

II. PURPOSE AND NEED FOR PROPOSED PROJECT

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A. Project History

The University Heights Connector project includes key elements of previous transportation programs proposed for the study area: the First Street Beautification Program; the Newark Route I-280 / Downtown Connector Study; and, the Newark Land Use and Economic Development Study.

The First Street Corridor Beautification proposal of 1991 called for a six-lane boulevard widened along the west side of First Street between Sussex Avenue and West Market Street. The project was viewed as both a short-term enhancement of connections between Route I-280 and the key arterials leading to the CBD (i.e., Central Avenue and West Market Street), and a long-term enhancement of the neighborhood entry and access to UMDNJ. Where appropriate, property acquisition would serve both short-term corridor and long-term Downtown Connector goals.

To address the need for improved accessibility and reduced diversions through residential neighborhoods, the New Jersey Department of Transportation (NJDOT) initiated a re-examination of the Route I-280 / Downtown Connector concepts approximately ten years ago. This study included a comprehensive review of land use, traffic, environmental concerns and the impacts associated with the development of a series of improvement measures to improve access to the Newark CBD and other corridors. A three-phased program of staged improvement measures was proposed upon the conclusion of this Concept Development Study:

- Phase 1 proposed the widening and reconfiguration of the abandoned Route I-280 and Route 75 interchange intersection at First Street. Morning peak hour congestion along the First Street intersections with Sussex Avenue and Orange Street would be eased by providing a bypass connection directly from the Route I-280 interchange to Sussex Avenue east of First Street. Evening peak operations would be enhanced by allowing direct access from First Street to Route I-280 westbound without requiring use of the existing Orange Street connection (which would remain in a reduced capacity). Phase I was constructed in 1997-98. Six vacant lots, that formerly included four residential structures at the southwest corner of Sussex Avenue and First Street, were acquired by NJDOT for the street widening to allow the improvements north of Sussex Avenue to operate effectively and are currently publicly owned.
- Phase 2 proposed the widening of the section of First Street extending south of Sussex Avenue to the intersection of West Market / Hartford / Bergen Streets. Utilizing information derived from the Route I-280 Downtown Connector Report, the NJDOT advanced a Feasibility Assessment Report (October 1998) for the First Street Widening Project. This Final Scope Development effort and the preparation of the accompanying Environmental Assessment Document represent a continuation of that Feasibility Assessment process. Further discussion of the Feasibility Assessment process, and how it was affected by other ongoing programs to result in an initial improvement recommendation, is provided below.

- Phase 3 recognizes that the Newark Central Business District will require long-term connections between Route I-280 and key north-south CBD corridors (i.e., Route 21/McCarter Highway, Broad Street, and/or University Avenue/Washington Street) or east-west corridors (Raymond Boulevard, West Market Street, Central Avenue and Orange Street). Phase 3 is outside the scope of this project.

Simultaneously, the City of Newark began a program of mobility planning and engineering aimed at improving the economic vitality and quality of life of the entire city, which culminated in the Draft Node Development and Transportation Plan. The study recognized the importance of the First Street widening project as an important component of this effort.

Two development proposals along the First Street corridor reflect the City of Newark's view that the project should proceed based on widening the west side of First Street rather than the east side before the improvement connects to Bergen Street, located south of the project corridor:

- Checkers Restaurant. Plans for the redevelopment of the east side of First Street between New Street and Hartford Street date to early 1994, when Burger Boys, Inc. prepared the first site plan for a new Checkers Restaurant. The initial site layout, dated May 27, 1994, included a new building oriented on an east-west axis, perpendicular to First Street. According to city records, this concept was altered to a north-south alignment in response to the city's intent to widen First Street.
- Roseville Resurrection Project. In the 1995-1996 period, city-owned abandoned property on Block 1846 (west side of First Street between Dickerson Street and Central Avenue) was sold to the Metropolitan Ecumenical Ministry Community Development Corporation for a nominal price. The corporation promised to develop the site as the first phase of the "Roseville Resurrection" residential project. In return, the City of Newark would be granted a 131-foot ROW along the west side of First Street between Dickerson Street and Central Avenue for the proposed widening of First Street and as a buffer or recreation zone for the ongoing townhouse construction.

