NATIONAL HIGHWAY SYSTEM CONNECTORS TO FREIGHT FACILITIES IN THE DELAWARE VALLEY REGION

OCTOBER 2001

DELAWARE VALLEY REGIONAL PLANNING COMMISSION

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The Bourse Building, 8th Floor
111 South Independence Mall East
Philadelphia, PA 19106-2582

215.592.1800
www.dvrpc.org

Created in 1965, the Delaware Valley Regional Planning Commission (DVRPC) is an interstate, intercounty and intercity agency that provides continuing, comprehensive and coordinated planning to shape a vision for the future growth of the Delaware Valley region. The region includes Bucks, Chester, Delaware, and Montgomery counties, as well as the City of Philadelphia, in Pennsylvania; and Burlington, Camden, Gloucester and Mercer counties in New Jersey. DVRPC provides technical assistance and services; conducts high priority studies that respond to the requests and demands of member state and local governments; fosters cooperation among various constituents to forge a consensus on diverse regional issues; determines and meets the needs of the private sector; and practices public outreach efforts to promote two-way communication and public awareness of regional issues and the Commission.

Our logo is adapted from the official DVRPC seal, and is designed as a stylized image of the Delaware Valley. The outer ring symbolizes the region as a whole, while the diagonal bar signifies the Delaware River. The two adjoining crescents represent the Commonwealth of Pennsylvania and the State of New Jersey.

DVRPC is funded by a variety of funding sources including federal grants from the U.S. Department of Transportation's Federal Highway Administration (FHWA) and Federal Transit Administration (FTA), the Pennsylvania and New Jersey departments of transportation, as well as by DVRPC's state and local member governments. The authors, however, are solely responsible for its findings and conclusions, which may not represent the official views or policies of the funding agencies.

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EXECUTIVE SUMMARY

DVRPC conducted a study of important roadway connections between the National Highway System and 12 key intermodal freight terminals (or clusters of freight facilities) to assist the planning needs of the Delaware Valley Goods Movement Task Force.

The analytical work includes an inventory and assessment of physical and traffic operating conditions along the connectors (contained in the Appendix). Recommendations to improve deficiencies along the network are contained in Table 4 in the main body of the report. The candidate improvement program identifies cost estimates and potential funding sources to implement the improvements. Furthermore, truck trip generation estimates are provided in the improvement program — as activity indicators for establishing priorities.

In total there are 67 individual improvement recommendations in the program. The scope of the recommendations include conducting additional studies, improving signing, providing auxiliary lanes and/or new traffic signalization at intersections, completing / reconfiguring interchanges and constructing new access roadways. About twenty of the capital improvement projects are already contained in existing financing programs, while many of the smaller scale projects can be undertaken through existing maintenance programs. Approximately $163.1 million in improvements are included in the program.

The work was conducted through DVRPC's Intermodal Management System (IMS) Planning Program. The IMS was one of the six management systems created by ISTEA in 1991, and is carried on through the auspices of the region's current long range plan.

INTRODUCTION

The work summarized in this report addresses an inventory and assessment of physical and traffic operating conditions along connector highways designated within the National Highway System (NHS). Steps that may be taken to improve those conditions to facilitate goods movement in the Delaware Valley are subsequently identified.

NHS routes aim to enhance personal mobility, serve commerce, support economic growth and increase the nation's competitiveness. Connectors are short highway extensions of mainline NHS routes which provide the local access function between line-haul highways and entry points at important intermodal facilities. In this particular study, the connector network being evaluated serves 12 intermodal freight facilities (or clusters of facilities) in the region.

The study was conducted as an aid to the planning activities of the Delaware Valley Goods Movement Task Force (DVGMTF). The DVGMTF seeks to improve communication among, and data and technology sharing between, different freight interests in the region. The DVGMTF also acts as a freight community advocate in influencing the allocation of TEA-21 and other transportation improvement funds to optimize commodity flows in the Delaware Valley.

The principal products delivered in this report are:

1) an inventory and assessment of physical and operation conditions along the connectors (see the report's Appendix, following page 34); and,
2) a recommended capital improvement program and implementation guide to deliver improvement to the connector network (see Table 4 in the Recommendations section, beginning on page 23).

The analytical work contained in the Appendix imitates a nationwide evaluation of connector highways conducted by the Federal Highway Administration (FHWA) during 1998. The nationwide evaluation was summarized in a report to the U.S. Congress (*NHS Intermodal Freight Connectors*, US DOT, 2000) and reflects the growing attention and importance being attached to the connectors.

Truck trip generation estimates associated with the intermodal freight facilities, cited in Table 4, are provided for possible use in prioritizing improvements.[1] Table 4 can serve as a complement to the DVGMTF's rail-side improvement program — *Fastrax* — developed in 1999.

[1] Truck trip generating characteristics shown in the table were developed through analytical procedures conducted in *Truck Trip Generation at Intermodal Freight Facilities in the Delaware Valley Region*, DVRPC (June 2000).

