of the alignment located in Piscataway Township: the Hoes Lane link, and the Rutgers University links to Livingston Campus and Busch Campus. As proposed, the Northwest Segment of the system will be anchored by the Centennial Avenue employment corridor and a park & ride/shared parking facility in the vicinity of Hoes Lane and Centennial Avenue or Knightsbridge Road. The intent of this park & ride facility is to intercept riders traveling from I-287 and points north and west that wish to use the proposed transit system to access employment, shopping, government, healthcare and University destinations throughout the greater New Brunswick area. For purposes of this analysis, the park & ride was situated on currently vacant land owned by Telcordia. The study team assumed that exits from I-287 at Possumtown Road and South Randolphville Road could be improved to facilitate access to the proposed park & ride facility which will serve as the transit system's northwest terminal station. In addition, it was assumed that a jitney service might be implemented to distribute transit riders to



LEGEND:

Building / Area Designations:

- Rutgers Activity Centers: Student Centers, Recreation Centers, Libraries, Dining Halls
- Rutgers Student Housing
- Rutgers Academic Halls
- Rutgers Adminstration
- Corporate / Hotel / Commerical / Industrial
- Hospitals
- Parking Lots
- Municipal / Public

Transit Routes:

- Analysis Alignment
- Alternative Analysis Alignments
- Existing New Jersey Transit Bus Routes
- Existing Rutgers Bus Route
- Town Lines
- Proposed LRT / BRT Stop
- Existing Rutgers Bus Stop

CONCEPTUAL ANALYSIS ALIGNMENT
(Entire System)

GREATER NEW BRUNSWICK
AREA CORRIDOR STUDY

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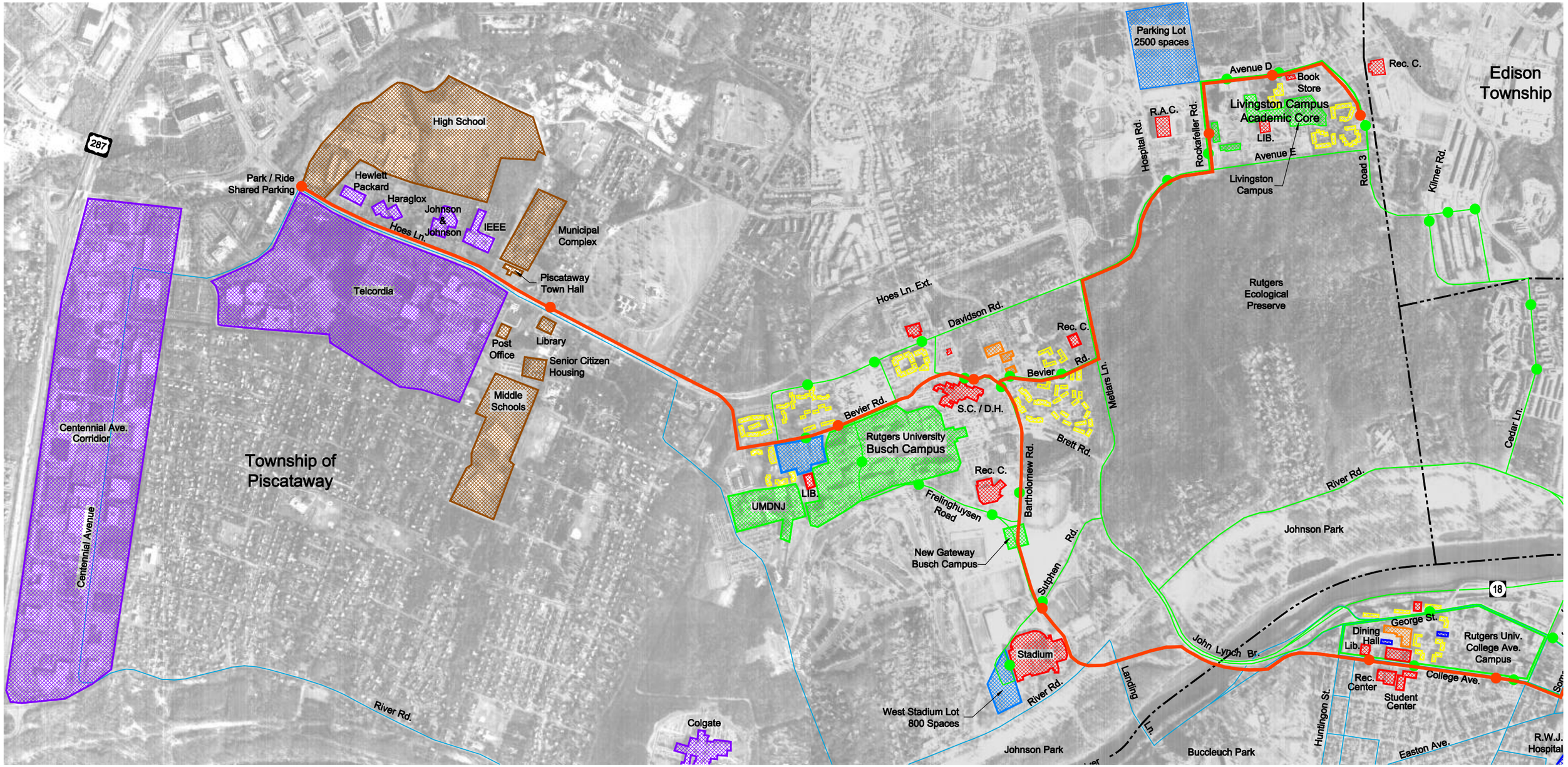
The Urbitran Group

Figure 1



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Transit Routes:

- Analysis Alignment
- Alternative Analysis Alignments
- Existing New Jersey Transit Bus Routes
- Existing Rutgers Bus Route
- Town Lines
- Proposed LRT / BRT Stop
- Existing Rutgers Bus Stop

Scale: 1"=400'±

CONCEPTUAL ANALYSIS ALIGNMENT
(Northwest Segment)

GREATER NEW BRUNSWICK
AREA CORRIDOR STUDY

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Figure 2

employment sites along the Centennial Avenue corridor. Further study is needed to determine the exact location of the terminus and park & ride facility.

Hoes Lane Link

From the Centennial Avenue/Knightsbridge Road terminal station, the Concept Alignment joins the right-of-way of Hoes Lane (proposed Route 18 Extension). For the purpose of this study, it was assumed that the proposed Route 18 extension would be completed as currently designed with a fourteen (14) foot center median, wide enough for a single fixed guideway track/BRT lane. The Concept Alignment travels south along the Route 18 Extension utilizing the center median for a single track operation to a point just north of Rutgers University's Busch Campus. One stop along this link is proposed in the vicinity of the Piscataway Township municipal building and library. Figures 3 and 4 depict a street plan and typical cross-section for the Hoes Lane link.

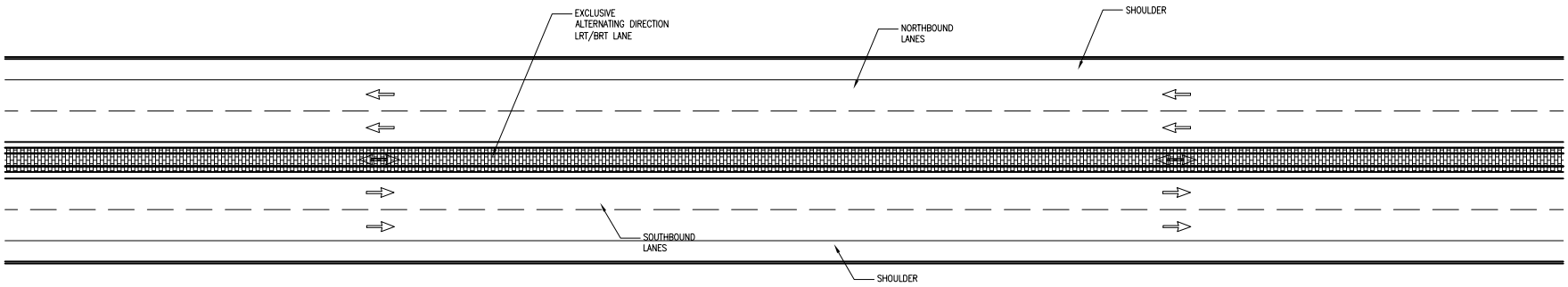
Busch Campus Link

In the last decade, the Busch Campus has been a focal point for University growth. This trend is expected to continue into the foreseeable future. As a result of its vast size and poor pedestrian accessibility from surrounding activity centers, the Busch Campus could benefit significantly from improved transit service. For this reason, the Concept Alignment includes a Rutgers University Busch Campus link. The Concept Alignment enters Busch Campus south of Old Hoes Lane in the vicinity of the Nichols Apartments. It utilizes University-owned land for two-way exclusive right-of-way operation, and serves student housing, academic buildings and other activity centers in the core area of the campus. It is also proximate to the University of Medicine and Dentistry of New Jersey's (UMDNJ) Piscataway campus. There is a proposed stop at the Richardson Apartments, which is less than a 5-minute walk to UMDNJ, and a stop at the Busch Campus Center. Finally, the alignment serves both Rutgers Stadium and nearby satellite parking for commuting students with a stop in the vicinity of Sutphen Road. The Stadium stop has the potential to reduce event-related traffic congestion significantly.

Livingston Campus Link

In addition to serving Busch Campus, the Concept Alignment also serves the University's Livingston campus. The Livingston Campus link begins at the intersection of Bartholomew Road and Bevier Road on the Busch campus; utilizes existing right-of way on Bevier Road, Metlars Lane, and Davidson Road/Avenue E for two-way, exclusive right-of-way operation; and enters Livingston Campus at the intersection of Rockafeller Road. Stops are proposed at the Janice H. Levine Building, Livingston Student Center, and the Quad Residences Halls. This link serves several purposes. Most importantly, it will improve connectivity between Livingston Campus, the other University campuses, and downtown New Brunswick. Second, the Livingston Campus link can be used to serve an existing 2,000 +/- space satellite parking lot for commuter students and the Louis Brown Athletic Center located at the northwest end of the campus. Finally , the link also provides access to underutilized university property that could be used as an operations, maintenance, and storage facility for the fixed guideway system; however, it should be noted further study will be needed to determine the specific location for such a facility.

North



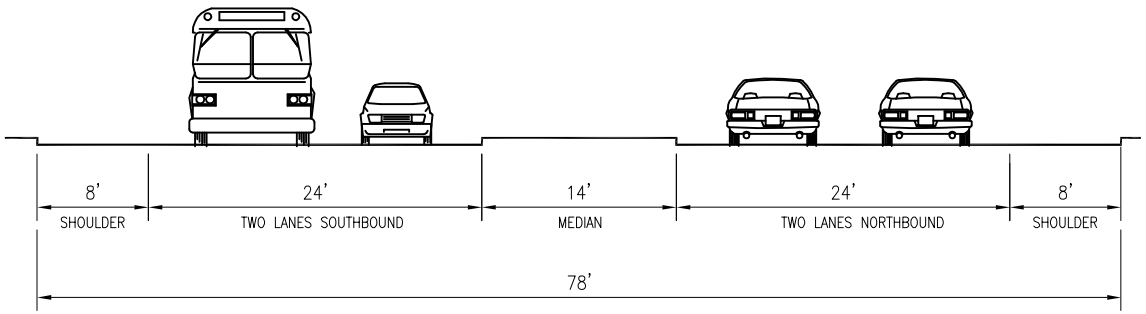
NORTHWEST SEGMENT NJDOT - PROPOSED
ROUTE 18 EXTENSION (HOES LANE)
(Street Plan)

GREATER NEW BRUNSWICK
AREA CORRIDOR STUDY

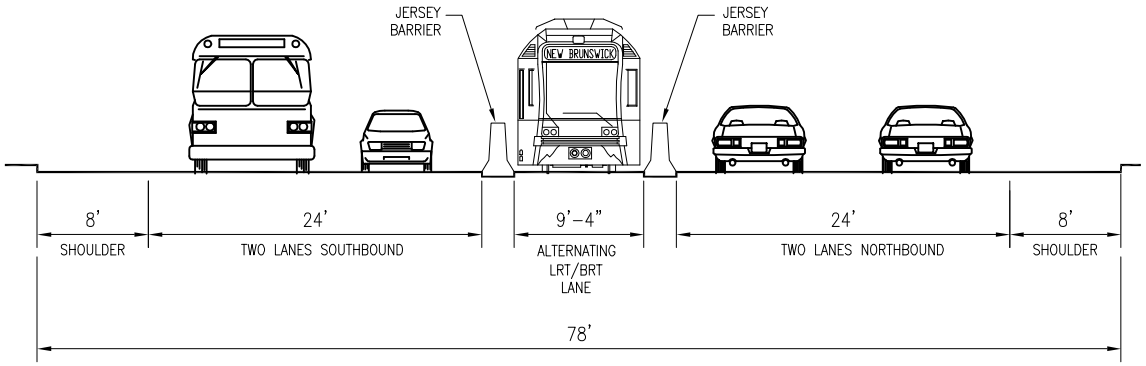
URBITRAN
The Urbitran Group/
El Taller Colaborativo

Figure 3

NJDOT – PROPOSED ROUTE 18 EXTENSION
(HOES LANE) CONDITIONS



PROPOSED
LRT/BRT LANE
CONDITIONS



NJDOT - PROPOSED ROUTE 18 EXTENSION
(HOES LANE) LOOKING NORTH
(Typical Section)

GREATER NEW BRUNSWICK
AREA CORRIDOR STUDY

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Figure 4

One additional note regarding the Livingston Campus link is its proximity to the Edison Station on the NEC rail line. While not investigated as part of this study, a potential extension of this link to the Edison Station could serve two intermodal purposes: enhance accessibility by commuter rail to the Livingston and Busch campuses, and connect satellite parking lots by shuttle to the NEC station.

John Lynch Bridge and Johnson Park Issues

Based on early investigations, it became clear that the John Lynch Bridge could not be retrofitted to accommodate a transit right-of-way. The bridge cannot structurally support additional cantilevered tracks or BRT lanes. Furthermore, the heavy volumes of traffic that currently use the bridge preclude the practical use of existing travel lanes for shared transit and vehicular use. For these reasons, the study assumes that a new bridge crossing will be built adjacent to and immediately north of the existing bridge, as close to the existing structure as possible. Building a new bridge structure in this location appears to be feasible from an engineering perspective; however, additional studies will be needed to determine the impact of a new structure on Johnson Park and known historic and archeological resources in this location.

Downtown Segment

The Downtown Segment of the Concept Alignment includes the College Avenue link, Downtown Area #1 – North of the NEC, Downtown Area #2 – Albany Street to New Street, and Downtown Area #3 – Entrance to Douglass Campus. Figure 5 provides an aerial overview of New Brunswick, from the John Lynch Bridge on the north, through the central business district, and south to Rutgers University's Douglass Campus.

College Avenue Campus Link

After crossing the Raritan River in the vicinity of the existing John Lynch Bridge, the Concept Alignment connects with the College Avenue Campus at the College Avenue intersection with Huntington Street. The Concept Alignment utilizes a portion of the existing College Avenue cartway for two-way exclusive right-of-way operation to Somerset Street where it turns east. This link includes proposed stops at Alexander Library and adjacent to the Voorhees Mall. The Concept Alignment then turns south again onto George Street toward the downtown central business district and proximate to the New Brunswick train station on the elevated NEC rail line. As previously noted, the Concept Alignment crosses under the NEC rail line utilizing the existing George Street underpass. Based on the consultant team's analysis, the College Avenue – Somerset Street –George Street alignment appears to be the most practical because Somerset Street is less heavily traveled than parallel Hamilton Street. In addition, the Rutgers Study option of tunneling under the Northeast Corridor was also analyzed. While it appears that this option would be technically feasible, this approach would raise the cost of the system considerably.