The City of Newark's support for the west side widening is also documented in a December 1999 meeting attended by the State, City traffic engineers and consultant representatives for the University Heights Connector and the Newark Greenway Project discussed the status and location of a proposed Greenway segment within the First Avenue corridor between Sussex Avenue and New Street. Original proposals for the bikeway had intended its location to be along the east side of the First Street corridor, as its origin and destination points (Sussex Avenue and New Street, respectively) would be on the east side as well. At this meeting, recommendations for corridor widening focused upon the west side of the corridor since the remainders of acquired parcels could be developed for recreational uses, or allow for a curvilinear bikeway design. It was also noted that the west side of First Street abutted residential areas of the Roseville

neighborhood, while the east side areas were generally industrial in nature. On the basis of these considerations, it was agreed to develop a Class 1 Bikeway along the west side of First Street between Sussex Avenue and New Street.

B. Project Purpose

The University Heights Connector project, which proposes the development of a widened boulevard within an enhanced First Street roadway between Sussex Avenue and West Market Street, seeks to improve Central Ward mobility and safety. The proposed project will improve access to University of Medicine and Dentistry of New Jersey and enhance the connection between Route I-280 and two key CBD-bound arterials, West Market Street and Central Avenue.

C. Project Need

The need for improved connections between the Route I-280 corridor and the Newark CBD, as well as improved vehicular mobility in Newark's Central Ward, has been recognized since the 1950's. The lack of suitable vehicular access to the CBD is evidenced by the overall decline in employment that has occurred in the CBD since the 1960's, and by the continuing congestion that affects the Garden State Parkway and the city's arterial system immediately beyond the limits of the CBD.

Support for improved operations and safety in the corridor, and reduced diversions into residential areas, has been sought by the City of Newark since the early 1990's. A City Council resolution adopted on August 6, 1997 supports this project and related acquisitions. The University of Medicine and Dentistry, University Hospital, the Metropolitan Ecumenical Ministry Community Development Corporation, and other local groups have expressed additional support for the project.

According to traffic engineering analyses performed in the mid-1990s, there are two key physical alterations to the project corridor that would be necessary to provide the capacity to alleviate the current bottlenecks in the project corridor. These include:

- Two through travel lanes in each direction along First Street
- Provision of a protected left turning lane, with storage lane and approach tapers (based upon a 60 km/hr design speed) sufficiently long to fully store the queues of left-turning vehicles, at Central Avenue (both directions) and West Market Street (southbound).

Quantitative verification through the acquisition of new traffic data and analysis indicate that these needs remain.

The Department's Route I-280 Downtown Connector Study included an origin-destination study of vehicles departing the Route I-280 corridor at the First Street exit. This study determined that approximately 40 percent of the ramp traffic turned onto southbound First Street for access to institutions located outside of the Central Business

district, including UMDNJ and its surrounding neighborhood. An additional 40 percent sought destinations within the CBD, but utilized First Street as a matter of convenience until the point at which their trip was adversely affected by corridor congestion. At that point, drivers would make left turns and travel through the residential neighborhoods along Sussex, Dickerson or New Streets for access to the northern portions of the Newark CBD. Recent improvements at the Route I-280 Connector / First Street intersection (Phase 1 - Sussex Avenue Connector) have provided short term, limited relief to the vicinity of the First Street corridor by directing CBD-bound traffic eastward onto Sussex Avenue, a residential collector street improperly serving CBD-bound traffic. However, the bottleneck of the narrow First Street section between Sussex Avenue and West Market Street leaves little choice to area commuters. In recognition of these remaining concerns, and the importance of addressing the concerns, the North Jersey Transportation Planning Association issued a Type 3 Waiver (Alleviation of a Bottleneck) of a Congestion Management System (CMS) study to this project in Spring 1999.