Scope of work

Activities undertaken in the conduct of this study included:

- Coordinating with DVRPC's Manager of Urban Goods Program.
- Conducting research, field recognizance and analyses of the connectors.
- Preparing a final report.

The report

In the subsequent sections of this report, an overview of the NHS connector network, and the key intermodal freight facilities it serves, is presented. Planned and programmed transportation improvements along the connectors are identified in Table 1 and Table 2 as background to the current effort devoted to improving the network.

Intermodal freight facility and highway connector fact sheets (contained in the Appendix) summarize observed traffic, physical, operational conditions along the connectors. These also serve as a basis for DVRPC staff's evaluations and improvement recommendations. A review of regional funding sources to implement the improvements are subsequently identified in Table 3.

Lastly, a candidate capital improvement program is presented in Table 4. The program addresses needs along the connectors through a set of transportation improvements grouped by intermodal facility. Included in the improvement program are: estimated costs; likely funding sources for developing and implementing the projects, and; facility activity indicators (daily truck trips) as an aid for establishing priorities.

THE NETWORK

The NHS is an interconnected network of highways linking travel between major trip producers and attractions. The system offers the highest degree of mobility possible. As such, the NHS is comprised predominantly of freeways and primary arterials — routes which carry a disproportionally high level of travel demand (including trucks) relative to a rather limited amount of roadway mileage. In accordance with its importance, the network has its own designated federal funding program (also called the "NHS").

In the Delaware Valley, the NHS represents about 1,300 linear miles of highways. Of that total, only 23 miles are officially designated by the FHWA as connector highways which directly serve intermodal freight facilities[2]. The connector highways link ten regionally significant intermodal freight facilities with nearby main line highways. Seven of the freight facilities are located in Pennsylvania, and three are located in New Jersey.

Figure 1 displays a broad view of the existing NHS (shown as green lines) and the ten key intermodal freight locations where local access is supported by an officially designated connector highway. Insets are provided at a larger scale for each freight center to highlight the connector highways (shown in yellow). Fact sheets addressing traffic, physical and operating conditions along the connectors are included in the Appendix to this report. Each fact sheet provides a (still) larger scale map of the connector highway.

Two additional intermodal freight facilities are included in the Appendix, and addressed in the improvement planning contained in the report. Novolog (facility #11 in the Appendix) is an existing port terminal in Falls Township, Bucks County, while the proposed FastShip port and rail terminal (facility #12 in the Appendix) in the Port Richmond section of Philadelphia is slated for commercial port operation in 2004.

Novolog has been included due to its regional importance and because the principal highway serving the site meets warrants as an NHS Connector, but is not officially designated in the system. FastShip, will offer new and innovative shipping services and terminal operations. Regional aspiration for the facility is very high as are estimated truck levels. Clearly, roadways serving the site will warrant inclusion in the NHS connector network upon the facility's operation.

Potential NHS connectors serving Novolog and FastShip are shown as dashed lines in the maps contained in the Appendix.

[2] The fundamental criterion for NHS connector designation is 100 trucks per day by direction generated by the freight intermodal facility onto the principal route connecting to the NHS.

Facilities

Noted below are the 12 facilities included in the NHS connector inventory summarized in this report. The terminal type(s), and the predominant form(s) of cargo handled at the site(s) are also described.

1) Norfolk Southern Intermodal Facility: rail facility handling containers and trailers.
2) Crowley Intermodal Terminal: port facility handling trailers and vehicles.
3) Tioga Pipeline and Port Facilities: port facilities handling containers, bulk, project, and break-bulk commodities.
4) Beckett Street Terminal: port facility handling containers, bulk, project, and break-bulk commodities.
5) CSX Philadelphia Bulk Terminal: rail facility handling bulk commodities.
6) South Philadelphia Rail and Port Complex: rail and port facilities handling containers and trailers, vehicles, project, bulk and break-bulk commodities.
7) Port of Camden (South): port facility handling containers, bulk, project, and break-bulk commodities.
8) Philadelphia International Airport: air facility handling containers, bulk, and skidded cargoes.
9) Penn Terminals: port facility handling containers, project and break-bulk commodities.
10) CSX Twin Oaks Auto Terminal: rail facility handling vehicles.
11) Novolog Port Terminal: port facility handling bulk, project, and break-bulk commodities.
12) Proposed FastShip Port and Rail Terminal: port facility handling containers.

