

I-295/I-76/ROUTE 42 DIRECT CONNECTION PROJECT CAMDEN COUNTY, NEW JERSEY

PROJECT PURPOSE AND NEED

Background

The Delaware Valley Regional Planning Commission (DVRPC) has identified the interchange as a high priority regional need within its 2020 Long Range Plan due to its deficiencies in highway safety, geometric and operational constraints and urban mobility.

Past studies conducted on this interchange that have concluded and confirmed the existence of structural and operational deficiencies and the need to improve traffic safety include the Preliminary Alternatives Report which evaluated eleven improvement alternatives and recommended four alternatives for further study.¹ The Final Alternatives Report recommended the implementation of one of four alternatives.² In 1997, the I-295, I-76, Route 42 Interchange Study and a follow-up to that report recommended further study of alternatives.³

In addition to the studies described above, a Congestion Management Study (CMS) was conducted in 1999. The CMS was performed as part of a Transportation Improvement Study (TIS) undertaken by NJDOT and DVRPC. Substandard roadway geometric conditions were identified within the TIS including poor sight distance and inadequate bridge clearances. The TIS also identified operational deficiencies due to the lack of a direct connection for I-295 through movements and from existing geometric deficiencies. The lack of a direct through movement on I-295 forces motorists to utilize ramp-type roadways as a substitute. This configuration conflicts with driver expectations regarding roadway design and operating speed and can be viewed as a possible contributing cause to the high incidence of accidents experienced on this facility. In addition, the resulting congestion within the interchange exacerbates congestion on surrounding arterials and within the region in general as motorists seek alternate routes.

True to the purpose of such a document, the TIS identified a range of potential strategies to address the existing conditions. Strategies were regional and broad based, ranging from operational improvements to more capital-intensive transit and highway options. Multi-modal and travel demand reduction solutions were also identified. The potential strategies included:

- No Build – utilize existing roadway.
- High Occupancy Vehicle (HOV) lanes.
- Supporting Measures/Strategies - Improvements identified by CMS (e.g., car/van pool, Intelligent Transportation Systems (ITS) applications).
- Express Bus/ Park and Ride.
- Rail Transit – construction of a new light rail transit line from Glassboro to Camden.
- New Jersey Turnpike Widening – Construction of one additional lane in each direction from Interchanges 1 to 4.

¹ McCormick, Taylor & Associates, Inc., November, 1987.

² McCormick, Taylor & Associates, Inc., October, 1990.

³ Buchart Horn, Inc., March 1997 and February 1998.

- New Jersey Turnpike Interchange – New interchange located between NJ Turnpike and Rt. 42 in the vicinity of Route 42/55 merge, missing ramps.
- Partial Build – Construction of missing ramps (or “missing moves”) from I-295 northbound to Rt. 42 southbound and Rt. 42 northbound to I-295 southbound.
- Full Build – Construction of a full, grade-separated connection for I-295 traffic through the Interchange. The full grade separated connection is now known as the I-295/I-76/Route 42 Interchange Reconstruction project, the subject of this Purpose and Need Statement.

The I-295/I-76/Route 42 Direct Connection project seeks to address the absence of a direct through connection for I-295 users passing through the I-295/I-76/Route 42 interchange. The absence of this direct connection forces through-traffic from this Interstate highway onto a series of ramps where this traffic mixes with turning traffic from another highway. The ramps being utilized for the I-295 through traffic were not designed to safely accommodate the volume of high-speed mainline traffic that now utilizes them. As a result, the interchange ramp system experiences operational failure in many locations and has accident rates significantly in excess of the statewide average.

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Purpose:

The purpose of this project is to improve traffic safety and reduce traffic congestion at the interchange of Interstate 295/Interstate 76/NJ Route 42 (I-295/I-76/Route. 42)

Need:

As noted above, there is a significant accident history at the interchange. The interchange's existing roadways include a number of geometric deficiencies that can be considered contributing factors to the poor accident history. The deficiencies were identified from New Jersey Department of Transportation (NJDOT) record construction drawings and Structural Inventory and Appraisal (SI&A) Sheets.

