BURLINGTON / GLOUCESTER CORRIDOR ASSESSMENT

Definition of Alignments, Technologies and Preliminary Alternatives

Technical Report
Task 4

JUNE 1991

Prepared By

Delaware Valley Regional Planning Commission

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This report, prepared by the Transportation Planning Division of the Delaware Valley Regional Planning Commission, was financed in part by NJ TRANSIT, the U. S. Department of Transportation, the Urban Mass Transportation Administration, the Federal Highway Administration, and the Pennsylvania and New Jersey Departments of Transportation. The authors, however, are solely responsible for its finding and conclusions, which may not represent the official views or policies of the funding agencies.

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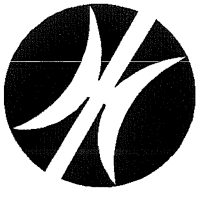

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DELAWARE VALLEY REGIONAL PLANNING COMMISSION

Publication Abstract

TITLE	
Burlington & Gloucester Corridor Assessment Study	**Date Published:** June 1991
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Geographic Area Covered:

Burlington, Camden, and Gloucester Counties in New Jersey
Philadelphia, Pennsylvania

Key Words:

Transit, Corridor Assessment, Alternatives, PATCO, Light Rail, Busway

ABSTRACT

This report discusses the proposed alignments, technologies and alternatives for the "Burlington & Gloucester Corridor Assessment" study, as developed through consultation with members of the study's Advisory Committee. The report is divided into three sections. Alignments provides descriptions of the physical alignments within each corridor. Technologies is a discussion of the various transit technologies considered appropriate to these corridors. Alternatives is an outline of the specific alternatives that will be analyzed, including the alignment, technology, generalized station locations and types (used only for system scaling purposes), and any special features or issues that must be addressed in the analysis of the alternative. Though these descriptions will form the basis for the Systems Analysis and Cost Estimation tasks of the study, it is expected that further enhancements will be made to the alternatives as the analyses proceed. In particular, the study team will seek to identify the most cost-effective line segments for each alternative through possible shortening of the lines or substitution of less expensive design requirements. The report provides the background necessary to understand the ridership and cost estimates that the consultants will be preparing. The objective of this study is to determine whether a major transit facility in either of these corridors could be cost-effective according to the criteria set by the Urban Mass Transportation Administration. This study will not define the final alternatives; that will be done during the more detailed Alternatives Analysis, if it can be shown that a major transit facility could be viable.

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I INTRODUCTION

The Burlington & Gloucester Corridor Assessment Study is a two phase effort encompassing surveys of the trans-Delaware travel market and a systems planning analysis of various transit alternatives between the Philadelphia and Camden central business districts and the counties of Burlington and Gloucester. This document summarizes the work of the study team and the Advisory Committee in defining the alternatives to be studied.

The systems planning phase of the study will determine if there are sound technical reasons, based on ridership projections and engineering cost estimates, to consider investing in a new transit facility in one or the other of these two corridors according to the criteria set by the Urban Mass Transportation Administration. To pursue such a determination, a set of reasonable alternatives have been developed which specify particular alignments and technologies. Certain aspects of the alternatives, such as station siting, remain generalized at this stage of the analysis. These items will of course be developed in greater detail during a full scale alternatives analysis that would be conducted if this study determines that one of the corridors could support a major transit facility.

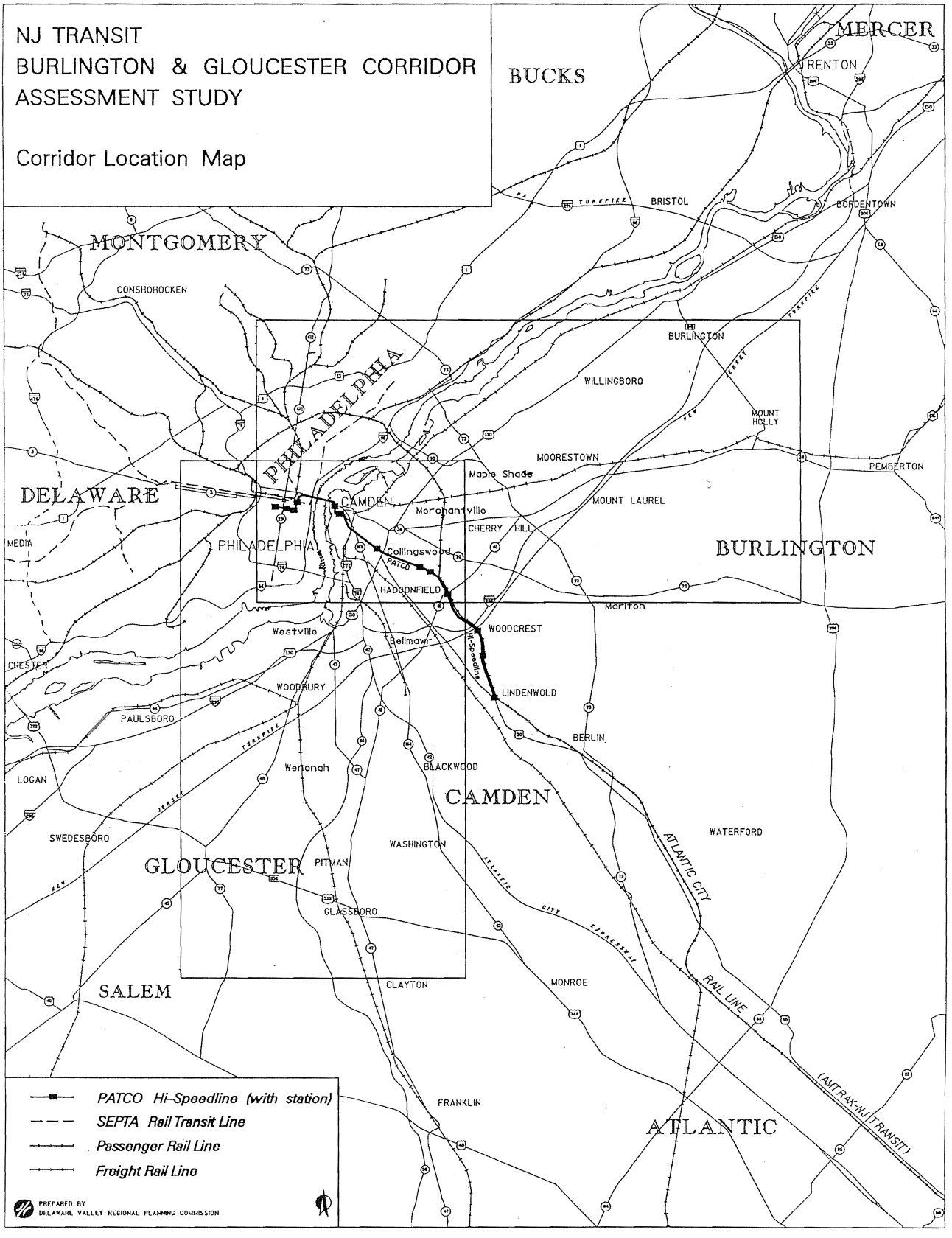
The report is divided into three sections: Alignments, Technologies, and Alternatives. *Alignments* provides descriptions of the physical alignments within each corridor that will be considered in the study. *Technologies* is a discussion of the various transit technologies that are considered appropriate to these corridors. Finally, *Alternatives* is an outline of the specific alternatives that will be analyzed. The description of each alternative identifies the alignment, technology, generalized station locations and types (used only for system scaling purposes), and any special features or issues that must be addressed in the analysis of the alternative. Though these descriptions will form the basis for the Systems Analysis and Cost Estimation tasks of the study, it is expected that further enhancements will be made to the alternatives as the analyses proceed. In particular, the study team will seek to identify the most cost-effective line segments for each alternative through possible shortening of the lines or substitution of less expensive design requirements.