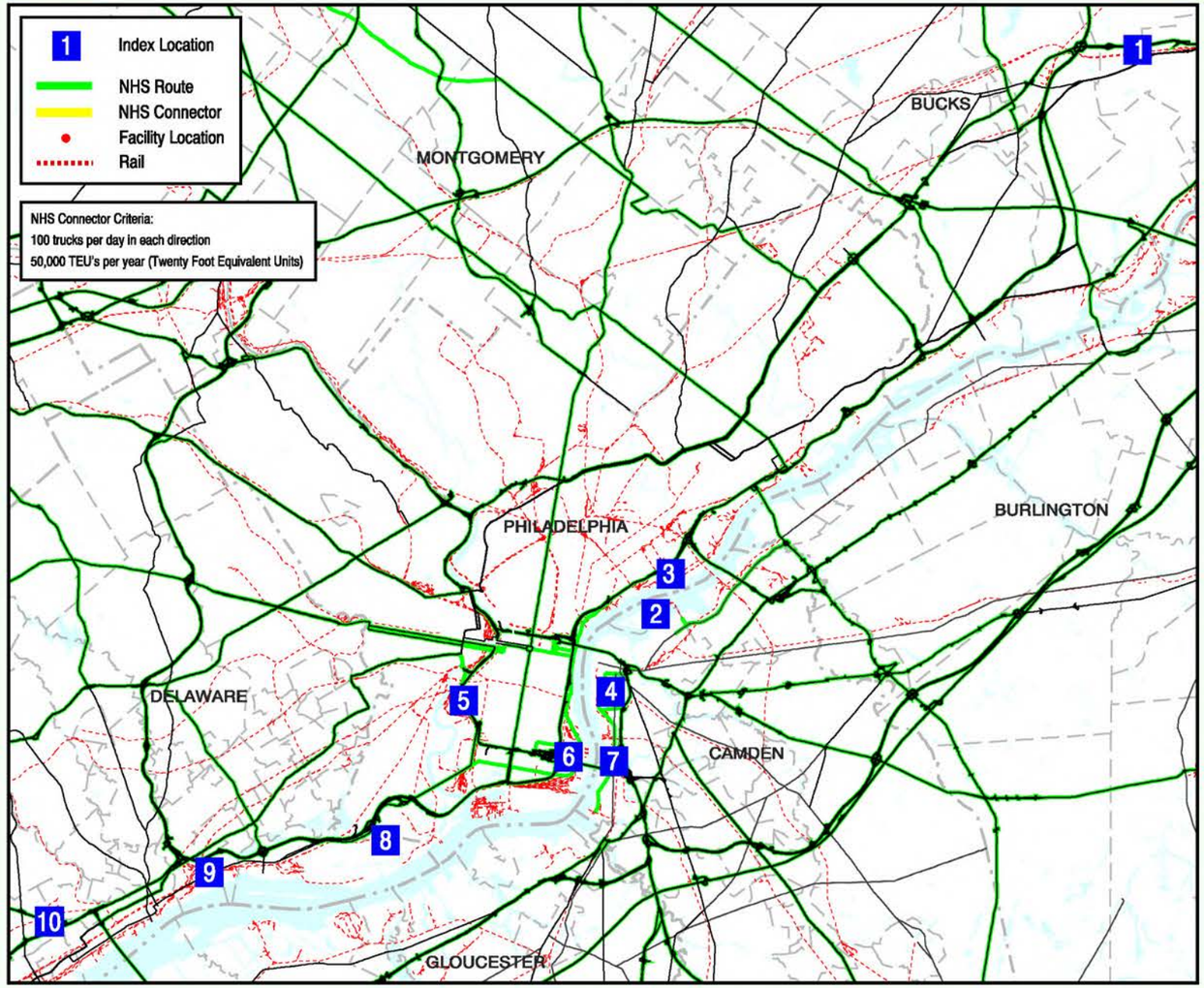
The types of terminals included in the region's intermodal system can be classified as port, rail, or air facilities. In certain cases (e.g., South Philadelphia), clusters of facilities include more than one terminal type. Cargo handled by the various facilities can be grouped into the following categories: containers, trailers, vehicles, bulk, break-bulk, skidded, and project commodities.

From the perspective of highway access to the intermodal facilities, most cargoes are typically handled by conventional tractor-trailers. However, over-size project cargoes may require larger, specially configured commercial vehicles.

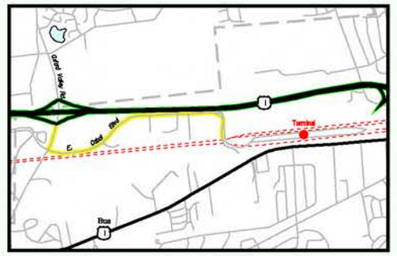
It is also important to note that different time sensitivities exist between terminals that focus on the rapid transfer of cargoes (e.g., containers), and other terminals which handle cargoes which are less time-sensitive (e.g., bulk commodities). The type of cargo will also have a dramatic impact on traffic generation and traffic patterns. For example, a 100 car train carrying loaded containers may generate 200 truck trips in one day, while a 100 car train of bulk materials may generate only 20 trucks per day as local trucks arrive to pick up materials only as needed.