Improve Safety

Accident data for the years 1995 through 2000 was reviewed. Since statewide accident rates were available for 1995, 1996, and 1999, a comparison of the accidents on I-295, I-76 and Rt. 42 for these years was made with the statewide average.

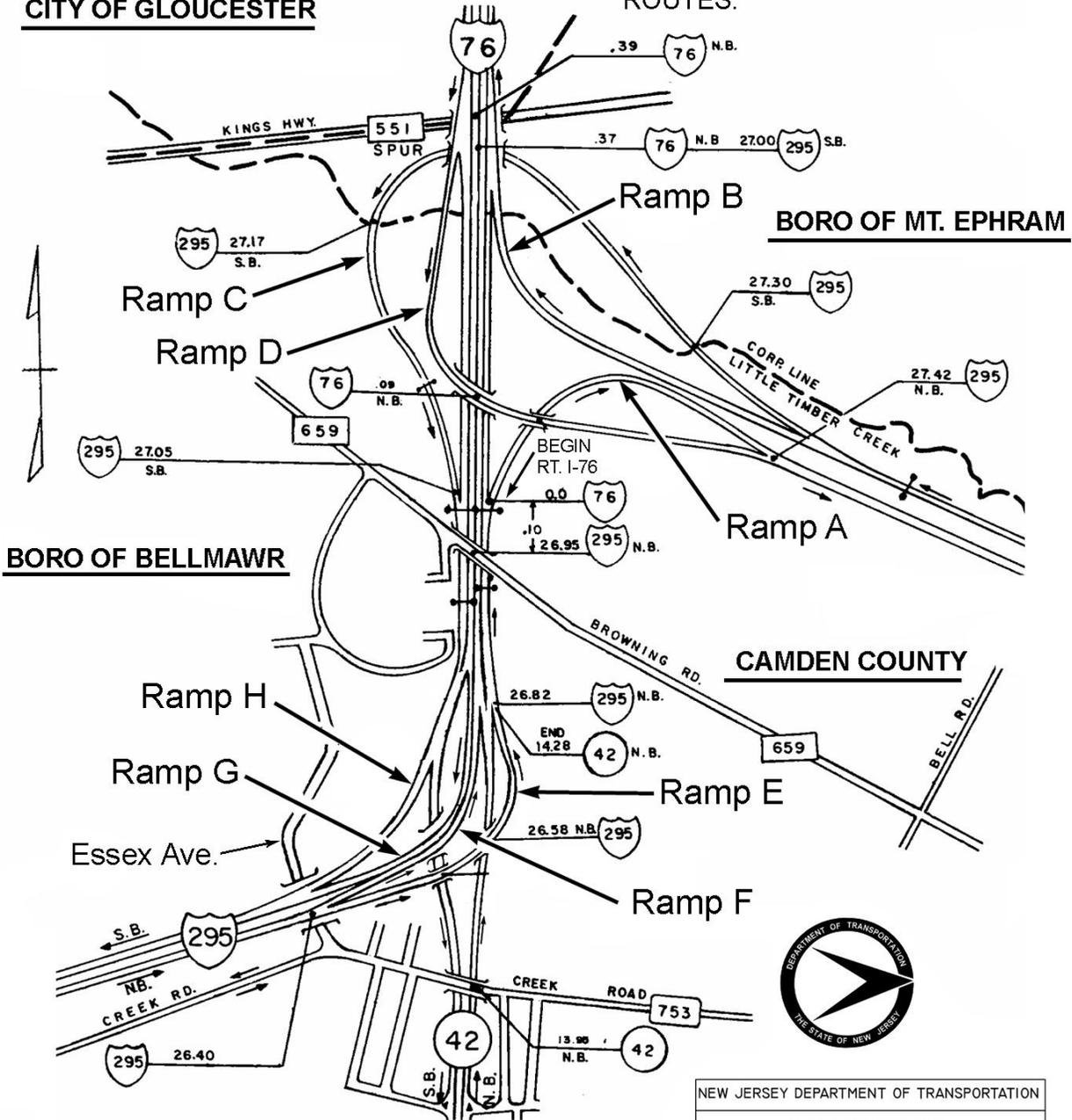
During the 1995 period, the Interstate 295 roadway segments from Mile Post (M.P.) 26.4 to M.P. 28.16 had accident rates up to twelve times the statewide average. Of these segments, M.P. 26.4 and 27.6 and M.P. 28 to 28.2, lengths that encompass the area of the interchange with Route 42 and I-76, had a substantially higher number of accidents than sections of I-295 immediately north and south of the interchange. For example, in 1995, M.P. 26.4 to 27.0 had almost seven times more accidents than the statewide average while M.P. 26.8 and M.P 27.1 had the most accidents in each of the analyzed years.