At present, First Street is intended to function with a single travel lane in each direction. The existing configuration of the project corridor is shown in Figure II-1. Between Sussex Avenue and New Street, left turn bays are not provided despite large turning movements at Central Avenue. Though striped for a single lane operation (12-foot travel lane with an 8-foot parking lane implied) in each direction, the prohibition of peak period curbside parking (southbound in AM, northbound in PM) often results in two-lane operation in the peak direction on two narrow (10-foot) lanes. This operation often allows through traffic to bypass turning vehicles, with operations effectively reverting to a single lane operation, especially southbound in the AM peak. (Note: Signal plans obtained from the Essex County Department of Engineering indicate that striping for full-time four-lane operation (two 10-foot lanes each direction) was once intended). The resulting narrow lanes and frequent illegal curbside parking make it imprudent to rely upon the two lane peak direction operation as a permanent means of increased capacity, and make the corridor highly dependent upon traffic enforcement. As a result, congestion persists even during periods of two-lane peak period operation in the peak direction.

Existing land use is decidedly different on either side of the First Street corridor. Land use on the east side of the existing corridor predominantly consists of commercial and industrial businesses occupying large lots. The west side is characterized by residential land use, although a majority of the former residential lots are now vacant.

INSERT FIGURE II-1

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The proposed project will satisfy the following needs:

- Alleviate the current First Street bottlenecks and reduce commuter diversions onto adjacent residential streets by improving access to the CBD by way of the Market Street and the reversible Warren Street / Raymond Boulevard corridors.
- Provide a north-south boulevard through the Central Ward, comprised of the widened sections of First and Bergen Streets to improve local peak period traffic and emergency access.
- Reduce turning movement conflicts by providing turning lanes and storage capacity.
- Enhance pedestrian safety by providing wider sidewalks free of encroachments.
- Within the framework of bottleneck relief and enhanced safety, create a beautified First Street to provide a visual gateway to the Roseville area of the Central Ward and to routes leading to the CBD. Use of urban design treatments to enhance the appearance of the corridor is considered important to help spur economic and residential redevelopment of the Roseville area.

1. Operational Problems

Traffic counts conducted during May 2000, indicated that during the AM Peak Hour (7:45 AM – 8:45 AM), when southbound operations are constrained, southbound left turn volumes onto Dickerson Street were nearly one-third higher (275 vph vs. 210 vph) than southbound turns onto Central Avenue, one of the principal arterial routes into the CBD. Most turning vehicles were observed to make secondary turns southward for access to Central Avenue beyond the point of congestion at First Street / Central Avenue. Based upon traffic counts acquired during other periods of the day when less constrained operations occur, we estimate that approximately 200 vph of the turning volume at Dickerson Street actually desires access to Central Avenue, but bypasses corridor congestion. To a lesser degree, southbound diversions from West Market Street have also been noted on New Street, one – two blocks north. Additionally, new residential, commercial and institutional development within the Central Ward and along the West Market Street corridor, including the expansion of UMDNJ and Essex County College, have increased vehicular demands over the past 20 years to points west of the CBD during peak commuter periods.

Capacity analyses conducted for this project based upon Spring 2000 traffic volumes, two years after the opening of the Sussex Avenue Connector, indicate unsatisfactory corridor traffic operations during peak periods. These findings are corroborated by recent field observations of congestion and delays persisting along First Street at the intersections of Central Avenue and West Market Street. Recent observations and data collection and analysis indicate that the Phase 1 improvements employed between Orange Street and Sussex Avenue, including construction of the Sussex Avenue Connector, have improved conditions at Sussex Avenue and points to the north. However, congestion and safety concerns persist along First Street to the south.

In addition to existing capacity concerns, there are several safety concerns apparent in the project corridor. To examine these issues, the accident history along the First Street corridor has been analyzed for the years 1998-2000. Results of this corridor-wide analysis are summarized in Table II-1.

**Table II-1
First Street Corridor – Accident Rate Data**

Roadway	Years	Limits	Cross Section	Accident Rate Per MVMs	NJ Statewide Accident Rate (Accidents/MVM) 3 Year Average
First Street	1998-2000	Sussex Avenue – West Market Street	Two lanes without shoulders	8.46*	4.40

Source: Statewide Accident Rates for Interstate, U.S., and New Jersey Numbered Highways under NJDOT jurisdiction, NJDOT website.

Notes: MVM = million vehicle miles.

* 1998-2000 accident summaries show 66 accidents occurred between West Market Street and Sussex Street.