FIGURE 1 : LOCATION MAP

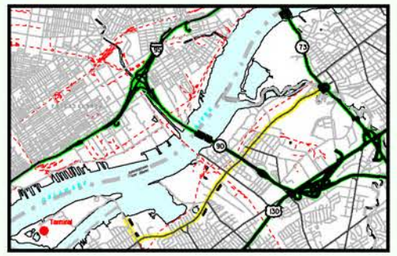
National Highway System Connectors to Freight Facilities in the Delaware Valley Region



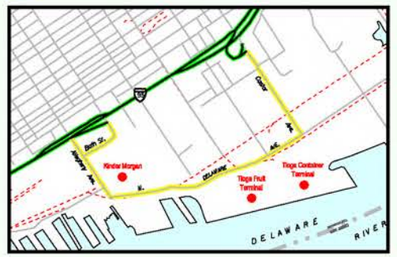
1 Norfolk Southern Intermodal Facility



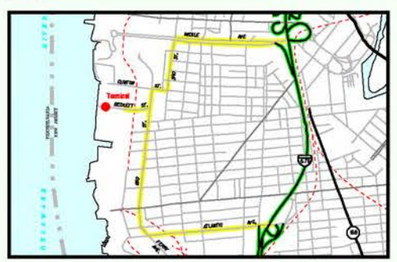
2 Crowley Intermodal Terminal



3 Tioga Pipeline & Port Facilities



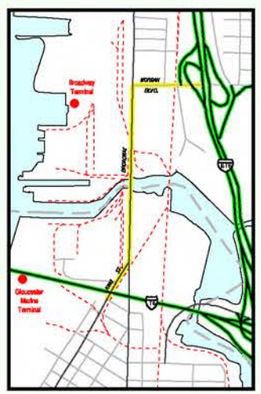
4 Beckett Street Terminal



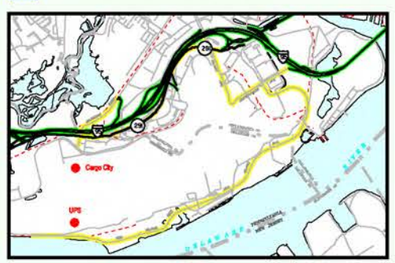
5 CSX Philadelphia Bulk Terminal

6 South Philadelphia Rail & Port Complex

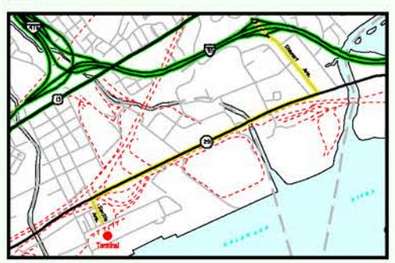
7 Port of Camden (South)



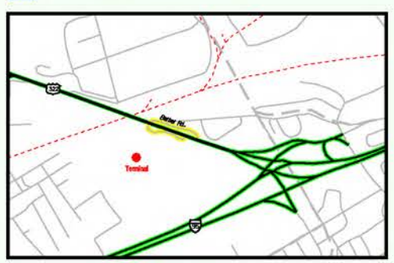
8 Philadelphia International Airport



9 Penn Terminals



10 CSX Twin Oaks Auto Terminal



0 2 4 6 MILES

* INSETS NOT TO SCALE *

DELAWARE VALLEY REGIONAL PLANNING COMMISSION
OCTOBER 2001

Planned improvements

The federally mandated regional transportation planning process consists of two implementation "instruments" — the long-range plan, and the Transportation Improvement Program (TIP).

The long-range plan provides a vision for the region looking a minimum of 20 years into the future. The plan's transportation component contributes transportation projects required to advance and support the region's land use plans and policies, and proposes strategies to carry out those policies. It represents a comprehensive blueprint for moving people and goods — safely and efficiently.

The current plan guiding transportation and land use policies in the Delaware Valley is the *Year 2025 Plan*. A more extensive Plan will be prepared following the complete publication of the 2000 Census.

Plan implementation takes place most demonstratively via the shorter-range TIP. Adopted in July 2000, DVRPC's current TIP (i.e., the FY 2001 TIP) applies to federal funding assistance sought between 2001 and 2003 for the New Jersey portion of the region and between 2001 and 2004 for the Pennsylvania counties.

Long-range plan

The Year 2025 Transportation Plan includes regionally significant improvement projects and studies which are deemed important to facilitate the region's orderly development over the next 24 years. Table 1 provides a description of each project / study included in the Plan applicable to this analysis.

Access or circulation improvements in the vicinity of six intermodal freight facility locations are addressed in seven improvement projects and studies. In addition, access studies are identified in association with the South Philadelphia complex and the proposed FastShip Terminal, located in the Port Richmond section of the City of Philadelphia. If constructed, and assuming public ownership, the new access routes serving these intermodal facilities may warrant inclusion in the NHS.

In the table, those projects which are slated for implementation between 2002 and 2005 are either already included on the current TIP or are candidate additions as part of its regular update.