Johnson Park
18
Albany Street
Donaldson Park
Raritan River
Br.
George St.
Dining Hall
Lib.
Rutgers Univ. College Ave. Campus
College Ave.
Rec. Center
Student Center
Johnson & Johnson
Somerset St.
Nielson St.
Hyatt
Richmond St.
C.B.D.
New St.
Huntington St.
Easton Ave.
R.W.J. Hospital
Theaters
Train Station
EJB
City Hall
Nielson St.
Rutgers Univ. Douglass Campus
Hickman Hall
Bishop Place
Lib.
Dining Hall
George St.
Student Center
Loree Hall
Hamilton St.
North East Corridor
Lord Stirling School (Relocated)
Commercial Ave.
St. Peters Hospital

LEGEND:

Building / Area Designations:

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- Rutgers Student Housing
- Rutgers Academic Halls
- Rutgers Adminstration
- Corporate / Hotel / Commerical / Industrial
- Hospitals
- Parking Lots
- Municipal / Public

Transit Routes:

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- Alternative Analysis Alignments
- Existing New Jersey Transit Bus Routes
- Existing Rutgers Bus Route
- Town Lines
- Proposed LRT / BRT Stop
- Existing Rutgers Bus Stop

Scale: 1"=200'±

CONCEPTUAL ANALYSIS ALIGNMENT
(Downtown Segment)

GREATER NEW BRUNSWICK
AREA CORRIDOR STUDY

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The Urbitran Group

Figure 5

Johnson Park
18
Albany Street
Donaldson Park
Raritan River
Br.
George St.
Dining Hall
Lib.
Rutgers Univ. College Ave. Campus
College Ave.
Rec. Center
Student Center
Johnson & Johnson
Somerset St.
Nielson St.
Hyatt
Richmond St.
C.B.D.
New St.
Huntington St.
Easton Ave.
R.W.J. Hospital
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- Proposed LRT / BRT Stop
- Existing Rutgers Bus Stop

Scale: 1"=200'±

CONCEPTUAL ANALYSIS ALIGNMENT
(Downtown Segment)

GREATER NEW BRUNSWICK
AREA CORRIDOR STUDY

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Figure 5

Downtown Area #1: North of the Northeast Corridor

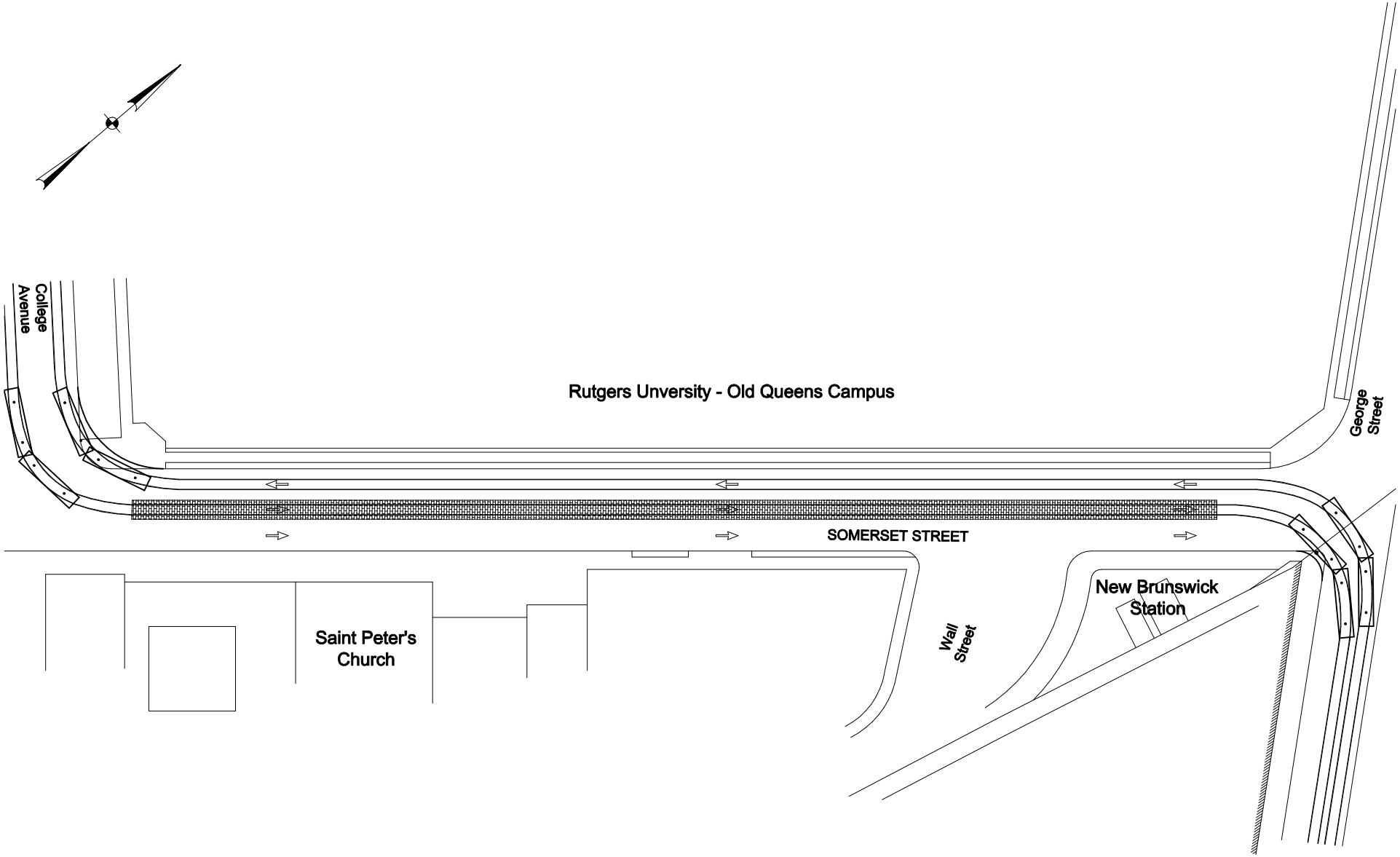
As noted earlier in this report, one of the more technically challenging issues of this study was passage of the proposed system under the NEC rail line. As proposed, the Concept Alignment transitions from College Avenue to Somerset Street and then to George Street to utilize the George Street underpass. In the two-block segment between College Avenue and Albany Street, the system operates with an exclusive right-of-way track/BRT lane traveling southeast and a shared-use lane (transit and vehicular traffic) traveling northwest. This segment includes one stop located on George Street between Somerset Street and Albany Street adjacent to the north end of the NEC New Brunswick Station platforms. While deemed the most practical option, this alignment raised a number of design and operational issues.

Turning radii – The configuration of existing intersections – specifically the intersection angle of Somerset Street with George Street at approximately 80 degrees – and physical constraints such as the stone wall and a decorative entrance gate surrounding Rutgers University's Old Queens Campus, and existing bridge support columns associated with the George Street underpass, will require the transit system to operate using very tight turning radii. Articulated vehicles will be needed to make these turns. Figure 6 depicts a street plan of the College Avenue – Somerset Street – George Street transition and demonstrates that the turning radii are feasible. Based on the consultant team's analysis, it was determined that acceptable radii can be provided, mostly within the available street space, with only minimal intrusion into sidewalk areas. This intrusion occurs on the northeast quadrant of the College Avenue – Somerset Street intersection adjacent to Old Queens Campus.

Further, it was determined that one of the existing George Street underpass bridge support columns may need to be reconfigured to accommodate the turn from Somerset Street onto George Street because one of the support columns interferes with the turning path of a vehicle turning right from Somerset Street onto George Street. Based on preliminary field reconnaissance, the consultant team concluded that this bridge column appears to support a former rail spur that no longer exists. Consequently, there is a strong possibility that the support column in question could be removed or reconfigured without compromising the structural integrity of the underpass.

Vertical Clearance – With respect to vertical clearances, the height of the existing George Street underpass structure, at 13'9", is acceptable clearance for typical LRT/BRT vehicles powered by electrical transmission and collection mechanisms (pantograph and catenary wire). Figure 7 depicts a cross-section of the George Street underpass looking north. As an example, the Hudson/Bergen LRT line passes under a 13'8" clearance at Johnson Avenue in Jersey City. This demonstrates that the Concept- Alignment is compatible with using standard articulated equipment operating within existing underpass parameters.

Shared operation with vehicular traffic – Because of heavy traffic volumes on George Street north of Albany Street andsouth of Somerset Street, it was decided that George Street north of Albany Street must remain open to two-way vehicular



COLLEGE AVENUE, SOMERSET STREET
AND GEORGE STREET
(Vehicle Turning)

GREATER NEW BRUNSWICK
AREA CORRIDOR STUDY

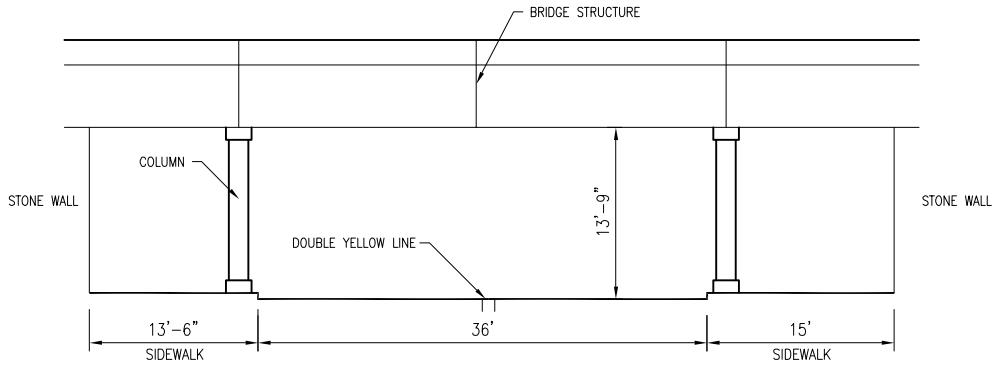
Legend

Exclusive LRT/BRT Lane

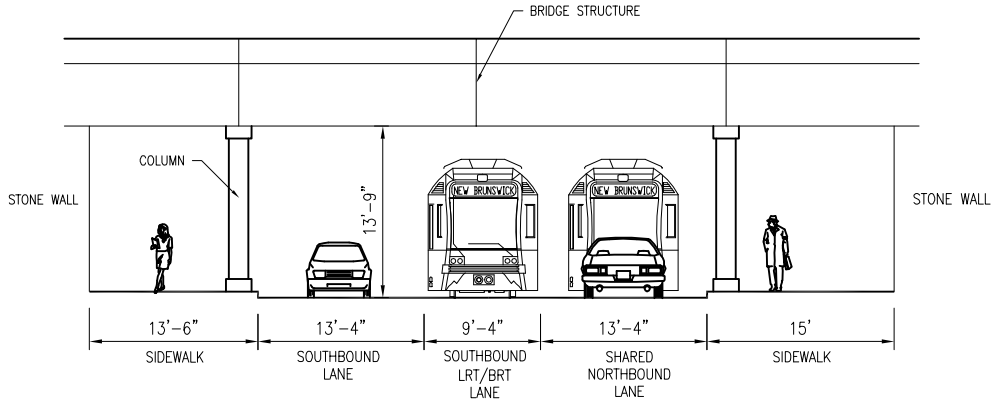
URBITRAN
The Urbitran Group/
El Taller Colaborativo

Figure 6

EXISTING CONDITIONS



TWO-WAY LRT/BRT



GEORGE STREET LOOKING NORTH
AT NORTHEAST CORRIDOR BRIDGE
(Typical Section)

GREATER NEW BRUNSWICK
AREA CORRIDOR STUDY

URBITRAN
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El Taller Colaborativo

Figure 7

traffic. Figure 8 depicts the typical cross-section for Somerset Street and demonstrates the use of one exclusive transit lane and one shared use lane. As such, it was determined that a combination of operational equipment, such as signal preemption and queue jumper signals, could be used to maintain both transit system efficiency and the progression of vehicular traffic through this section. In addition, a prohibition of left turns from George Street to Somerset Street and from Somerset to George Street may be needed to maintain traffic flow. It should also be noted that approximately 25 on-street parking spaces may be eliminated in this segment.

Downtown Area #2: Albany Street to New Street

Traversing downtown New Brunswick is challenging for a variety of reasons, including the density and pattern of existing downtown development, narrow streets, and heavy volumes of vehicular traffic. The consultant team investigated three options for locating the concept alignment in the downtown segment.

Alternative #1: George Street, closed to vehicular traffic with two-way transit

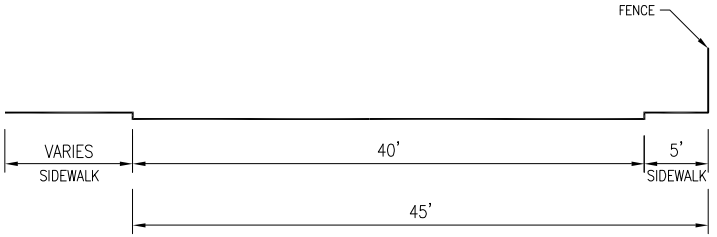
One of the goals of the transit system is to connect activity centers effectively throughout the greater New Brunswick area. As such, operating the transit system on George Street, the spine of the downtown central business district, would be ideal as transit right-of-way. Unfortunately, the George Street right-of-way between Albany Street and New Street is narrow and cannot accommodate both an exclusive two-way transit right-of-way as well as two-way vehicular traffic. Therefore, one alternative analyzed was to create a transit-only corridor that crossed Albany Street and extended to New Street. Vehicular traffic would be redirected to Route 18, Neilson Street and to other routes through downtown. Figure 9 illustrates Alternative #1, the George Street transit corridor, which features two-way transit in the central business district. From New Street to Commercial Avenue, two-way exclusive right-of-way transit and two-way vehicular traffic can be accommodated; however, all on-street parking must be eliminated. Alternative #1 includes two stops, one in the vicinity of Livingston Avenue and one in the vicinity of Remson Avenue.

Transit-only corridors, such as the one proposed in this alternative, have been implemented in a number of communities throughout the United States. Many of these communities have found that transit-only corridors can enhance the sense of community and strengthen retail businesses. In addition, depending on the mode of transportation selected for this system and the specific physical characteristics of a fixed-guideway built along this portion of George Street, emergency vehicles (police, fire, ambulance, etc.) could access the street on an as-needed basis.