II ALIGNMENTS

The two corridors are shown on the accompanying Study Location Map. Both corridors radiate out of the regional core which focuses on the central business districts of Philadelphia and Camden. The *Burlington Corridor* consists of the communities between Camden and Mount Holly, including Pennsauken, Merchantville, Maple Shade, Moorestown, Hainesport and Mount Laurel. The corridor is densely developed from Camden to Maple Shade, newly developing through Moorestown, Mount Laurel and Hainesport, and anchored by an older regional sub-center and county seat, Mount Holly. The *Gloucester Corridor* consists of the communities between Camden and Glassboro, including Gloucester City, Westville, West Deptford, Woodbury, Woodbury Heights, Deptford, Wenonah, Mantua and Pitman. This corridor is densily developed from Camden to Woodbury, newly developing through West Deptford, Deptford and Mantua, and anchored by the regional sub-center of Pitman-Glassboro and the State College.

The corridor alignments discussed below describe the rights-of-way that will be considered for the alternatives in this study. To develop a prudent investment, flexibility is required in setting the terminus points for the transit line. Lines that are too short may cost less to build but do not reach all of their potential market; lines that are too long waste limited funds. During the course of the study, the most cost-effective terminus point for each alternative will be determined. Therefore, the final description of any alternative may or may not span the entire corridor.

All or parts of both alignments are currently used for railroad freight service. Certain assumptions have been made concerning the joint use of the alignments by both a railroad and a transit operator. Sound engineering judgment and research of similar arrangements in other cities have been employed. This has been done so that the study can proceed. However, the actual procedure to handle the service of freight traffic in the corridor will eventually need to be negotiated with the freight operators, if and when a particular alternative is ready to be advanced.


NJ TRANSIT
BURLINGTON & GLOUCESTER CORRIDOR
ASSESSMENT STUDY
Corridor Location Map
BUCKS
MERCER
TRENTON
BRISTOL
BORDENTOWN
MONTGOMERY
CONSHOHOCKEN
PHILADELPHIA
BURLINGTON
WILLINGBORO
MOUNT HOLLY
MOORESTOWN
PEMBERTON
Maple Shade
DELAWARE
CAMDEN
Merchantville
MOUNT LAUREL
CHERRY HILL
MEDIA
PHILADELPHIA
Collingswood
PATCO
BURLINGTON
HADDONFIELD
Marlton
Westville
Bellmawr
WOODCREST
Hi-Speedline
CHESTER
WOODBURY
LINDENWOLD
PAULSBORO
BERLIN
Wenonah
BLACKWOOD
LOGAN
CAMDEN
SWEDESBORO
WASHINGTON
WATERFORD
GLOUCESTER
PITMAN
ATLANTIC CITY
GLASSBORO
CLAYTON
MONROE
SALEM
RAIL LINE
(AMTRAK-NJ TRANSIT)
FRANKLIN
ATLANTIC
PATCO Hi-Speedline (with station)
SEPTA Rail Transit Line
Passenger Rail Line
Freight Rail Line
PREPARED BY
DELAWARE VALLEY REGIONAL PLANNING COMMISSION

Burlington Corridor

The alignment for the Burlington Corridor utilizes the Pemberton Industrial Track rail freight right-of-way, presently owned by NJ TRANSIT and operated by Conrail. This right-of-way runs from a point east of Broadway Station in Camden City, northeast through the Pavonia rail yard and continues east through Merchantville, across NJ 73 at Maple Shade and on to Mount Holly. The right-of-way is 50 feet wide over most of its length, except through the Third Street section of Moorestown where it narrows to 15 feet. Most of this alignment is currently used for freight movements. However, the section from Pavonia Yard in Camden to Cove Road in Merchantville is unused, with tracks actually removed in Merchantville.