Table 1: Long Range Transportation Plan Elements affecting NHS Connectors

source: *Horizons*, DVRPC's Year 2025 Transportation Plan (Preliminary, February 2001)

Facility	Programmed Improvement			
	LRP #	Location	Description	Deliverable
Pennsylvania				
Site #3 TIOGA PIPELINE & PORT FACILITIES	B001	I-95 & Cottman, Girard & Allegheny Avenues interchange	Interchange improvements	2002 - 2005
	B017	North Delaware Avenue	Northward extension from Lewis Street to Bridge Street	2002 - 2005
Site #6 SOUTH PHILADELPHIA RAIL & PORT COMPLEX	B031	Philadelphia Naval Business Center	Construct new access roadways from Delaware Avenue and Penrose Avenue (includes the evaluation of additional access from Pattison Avenue to the Greenwich Yard)	2002 - 2005
Site #10 CSX TWIN OAKS AUTO TERMINAL	C009	I-95 & US 322	Reconstruct interchange	2006 - 2013
Site #12 (Proposed) FASTSHIP PORT & RAIL TERMINAL	A038	Conrail Port Richmond Terminal	Conduct study to construct high-tech intermodal terminal	2002 - 2005
New Jersey				
Site #2 CROWLEY INTERMODAL TERMINAL	B019	37th Street	Reconstruct / Realign between River Road and Petty's Island Bridge for new access route to terminal	2002 - 2005
	C054	Delair Bridge	Conduct study to evaluate condition of the bridge	N.A.
Sites #4 & #7 BECKETT STREET TERMINAL & PORT OF CAMDEN (SOUTH)	A041	Undetermined	Conduct study to provide landside connection between Beckett Street and Broadway terminals via rail / roadway	N.A.

Transportation Improvement Program

The short-range portion of the long range plan corresponds with the region's TIP. At the present time nine improvements to connector highways serving six of the region's freight centers are included in the TIP. One additional highway construction project, proposing to extend Hog Island Road is included on the list, is tapping non-traditional sources for funding including the Community Development Block Grant Program.

Table 2 details the nine highway improvements. They range in scope from preliminary engineering studies for drainage improvements to complete project development for reconfiguring an interchange. Cost estimates are identified, where applicable and known, for project phases which lie beyond the program years of the TIP. In total, almost $105 million in improvements are programmed in the region — $100 million in Pennsylvania[3], and $5 million in New Jersey.

Two of Pennsylvania's improvement projects are also part of the long-range plan. These include providing new access roadways serving the Tioga port area (Site #3, per TIP project # 9740) and the South Philadelphia complex (Site #6, per TIP project # 9748).

[3] It should be noted that since beginning this study, the improvements along Oxford Valley Road serving Norfolk Southern's intermodal facility (Site #1) have been constructed.

Table 2: Current Investments along NHS Connectors serving Freight Facilities

source: DVRPC FY 2001 Transportation Improvement Program (TIP)

Facility	Programmed Improvement					Unfunded Phase(s) Amount ($)
	TIP #	Location	Description	Amount	Funding Source(s)	
Pennsylvania's TIP (covering fiscal years 2001 - 2004)						
Site #1 NORFOLK SOUTHERN INTERMODAL FACILITY	5716	Oxford Valley Rd at US 1	Construct turning lanes and other safety improvements at the interchange	$1,050,000	Congressional earmark and state funds	
	5725	Oxford Valley Rd from Lincoln Hwy to US 1	Design and acquire right-of-way for safety improvements, including a center left turn lane or turning lanes at intersections	$1,650,000	State and federal hwy funds	construction - $6,450,000 **(NOTE 10/01 - project has been constructed)**
Site #3 TIOGA PIPELINE & PORT FACILITIES	9740	N. Delaware Ave	Design and construct new bridge and new roadway across Frankford Cr, extend N. Delaware Ave from Lewis St to Bridge St	$7,200,000	Congressional earmark, federal hwy and local funds	
	9749	N. Delaware Ave	Design and construct new gates, install traffic signals, and stripe travel lanes to eliminate on-street truck marshaling	$1,500,000	Congressional earmark and local funds	
Site #6 SOUTH PHILADELPHIA RAIL & PORT COMPLEX	9748	Philadelphia Naval Shipyard Access	Design and construct additional access to the site via Delaware Ave extension on the east, and/or 26th St extension on the west, thus improving access to proposed intermodal rail facility and minimizing highway-railroad conflicts	$4,175,000	Congressional earmark and local funds	

Table 2: Current Investments along NHS Connectors serving Freight Facilities

source: DVRPC FY 2001 Transportation Improvement Program (TIP)