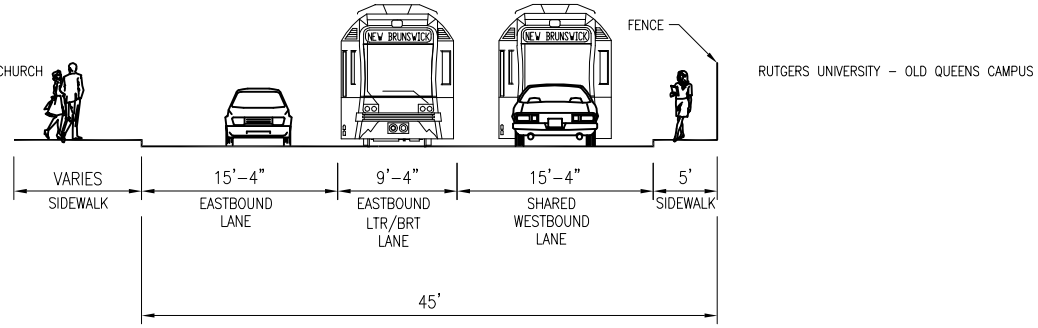
Alternative #2: Neilson Street, one-way vehicular traffic with two-way transit

A second alternative analyzed the feasibility of locating the fixed guideway transit system on Neilson Street. For this alternative, the Concept Alignment would turn east from George Street to Albany Street (Route 27). Figure 10 illustrates how Albany Street

EXISTING CONDITIONS



TWO–WAY LRT/BRT



SOMERSET STREET LOOKING WEST
(Typical Section)

GREATER NEW BRUNSWICK
AREA CORRIDOR STUDY

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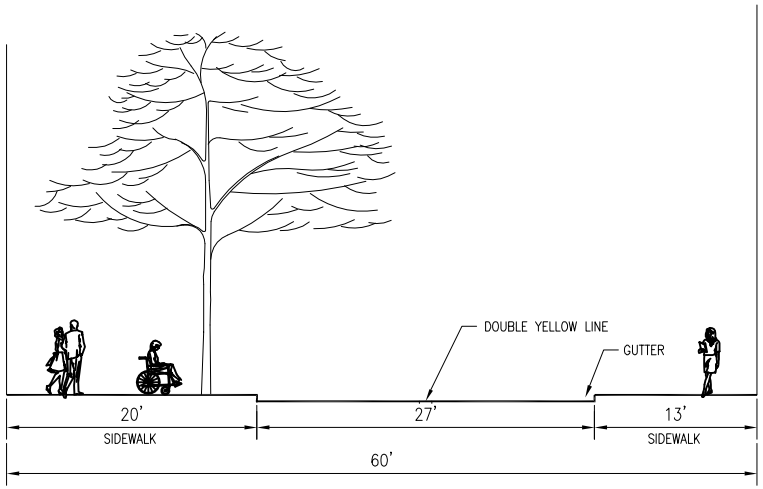
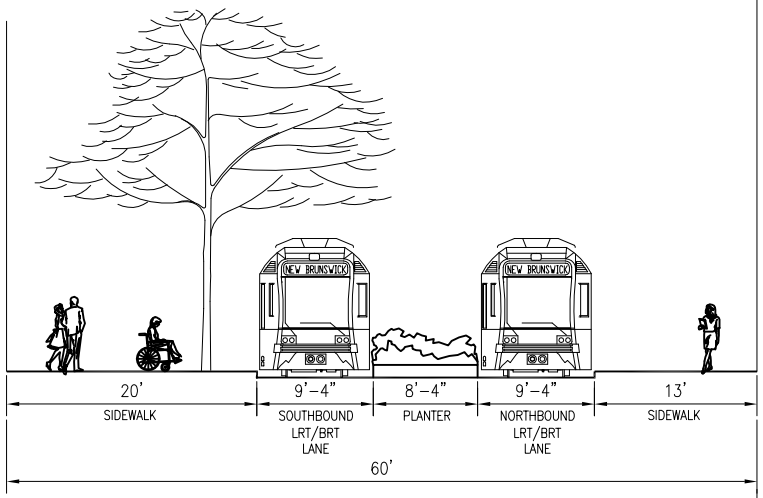
Figure 8

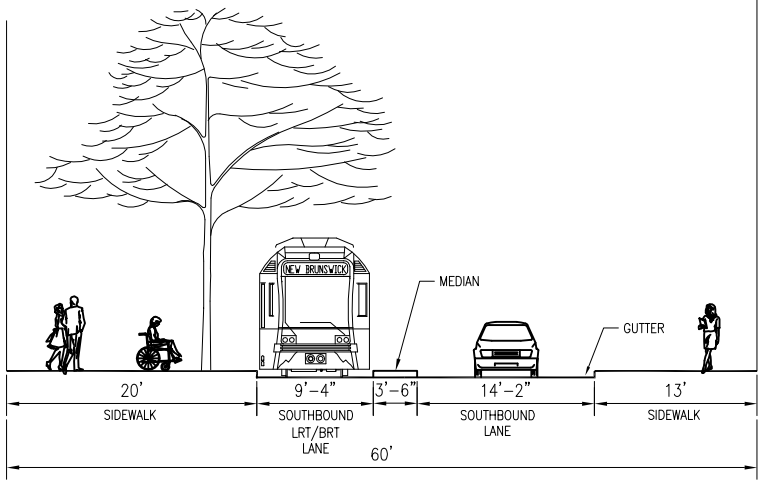
EXISTING CONDITIONS



ALTERNATIVE 1: TWO-WAY LRT/BRT



ALTERNATIVE 3: ONE-WAY PAIR LRT/BRT



GEORGE STREET SHOPPING DISTRICT
LOOKING NORTH
(Typical Section)

GREATER NEW BRUNSWICK
AREA CORRIDOR STUDY

URBITRAN
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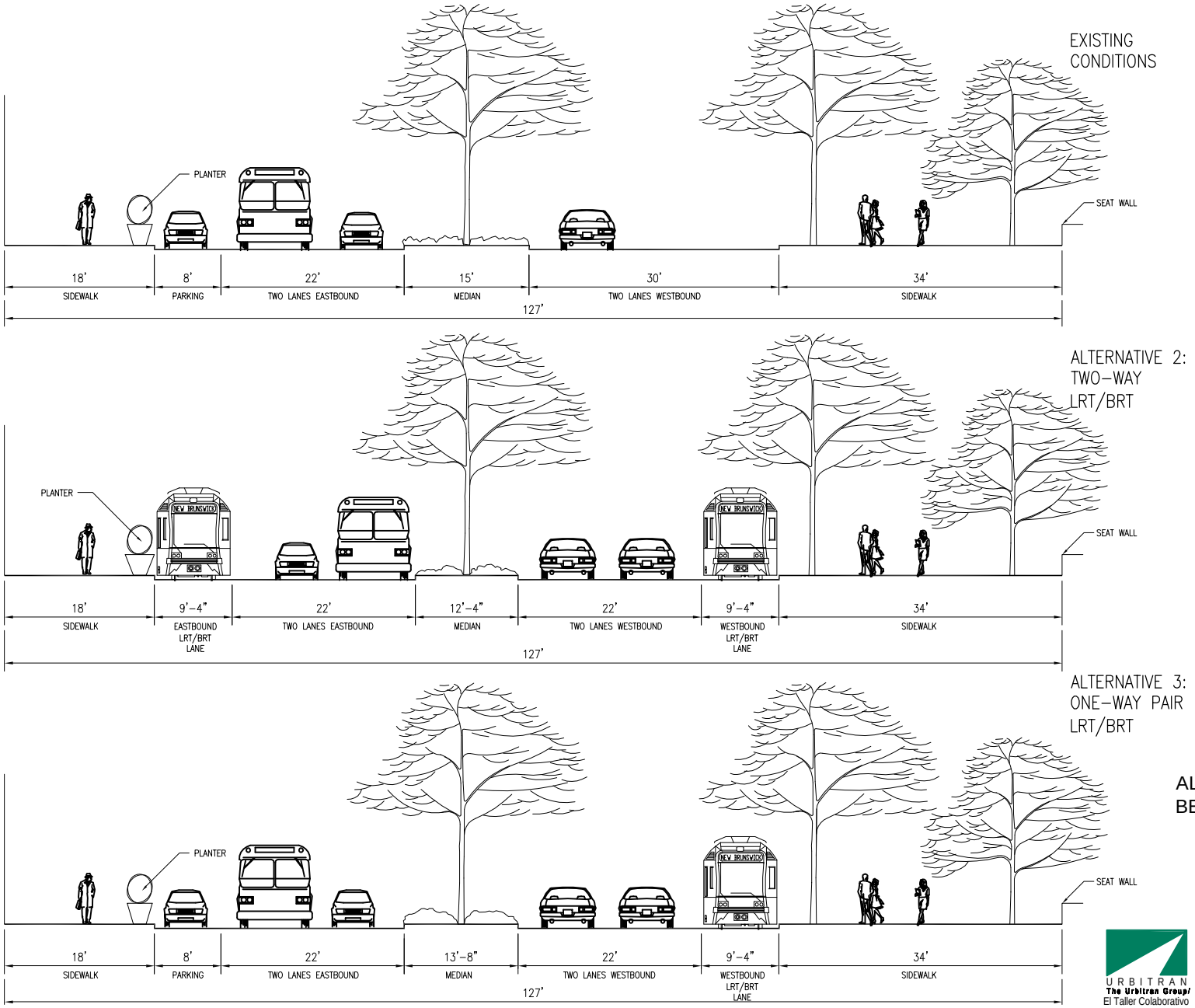
El Taller Colaborativo

Figure 9



ALBANY STREET LOOKING WEST
BETWEEN GEORGE STREET AND
NEILSON STREET
(Typical Section)

GREATER NEW BRUNSWICK
AREA CORRIDOR STUDY

URBITRAN
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Figure 10

(Route 27) could function under Alternative #2.. To maintain two-way transit operation along Albany Street, Alternative #2assumes: an exclusive transit lane along each curb; that the existing median be reduced from its current fifteen foot (15') width to a width of twelve feet, four inches (12'4"); parking is eliminated on the northbound side of Albany Street; two eleven-foot traffic lanes in each direction are installed; and the existing sidewalk area will remain unchanged.

On Neilson Street, two-way exclusive transit operation would be maintained; however, because the Neilson Street right-of-way, is only thirty-six feet (36') wide adjacent to the historic Poile Zedek Synagogue, only one-way vehicular traffic would be feasible. Figure 11 depicts the typical cross-section under this alternative for Neilson Street at this its narrowest point,. Alternative #2 includes two stops, one in the vicinity of Richmond Street and one in the vicinity of Oliver Street.

Alternative #3: George Street and Neilson Street, One-Way Pair

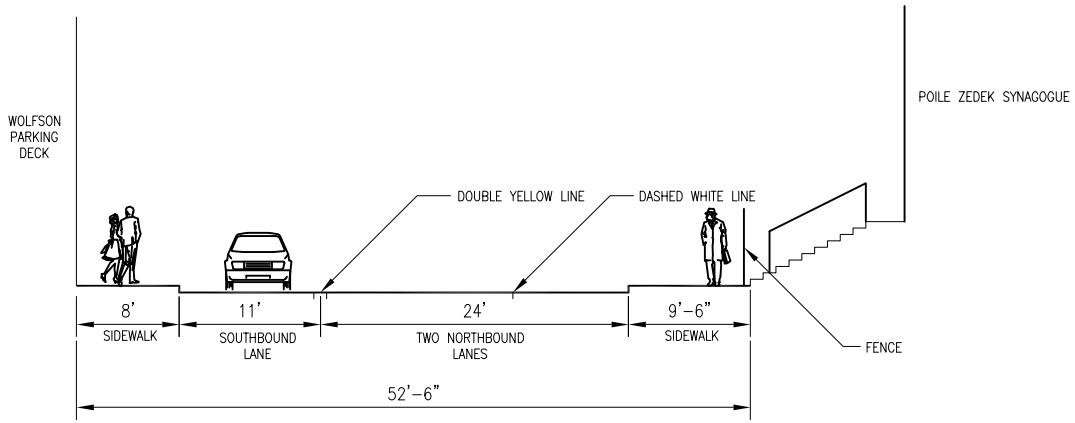
The third alternative analyzed for Downtown Area #2 was suggested by officials from the City of New Brunswick.This alternative involves splitting the transit right-of-way between George Street and Neilson Street and operating a one-way transit pair separated by a city block – north- bound transit service in the middle of Neilson Street and south-bound transit service on the west side of George Street.. Figure 10 illustrates how this alternative would function on Albany Street.

Unlike Alternative #1, which closes George Street to vehicular traffic, this alternative would maintain one-way traffic traveling south on George Street and potentially permit parking on one side of the street in the lower George Street area between New Street and Commercial Avenue. On Neilson Street, two-way vehicular traffic could be maintained sandwiched around the exclusive guideway in the middle. Placing the fixed guideway system in the middle of the street lessens potential impacts on existing land uses, such as the synagogue.

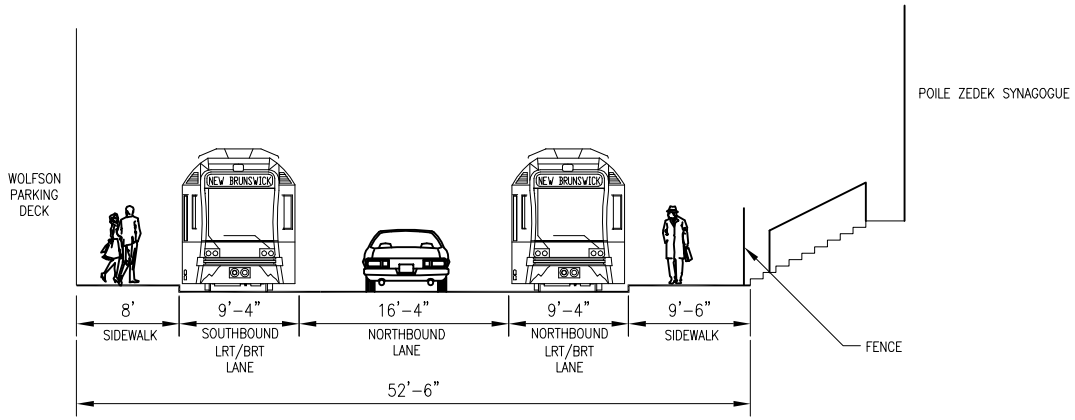
Alternative #3 anticipates no change to existing sidewalk widths throughout this segment and includes four stops, two in each direction in locations similar to those described for Alternatives #1 and #2. Figures 13 and 14 show a photographic simulation of an LRT vehicle on George Street and Neilson Street, respectively. Figure 13 shows the front of the LRT vehicle traveling south on George Street with an adjacent vehicular lane. Figure 14 shows the back of an LRT vehicle traveling northbound on Neilson Street with adjacent vehicular lanes.

This type of fixed-guideway configuration has been successfully implemented in several U.S. cities, including Portland, Oregon, where a one-way pair functions smoothly on two downtown streets characteristically similar to George Street. Figure 12 depicts a street plan illustrating Alternative #3. Future traffic and environmental studies will test the apparent superiority of this alternative.

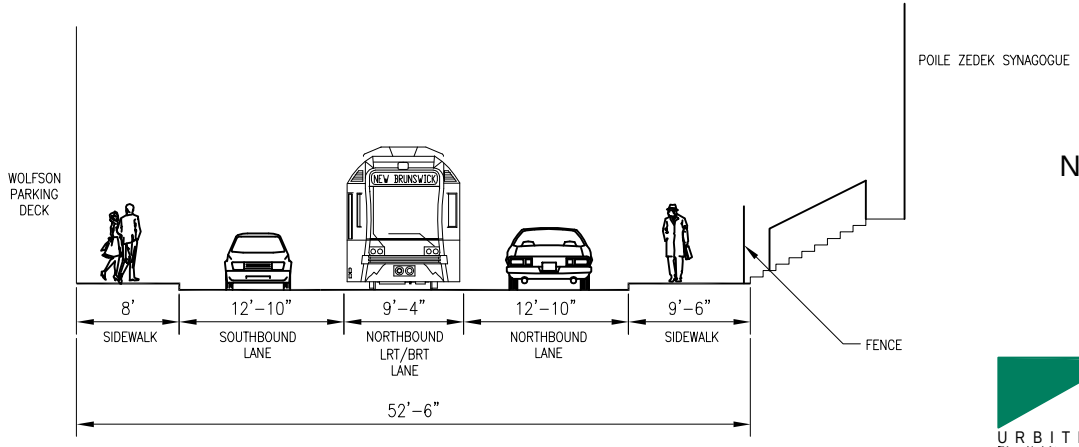
EXISTING CONDITIONS



ALTERNATIVE 2: TWO-WAY LRT/BRT



ALTERNATIVE 3: ONE-WAY PAIR LRT/BRT



NEILSON STREET AT THE SYNAGOGUE
LOOKING NORTH
(Typical Section)