Because of the very narrow right-of-way in Moorestown, two alignments for continuing the corridor east beyond NJ 73 have been proposed. These alignments are shown on the Burlington Corridor Map and described below.

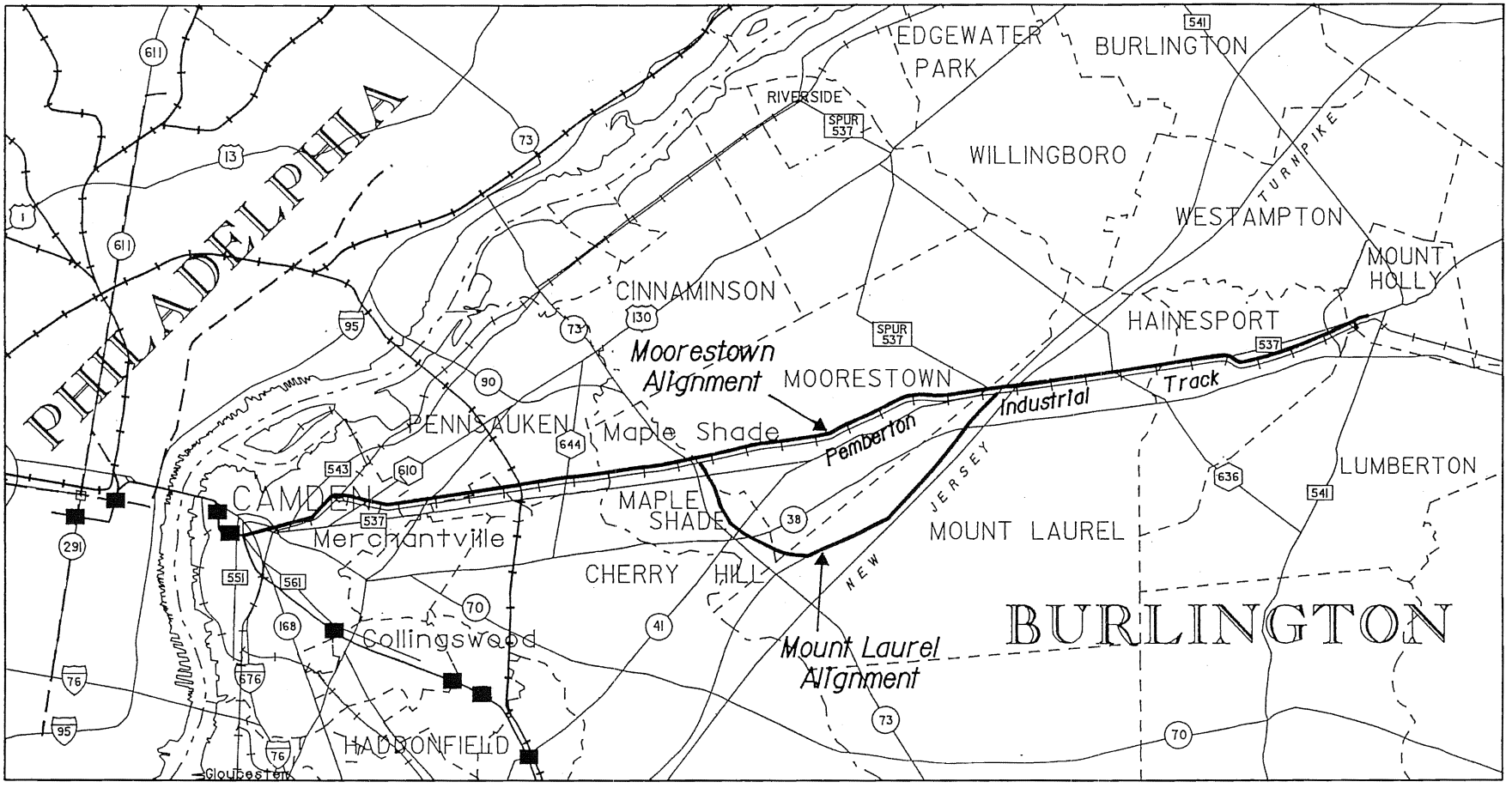
Camden - Moorestown - Mount Holly

This extension of the Burlington Corridor continues along the Pemberton Industrial Track through Moorestown to Mt Holly. Possible terminus points could be at/near NJ 73, at/near the interchange of I-295 and NJ 38, at/near the Route 541 bypass, or at/near Madison Avenue (the former Mount Holly train station).

For a non-rail technology, the use of parallel one-way roadways could be employed in areas where there is insufficient, easily obtainable right-of-way for a bi-directional facility, such as the Third Street section through Moorestown.

Camden - Mount Laurel - Mount Holly

This extension of the Burlington Corridor would branch off the Pemberton Industrial Track at NJ 73 and continue southeast along Pennsauken Creek in the same alignment as had been detailed in the 1975 DRPA studies (the once proposed extension of NJ 90 Freeway). The corridor would cross NJ 38 and Lenola Road, traverse the Moorestown Mall and the East Gate Center industrial park, enter the right-of-way of I-295 and run northeast to rejoin the Pemberton Industrial Track, and continue on the rail right-of-way to Mount Holly. Possible terminus points could be at the Moorestown Mall, at/near the interchange of I-295 and NJ 38, at/near the Route 541 bypass, or at/near Madison Avenue (the former Mount Holly train station).