Facility	Programmed Improvement					Unfunded Phase(s) Amount ($)
	TIP #	Location	Description	Amount	Funding Source(s)	
Site #8 PHILADELPHIA INTERNATIONAL AIRPORT	9745	I-95 / Airport Interchange	Construct interchange improvements - realign SB I-95 off-ramp; create new direct NB I-95 / Airport off-ramp, and realign PA 291 to support new Terminal 1	$75,766,000	Congressional earmark, federal bridge and hwy, economic development, and state funds	
	(Non-TIP)	Hog Island Road	Construct 1.25 mile extension connecting Hog Island Road with Tinicum Island Road	$5,500,000	Delaware County Community Block Grant, DRPA funds and Pennsylvania Opportunity Grants	
Site #10 CSX TWIN OAKS AUTO TERMINAL	7883	I-95 / Conchester Highway Access Study	Conduct study and engineering for improving: access to I-95 and US 322 from three industrial parks and the CSX Twin Oaks site located north of I-95, and: safety at the I-95 / US 322 interchange	$3,000,000	State and federal hwy funds	right-of-way and construction - $19,000,000
			Pennsylvania Total:	**$99,841,000**		
New Jersey's TIP (covering fiscal years 2001 - 2003)						
Site #4 BECKETT STREET TERMINAL	2370	Martin Luther King, Jr Blvd (formerly Mickle Boulevard) and !-676	Widen I-676 SB on-ramp from ML King Blvd to two lanes, widen ML King WB approach to provide a separate left turn lane	$4,650,000	Federal interstate maintenance funds	
	2373	Atlantic Ave and I-676	Conduct preliminary engineering for drainage improvement on Atlantic Ave at the I-676 SB on-ramp	$50,000	Federal interstate maintenance funds	final design, right-of-way and construction
			New Jersey Total:	**$4,700,000**		
			Regional Total:	**$104,541,000**		

INVENTORY OF EXISTING CONDITIONS

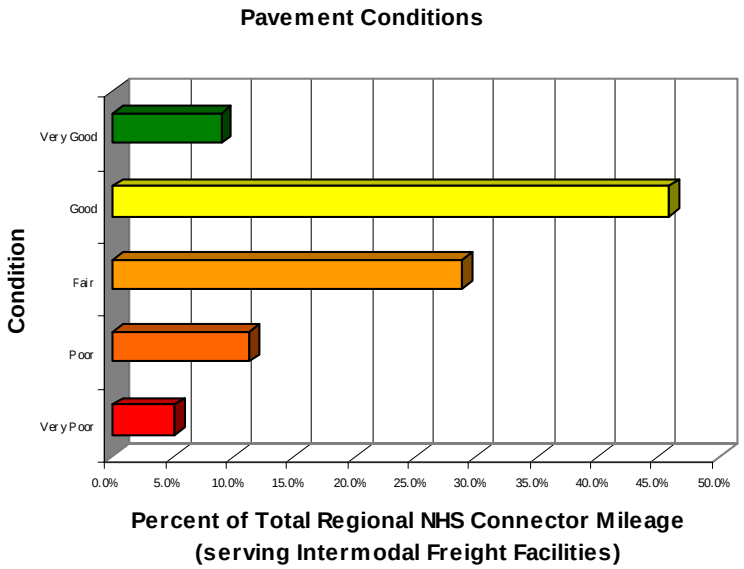
Field views were conducted of the connectors to gain a perspective on the functional, physical, and operating state of the links. This work was performed during Fall 2000, and is summarized in a fashion closely resembling a national survey effort of the NHS conducted by the FHWA in 1998. The data examined included, but was not limited to:

- pavement conditions
- geometric/ physical features
- traffic operations along the connector, and at the junction with the NHS mainline segment
- adequacy of signing between the intermodal facility gate and the mainline NHS facility.

The findings of the field observations and evaluations are summarized on the fact sheet sets — ordered from facility #1 to facility #12 — in the Appendix. The analytical summaries presented below, address only the approved connector inventory (i.e., facilities #1 to #10).