All six segments of Route 42 (from M.P. 13.2 to M.P. 14.28) had accident rates in excess of the statewide average. In 1996, four segments (from M.P. 13.45 to M.P. 14.28) had accident rates per million vehicle miles greater than the statewide average. In 1999, four segments (from M.P. 13.44 to M.P. 14.28) had accident rates per million vehicle miles greater than the statewide average. In the years 1995, 1996 and 1999, one segment had an accident rate four times the statewide rate.

I-76 accident rates were similar to those of I-295 and Route 42 in the 1995-1999 timeframe. For 1995, four segments (from M.P. 0.0 to M.P. 0.8) had accident rates which exceeded the statewide average. One segment had an accident rate twice the statewide rate. In 1996 five segments (from M.P. 0.0 to M.P. 0.8) had accident rates greater than the statewide average, with one segment being three times the statewide rate. On I-76 in 1999, three segments (from M.P. 0.0 to M.P. 0.53) had accident rates in excess of the statewide average. In 1999, one segment had an accident history four times greater than the statewide average. Segments that were overrepresented in all three years that were compared with statewide averages were M.P. 0.0 – 0.3 and 0.3 – 0.5. These segments mainly encompass the area in which I-76 is combined with I-295.

CITY OF GLOUCESTER

NOTE: DECIMAL NUMBERS SHOW MILEPOSTS OF RESPECTIVE ROUTES.



BORO OF BELLMAWR

BORO OF MT. EPHRAM

CAMDEN COUNTY



Source: NJDOT Straight Line Diagram
Enlarged Index, Page 26

NEW JERSEY DEPARTMENT OF TRANSPORTATION
PRELIMINARY
I-295/I-76/RT. 42
RECONSTRUCTION
INTERCHANGE OVERVIEW
FIGURE 1

Geometric and Structural Deficiencies

Substandard geometric features identified at the interchange include substandard horizontal curvature on Ramps B, E, F and G, a substandard stopping sight distance due to vertical curvature on Ramp E, and substandard superelevation on mainline roadways I-295, I-76 and Route 42, along with Ramps B, C, E, F, G and H.

In addition to the geometric deficiencies noted, four of the fourteen bridge structures within the project are noted as functionally obsolete due to substandard vertical and horizontal clearances. Three structures are considered structurally deficient. Half of the structures are suggested for corrective action or replacement since they do not meet requirements for vertical and/or horizontal under clearance indicated in the SI&A reports.

Driver Expectations

While there is a definite need to correct the geometric deficiencies in existing ramps and structures, driver expectations also play a large role in the high accident rates at the interchange and necessitate improved safety. The posted speed limits on the existing ramps that serve the through traffic on I-295 are inconsistent with driver expectations of operating speeds on an Interstate highway. The posted speed limit on all of the highway approaches to the Interchange is 55 miles per hour (MPH). The 20 MPH discrepancy between the posted speed limits (and higher operating speeds) on the approach highways and the exiting ramps can be considered as a contributing factor in the Interchange's overall poor accident record.

Operational Deficiencies

The lack of direct connection for through movement on I-295, significant weaving problems, deficient connecting ramps, and high volumes of traffic all result in operational deficiencies or congestion within and near the interchange. The operational deficiencies on I-295, I-76 and Rt. 42, particularly the queuing of traffic and poor Levels of Service (LOS) that cause excessive delays, impact not only regional traffic and commuters using the highway, but local arterials and neighborhood streets as well. Excessive delays at the interchange result in highway traffic exiting onto surrounding local arterials, thereby further adding to congestion in the region. The diverted traffic, in turn, causes congestion on local roads, compromises traffic and pedestrian safety, lowers air and noise quality in the community and disproportionately taxes the capacity and life of local roadways.