Proposed Alignment
PATCO Hi-Speedline (with station)
SEPTA Rail Transit Line
Passenger Rail Line
Freight Rail Line

BURLINGTON AND GLOUCESTER CORRIDOR ASSESSMENT STUDY

Burlington Corridor

Gloucester Corridor

The alignment for the Gloucester Corridor utilizes the Vineland Secondary rail freight right-of-way, owned mostly by Conrail and partly by NJ TRANSIT. The alignment, referred to as the *Camden-Woodbury-Glassboro* alignment, is shown on the accompanying Gloucester Corridor Map and is discussed below.

It should be noted that the 1975 DRPA studies gave strong consideration to an additional alignment, the *Camden-NJ 55-Glassboro*[1] alignment, which envisioned running a transit line along the North-South (I-76/I-295/NJ 42) and NJ 55 freeways. That alignment is depicted on the map as a dashed line. However, because that alignment would require a large number of costly structures along I-76 and in recognition of the difficulties of such construction in that complex highway section, that alignment was removed from further consideration in this study.

Camden - Woodbury - Glassboro

This alignment for the Gloucester Corridor runs south from a point east of Broadway Station through Camden City and Woodbury to Glassboro. The right-of-way is 50 to 60 feet wide (two tracks originally) in Camden and 60 to 100 feet wide (originally three tracks) through the remainder of the corridor. This line is currently an active rail freight line, now operating on a single track within a two and three track right-of-way. Possible terminus points could be at/near the NJ Turnpike, at/near the interchange of NJ 55 and Route 553, or at/near University Boulevard (the former Glassboro train station).

Alternatives not merging into PATCO from the Gloucester Corridor would deviate from this alignment in the City of Camden by using either a section of abandoned railroad right-of-way that lies within 7th Street between Atlantic Avenue and Mickel Boulevard or by using the section of I-676 between Morgan Boulevard and Mickel Boulevard.

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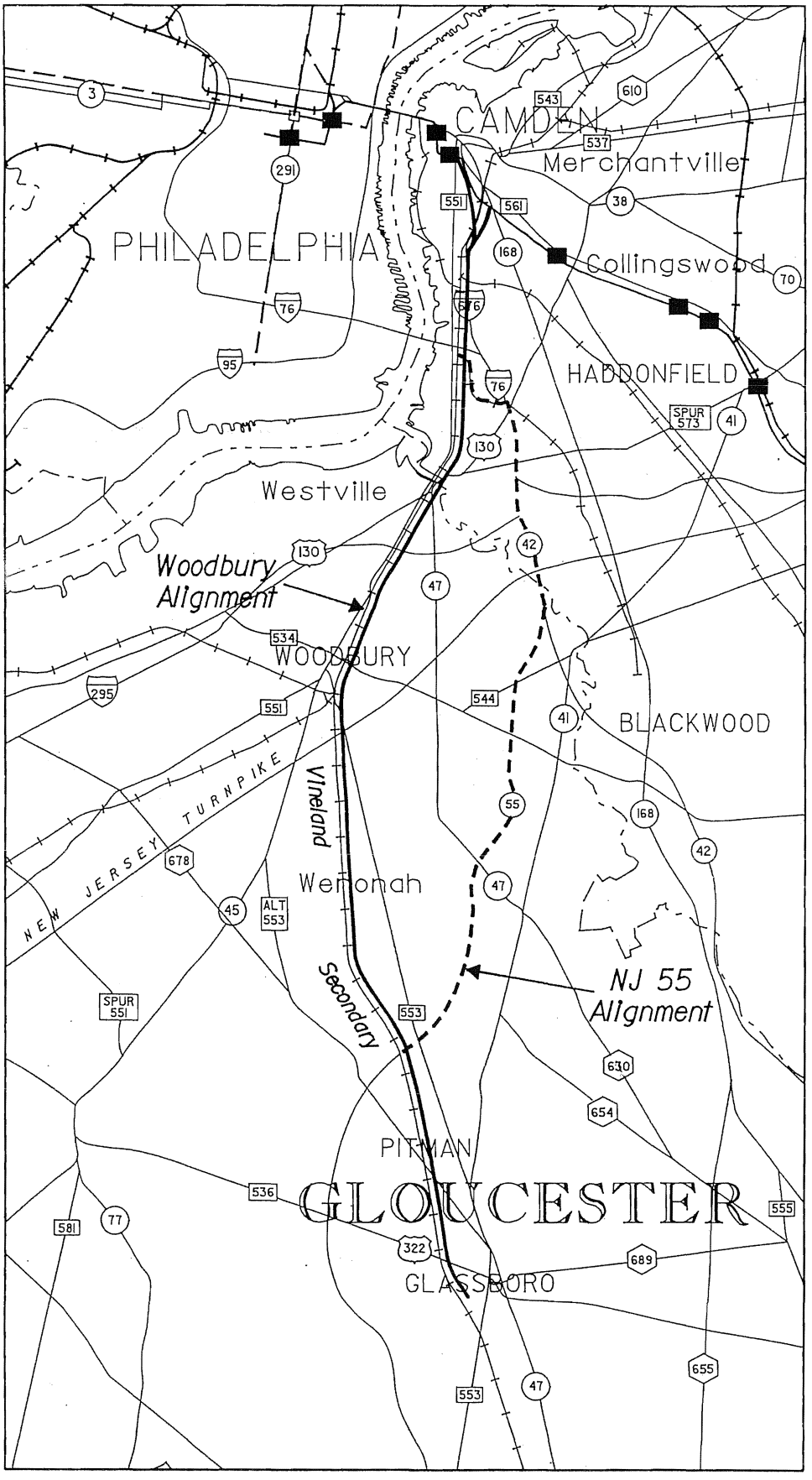
[1] The 1975 proposed Camden - NJ 55 - Glassboro alignment followed the Vineland Secondary railroad line south from Camden, then turned east near the Walt Whitman Bridge, entered and ran along the west side of the right-of-way of the North-South Freeway (I-76/I-295/NJ 42), turned south at the interchange with NJ 55 and continued in the median of NJ 55 to a point just beyond Route 553 where it rejoined the Vineland Secondary.