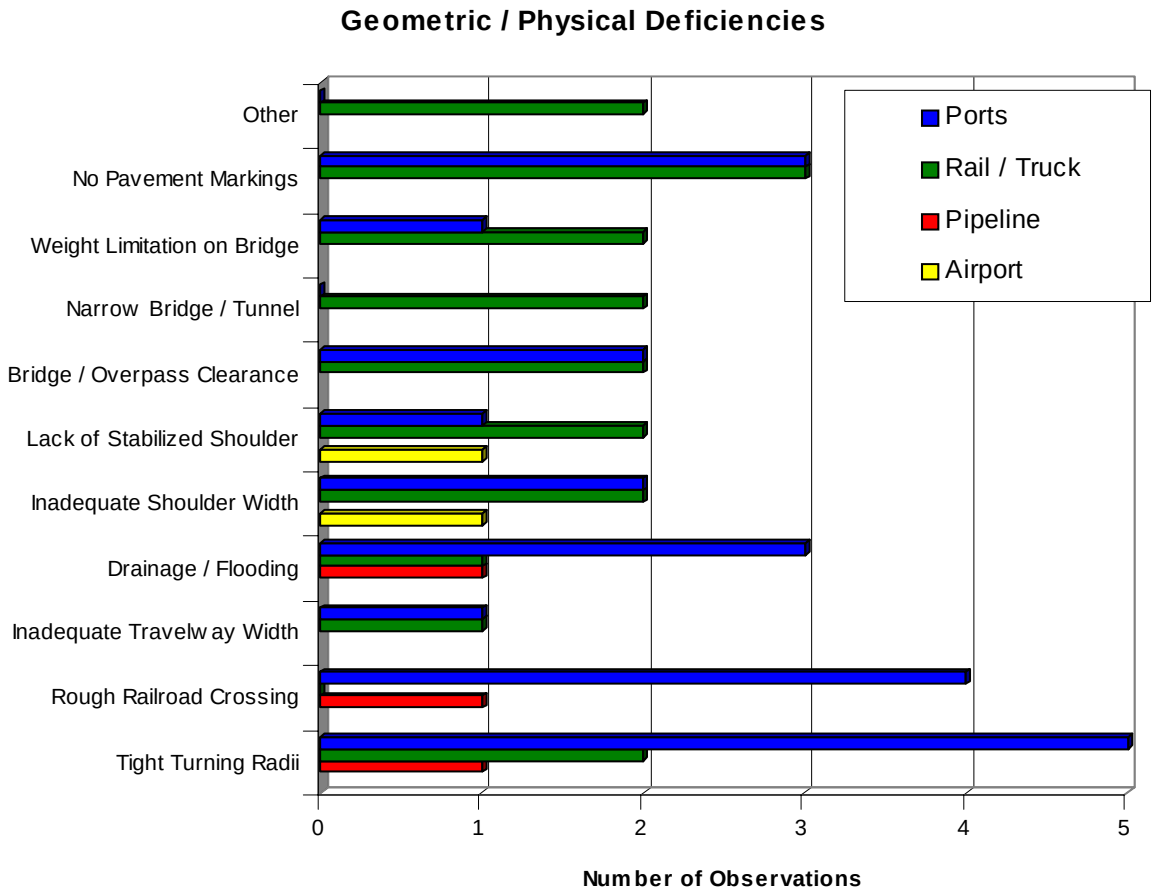
Pavement conditions

Roadway surface conditions throughout the connector highway network are considered to be in fair to good repair. Where fair, poor or very poor conditions exist, they are most frequently associated with connector roadways serving ports.



Geometric / physical conditions

The most frequently encountered physical deficiency along the connector network is tight turning radii. Second tier deficiencies throughout the network are: inadequate shoulder widths, missing pavement markings, drainage problems and rough highway / railroad at-grade crossings. Finally, bridge / overpass clearances and inadequate cartway widths (roadway and suitable shoulder) are identified as the least frequently occurring deficiencies affecting the connectors serving all freight facilities.

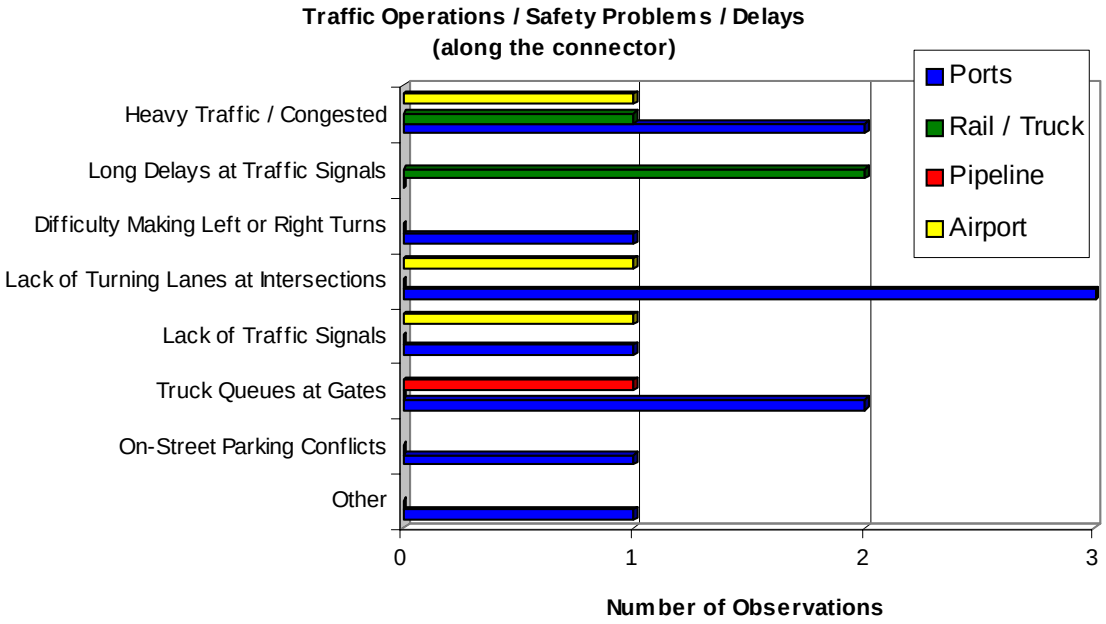


Here again deficient physical connector conditions seem to predominate around port facilities, although rail / truck terminals are also affected.