The effective operation of any roadway network, be it highway, local arterial or street intersection, is measured by the Level of Service (LOS) categories ranging from A to F. LOS A represents the most favorable operating conditions with little or no delay. LOS F is the worst operating condition that is considered unacceptable to most drivers and occurs when demand volume exceeds the capacity of the roadway with queuing and severe congestion occurring at the location. It is also an indicator of the need for improvement.

Specific sections of the interchange that experience a poor LOS (LOS D, E or F) are shown in the table below. Of the eight ramps studied in detail five operate at a LOS E or worse for at least one of the two Peak Hours (AM and PM).

Roadway/Ramp	Peak Hour Level of Service	
	AM	PM
I-295 - Northbound		
South of Interchange	D	C
North of Interchange	D	E
I-295 - Southbound		
South of Interchange	E	E
North of Interchange	C	C
I-76 - Northbound		
South of Interchange	n/a ¹	n/a ¹
North of Interchange	E	C
Express Lanes	D	B
I-76 - Southbound		
South of Interchange	n/a ¹	n/a ¹
North of Interchange	C	E
Rt. 42 - Northbound		
South of Interchange	D	C
North of Interchange	n/a ¹	n/a ¹
Rt. 42 - Southbound		
South of Interchange	B	D
North of Interchange	n/a ¹	n/a ¹
Ramp A	F	F
Ramp B	E	B
Ramp C	F	F
Ramp D	B	C
Ramp E	E	E
Ramp F	E	E
Ramp G	B	C
Ramp H	C	B

¹Section of roadway does not exist (see Figure 1).

In addition, a weaving condition exists on I-76/Route 42 between Ramp E and Ramp A. Traffic on Ramp E wishing to proceed north on I-295 must weave with traffic from northbound Route 42 also proceeding north on I-76. Due to the volumes of traffic involved in this section of the interchange (specifically the high volume of traffic from Ramp E proceeding to Ramp A) this section of the roadway experiences failure. It should be noted that the traffic exiting Ramp E and proceeding on Ramp A is “through” traffic that could be expected to stay on mainline I-295 if a mainline section of the highway were available.

Goals and Objectives:

A set of project goals and objectives have been developed based on the project’s purpose and needs described above, findings from previous studies and goals developed during the partnering meetings on December 11-12, 2001. The goals and objectives are a compendium of statements made by the NJDOT, FHWA, agencies, local elected

officials, residents, and other stakeholders in the project. As such, the goals and objectives are wide ranging and represent different levels of priority for each stakeholder.

While the project may not be able to satisfy all goals and objectives listed herein, the preferred alternative seeks to address as many as possible. The identified project goals and objectives are as follows:

- Improve roadway safety by constructing a facility that meets driver expectations for the Interstate Highway System by providing roadway geometric features that meet the required design standards for the facility.
- Reduce local congestion on surrounding (local) arterials such as Rt. 168 and US 322 and reduce commuter cut-through traffic on neighborhood streets, thereby improving local traffic mobility, pedestrian safety, noise levels, air quality, level of service on I-295 and traffic safety.
- Improve regional mobility to support greater economic development of the region and attract visitors to the region.
- Reduce air pollution levels, including carbon monoxide and criteria pollutants.
- Reduce financial burden on State Police expenditures and cost to municipalities by reducing the need for local emergency services and lowering the number of vehicle accidents.
- Reduce existing noise levels from highways and address resident concerns about potential increased noise levels through avoidance and mitigation measures such as noise walls which incorporate context sensitive design principles.
- Avoid, minimize and mitigate all environmental impacts to the fullest extent practicable.
- Conduct a streamlined agency coordination process that results in a cost and time-effective EIS and permit process, but that does not overlook each agency's mission, authority and procedures.
- Create and maintain an ongoing public outreach/participation process that fosters public trust.
- Minimize disturbances to the quality of life of communities, including minimizing relocation and acquisitions of private and public property.