BURLINGTON AND GLOUCESTER CORRIDOR ASSESSMENT STUDY

Gloucester Corridor

Proposed Alignment

PATCO Hi-Speedline (with station)

SEPTA Rail Transit Line

Passenger Rail Line

Freight Rail Line

III TECHNOLOGIES

The following discussions describe the transit technologies that have been selected for study in both the Burlington and Gloucester corridors. Three technologies are presented: **Modified-PATCO, Light Rail Transit (LRT)**, and **Busway**. The first technology represents a scaled back version of the existing PATCO system, the second employes traditional light rail concepts with a transfer to the existing PATCO line, while the third considers the use of dedicated rights-of-way for buses.

Issues Needing Attention

Prior to describing the technologies, three related issues need to be addressed: the capacity of the PATCO system to handle the influx of new riders that would be generated by any branch or transfer feeder line; the freight service that currently operates on both of the proposed alignments; and, the structure of bus service under any alternative system.

PATCO Trunkline Capacity For either the Modified-PATCO or LRT technologies to be feasible, there must be sufficient capacity on the PATCO trunk line from Camden to Philadelphia to handle the combined demands of the existing Lindenwold Line and at least one branch or transfer line, when each is operating a schedule appropriate for its peak demand.

PATCO management and the engineering consultant have determined that sufficient peak capacity does in fact currently exist as a result of new signalling equipment installed by PATCO. Their calculations and actual field tests show that 24 six-car trains could be operated during the evening peak hour, the period in which 20% of the daily ridership must be carried in the peak direction, according to PATCO experience. This capacity would allow for a peak hour volume of 14,400 passengers (assuming 100 persons per car: load factor = 1.25) and a total daily ridership of 72,000 riders. PATCO's ridership has been holding in the range of 40,000 - 42,000 daily trips over the past decade.

Presently, PATCO operates a maximum of 16 trains in the peak hour. The capacity analysis indicates that there is sufficient capacity for 8 additional six-car trains. The analysis also shows that a combination of any Lindenwold Line ridership growth plus the ridership from a new branch or transfer line could add up to 30,000 daily new riders to the system with the present signal and operating system. PATCO officials also explained that since all station platforms have been lengthened to accommodate eight-car trains, there is additional reserve capacity to handle additional growth in ridership, if certain other changes to stations and operating procedures are made.

Rail Freight & Transit Line Joint Use of Right-of-Way Both alignments presently are used by freight railroads. In order to operate transit service on these alignments, provision must be made in the design of the passenger facility to accommodate the freight trains.

Where rail freight traffic is light, joint transit and freight operations over the same track will be designed into the alternative. It will be assumed that an agreement can be negotiated to limit freight operations to specific hours outside of the transit schedule, as has been done with Conrail and other railroads in other cities.

Where rail freight traffic is more frequent, the transit facility will be designed to operate on its own tracks adjacent to the railroad tracks, with appropriate clearances as required for freight operations.

The possibility exists that freight operations could cease on certain segments of the alignments being considered in this study by the time an Alternatives Analysis could be completed. If the accommodations for rail freight service could be eliminated from the transit facility design, certain expenses could be eliminated from both the construction and operating costs of an alternative. However, for the purposes of this study, it is assumed that rail freight service will continue at its present level.

Local Bus Service The discussions of technologies that follow focus on the characteristics of the new line-haul transit facility. Though the local bus service would need to be restructured if any alternative were actually implemented, that route-by-route analysis will be conducted by NJ TRANSIT under a separate study, when a viable alternative is selected and advanced. The Burlington & Gloucester Corridor Assessment Study will assume that the local bus service operates according to its existing structure, except for the Busway alternative where special busway services will be tested.

Modified-PATCO

This technology is a hybrid of PATCO and traditional light rail systems. The distinguishing features of this technology (as defined for this study) are the capability of through-service to Philadelphia, the dual power supply capability of the fleet used on the corridor branch, the inclusion of single- or gauntlet-tracked sections, and the allowance of at-grade crossings.

The cars used on the corridor will receive their power from a third rail when travelling along the trunkline portion of the existing system and from PATCO-compatable 750 volt DC overhead catenary lines along the branch. Trains will operate through-service from the corridor branch to Center City via a high-speed interlocking with the existing PATCO line located southeast of the Center Tower portal in Camden, having common stops with PATCO from Broadway to 16th Street Stations. Train lengths can vary from one to six cars, depending on demand.

The lines generally will be double-tracked, except for selected bridges, viaducts or extremely narrow sections of the right-of-way. For short bridge spans, gauntlet-tracks will be used to eliminate the need for and delay associated with switching between double and single tracked sections. Long single-tracked sections will only be considered as a last resort, cost-cutting option.

The right-of-way will feature gate controlled crossings of numerous highway intersections. Certain minor crossings will be eliminated, where feasible. Certain major crossings will be grade-separated to insure safety and schedule integrity. Where the Modified-PATCO line shares a right-of-way with a very light usage rail freight line, the operations will share the same track but will be separated by a time-of-day scheduling agreement. Where the Modified-PATCO line shares the right-of-way with a heavier usage rail freight line, the two lines will operate on completely separate tracks within the alignment.