GREATER NEW BRUNSWICK
AREA CORRIDOR STUDY

URBITRAN
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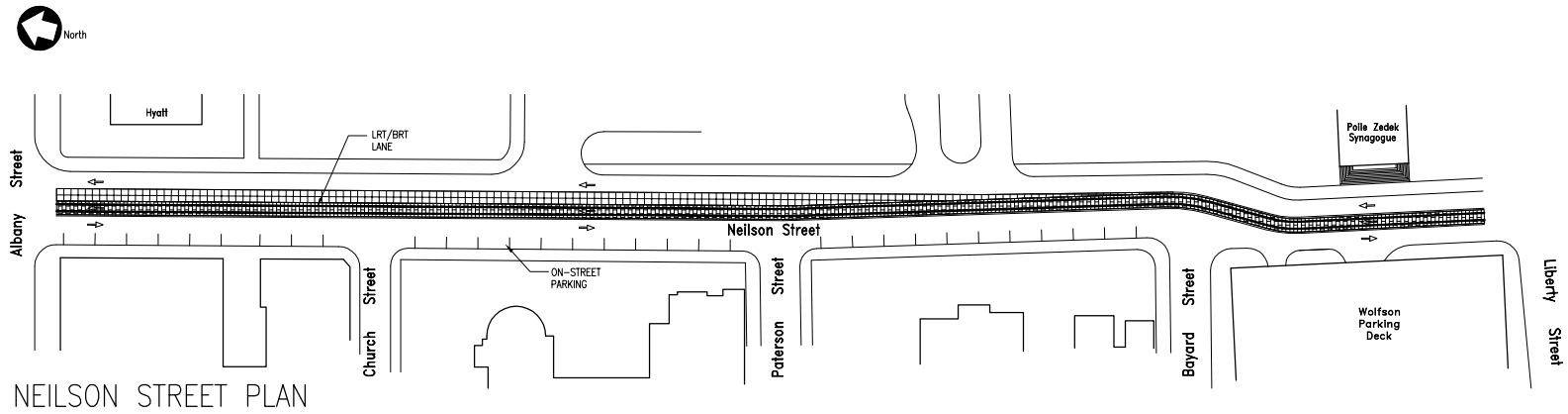
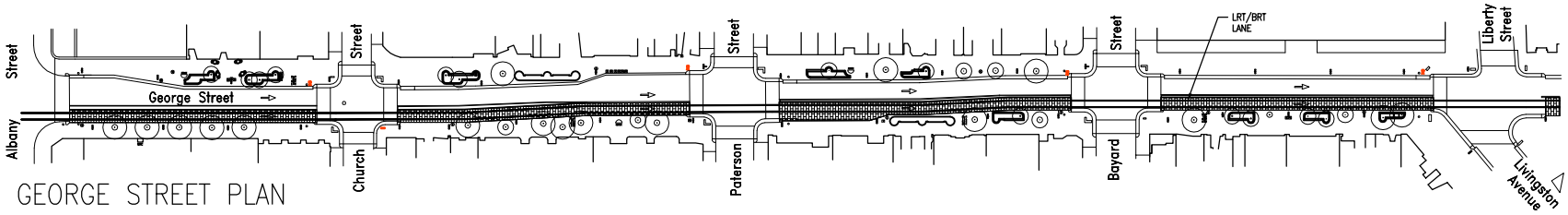
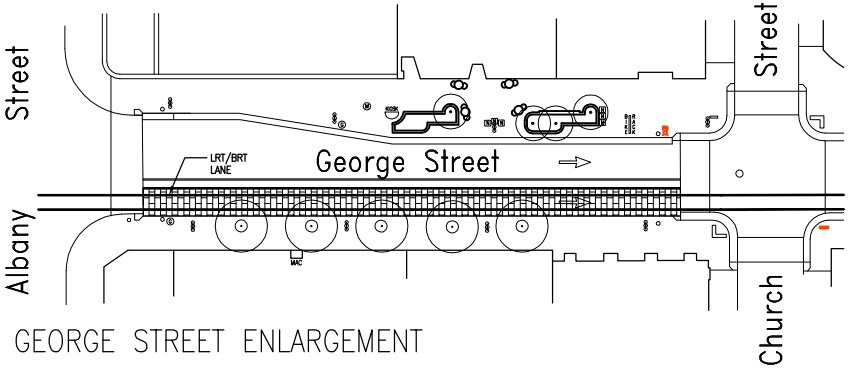
Figure 11



NEILSON STREET PLAN



GEORGE STREET PLAN



GEORGE STREET ENLARGEMENT

Legend

Exclusive LRT/BRT Lane

NEILSON AND GEORGE STREET PLANS
(Alternative 3 - One-way Pair)

GREATER NEW BRUNSWICK
AREA CORRIDOR STUDY

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Figure 12

GEORGE STREET LOOKING NORTH
FROM CHURCH STREET

GREATER NEW BRUNSWICK
AREA CORRIDOR STUDY

URBITRAN
The Urbitran Group/
El Taller Colaborativo

Figure 13

NEILSON STREET LOOKING NORTH
FROM LIBERTY STREET

GREATER NEW BRUNSWICK
AREA CORRIDOR STUDY

URBITRAN
The Urbitran Group/
El Taller Colaborativo

Figure 14

Downtown Area #3: Entrance to Douglass Campus

This segment of the Concept Alignment includes the transition from downtown New Brunswick across Commercial Avenue and onto Rutgers University's Douglass Campus. To accommodate the Concept Alignment as it enters Douglass Campus, the study assumes that George Street will be incrementally widened, south of either Commercial Avenue or Bishop Street. Preliminary analysis indicates that the existing George Street cartway would need to be widened approximately eight to ten feet to permit two-way exclusive transit right-of-way operation from Bishop Street to Hickman Hall. From a point in the vicinity of Hickman Hall, the Concept Alignment turns to the south on University property and connects with Clifton Avenue/Ryders Lane in the vicinity of Neilson Dining Hall. From this location the alignment continues south alongside Ryders Lane to Route 1. There are two proposed stops in this segment – one located in the vicinity of Chapel drive and the Douglass Campus Center and one located in the vicinity of the Dudley Road-Ryders Lane intersection.

It should be noted that there are several potentially historic structures on the Douglass Campus that will influence the selection of a final alignment. Further detailed study and close consultation with Douglass College officials are needed to determine the impact of the proposed transit system on these historic resources. While the Concept Alignment passes nearby key Cook Campus activity centers, an intra-campus jitney service will be necessary to connect the exclusive fixed guideway system to additional Cook Campus locations.

The composition of the Concept Alignment transition from downtown New Brunswick onto the Douglass campus depends, in large part, on which alternative from Downtown Area #2 is selected; therefore the analysis presented below is framed around the Area #2 alternatives.

Alternative #1: George Street, Two-way LRT/BRT

As previously described, this alternative utilizes George Street for two-way exclusive transit operation with two-way vehicular traffic operating alongside south of New Street. Consequently, the Concept Alignment crosses Commercial Avenue at its intersection with George Street and continues on George Street to where it enters the Douglass Campus just south of Bishop Street. Because available George Street right-of-way at this intersection is constrained, shared-use travel lanes (transit and vehicular traffic) may be required for a short distance between Commercial Avenue and Bishop Street. In addition, some incremental widening of the George Street right-of-way will be needed to accommodate both two-way exclusive transit and vehicular operation between Bishop Street and Hickman Hall.

Alternative #2: Neilson Street, Two-way transit

As previously described, this alternative utilizes Neilson Street for two-way exclusive transit operation with two-way vehicular traffic. Since Commercial Avenue is heavily traveled and is a primary access route to Route 18 in New Brunswick, it was determined that turning the Concept Alignment west onto Commercial Avenue to George Street was impractical. Consequently, under this alternative, the Concept Alignment crosses Commercial Avenue at its intersection with Neilson Street and proceeds to Bishop Street

where it turns to the west and rejoins George Street just to the north of the Douglass Campus. Crossing Commercial Avenue at Neilson Street would require the installation of a new traffic signal.

Bishop Street is approximately 27 feet wide with on-street parking, housing along its north side, and Douglass College buildings and a parking lot on the south side. Currently, Bishop Street has low traffic volumes and flow is restricted to one-way from George Street to Neilson Street.

Two-way exclusive transit operation on Bishop Street would require that the street between George and Neilson Streets be closed entirely to vehicular traffic.

Alternative #3: George Street and Neilson Street, One-way Pair

Alternative #3 derives from the "one-way pair" option previously described. As such, it assumes that an exclusive right-of-way transit lane will be provided on the west side of George Street running southbound. In addition, the remaining lane on George Street would operate with one-way vehicular traffic in the same direction. Under this alternative, the southbound lane of the Concept Alignment crosses Commercial Avenue at George Street and may require a shared use lane for a short distance before entering the Douglass Campus at Bishop Street. Further detailed study is needed to determine if George Street between Commercial Avenue and Bishop Street can be incrementally widened to accommodate two-way vehicular traffic and an exclusive right-of-way transit lane.

Under this alternative, the northbound lane of the Concept Alignment would utilize the Bishop Street right-of-way as it exits Douglass Campus from George Street. Crossing Commercial Avenue at Neilson Street would require the installation of a new traffic signal. Preliminary analysis indicates that there is adequate turning radius to accommodate movement of an articulated transit vehicle from George Street onto Bishop Street. As previously described, Bishop Street is approximately 27 feet wide, its low volume traffic flow is restricted to one-way from George Street to Neilson Street and across Commercial Avenue, and it has on-street parking, housing along its north side, and Douglass College buildings and a parking lot on the south side. One-way exclusive transit operation on Bishop Street would permit the street to remain open to one-way vehicular traffic. On-street parking would be eliminated.

Southeast Segment

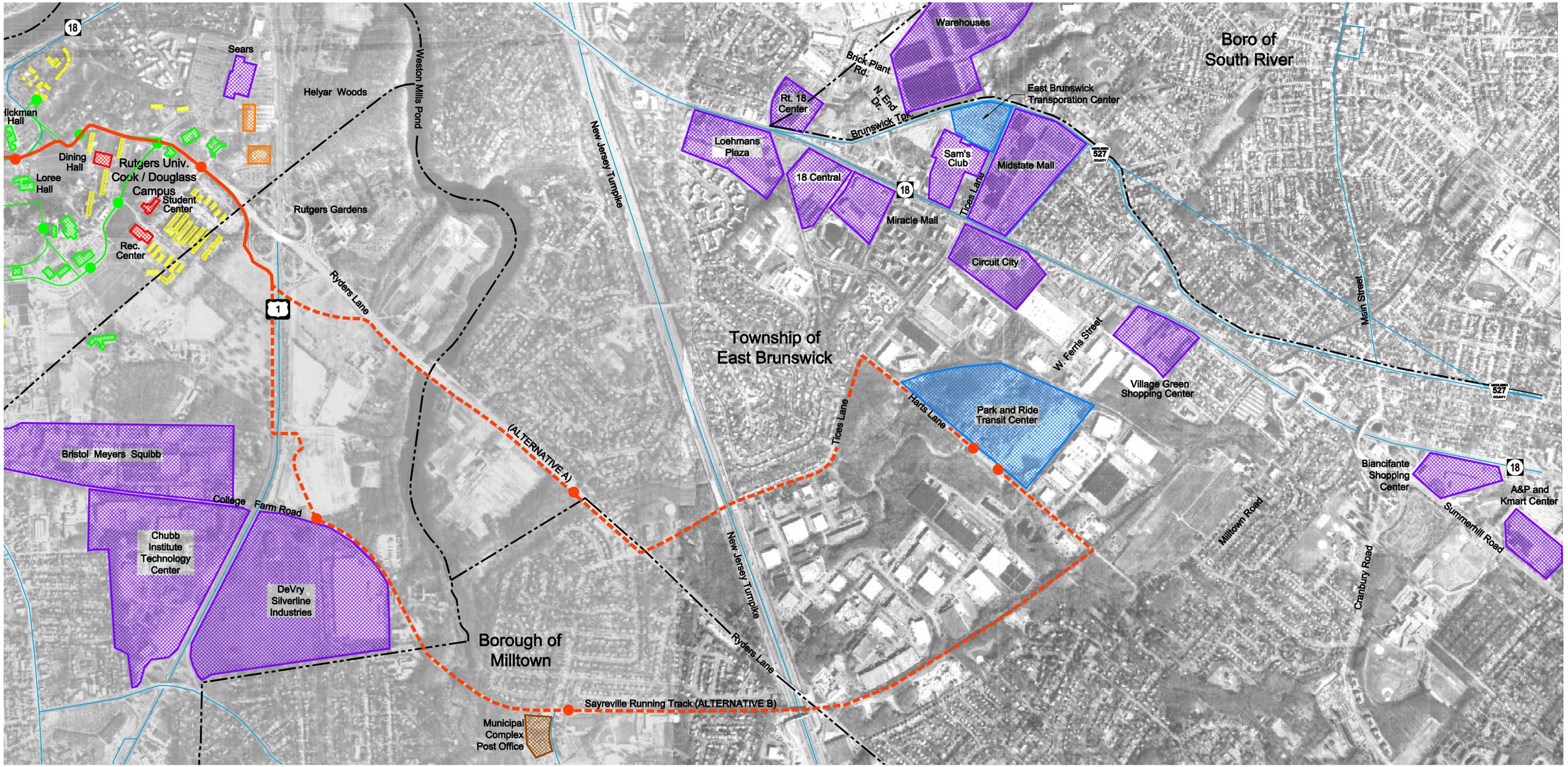
The Southeast Segment of the Concept Alignment, depicted in Figure 15, will be anchored by a new multi-modal transportation center and park & ride terminal facility in the Harts Lane industrial district located in East Brunswick Township. The transportation center is intended to replace the existing East Brunswick Transportation Center presently located on Tices Lane, so that this valuable property can be redeveloped. . The facility is intended to intercept riders traveling from Route 18 and points south and east that wish to use the proposed transit system to access employment, shopping, government, healthcare and University destinations throughout the greater New Brunswick area. It would also serve as a staging area for interstate buses bound for New York City. For the purpose of this study, it was assumed that access to the proposed transportation center could be provided through an improved intersection/interchange at the intersection of Route 18 and West Ferris Street. This would allow potential riders to access the system prior to reaching the most congested segment of Route 18. In addition, in order to effectively distribute riders using the transit system to employment and retail destinations along the Route 18 commercial corridor, it was assumed that a jitney service could be implemented. Further study is needed to determine the exact location of the terminus and park & ride facility.

Between the Rutgers University Cook Campus (south of Route 1) and the Harts Lane area of East Brunswick this segment covers portions of North Brunswick Township, Milltown Borough, and East Brunswick Township. Given an identified system terminus on Harts Lane in East Brunswick, two potential alignments emerged as promising. Alternative A uses a portion of the Sayreville Running Track freight rail line right-of-way running through Milltown Borough. Alternative B uses a portion of the Ryders Lane and Tices Lane right-of-way. Both alternatives assume single track/BRT lane operation from Route 1 to the terminal station and have similar ridership characteristics. Each alternative is described in more detail below.

Alternative A: Sayreville Running Track Right-of-Way

The first alternative investigated utilizes a portion of the Sayreville Running Track freight rail right-of-way, owned by Conrail Shared Assets. To access this right-of-way the Concept Alignment proceeds in a southerly direction along the west side of Route 1 to a point close to the existing College Farm Road underpass in North Brunswick. Initially, it was contemplated that the Concept Alignment could pass under Route 1 in this area via the existing College Farm Road underpass, which presently includes the existing rail line passage; however, upon further investigation, it appears that the current NJDOT plans for addressing deficiencies at the College Farm Road interchange will preclude the use this option. For the purpose of this study, it was assumed that a new crossing of Route 1 in this area will be required and is feasible. Further study is needed to determine the appropriate location for this crossing.

After crossing Route 1, the Concept Alignment joins the Sayreville Running Track right-of-way, passes through Milltown Borough and connects with the Harts Lane industrial district in East Brunswick. This alternative includes a proposed park & ride stop in the vicinity of DeVry College in North Brunswick (that could intercept travelers heading



LEGEND:

Building / Area Designations:

- Rutgers Activity Centers: Student Centers, Recreation Centers, Libraries, Dining Halls
- Rutgers Student Housing
- Rutgers Academic Halls
- Rutgers Adminstration
- Corporate / Hotel / Commerical / Industrial
- Hospitals
- Parking Lots
- Municipal / Public

Transit Routes:

- Analysis Alignment
- Alternative Analysis Alignments
- Existing New Jersey Transit Bus Routes
- Existing Rutgers Bus Route
- Town Lines
- Proposed LRT / BRT Stop
- Existing Rutgers Bus Stop

CONCEPTUAL ANALYSIS ALIGNMENT
(Southeast Segment)

GREATER NEW BRUNSWICK
AREA CORRIDOR STUDY

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Figure 15

north on Route 1) and a stop in the vicinity of the Milltown Borough municipal complex on Washington Road.

The freight line currently supports a low level of freight activity to a limited number of clients.. For most of its length in this segment the Sayreville Running Track right-of-way is 66 feet wide, but contains only a single track. For this alternative, it was assumed that the existing right-of-way could be shared between freight users and the proposed transit system. This could be accomplished either through time-separation utilizing existing trackage or through physical separation by installing a new track/BRT lane for the transit system within the existing right-of-way.