A second measure of safety, related specifically to accidents at intersections, compares the number of intersection accidents to the number of vehicles entering the intersection. This rate of accidents per million entering vehicles (MEV) is distinguished on the basis of roadway geometry, traffic control, area population, and land use. NJDOT does not currently maintain statewide accident rates based on intersection MEV. However, the NYSDOT does maintain these values, and they are generally consistent with Institute of Traffic Engineers values for similar conditions. Table II-2 compares the associated accident rates per MEV for the corridor to NYSDOT statistics for urban state highways.

Traffic accident summary reports that NJDOT provided in January 2002 indicate that the intersections in the northern section of the corridor operate more safely than do those in the southern section. This finding appears related to the opening of the Sussex Avenue Connector in 1998. This connector has eased congestion and safety concerns at the Sussex Avenue and Dickerson Street intersections.

**Table II-2
First Street Intersections – Intersection Accident Rate Data
1998-2000**

First Street Intersection	Traffic Control	Number of Accidents	Actual Accident Rate – Accidents per MEV	NYSDOT Accident Rate per MEV
West Market Street	Signal	82	1.81	0.60
New Street	Stop Sign	25	1.10	0.35
Central Avenue	Signal	76	1.87	0.74
Dickerson Street	Stop Sign	7	0.24	0.35
Sussex Avenue	Signal	11	0.35	0.74

Source: Average Intersection Accident Rates for State Highways by Intersection Type (1/97-12/98), dated 2/00, NYSDOT.

At the other intersections along the First Street corridor, accident history is consistent with the physical and operational inadequacies of the corridor. These specifically include:

- Central Avenue has rear end and turning vehicle accident concerns that will be addressed by proposed turning bays and improved signalization. Existing county-owned signals are undersized and antiquated, and should be replaced.
- At New Street, inadequate intersection sight distance appears to contribute to the high incidence of right angle accidents in the corridor. Intersection sight distance is adversely affected by the abrupt curvature in the First Street alignment west of New Street, by buildings along the property line of First Street, and most particularly by congestion and queued vehicles. The Preferred Alternative will ameliorate these conditions. Signalization would lessen the likelihood of right angle accidents, but the addition of a signalized intersection within 300 feet of the signalized West Market Street intersection is not considered to be operationally beneficial.
- The West Market Street intersection has a predominance of turn-related accidents. Proposed measures to widen and realign the First Street approach with the Bergen Street approach to the south would provide some benefit, and the closure of the fifth approach leg (to Hartford Street in the NE quadrant) would also ease intersection and corridor operations.

2. Need for Physical Widening of the Corridor and Pedestrian Safety

The need for sufficient length of left turn bay and tapers in advance of the Central Avenue and West Market Street intersections will necessitate widening up to one block in advance. Thus, the minimum limits of First Street widening necessitated by constrained left turn capacity would extend at a minimum from one-half block north of Dickerson Street south to West Market Street.

This requirement is the basis for evaluating whether the minimum roadway cross section necessary to accommodate the required five lanes plus sidewalks can be accommodated so as to alleviate the current bottleneck within the existing 66-foot right-of-way.

Recent observations and analysis indicate that a minimally acceptable connector cross section based upon Table 2-2 of the NJDOT Roadway Design Manual, with engineering judgment applied to relate these criteria to an undivided urban street, the absolute minimum cross sectional width (curb-to-curb) of First Street should be 58 feet.

This configuration would result in unsafe four-foot maximum sidewalk widths available within the existing foot right-of-way. As the existing building line along either side of First Street is coincident with, or in some cases extends beyond, the existing right-of-way line, building acquisition of some form is unavoidable. On this basis, it was determined that any meaningful improvement to the First Street corridor would require acquisition of a property frontage strip to accommodate the required First Street improvements.

In 1997, citing City goals and UMDNJ efforts to beautify the corridor, the concept of a 74-foot wide section with decorative plantings and sidewalk treatments was advocated, provided that it would not result in additional displacements of residents and businesses. As per the December 1999 meeting noted earlier, the improvement also includes the development of a Class I bikeway further necessitating the widening of the First Street corridor.