Stations will consist of three types: park & ride (PR), suburban-town (S), and community walk-on (C). The park & ride stations will be located where appropriate in terms of land suitability and highway access. These stations will provide parking for 300 or more cars. The smaller suburban-town stations, providing access to a mix of park & ride and walk-on patrons, will be located as close to town centers as possible. A third category of station, Community Walk-On, will be located within the more dense town centers, with minimal parking and provision for kiss-and-ride, community shuttle bus and taxi drop-off and pick-up. All stations will feature high-level platforms to permit faster boarding and discharging of passengers.

Fare collection will be off-vehicle using the same equipment and procedures as the PATCO Lindenwold Line. Stations, therefore, will require at least a weather-protected enclosure for the electronic ticket machines and turnstiles, though other amenities should be included.

Car maintenance will be performed at the existing Lindenwold Shops, with enhancements to the physical plant and procedures to handle the fleet of modified cars. Line maintenance equipment and procedures will be modified to service overhead power lines on the branch.

Efforts to minimize system costs will focus on reducing the length of the line, the number and size of stations, the size of the fleet, service frequency, and the substitution of longer single-tracked sections and additional grade crossings.

Light Rail Transit (LRT)

This technology represents the more traditional light rail systems that are being implemented in numerous cities across the country. As applied to this study, the technology will be similar to the Modified-PATCO technology discussed above, except for the requirement of a transfer station to allow passengers to access the PATCO Lindenwold Line for service to Philadelphia; smaller, somewhat lighter cars with overhead current collection only; and, additional provisions for vehicle maintenance.

The light rail vehicles will acquire their power from overhead catenary wires along the entire length of the corridor. However, since there is no need for compatability with the PATCO system, the voltage in the overhead power lines will be either 600 or 750 volts DC. Trains will operate as a shuttle service between the outer end of the corridor line and a transfer station that will be built into the Camden Transportation Center (CTC). The CTC transfer station will be connected to the corridor by a section of track along Mickel Boulevard. All passengers desiring to continue on to Philadelphia will make a free transfer to PATCO trains at the CTC. This transfer will require a change of level within the CTC, but riders will proceed directly from the LRT platform to the PATCO platform. Since this is the maximum load point of the Lindenwold Line, PATCO will need to operate additional trains on its line to handle the passengers transferring from the shuttle line. These additional cars must be considered in the cost of the alternative.

As with the Modified-PATCO technology, the lines generally will be double-tracked, except for selected bridges, viaducts or extremely narrow sections of the right-of-way. For short bridge spans, gauntlet-tracks will be used to eliminate the need for and delay associated with switching between double and single tracked sections. Long single-tracked sections will only be considered as a last resort, cost-cutting option.

The right-of-way will feature gate controlled crossings of numerous highway intersections. Certain minor crossings will be eliminated, where feasible. Certain major crossings will be grade-separated to insure safety and schedule integrity. Where the LRT line shares a right-of-way with a very light usage rail freight line, the operations will share the same track but will be separated by a time-of-day scheduling agreement. Where the LRT line shares the right-of-way with a heavier usage rail freight line, the two lines will operate on completely separate tracks within the alignment.

Stations will consist of three types: park & ride (PR), suburban-town (S), and community walk-on (C). The park & ride stations will be located where appropriate in terms of land suitability and highway access. These stations will provide parking for 300 or more cars. The smaller suburban-town stations, providing access to a mix of park & ride and walk-on patrons, will be located as close to town centers as possible. A third category of station, Community Walk-On, will be located within the more dense town centers, with minimal parking and provision for kiss-and-ride, community shuttle bus and taxi drop-off and pick-up. All stations will feature high-level platforms to permit faster boarding and discharging of passengers.

Fare collection will be off-line using the same equipment and procedures as the PATCO Lindenwold Line. Stations, therefore, will require at least a weather-protected enclosure for the electronic ticket machines and turnstiles, though other amenities should be included.

A full maintenance facility will be constructed at a location along the branch line to perform both light duty and major repair maintenance.

Efforts to minimize system costs will focus on reducing the length of the line, the number and size of stations, the size of the fleet, service frequency, and the substitution of longer single-tracked sections and additional grade crossings.

Busway

This technology utilizes traditional bus equipment consisting of 45 passenger suburban buses and 70 passenger articulated buses. The distinguishing feature of the the Busway technology is a controlled access, bus-only right-of-way that allows a bus to by-pass the traffic congestion on the highway network, resulting in better travel times for bus users.

The Busway will be constructed at-grade along the railroad right-of-way with signalized (possibly pre-emptive) intersections with the highway network. Where there would be significant conflict with highway traffic, grade-separated sections will be constructed. The Busway generally will be constructed as a two-lane facility for its entire length. Single-lane operation will be considered for certain bridges. In such cases, special signals will be employed to insure safe operations. It is also possible to construct certain sections of the Busway as two one-way lanes divided from each other by developed land, if it was impossible to obtain sufficient right-of-way for a two-lane facility. Where the Busway operates along an operating section of a rail freight right-of-way, it will be physically separated from the rail freight line.

Buses using the Busway will operate as a trunkline service, making stops along the Busway to pickup and discharge passengers similar to a rail line. However, the flexibility of the Busway is that multiple routes serving a wide array of origins and destinations can utilize the facility as a means of bypassing congested sections of the highway network. In these cases, part of the route is operated on local streets for collection and distribution both before and after using the Busway. NJ TRANSIT will offer continuing-trip fares for those transferring between intersecting bus routes and the Busway trunkline route. All routes operating on the Busway will serve the Camden Transportation Center. All peak period express buses which use the Busway and trunkline service buses will continue on to Philadelphia via the Ben Franklin Bridge. All other routes will terminate at the CTC. For those wishing to transfer to the PATCO line, a coordinated fare will be provided.