Use of the Sayreville Running Track right-of-way would enable the system to: serve North Brunswick destinations such as DeVry College, Chubb Institute, Silver Line Industries and the Technology Centre of New Jersey; and connect to Harts Lane and the proposed new multi-modal transportation center, in East Brunswick, without requiring a new right-of-way. It also provides an opportunity to enhance transit access to and from Milltown Borough, which has density, land use and physical design characteristics that would support transit use. Finally, the proposed stop near the Borough's municipal complex on Washington Road could significantly enhance the redevelopment potential of the Borough-owned Michelin site.

The right-of-way passes nearby a residential area between Washington Road and the Turnpike in Milltown. Local elected officials from Milltown reacted negatively to this alignment. For the purposes of this preliminary feasibility study, it was r assumed that potential noise, safety and other impacts caused by the proposed transit system's proximity to residential areas could be effectively mitigated using appropriate design and engineering practices.

Alternative B: Ryders Lane/Tices Lane

The second alternative investigated utilizes portions of the Ryders Lane right-of-way and land adjacent to Ryders Lane and Tices Lane to access the Harts Lane industrial district. This alternative proceeds on the west side of Route 1, crosses Route 1 on an overpass south of the Ryders Lane interchange, and rejoins Ryders Lane east of Route 1 on its southern edge. The existing Ryders Lane right-of-way appears to be wide enough to accommodate a single-track exclusive transit right-of-way until it reaches a point approximately 100 feet north of the Tices Lane/Washington Road intersection. At that point, the right-of-way narrows, and additional land acquisition will be required to fit a single track exclusive right-of-way and the existing vehicular lanes. An additional stop is proposed in the vicinity of the Washington Road/Tices Lane intersection.

From this point, the Concept Alignment turns east onto the south side of Tices Lane (either at grade, over, or under Ryders Lane), and passes under the NJ Turnpike (using space within the existing underpass). In that segment it crosses entrances to numerous business and civic facilities and the edge of a municipal park. Across Tices Lane for some of this distance is a residential community Finally, it turns south again onto Harts Lane to its terminus at the proposed multimodal transit center.

The primary advantages of this alternative include: shorter travel distance (approximately one mile shorter), one less stop (cumulatively saving some running time), and fewer potential impacts on residential neighborhoods in Borough of Milltown. Disadvantages include: the need to take more land on Ryders and Tices Lanes, as well as Township of East Brunswick park land located at the corner of Tices Lane and Harts Lane, to build an additional bridge to cross over Westons Mill Pond, to reconfigure entrances along Tices Lane, and to be proximate to residences across the road, in East Brunswick Township.

Clearly, additional analysis and l community outreach should be pursued as part of future studies to achieve consensus on an alternative in this segment.

Chapter 3: Ridership

Introduction

The final component of this study was to forecast the potential ridership that a fixed guideway transit system in the greater New Brunswick Area might attract. In part, the feasibility of the proposed fixed guideway transit system is dependent on the ridership attracted to the system. In addition, financial support for planning, constructing and operating the proposed system will be allocated from scarce resources. The higher the forecast ridership, the greater the competitive justification there will be for investing in the proposed system. Ridership forecasts for the proposed fixed guideway transit system were based upon the characteristics of the Concept Alignment described in Chapter 2.

Market Segmentation

It is clear that a number of markets will be served by the proposed system. Since characteristics of each market may be unique, market segmentation is used to identify and characterize each market segment that may be served. Potential markets in the greater New Brunswick area include:

- **Regional travelers accessing destinations outside of the greater New Brunswick Area** – The proposed system could serve Middlesex County residents and residents from neighboring counties traveling by automobile or express bus service to New York, Newark and Trenton. Travelers might be diverted to Northeast Corridor rail service if access to the NEC is improved via a new fixed guideway transit system serving close-in areas and park-and-ride facilities near I-287, Route 18 and Route 1.
- **Local travelers accessing greater New Brunswick area activity centers** – Similarly, the system could serve travelers from close-in areas who, because of travel time savings, may be induced to use the system to access area employment destinations, Rutgers University activity centers, government offices, and regional healthcare facilities throughout the greater New Brunswick area. A sizable portion of the downtown New Brunswick and Rutgers University commuters reside in areas proximate to the Concept Alignment. ,
- **Regional travelers accessing greater New Brunswick area activity centers** – The proposed system could serve regional travelers accessing employment and other activity centers in the greater New Brunswick area. Travelers with access to the NEC rail line at their point of origin could be induced to use the NEC rail line because the proposed exclusive fixed guideway system will offer a convenient and efficient means of traveling from the New Brunswick rail station to their destination. In addition, other regional automobile travelers may be induced to use the system via park & ride facilities near I-287, Route 18, and Route 1.
- **Non-work travelers** – The proposed system could provide a convenient and efficient alternative to the automobile for travelers making noontime, evening and weekend trips to shopping, recreation and cultural destinations throughout the greater New

Brunswick area. Some of the destinations include New Brunswick's Theatre Row and the Rutgers University sports facilities (Rutgers Stadium and RAC) in Piscataway.

- **Rutgers University intra- and inter-campus travelers** - A significant number of Rutgers University students, faculty and staff make several trips per day within and between campuses. In addition to travel between classes, trips are made for recreation, extracurricular activities, library visits, work, meals, and other purposes. Approximately 84% of Rutgers students visit two campuses per day, and 45% visit three or more campuses per day. The current daily travel on the campus bus system is on the order of 43,500 riders per day. The proposed system could be used to serve a significant portion of this market. In addition, since it is currently difficult to accomplish intercampus travel in the twenty minutes allotted between class periods, and parking availability is limited, latent un-served demand for intercampus travel is likely.

Methodology

Year 2020 ridership levels were estimated using various methods, as appropriate to each market segment.

- The New Jersey Transit Demand Forecasting Model (NJTDFM) was used to estimate baseline year 2020 no-build conditions. The NJTDFM provided information on longer distance regional and work travel, reflecting current and future regional demographic characteristics and reflecting proposed future changes to the regional transit network.
- Sketch-planning methods were used to reflect and detail specific access options and conditions, university-related travel, local area work travel, and non-work travel demands, which are not represented fully within the NJTDFM.
- Common input data were incorporated for both models to the level of detail appropriate for each. These inputs included demographics, roadway and transit service characteristics, unit cost data, and impedance coefficients.

More detailed descriptions of each methodology follow.

New Jersey Transit Demand Forecasting Model

The New Jersey Transit Demand Forecasting Model (NJTDFM) was applied to estimate the regional demand forecasts associated with the 2020 no-build and build alternatives. The NJTDFM is a comprehensive transportation model that includes a full complement of transit options in the mode choice routine, including the ability to evaluate light rail or express bus service. The Concept Alignment was coded to reflect its physical characteristics (stations, access modes, and connections to other modes) and operating characteristics (headways, run times, and fares). The local expertise of the Steering Committee, university staff, and other stakeholders helped define the specific localized characteristics of each segment.

With the assistance of the Steering Committee, quality control measures were applied to assure accuracy of the future no build transportation system and operations, as briefly described below:

- Within the study corridor and the immediate area, highway networks were reviewed to assure the inclusion of committed improvements for the target year. NJDOT and Middlesex County were consulted on what improvements were appropriate for inclusion;
- The future year transit network was reviewed with New Jersey Transit staff to assure the inclusion of expected transit service changes. These included the Secaucus Transfer and other North Jersey rail improvements, rail projects elsewhere in the State, and associated revisions to line and feeder bus service related to these rail service enhancements. The expected levels of parking supply to support these services were also reflected in the model networks;
- Zonal activity data reflected the latest accepted forecasts, utilizing the recent North Jersey Transportation Planning Authority (NJTPA) / New York Metropolitan Transportation Council (NYMTC) projections, and reflecting local allocations from county to municipal or lower levels. Within the study corridor, the project Steering Committee supplied known information on development proposals and their status, particularly within New Brunswick; and
- Model coefficients reflective of light rail and bus rapid transit were used for model analyses.

Sketch Planning Procedures

The sketch planning process utilized in this study reflects the techniques used by NJ Transit for similar investigations. This process provided for a detailed numerical examination of the effect of access conditions and market segmentation on operational design and estimated ridership.

The basis for this process is a logit-based mode share model in spreadsheet format. The model applies coefficients from sources such as the New Jersey Transit Demand Model to components of in-vehicle travel time (auto and transit), out-of-vehicle walk and wait time, cost (transit and auto), and income level. The coefficients allow for summation and comparison of travel impedance for trips by auto and transit, to compute the expected percent mode shares for the trip.

In addition, the model procedures require the assessment of the proposed Concept Alignment's market coverage, including identifying the origins and destinations for different types of station access (e.g., bicycle/pedestrian, automobile park & ride, passenger drop off and shuttle bus). Other factors evaluated include schedule time versus work or class schedules, and proportions of tract or zone residents or employees within specified distances to origin and destination stations or bus stops.

Therefore, the model considers all of the primary factors related to cost or travel time, including the impact of transfers, use of various access modes, parking costs, and headways. It also allows for adjustments to account for geographic and other market penetration factors.

The calculations are structured to first consider transit in-vehicle time by trip segment; then each segment of walk and wait time is detailed. Travel costs elements are then considered for each segment of the auto and competing transit mode trip. Auto mode in-vehicle and out of vehicle cost and time elements are then calculated. Applying appropriate impedance coefficients to each of the previously listed elements allows for a logit-based determination of preliminary mode shift percentages. Adjustments are then made for time availability (schedule time versus work or class start times), access at each end of the trip (walk distance, for example), and related factors. The calculated mode share percentage is then applied to the total available trip market, yielding the expected ridership.

System Operation

Since ridership estimation is dependent on stop location, travel time, headway and other operational characteristics of the proposed system, a preliminary operational analysis of the Concept Alignment was performed. Stop locations were chosen to serve centers of activity as identified by stakeholders, providing maximum coverage consistent with acceptable walk distances.

Travel time is dependent on maximum allowable speed by section, acceleration/deceleration/transition rates, station dwell time, and traffic signal delay. Travel times between each station in the system were computed, considering each of these factors. Figure 16 illustrates the estimated travel times that the Concept Alignment transit system would provide from New Brunswick center to each stop in the system. Since the Concept Alignment operates in shared traffic in only a limited number of locations, the exclusive right-of-way operation affords considerable time savings over existing travel modes. Notably for Rutgers students, all intercampus trips can be completed within the allocated twenty-minute class change time. Total travel time over the ten mile Concept Alignment is just under 26 minutes.

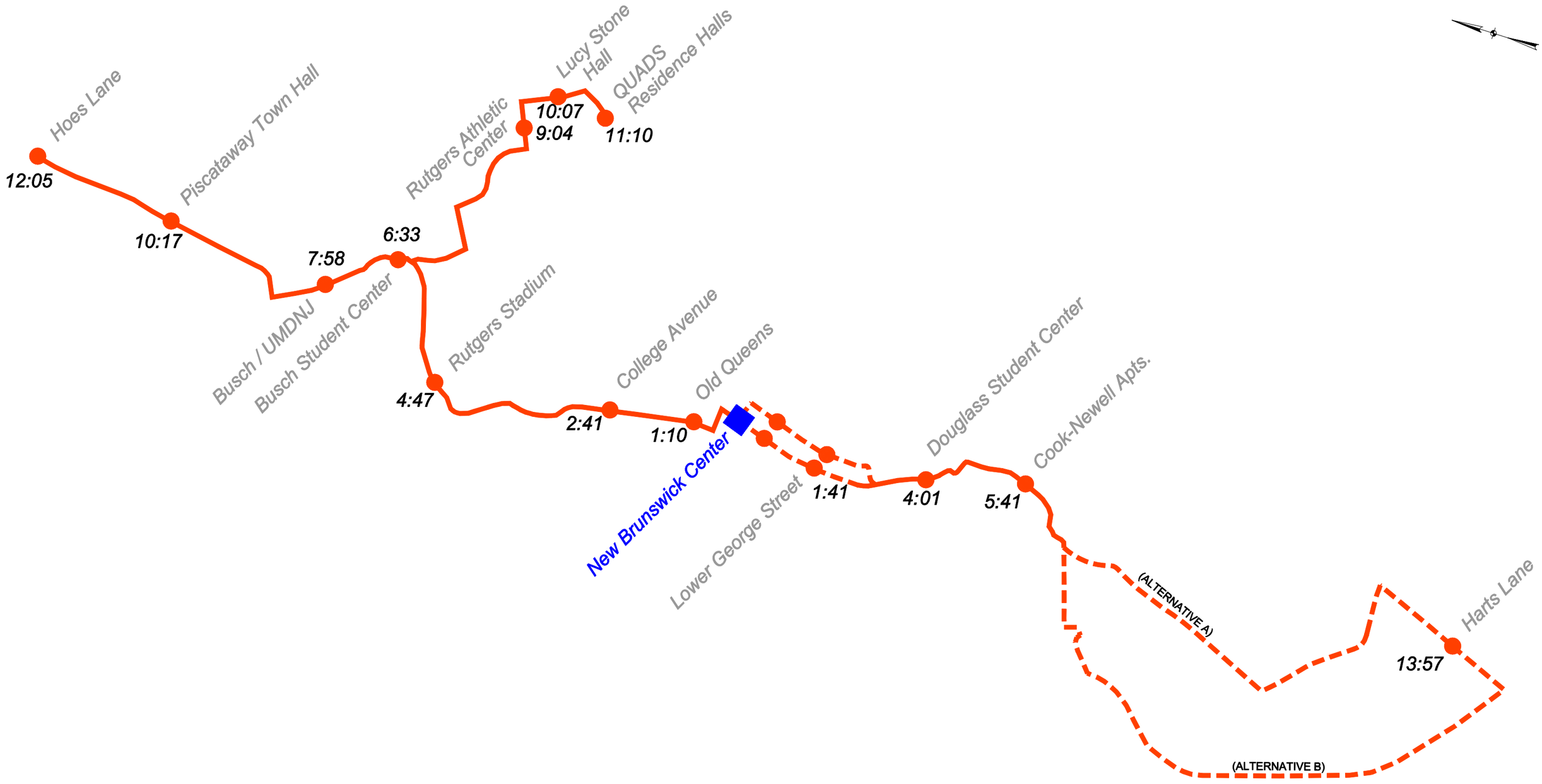
For purposes of this analysis, headway of three minutes on the primary system, and six minutes on the northern and southern branches, was assumed. Turn-back operations can be employed to maintain these headways to suit differential market usage throughout the day.

Analysis and Findings

The analysis methods previously described were applied as appropriate to each identified market segment to determine year 2020 daily ridership for the Concept Alignment. The following is a brief summary of the approach used and the findings for each market segment:

Regional Trips

The NJTDFM was coded and applied to represent the transportation system for the year 2020 without the fixed guideway system. For the Build condition, in addition to coding



CONCEPTUAL ANALYSIS ALIGNMENT
(Estimated Travel Times)

GREATER NEW BRUNSWICK
AREA CORRIDOR STUDY

Legend:

0:00 Travel Time (minutes) from New Brunswick Center

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Figure 16

in the proposed fixed guideway system and associated access links, four park-and-ride locations were also assumed:

- A proposed multi-modal transportation center on Harts Lane in Each Brunswick. This facility serves as the system's southeast terminus.
- A proposed park and ride facility located on Route 1 in the vicinity of the Sears Department Store or DeVry College;
- The existing commuter parking lot located adjacent to the Rutgers Athletic Center on the Rutgers University's Livingston campus; and
- A proposed park & ride shared parking facility in the vicinity of I-287 near Hoes Lane-Centennial Avenue-Knightsbridge Road in Piscataway Township. This facility serves as the system's northwest terminus.
- Due to the coarse nature of the network and zone system, the NJTDFM primarily focused on diversion from express bus or auto to the Northeast Corridor rail service for longer distance trips. To a lesser extent, regional trips to and from New Brunswick were diverted from other modes. The model predicted that a total of 1,900 daily person trips would use the proposed system.

Local Employment Trips

Since the coarseness of the regional model may not allow for proper representation of shorter trips to local area employment destinations, the consultant team reviewed detailed origin and destination data provided by St. Peters University Hospital; employee trip productions by distance supplied by Rutgers University; and origin / destination data supplied by Robert Wood Johnson University Hospital. These data revealed that a high proportion of employee trips come from close-in locations. Further, these data show that approximately 30% of employees are located in close proximity to three potential park and ride corridors: Route 18 from the east, Route 1 from the south, and Route 287 from the northwest and northeast.