Stations on the Busway will be designed to allow buses to pull out of the Busway travel lane to service passengers, permitting other buses to bypass the station if skip-stop or express service is operated. Stations on the Busway will be of two types: suburban-town (S) and community walk-on (C). The small suburban-town stations, providing access to a mix of park & ride and walk-on patrons, will be located as close to town centers as possible. Community Walk-On stations will be located within the more dense town centers, with minimal parking and provision for kiss-and-ride, community shuttle bus and taxi drop-off and pick-up.

Fare collection will be on-board the buses using the same equipment and procedures as the rest of the NJ TRANSIT bus system. Stations, therefore, will only require a passenger shelter area, though other amenities should be included. It is desirable that NJ TRANSIT

implement some form of off-vehicle ticket vending program at high demand locations to enable faster boarding of cash-fare passengers.

Bus maintenance will be performed by the existing NJ TRANSIT garages which service the routes using the Busway.

Efforts to minimize system costs will focus on reducing the length of the Busway, the number and size of stations, service frequency, and the elimination of grade separations.

Other Technologies Reviewed

A number of other technologies are often mentioned as appropriate for corridor transit lines. These include *monorail*, *maglev*, and *automated guideway transit (AGT)*. In certain applications, these technologies have been cost effective. However, each requires a fully grade separated right-of-way, entirely separate maintenance facilities and specialized training of personnel. Furthermore, these technologies are generally proprietary to a limited number of vendors, reducing the options of the operator to secure competitive prices. In the case of maglev, the technology is still in the developmental stage.

To support the ridership levels that could be expected from either the Burlington or Gloucester corridors, the construction costs for any of these systems would be substantial due to their grade separated design requirements. Each of these technologies also require grade-separated track structures into the Camden CBD, construction of a transfer station at the Camden Transportation Center, expansion of PATCO Lindenwold Line capacity, and a separate maintenance facility. Except for the grade-separated structures, these requirements are the same as those needed for the LRT.

For all these reasons, the study team has concluded that these innovative technologies should not be considered further in this study.

IV ALTERNATIVES

The alternatives to be considered in the Burlington & Gloucester Corridor Assessment study are defined in terms of the alignments and technologies presented in the preceeding discussions. Each alternative is based on one of the selected technologies functioning on a specific alignment. The alternatives are presented in outline form, identifying the alignment and the technology selected, the outer terminus point for the facility, the degree of grade-separation, the approach to handling freight service, any special features or considerations, and the stations on the line indicating their general locations and types.

The outer terminus point shown in the outline for an alternative is only preliminary. As the alternative is studied, the most cost-effective terminus will be identified. The degree of grade separation, a characteristic of the technology, is re-stated for clarity. Special features or considerations may indicate specific locations for grade separations or types of junctions.

Concerning the handling of freight service in the corridors, the specifications for the alternative include an assumption of how this can be accomplished based on engineering principles and experience in other cities. However, the actual procedure will need to be negotiated with the freight operators, if and when a particular alternative is ready to be advanced.

Station types are defined as follows for system planning purposes:

> Park & Ride These stations will provide large parking lots (300 or more spaces), generally located near state or county arterial highways and at some distance from any town center.
>
> Suburban Town These stations are smaller than the park & ride type stations, yet still provide a moderate amount of parking (50 - 300 spaces). They are located as close to a town center as possible and, therefore, permit a considerable degree of walk-on access from the community.
>
> Community Walk-On These stations are quite small and fit well into their community setting. With only a minimal amount of parking provided, these stations are accessed by walk-on and passenger drop-off from auto (kiss & ride), community shuttle bus services and taxis. They are located within the more dense town centers.

Three alternatives in each of the two corridors (a total of six) will be studied. Though many more combinations can be created from the alignments and technologies discussed, study resources will limit the total number of alternatives to six, as refined by the study Advisory Committee.

Station Types: PR = Park & Ride S = Suburban Town C = Community Walk-on

Burlington Corridor Alternatives

B-1 Modified-PATCO System

- Camden - Mount Laurel - Mount Holly alignment
- Terminus located at Mount Holly
- Through-service to Philadelphia
- At-grade crossings at most roads, some grade-separated
- Grade-separated junction with PATCO at Center Tower
- Use of gauntlet tracks on existing bridges, where feasible
- Car maintenance at Lindenwold Shops
- Joint operations with Conrail from Delair eastward
- PATCO-style fare collection

Stations located near	Station Type	Mile Post
Broadway (CTC)	(Existing)	0.0
Westfield Ave (East Camden)	(C)	2.5
Crescent Blvd (US 130 Pennsauken)	(PR)	3.1
Merchantville	(S)	4.4
Iron Rock (Pennsauken at Haddonfield Road)	(PR)	5.7
Maple Shade (NJ 73)	(PR)	7.4
Moorestown Mall	(C)	9.4
Mount Laurel (I-295/NJ 38)	(PR)	13.5
Rancocas	(PR)	16.9
Mt. Holly	(C)	20.4

Station Types: PR = Park & Ride S = Suburban Town C = Community Walk-on

Burlington Corridor Alternatives (continued)

B-2 Light Rail Transit (LRT) System

- Camden - Moorestown - Mount Holly alignment
- Terminus located at Mount Holly
- Transfer station at CTC for service to Philadelphia
- At-grade crossings at most roads, some grade-separated
- At-grade rail loop from LRT line through the CTC
- Use of gauntlet tracks on existing bridges, where feasible
- Car maintenance at new LRT facility along line
- Joint operations with Conrail from Delair eastward
- PATCO-style fare collection