Current total employment in New Brunswick is approximately 25,000 employees, including approximately 8,000 Rutgers employees. Assuming a modest growth rate and some known development, it was estimated that total employment for the year 2020 could be expected to be approximately 30,000 employees. Thirty percent (30%) or 9,000 of these employees could be expected to reside in the park and ride tributary areas.

Travel times from New Brunswick center to each park and ride by highway at loaded network speeds were compared with fixed guideway travel times to the same locations. The following results were seen:

▪ I-287 park and ride:	14:07 highway	12:05 transit
▪ Livingston park and ride:	10:53 highway	9:04 transit
▪ Harts Lane park and ride:	20:23 highway	13:57 transit
▪ Route 1 park and ride:	7:43 highway	8:48 transit

Using the tributary employment and comparative travel times in the sketch planning procedure, it was estimated that 3,400 daily trips might use the proposed system from park and ride locations to close-in New Brunswick employment sites.

Local Circulation Trips

The availability of an attractive and efficient fixed guideway transit service frequently stimulates business and social activities in its immediate vicinity. This is especially true in locations such as downtown New Brunswick, with its business, governmental, cultural facility, and student presence. This increased activity, in turn, generates system ridership. Increased housing opportunities near downtown will also generate ridership, as will diversions from local public buses. It was estimated that this local circulation activity will generate 1,700 daily trips.

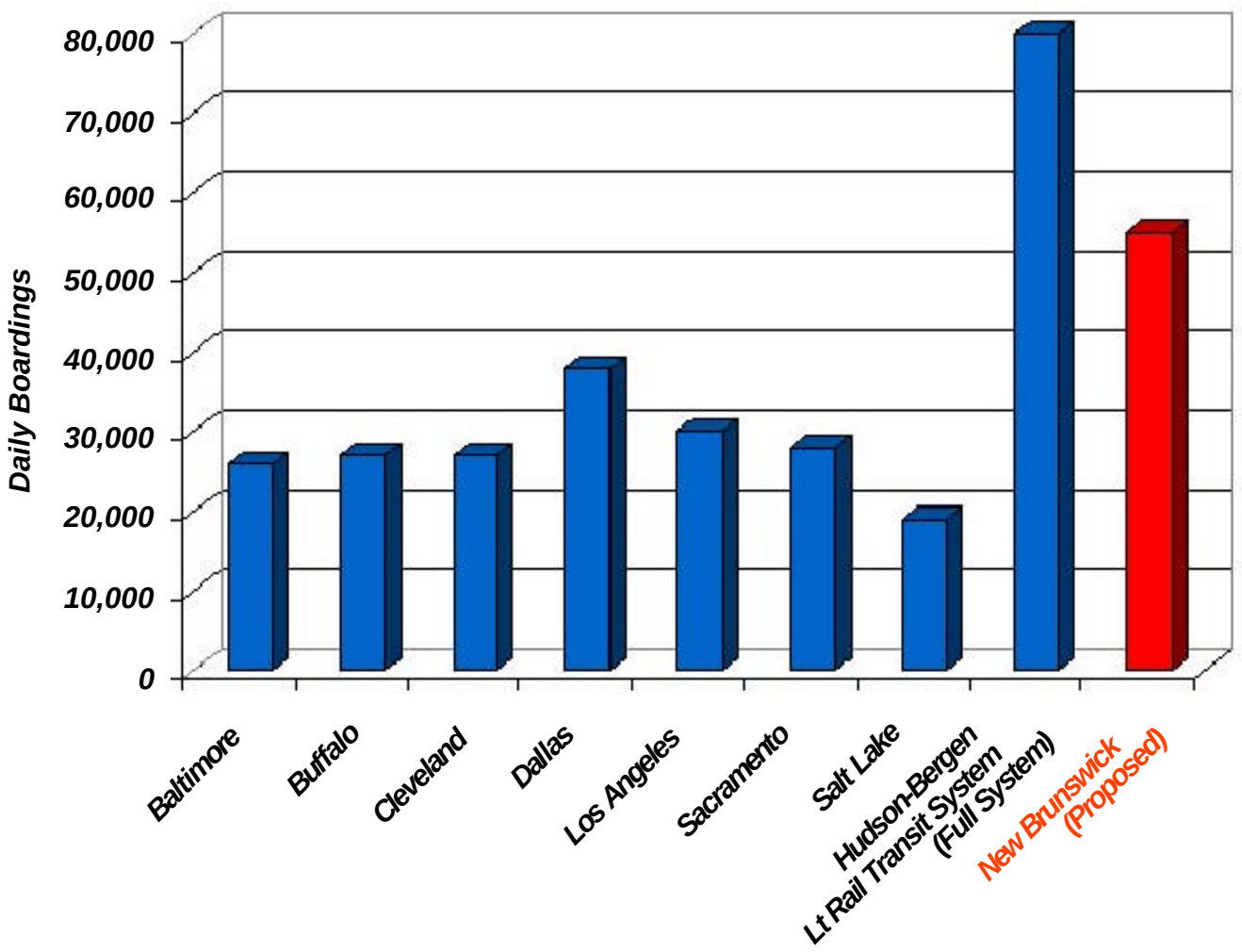
Rutgers Inter- and Intra-Campus Travel

Rutgers University intra- and inter-campus travel was identified as a key market segment. The Rutgers bus system consists of ten routes, running on a seven to twelve minute headway. In 1998, the system carried 43,500 trips on the average weekday. The consultant team reviewed information related to University-related travel patterns, including the numbers of residents and employees by campus; class enrollment by time of day; daily bus ridership by route, and concentration of class enrollment by major buildings. Given that the level of intercampus movement is likely to increase over time due to increased campus interdependence and enrollment and that the proposed system may increase the overall level of transit usage because of enhanced efficiency, a ten percent growth in student travel was assumed. Therefore, ridership attributable to Rutgers University travel was conservatively estimated at 48,000 daily boardings.

Total Ridership

As described above, analytical procedures developed by New Jersey Transit were applied to identified market segments for the proposed fixed guideway system. The resulting forecast for year 2020 daily ridership is 55,000 daily boardings. Figure 17 provides a comparison of expected ridership with seven other light rail systems currently in operation in the United States. The proposed Greater New Brunswick system is projected to carry between one and a half to three times the actual current ridership on each of these operating systems. Thus, despite being 10 miles in length as opposed to 15 to 38 miles in length for the comparison systems, the proposed system will carry in general more than double the daily ridership of each of these systems. Also for comparison, the proposed 10-mile system will carry about two-thirds the projected full build ridership of the 23-mile Hudson/Bergen Light Rail Transit system currently in operation and under construction.

It is also interesting to note that the ridership analysis revealed a unique time distribution for the expected boardings. An examination of the time distribution of boardings throughout the day showed that work-related travel occurred during traditional morning and afternoon peak periods; however, Rutgers ridership is almost evenly spread throughout the day. In addition, riders accessing the greater New Brunswick area's two major medical facilities and noontime and evening riders help to further even out



Daily Boardings for Existing LRT Systems

ridership levels throughout the day. This pattern will allow for more efficient use of transit equipment, because service to terminal park and ride facilities during peak period commute times can be increased, with correspondingly less service to Rutgers University destinations. This pattern can be reversed during late morning, mid-day and early afternoon to serve University related travel demand better. Consequently, equipment and operational requirements may be significantly less than the high ridership forecasts would at first indicate.

In summary, the ridership analysis demonstrates that the proposed system is feasible from the standpoint of total ridership. Further, the analysis demonstrates that the unique nature of the available markets to be served by the proposed system leads to a high degree of equipment utilization, and therefore efficiency and effectiveness, throughout the service day.

Chapter 4: Conclusions

The *Greater New Brunswick Area Corridor Study* feasibility analysis has shown that the development of a fixed-guideway transit system for the study corridor is physically feasible, operationally beneficial, and supported by projected ridership levels. The high level of local interest and support exhibited in the outreach program indicates that efforts should be undertaken to secure funding for the next phase of more detailed investigations. The following is a summary of key findings and conclusions:

1. Construction of a fixed guideway system is physically feasible.

This study has shown that a fixed guideway transit system is physically feasible to construct in the greater New Brunswick area. In fact, it was determined that it could be designed in a way that would permit the proposed system to be expanded beyond the 10-mile initial system to connect other areas of central New Jersey.

- **A crossing of the Northeast Corridor can be accomplished.**
  Utilization of the George Street underpass can be accomplished with minimal structural modification of the NEC bridge. This alignment provides for close access to the Northeast Corridor rail station, Johnson & Johnson World Headquarters and Robert Wood Johnson University Hospital, and also provides an entrance directly to New Brunswick's Central Business District.

- **Other design issues are manageable.**
  The study has demonstrated that crossing the Raritan River, Route 1, and the New Jersey Turnpike; traversing downtown New Brunswick; respecting the integrity of Rutgers University Campus settings and historic resources throughout the greater New Brunswick area; and locating an Operations, Maintenance, and Storage facility appear to be feasible from an engineering perspective. It is noted, however, that further detailed design investigations will be required in the next phase of system planning.

2. The proposed system is operationally beneficial.

Placement of a fixed guideway through the corridor can be accomplished with minimal shared roadway operation and minor impacts on street traffic and parking. . The system will offer significant travel time advantages to users.

- **Minimal need for shared roadway operation.**
  Exclusive right-of-way operation was found to be feasible throughout the study corridor, with the minor exception of three block-long segments in the downtown area. Required removal of street parking was also limited.

- **Significant travel time advantages for users.**
  Commuters and other travelers from the I-287 corridor, Route 1, and particularly Route 18, would be offered competitive or advantageous travel

times on the proposed system to locations within the study corridor. The system meets a primary operational goal of providing timely connectivity between various greater New Brunswick area activity centers as well as among the five Rutgers University campuses. Intercampus travel within the available twenty-minute class change interval would now be reliable.

3. Expected ridership levels support investment in the system

Diversion of travel from private auto or bus to the fixed guideway transit system is expected to benefit downtown New Brunswick, as well as area-wide travel. This more efficient and effective means of transportation is expected to be utilized by current commuters and students, and support broader opportunities for employment, commerce and recreation.

- **Beneficial to New Brunswick and to surrounding communities**
  Improved transit service to students, employees, and consumers traveling into and out of the greater New Brunswick area is an obvious benefit; however, another key to this project is the amount that it will benefit the surrounding communities. East Brunswick will benefit from a new multimodal transit center that would allow redevelopment of the existing East Brunswick Transportation Center. If the system were to use the existing rail line though Milltown, the Borough could be benefited by increased transit access and enhanced redevelopment potential. Piscataway would benefit from the availability of an alternative means of accessing Hoes Lane and Centennial Avenue employment destinations; and the ability of these corridors to attract further development would be enhanced.

- **Beneficial to Rutgers University**
  The current Rutgers University bus system ridership is approximately 43,500 trips daily, but the system is not reliable for movement between campuses during class intervals. In addition to capturing this ridership, transit usage is likely to increase with the more reliable campus connectivity offered by the proposed system. That same increased travel efficiency will also broaden Rutgers University's development and expansion options and improve overall access to its athletic facilities.

4. The project should be moved to the next level of development

To continue to the next phase of decision-making, further detailed studies must be completed, funding sources must be identified and secured, and consensus-building must continue.

- **Detailed studies**
  To progress the project, further detailed investigations are required in the areas of traffic impact analysis, environmental review, preliminary physical design, capital and operating cost estimates, modal selections, existing mass transit network usage, proposed system operations, and other refinements of the Concept Alignment identified in this study.

- **Funding**
  To support the next phase of decision-making, additional funding sources must be identified and secured. All sources need to be explored, including federal (Federal Transit Administration, North Jersey Transportation Planning Authority), state (NJDOT, Office of State Planning, New Jersey Transit, Rutgers University, etc.), local (Middlesex County and local jurisdictions), and private sources (major employers, such as Johnson & Johnson, Robert Wood Johnson Hospital, etc.).

- **Implementation**
  The completion of the required studies, obtaining of funding sources, further community outreach, and possibly the construction of this promising system should be advanced. A coalition of current and future stakeholders should be organized and sustained to promote the advancement of this fixed guideway transit system for the Greater New Brunswick Area.

Appendix A: Stakeholder Outreach Process

Two separate groups, working in close collaboration, guided the completion of the ***Greater New Brunswick Area Corridor Study***. The Steering Committee consisted of key client and consultant staff members, listed below. In addition, a Study Advisory Committee of key stakeholders was formed to provide the Steering Committee with input on issues important to the study. Outreach was effectuated through an initial Study Advisory Committee Kick-Off meeting, six individual stakeholder meetings, and a final Study Advisory Committee meeting. A summary of these meetings is presented below.

1. Steering Committee

The GNBACS was directed by a dedicated group of professionals who comprised the project steering committee. These individuals included:

Martin E. Robins, Director, Transportation Policy Institute
George Ververides, AICP/PP, Director of County Planning, Middlesex County
Jon A. Carnegie, AICP/PP, Senior Project Manager, Transportation Policy Institute
Anthony Gambilonghi, Supervising Planner, Transportation, Middlesex County
Josh Schneider, Graduate Assistant, Transportation Policy Institute

Consultant services were provided by the firms of Urbitran Associates, Inc., El Taller Collaborative, P.C. (ETC), and Michael Baker Jr., Inc.

Gary W. Davies, PE/PP, Principal-in-Charge
David W. Woods, AICP, Project Manager
Theodore F. Ehrlich, PE/PP, Chief Transportation Engineer
James J. Welsh, ASLA, Landscape Architect (ETC)

The Steering Committee met regularly throughout the project and worked closely with the project consultants to complete the study work program.

2. Study Advisory Committee Kick-Off Meeting

The initial meeting of the Study Advisory Committee was held on February 2, 2001 at the Middlesex County Planning Board Meeting Room in New Brunswick. The meeting was attended by:

Morteza Ansari, Keep Middlesex Moving, Inc.
Kerry Brown, City of New Brunswick
Mayor James Cahill, City of New Brunswick
Douglas Campbell, Robert Wood Johnson University Hospital
Jon Carnegie, Rutgers – Transportation Policy Institute
Peter Cantu, Keep Middlesex Moving, Inc.
Elaine Cooper, Rutgers – Parking and Transportation
Dawn Corcoran, Piscataway Township
Robert D'Abadie, Urbitran Associates, Inc.

Theodore Ehrlich, Urbitran Associates, Inc.
Alan Godber, Lawrence Brook Watershed Association (Milltown Borough)
Anthony Gambilonghi, Middlesex County Planning Department
William Krysiak, Johnson & Johnson
Paul Larrouse, Rutgers – National Transit Institute
Mayor William Neary, East Brunswick Township
James Redeker, NJ Transit
Martin Robins, Rutgers – Transportation Policy Institute
Joshua Schneider, Rutgers – Transportation Policy Institute
Robert Spear, Rutgers – Parking and Transportation
Diana Stager, Saint Peter's University Hospital
Al Tavares, NJ Department of Transportation
George Ververides, Middlesex County Planning Department
Frank Wong, Rutgers – Planning
David Woods, Urbitran Associates, Inc.

The meeting was intended to introduce the stakeholders to the study and solicit their input regarding initial concerns. Topics discussed at the meeting included: history and background of the study, study purpose, boundaries of the study area, the consultant selection process, introduction of the consultant team, project timeline/schedule and next steps.

3. INDIVIDUAL STAKEHOLDER MEETINGS

The February Study Advisory Committee meeting was followed by a series of individual stakeholder meetings with local officials, Rutgers University, and key New Brunswick stakeholders. On April 4th and 5th, 2001 the Steering Committee and project consultants met with officials from Rutgers University, the Township of Piscataway, the Township of East Brunswick, and the City of New Brunswick. The purpose of these meetings was to review aerial base maps, present a preliminary concept alignment for the proposed fixed guideway transit system, and discuss issues of critical concern. Since one of the alignment alternatives developed out of discussions at this initial round of meetings involved the Borough of Milltown, a follow-up meeting with Milltown officials was held on June 5, 2001.

The following is a brief summary of the five meetings:

RUTGERS UNIVERSITY

The Steering Committee and project consultants met with Frank Wong, Rutgers University Planner, and Robert Spear, Director of Transportation and Parking Facilities, for Rutgers. Aerial base maps were reviewed and suggestions were solicited for changes to the maps. Suggestions included: adding notations for existing commuter parking lots; and adding University housing and other University-owned property, such as the recently acquired office space (110,000 square feet) just south of the Sears Department Store on Route 1.

Mr. Wong and Mr. Spear suggested changes to the preliminary concept alignment to include a Livingston Campus link. Mr. Wong indicated that underutilized University property associated with the Livingston Campus could possibly be used for an maintenance/operations/storage yard. It was noted that this link could also serve the Rutgers Athletic Center and an adjacent commuter parking lot. The possible future extension of this link to serve the Edison train station on the NEC was also discussed.

In addition, future plans for Busch campus were discussed, including planned reconstruction of the Busch campus road network and new loop road around the academic core. It was agreed that future University-wide master planning efforts should consider incorporating the possibility of a future fixed guideway transit system serving the five New Brunswick area campuses. Finally, a consensus was reached on where proposed stops should be located on the Concept Alignment.

TOWNSHIP OF PISCATAWAY

The Steering Committee and project consultants met with Piscataway Township Mayor Brian Wahler, the Township's Acting Director of Community Development John Donnelly, and Assistant Planner Dawn Corcoran. Aerial base maps and the preliminary concept alignment were reviewed and discussed. Suggestions for changes to the base maps included: the identification of employers in the Hoes Lane and Centennial Avenue corridors, and specific identification of municipal facilities such as the Senior Center/Library Complex, and Town Hall Complex.

In addition, three alternative locations for terminating the proposed system were identified. All were within a very short distance of each other. Consensus was reached for two stops in Piscataway, including the terminus and one stop close to the Senior Center/Library/Town Hall area.

TOWNSHIP OF EAST BRUNSWICK

The Steering Committee and project consultants met with Township of East Brunswick Mayor William Neary, East Brunswick's Director of Planning and Engineering, Leslie McGowan, and Ed Cohen. Once again, aerial maps were reviewed and the preliminary concept alignment was discussed. Specific changes to the maps were suggested, including annotation of retail centers along Route 18. There was also an extended discussion regarding an appropriate terminus of the East Brunswick segment of the concept alignment.

East Brunswick officials suggested that an appropriate terminus might be the Harts Lane industrial district located west of Route 18 between Tices Lane and Milltown Road. They noted that there were a number of underutilized properties on Harts Lane and that a site could be identified to create a new multi-modal transit center linked to the proposed fixed guideway system. That would permit the Township to relocate the existing East Brunswick Transportation Center from its present location on Route 18 and Tices Lane, permitting redevelopment of the existing transportation center parcel. Furthermore, it was agreed that a new interchange should be considered to provide direct access to the Harts Lane transportation center from Route 18 via West Ferris Street.

CITY OF NEW BRUNSWICK

The Steering Committee and project consultants met with Thomas Loughlin, III, City Administrator, and Thomas Bogdan, City Zoning Officer. They identified items to be added to the base maps. Suggested changes included: identifying the boundary of the central business district, and other major destinations, such as the Cultural Center, theatres, and City Hall. They also suggested that the study team review site plans for the Matrix residential/commercial development, including garage access issues. They further suggested that the study team investigate the feasibility of splitting the transit right-of-way, in downtown, between George Street and Neilson Street. A subsequent meeting was held with Mayor James Cahill on June 19, 2001.

BOROUGH OF MILLTOWN

The Steering Committee and project consultants met with Middlesex County Freeholder Director David Crabiel, Milltown Mayor Gloria Bradford, and other members of the Borough staff. After a brief discussion about the proposed analysis alignment, they commented that they did not see any benefit to Milltown. In fact, they expressed concern that a Sayreville Running Track alignment would merely shift Route 18 problems to Milltown. Furthermore, they made clear their position that they would oppose any option that utilized the existing rail right-of-way in any form whatsoever. They expressed no objection to using the Ryders Lane/Tices Lane option instead of the rail line through Milltown.

4. NEW BRUNSWICK STAKEHOLDER MEETING

The Steering Committee and project consultants met with several New Brunswick area stakeholders on June 19, 2001. This meeting was attended William Krysiak (Johnson & Johnson); Robert Spear, Elaine Cooper, and Frank Wong (Rutgers University); and Kevin McTernan (Robert Wood Johnson University Hospital). A subsequent briefing was held with New Brunswick Mayor James Cahill. The purpose of the meeting was to review and discuss issues related to the technical feasibility of connecting the proposed transit system through downtown New Brunswick from College Avenue to the Douglass Campus. The meeting began with a screening of a thirteen-minute video depicting the operation of light rail transit and bus rapid transit in a city environment. This was followed by a presentation by the consultant team starting with a brief orientation to the study area, a system-wide overview of the Concept Alignment, and a summary of the key design and feasibility issues. The discussion utilized graphics developed by El Taller Colaborativo (ETC) in consultation with Urbitran that depicted the following three alternatives for traversing downtown:

Alternative #1:	George Street to the Douglass Campus, two-way transit;
Alternative #2:	Neilson Street to the Douglass Campus, two-way transit; and
Alternative #3:	A one-way pair using both George Street and Neilson Street from Albany Street to Bishop Street.

Of the three alternatives presented, the participants agreed that Alternative #3 was, at present, the most practical option.

5. Study Advisory Committee Validation Meeting

On June 25, 2001, the Study Advisory Committee met for a second and final time. Attendees included:

Morteza Ansari, Keep Middlesex Moving, Inc.
Mayor James Cahill, City of New Brunswick
Douglas Campbell, Robert Wood Johnson University Hospital
Jon Carnegie, Rutgers – Transportation Policy Institute
Elaine Cooper, Rutgers – Parking and Transportation
Ed Cohen, East Brunswick Township
Dawn Corcoran, Piscataway Township
Theodore Ehrlich, Urbitran Associates, Inc.
Anthony Gambilonghi, Middlesex County Planning Department
Ed Kozack, Rutgers University
Jack Kanarek, NJ Transit
William Krysiak, Johnson & Johnson
Paul Larrouse, Rutgers – National Transit Institute
Steve Manas, Rutgers University
Liz Marsten, North Jersey Transportation Planning Authority
Vincent Martino, Middlesex County Engineers Office
Bruce McCracken, Middlesex County Planning Department
Martin Robins, Rutgers – Transportation Policy Institute
Joshua Schneider, Rutgers – Transportation Policy Institute
Robert Spear, Rutgers – Parking and Transportation
Diana Stager, Saint Peter's University Hospital
Al Tavares, NJ Department of Transportation
George Ververides, Middlesex County Planning Department
Frank Wong, Rutgers – Planning
David Woods, Urbitran Associates, Inc.

The purpose of this meeting was to present the findings and conclusions of the study. After brief discussion, the participants agreed that the concept should advance to the next phase of investigation and that discussion be initiated with various parties to secure funding for further studies.

Appendix B: Press Coverage

The Greater New Brunswick Area Corridor Study was covered by a variety of media outlets. Most notable was coverage and Editorial Board endorsement by the Home News Tribune. Copies of these articles and editorial pages are attached for reference.

1.	Top speed for transit plan (commends the study as a beneficial step towards relieving traffic congestion in the New Brunswick area)	February 15, 2001
2.	Rail line study under way	May 5, 2000
3.	Rutgers transit link offers needed relief	May 11, 2000
4.	Transit system eyed in New Brunswick	May 13, 2000
5.	RU studies ways to east traffic tie-ups (editorial)	May 28, 2000
6.	Mass-transit future studied	June 26, 2001

In addition, the New Brunswick area radio station, WCTC (1450 AM) also provided news coverage of this study.

HOME NEWS TRIBUNE

THURSDAY, FEBRUARY 15, 2001 A GANNETT NEWSPAPER

CENTRAL NEW JERSEY'S VOICE SINCE 1879

OPINION

Top speed for transit plan

There's good news on the transit front. Rutgers University and Middlesex County are moving forward on a proposed light-rail or bus line linking the five university campuses with Route 18 in East Brunswick or South River and Interstate 287 in Piscataway — points east and west of the university where students could park cars, hop on mass transit and ride to classes.

The university and county have started mapping the project in consultation with area mayors, employers and civic organizations, and a new advisory committee will begin reviewing prospective routes.

The benefits of the plan are numerous: it gives Rutgers an efficient mass-transit link through all five campuses; a rail link would accommodate an estimated 26,000 riders who now use the intercampus bus system, a portion of which would remain in use; and thousands of cars that now use routes 1 and 18, River Road in Piscataway and Easton Avenue in New Brunswick would be removed from the roads.

Traffic-mired Central New Jersey needs the relief. So do Rutgers students, whose daily parking and transportation problems are the stuff of legend.

Rail line study under way

Officials plan to link I-287, Route 18

By FRANCES CARROLL and KATHLEEN HOPKINS
STAFF WRITERS

A dedicated light rail or bus transit system linking Interstate 287 with the five Rutgers University campuses in New Brunswick and Route 18 in South River will be the subject of a joint study this summer by Middlesex County and university planning officials.

The study will look at the feasibility of establishing an exclusive right-of-way transit system that could replace Rutgers' current student busing system and get thousands of area commuters out of their cars and off of Routes 18 and 1.

Such a system would link I-287 in Piscataway, New Brunswick's downtown business district, the city's five Rutgers campuses and Route 18 in the vicinity of East Brunswick and South River. It could involve the construction of a new bridge over the Raritan River and a tunnel under the Northeast Corridor rail line.

The county freeholders board last night authorized the study, which will be funded by a $120,000 federal grant through North Jersey Transportation Planning Authority and $30,000 in

See Link, Page A2

LIGHT RAIL ROUTE

Consultants will design a route that will:

- Start at I-287 near Centennial Avenue in Piscataway
- Proceed southeastward to Rutgers' Busch Campus
- Cross the Raritan River, possibly on a new bridge, to Rutgers' College Avenue Campus
- Proceed across (or tunnel under) Amtrak's Northeast Corridor Line to Albany Street
- Intersect Neilson Street and extend to Rutgers' Douglass and Cook college campuses
- And continue to Route 18 in East Brunswick and South River

Source: Martin Robins, director of the Transportation Policy Institute.

LINK

■ From Page A1

in-kind professional services by county staff and officials at the Transportation Policy Institute of the Edward J. Bloustein School of Public Policy and Planning at Rutgers.

The institute will be hiring consultants to determine a possible alignment for an exclusive right of way, said Martin Robins, director of the TPI.

A task force made up of representatives of the county, Rutgers, New Brunswick, Piscataway and East Brunswick will oversee the year-long study, said George Ververides, county planner.

In general, the consultants would be looking at a route that would travel southeast from I-287, near Centennial Avenue in Piscataway to Rutgers' Busch Campus, Robins said. From there, the route would cross the Raritan River, possibly on a new bridge, to Rutgers' College Avenue campus, he said.

The consultants then would have to identify how the route would cross the Northeast Corridor rail line and wind its way to Rutgers' Douglass and Cook colleges, said Robins. A possible way is to go under the existing Northeast Corridor railroad station in New Brunswick from College Avenue to Albany Street and then travel along Neilson Street to the Douglass and Cook campuses, he said.

From there, the consultants would have to pick a route to get to Route 18 in South River and East Brunswick, Robins said.

The route could involve widening existing roads and installing medians. It also could allow for vehicular traffic to cross the route, Robins said.

"Each location has to be analyzed to see if such a thing is feasible," he said. "This is the first effort to see whether or not it's worth going forward."

Another focus of the study would be ridership projections, which could help determine possible stops along the route, such as at the university's student center on College Avenue, said Jon Carnegie, senior project manager at TPI.

Staff writer Jake Stulwer contributed to this report.

HOME NEWS TRIBUNE

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THURSDAY, MAY 11, 2000

Rutgers transit link offers needed relief

Regional planning put to test

Rutgers University and Middlesex County know they must plan now or pay later.

The pair have become partners in a study of the feasibility of building a light-rail or bus system linking the five university campuses with Route 18 in East Brunswick and Interstate 287 in Piscataway — points east and west of the sprawling university where students could parkcars and take mass transit to classes.

The concept faces key hurdles, one being whether it's even physically possible to thread a new bus or rail line through densely built New Brunswick. In order to clear the way for a new bus or rail route, private property would have to be taken — possibly even buildings — and establishment of a clear right-of-way might be a prohibitive task.

A second issue is money, perhaps the largest difficulty. A study by the county in the 1970s concluded that a similar mono rail project through the city would be too expensive to build. Local funding could never cover the costs of planning and construction, and huge amounts of federal dollars would be required to make this undertaking happen.

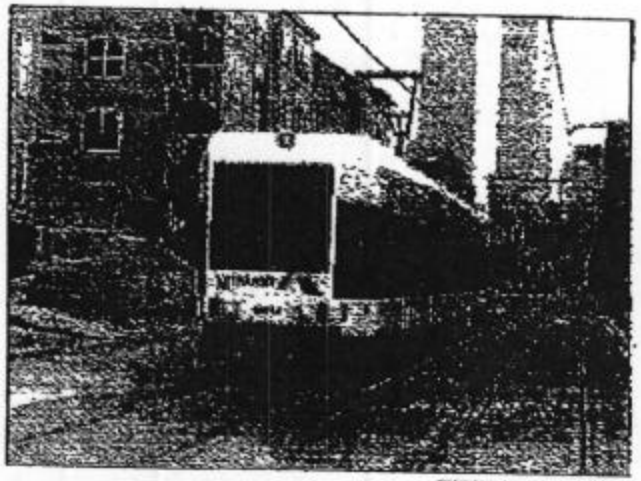
But if it can happen, the benefits are numerous.

For Rutgers University, there would be an efficient mass-transit link through all five campuses, even though a portion of the current inter-campus bus would remain in service. A rail link would accommodate an estimated 26,000 of riders who now use the intercampus bus system.

For the county and its residents, thousands of cars that now use routes 1 and 18, River Road in Piscataway and Easton Avenue in New Brunswick would be removed from the roadways.

The project is a chance to put true regional planning to the test. An advisory board of representatives from Rutgers, the county and the municipalities of East Brunswick, New Brunswick and Piscataway will oversee the study as it progresses. Should work go forward, the advisory panel would be vital in helping acquire the necessary town-by-town approvals.

In traffic-mired Central New Jersey, any plan that can ease congestion is a welcomed idea.



COURIER NEWS FILE PHOTO

A light rail system like the one in Jersey City, above, could be coming to New Brunswick and possibly Somerset County, if a study finds it feasible.

Transit system eyed in New Brunswick

By LARRY HIGGS
Staff Writer

NEW BRUNSWICK — With traffic turning the city into a knot of gridlock, Rutgers University and Middlesex County will study if building a light rail or bus line will make it easier to get around.

Depending on the outcome, that line could be extended into neighboring Somerset County.

Conceptually, a transit system could run between park-and-ride lots built off Route 287 in Piscataway and Route 18.

The line would travel through Piscataway and link the five Rutgers campuses served by the Rutgers bus and the New Brunswick train station, said Martin Robins, director of the Alan Voorhees Transportation Institute at Rutgers.

"The Rutgers bus system carries 40,000 people a day, 26,000 of them between those campuses," Robins said. "Buses are encountering street congestion and students wind up being late to class because they're stuck in traffic."

The study would look at two issues: where to build a private right-of-way for a light rail or bus line, and how many people could ride the system, Robins said.

The study won't estimate the cost of such a project or recommend rail or bus technology, he said. That will be the subject of future studies, if the line is found to be feasible.

See **TRANSIT** on page **D-2**

The Courier-News
Bridgewater, NJ
MAY 13 2000

Transit

From page **D-1**

Results could be known sometime next year, Robins said.

Somerset County officials have expressed interest in extending that line, if feasible.

The study is funded by a $120,000 grant from the North Jersey Transportation Planning Authority to hire a consultant. Middlesex County and Rutgers are contributing $30,000 in services.

County officials want to plan now in preparation for an explosion of redevelopment and new building pending in the city, said George Ververides, Middlesex County planning director.