Stations located near	Station Type	Mile Post
Broadway	(Transfer)	0.0
State Street (Camden)	(S)	1.9
Westfield Ave (East Camden)	(C)	2.5
Crescent Blvd (US 130 Pennsauken)	(PR)	3.1
Merchantville	(S)	4.4
Iron Rock (Pennsauken at Haddonfield Road)	(PR)	5.7
Maple Shade (NJ 73)	(PR)	7.4
Moorestown (village)	(C)	10.2
Mount Laurel (I-295/NJ 38)	(PR)	12.9
Rancocas	(PR)	14.7
Mt. Holly	(C)	18.2

Station Types: PR = Park & Ride S = Suburban Town C = Community Walk-on

Burlington Corridor Alternatives (continued)

B-3 Busway System

- Camden - Moorestown - Mount Holly alignment
- Outer terminus at Mt Holly
- Inner terminus at Camden Transportation Center (CTC)
- Trunkline plus long distance commuter service on Busway
- Trunkline and commuter route peak-period express service to Philadelphia
- Busway on separate roadway next to freight rail tracks
- Joint use of right-of-way with Conrail, segregated by time
- Vehicle maintenance by NJ TRANSIT
- NJ TRANSIT-style fare collection
- NJ TRANSIT Continuing-Trip & Coordinated PATCO fares offered

Stations located near	Station Type	Mile Post
Broadway (CTC)	(Existing)	0.0
State Street (Camden)	(C)	1.9
Westfield Ave (East Camden)	(C)	2.5
Crescent Blvd (US 130 Pennsauken)	(PR)	3.1
Merchantville	(S)	4.4
Iron Rock (Pennsauken at Haddonfield Road)	(PR)	5.7
Maple Shade (NJ 73)	(PR)	7.4
Moorestown (village)	(C)	10.2
Mount Laurel (I-295/NJ 381)	(PR)	12.9
Rancocas	(PR)	14.7
Mt. Holly	(C)	18.2

Station Types: PR = Park & Ride S = Suburban Town C = Community Walk-on

Gloucester Corridor Alternatives

G-1 Modified-PATCO System

- Camden - Glassboro alignment
- Through-service to Philadelphia
- At-grade crossings at most roads, some grade separated
- Grade-separated junction with PATCO between Chestnut Street and Pine Street in Camden
- Use of gauntlet tracks on existing bridges, where feasible
- Terminus at Glassboro
- Car maintenance at Lindenwold Shops
- Freight railroad on separate adjacent right-of-way
- Grade-separated crossing of Conrail at Clementon Branch
- PATCO-style fare collection

Stations located near	Station Type	Mile Post
Broadway	(Existing)	0.0
Morgan Blvd (South Camden)	(PR)	2.8
Gloucester City	(C)	4.6
Westville (I-295)	(PR)	7.5
Woodbury	(S)	9.0
Woodbury Hts	(S)	11.1
Wenonah	(S)	13.0
Mantua (NJ 55)	(PR)	15.0
Pitman	(C)	16.4
Glassboro	(PR)	18.7

Station Types: PR = Park & Ride S = Suburban Town C = Community Walk-on

Gloucester Corridor Alternatives (continued)

G-2 Light Rail Transit (LRT) System

- Camden - Glassboro alignment
- Terminus at Glassboro
- Transfer station at CTC for service to Philadelphia
- At-grade crossings at most roads, some grade separated
- At-grade rail loop from LRT line through the CTC
- Grade-separated crossing of Conrail and Morgan Boulevard
- Use of gauntlet tracks on existing bridges, where feasible
- Car maintenance at new LRT facility along line
- Operations fully segregated from Conrail from Camden to Woodbury
- Joint operations with Conrail south of Woodbury
- PATCO-style fare collection

Stations located near	Station Type	Mile Post
Broadway	(Transfer)	0.0
Kaighns Ave	(C)	1.4
Morgan Blvd	(PR)	2.8
Gloucester City	(C)	4.6
Westville	(PR)	7.5
Woodbury	(S)	9.0
Woodbury Hts	(S)	11.1
Wenonah	(S)	13.0
Mantua (NJ 55)	(PR)	15.0
Pitman	(C)	16.4
Glassboro	(PR)	18.7

Station Types: PR = Park & Ride S = Suburban Town C = Community Walk-on

Gloucester Corridor Alternatives (continued)

G-3 Busway System

- Camden - Glassboro alignment
- Outer terminus at Glassboro
- Inner terminus Camden Transportation Center (CTC)
- Trunkline plus long distance commuter service on Busway
- Trunkline and commuter route peak-period express service to Philadelphia
- Busway on separate roadway next to freight rail tracks
- Atlantic Ave to Mickel Boulevard on non-rail right-of-way
- Vehicle maintenance by NJ TRANSIT
- NJ TRANSIT-style fare collection
- NJ TRANSIT Continuing-Trip & Coordinated PATCO fares offered

Stations located near	Station Type	Mile Post
Broadway (CTC)	(Existing)	0.0
Kaighns Ave	(C)	1.4
Morgan Blvd	(PR)	2.8
Gloucester City	(C)	4.6
Westville	(PR)	7.5
Woodbury	(S)	9.0
Woodbury Hts.	(S)	11.1
Wenonah	(PR)	13.0
Mantua (NJ 55)	(PR)	15.0
Pitman	(C)	16.4
Glassboro	(PR)	18.7

Station Types: PR = Park & Ride S = Suburban Town C = Community Walk-on