"In the next five to 10 years, there will be a lot of redevelopment taking place that will be major generators of traffic," Ververides said. "This is the time to study to see how to accommodate it."

A similar study was done by the county in the 1970s, focusing on a monorail. That was ruled out because of cost, but the study led to the current Rutgers bus system, Ververides said.

"Last year, Rutgers approached the county seeking federal funding to revisit the corridor — where an exclusive bus or rail line could be accommodated," Ververides said.

A proposed line has some hurdles, such as where it would go under the busy NJ Transit/Amtrak Northeast Corridor Line and cross the Raritan River.

A light rail line could be similar to NJ Transit's Hudson-Bergen system, which is under construction. A segment between Bayonne and Jersey City opened in April.

HOME NEWS TRIBUNE

MAY 28, 2000 CENTRAL NEW JERSEY'S VOICE SINCE 1879 www.injersey.com/hnt • STORE

RU studies ways to ease traffic tie-ups

By FRANCES CARROLL
STAFF WRITER

As director of Rutgers University's parking and transportation services, Bob Spear has fielded his share of complaints over the years.

Most of the gripes come from students unhappy with crowded university buses that move too slowly on the congested local roads and highways between Rutgers' five New Brunswick campuses.

MIDDLESEX COUNTY

More than a few of those complaining — many of them past visitors to Disney World — have suggested the university build a monorail so students can zip from class to class, high above the hustle and bustle of vehicular traffic below, he said.

They're not the only ones. Some university officials and developers at the New Brunswick Development Corp. have toyed with the monorail idea for years.

Spear says he long had dismissed the notion as too unrealistic, until about two years ago when he began thinking that

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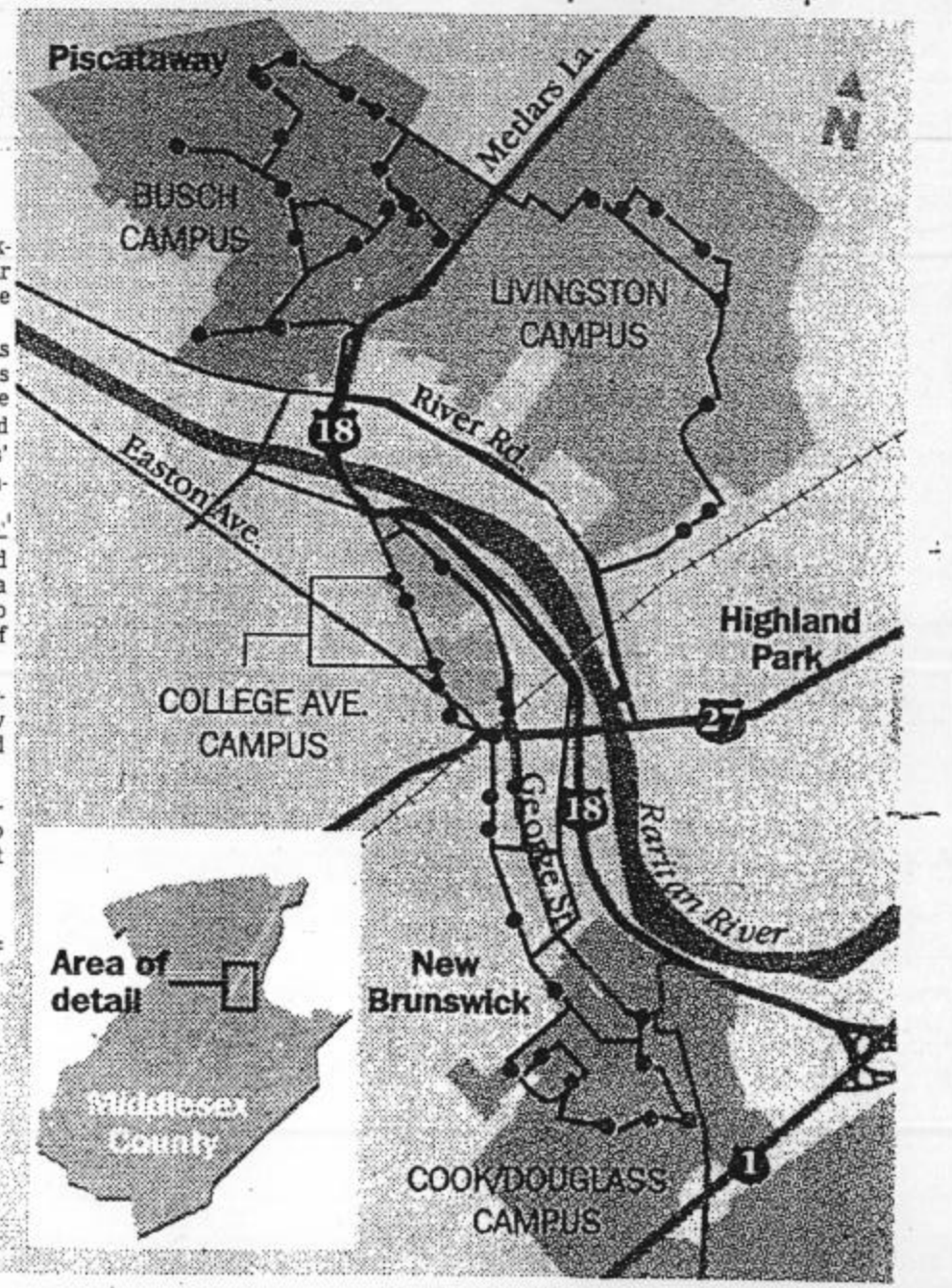
LIGHT RAIL? SHUTTLE BUSES?



DAWN PENDERGRASS/Staff artist

TRANSIT: Rutgers, county look to the future

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someone ought to look into it.

"My old story was it's too expensive, it's not going to happen," said Spear. "And one day I just said to myself I can't keep saying this. It's my responsibility and role to look into all possibilities, so I said let's find out."

He started searching for grant money, and last spring the North Jersey Transportation Planning Authority agreed to provide $120,000 to fund a study that will get under way this summer.

While the much-anticipated study by Middlesex County and university planning officials will look at the feasibility of establishing an exclusive right-of-way transit system that could replace Rutgers' existing busing system and get thousands of area commuters out of their cars and off routes 18 and 1, it's not expected to focus on monorails.

Nearly every planner involved agrees a monorail would be too expensive and is unrealistic. But a dedicated light rail or busway linking Interstate 287 in Piscataway with downtown New Brunswick, the five Rutgers' campuses and Route 18 in East Brunswick may be within the realm of possibility if a route can be identified, they say.

The upcoming yearlong study will not decide between a bus or light-rail system, officials said. That would be the focus of possible future studies once it is determined whether an exclusive right-of-way could be established.

Such a dedicated transit system would require transportation centers at either end so riders could park and leave their cars behind, said Middlesex County Planning Director George Ververides.

A park-and-ride would have to be created near I-287 on the northern end of the proposed route, he said. The existing East Brunswick Transportation Center at the Route 18 Market could serve as the park-and-ride on the southern end, he said.

In addition to stops at the Busch, Livingston, College Avenue, Cook and Douglass campuses, a new dedicated transit system also would likely stop at the train station on Albany Street in downtown New Brunswick, said Ververides.

Spear supports the concept of light rail, which was included in the university's 1998 Vision 2000 report that studied what a Rutgers campus in the 21st century might look like.

Local planners and developers say a light-rail system would be a big boost for employees and employers in the greater New Brunswick area in general and for the city's ongoing downtown revitalization efforts specifically.

But one of the largest beneficiaries of such a system might be Rutgers and its students. Area motorists who stick to their cars in turn would benefit from having the university's buses, and many students who now use their cars, off the main roads.

The Rutgers bus system is the second-largest bus system in the state behind New Jersey Transit. It carries about 45,000 students each day classes are in session, or about 6 million passengers each year.

Thirty-eight university buses on 10 routes are running at any one time Monday through Friday, said Spear. Rutgers contracts with Suburban Transit for about $4.5 million per year to provide the service.

Ridership increases when enrollment does and enrollment at Rutgers is higher than ever. Last year's incoming freshman class was one of the largest in over a decade.

The heaviest ridership on the buses is in between the six class periods throughout the day.

"So six times a day this bus system is challenged," said Spear. "Not only are they all pouring out of classes and getting on buses, but they're getting in their cars, which results in six rush hours a day in New Brunswick."

Students have complained about over-crowded buses and gridlock on the roads for making them late for class, but Spear has little sympathy for those consistently tardy, telling them to leave earlier for class and never schedule classes on different campuses back to back.

But the transportation problems have affected classes. Some professors routinely start class 10 minutes late to allow for late arrivals, and some students make a habit of leaving class 10 minutes early in an attempt to beat the rush to the buses, he said.

Some students opt to stick with their cars because the bus system is so crowded and sometimes slow due to traffic, although the university does what it can - through restricting the number and location of parking permits - to discourage them, said Spear.

Establishing a faster and more efficient dedicated transit system would get even more students out of their cars and off local roads, and make it easier for them to get to class on time, he said.

"The past year I think (traffic) is getting worse," said Spear. "I think there are more cars on the road and certainly the roads of New Brunswick were not designed for this mass of traffic. If we could find a way to have a dedicated light rail or bus route, (students) would get out of their cars immediately and just zip unimpeded by traffic to the next campus."

Under such a scenario, Rutgers could replace its inter-campus bus system with a much smaller shuttle system that would carry students between the light rail and the academic buildings, he said.

If the study determines an exclusive mass transit right-of-way can be established in the area, it would take at least another 10 to 15 years before it could open for business, said Spear.

The most opportune time to try to secure the necessary rights-of-way may be as the state Department of Transportation undertakes major road improvement projects - the Route 18 extension from the John Lynch Memorial Bridge to Interstate 287 and the Route 1 widening between route 18 and 27, said Spear.

But those long-awaited projects are slated to start this fall and in 2003, respectively, and the state is not likely to delay them for the light-rail proposal, he said.

The university is counting on those two Route 18 projects for relief, he said.

Local officials support the light-rail proposal in theory.

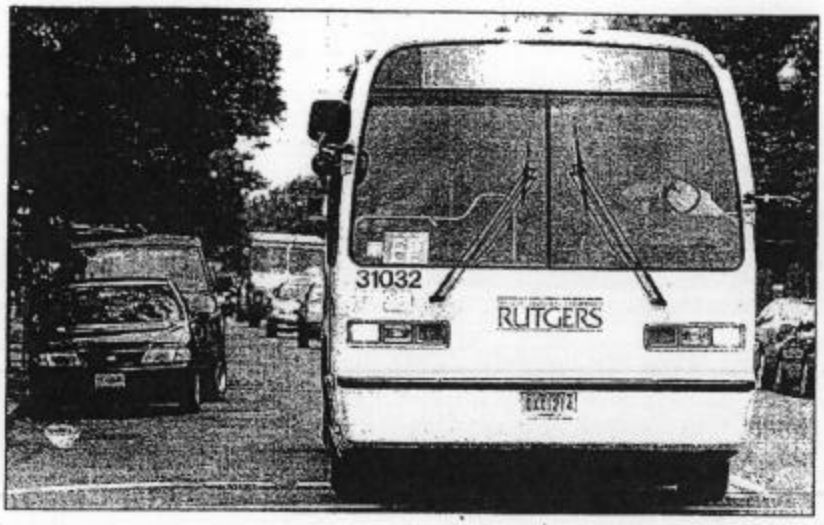
"Light rail would be a very good thing, very healthy for the local economy," said Glenn Patterson, New Brunswick's planning director.

"Right now, where people want to develop the most is around the (New Brunswick) train station. For New Brunswick to continue to grow, you have to get people in and out of town. Everybody needs to start thinking about the alternatives because there's only so many cars you can get on 287, 1, 18 and the Turnpike."

A light rail would benefit projects such as the New Brunswick Development Corp.'s planned 16-story Heldrich Plaza on George Street by improving parking problems and access to the downtown, said DevCo President Christopher Paladino.

Employers and employees would save money on parking and developers would not have to build as many new parking garages in the downtown, freeing up space for other kinds of development, said Paladino.

Paladino said he'd want the light-rail system to have a stop at the Raritan River waterfront, where he envisions a high-speed ferry service eventually running up the Raritan River from New Brunswick to New York City.



JASON TOWLEN/Staff photographer

■ A Rutgers University bus makes its way along George Street in New Brunswick on Thursday. A new study is looking at alternative ways to get Rutgers students between campuses.

HOME NEWS TRIBUNE

TUESDAY, JUNE 26, 2001 A GANNETT NEWSPAPER

CENTRAL NEW JERSEY'S VOICE SINCE 1879

Mass-transit future studied

Light rail or buses may cross county

By SARAH GREENBLATT
STAFF WRITER

A study unveiled yesterday answered two questions that intrigue Rutgers University policy wonks and Middlesex County planners alike: It would be possible to build a mass-transit system linking Piscataway, New Brunswick and East Brunswick. And such a system would be heavily used.

The study outlined a hypothetical right-of-way for a light-rail or rapid-transit bus system stretching from Route 287 in Piscataway to Harts Lane in East Brunswick, with connections along the way linking Rutgers' five campuses in Piscataway and New Brunswick.

The route would start at Hoes Lane in Piscataway, near a constellation of corporate offices and businesses along Centennial Avenue and Knights Bridge Road.

In downtown New Brunswick, the route would follow College Avenue, George and Nielson streets. One of several stops in the downtown area could be placed within a block of the NJ Transit train station, which could make the proposed system attractive to commuters who use the Northeast Corridor line.

To the south, the route would likely follow Ryders and Tices lanes to Harts Lane, where a new park-and-ride facility could be built for commuters.

An electric-powered light-rail system would follow tracks that could be built into the streets, while rapid-transit buses could run on a combination of gas, fuel cells and electricity in guideways placed within median strips or conventional traffic lanes.

The system would require construction of a new Raritan River crossing parallel to the John Lynch Bridge, which would not be able to accommodate a mass-transit guideway or rail line.

The potential cost of building such a

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The transit system would make it possible to go from Hoes Lane in Piscataway to Harts Lane in East Brunswick in 26 minutes.

A photo illustration shows what a proposed light-rail train on George Street might look like.
Courtesy of Urbitran Associates

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system has not yet been determined, said Gary Davies of Urbitran, the consulting firm hired by Rutgers' Transportation Policy Institute and the county to complete the study.

Davies said, however, that the rapid-transit buses would entail about one-third of the cost of a light-rail system.

Either type of system would reduce travel-time in the region, he said, adding that it would take about 26 minutes to get from Hoes Lane in Piscataway to Harts Lane in East Brunswick.

He projected that the transit system would attract a daily ridership of at least 55,000, including some 42,000 Rutgers students, faculty and staff members who now use campus buses.

While that projection would make the system one of the busiest of its kind in the nation, he said, ridership potentially could be much greater.

County Planning Director George Ververides said the system could play an important part in curbing traffic congestion that is expected to worsen as a result of economic growth in the region.

"This has tremendous, tremendous potential from a regional perspective," Ververides said, adding that the system could be expanded west and south into Somerset and Monmouth counties and east toward South Amboy and Perth Amboy.

New Brunswick Mayor Ja
Cahill said it is "high time
we all get moving in this d
tion."

Yet the project has yet t
tract any funding beyon
$150,000 federal grant that
for the study, TPI director I
tin Robins said.

Plans for the system ca
move forward unless fundin
secured for an environmer
impact study, Robins said.

The proposed system appe
on a list of projects identifiec
NJ Transit for possible deve
ment by 2020, but age
spokesman Michael Klufas s
many other projects are a
under consideration, some
which may get higher priorit

Robins said he hopes to bu
support for the project amc
decision-makers at Rutge
who could become advocates
the system. Rutgers could cc
mit funds to help operate
system, which would repl
the current network of camp
buses.

Rutgers Associate Vice Pre
dent for Auxiliary Services
ward Kozack praised the p
posal but said the study has
yet been reviewed by central
ministrators or the board
governors.

"I'm a believer in looking
new ways of transportation
the state of New Jersey,"
zack said. "I think we really h
a glimpse of the future in wl
they were showing us. New J
sey, with its density, really
to begin looking at systems l
light rail."

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