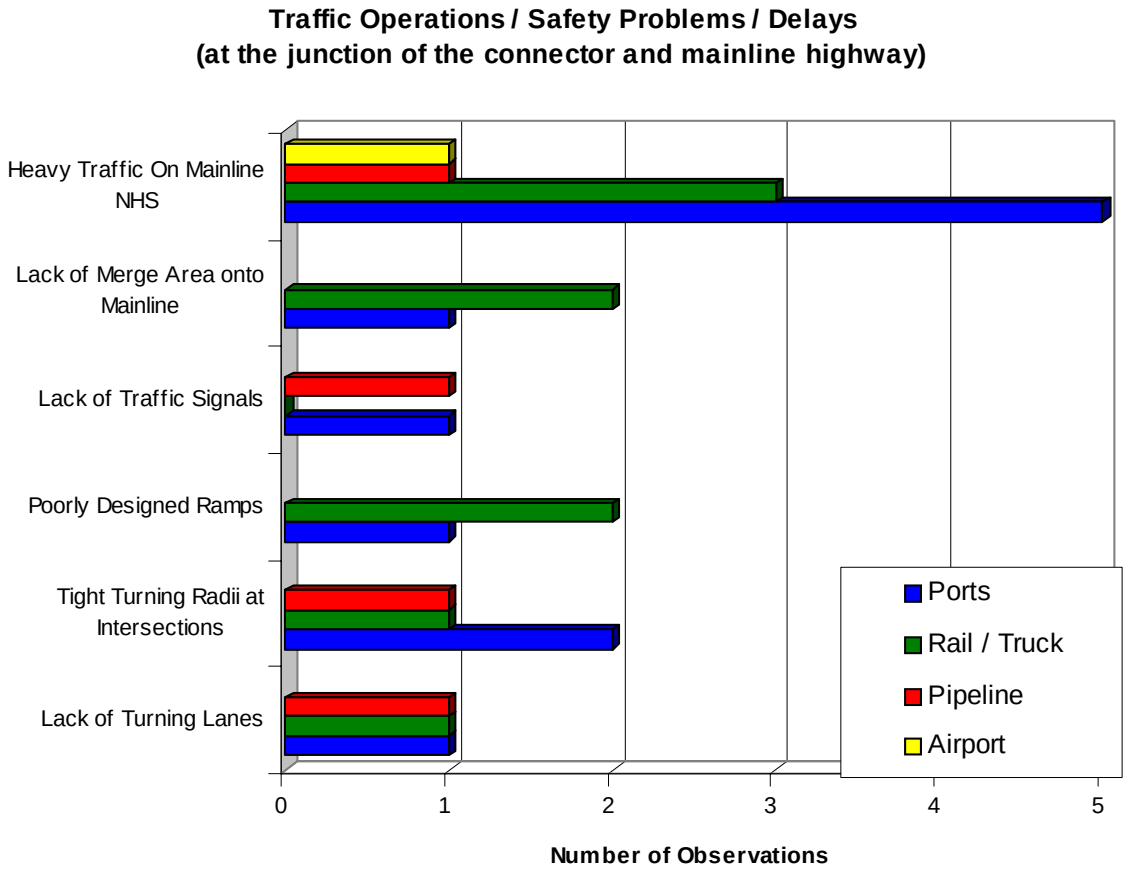
Traffic operations

Congestion resulting from heavy traffic volumes and a lack of turning lanes at intersections were identified as the most common reasons that traffic operations were compromised along the connector network. Delays at intersections due to inordinately long traffic signal cycles, inadequate traffic signal phasing and/or the absence of traffic signal control at key intersections were also frequently identified. Finally, the queuing of trucks at the facility gates was identified as a common problem along the connectors.

All of the operational problems are present for the connectors serving the ports.



Heavy mainline volume is the most often encountered problem at the junctions of the connectors and the mainline highway facility.



Signing

The majority of the overall network is in need of improved signing, including — facility destination signs on the nearby NHS mainline, directional signing leading to the intermodal freight facility from the mainline highway, and trailblazer signing from the terminal to the mainline.

Is Signing Adequate	To/From Facility #
Yes	6, 9
No	1, 2, 3, 4, 5, 7, 8, 10

IMPLEMENTATION OPPORTUNITIES

The major funding sources for improving the network are provided through the current surface transportation appropriations bill — TEA-21 — administered through the US Department of Transportation's Federal Highway Administration.

State and regional allocations of some of these funds are designated for use on particular highways (the NHS for instance), for use in achieving national policies (Congestion Mitigation and Air Quality funding, and Transportation Enhancement funding), and for programs addressing specific system-wide deficiencies (bridges, safety, etc.). States also develop programs, using the federal monies matched with their funding, to address other system needs.

Table 3 presents a selected set of the funding programs that exist in Pennsylvania and New Jersey which address the type of deficiencies present along the connector network. A brief description of the individual program and the total amount of funds currently allocated to the program are also noted in the table.

Other funding sources may be used in entirety or as a match in securing federal-aid. Examples shown in Table 3 include federal earmark funds, funding from state trust funds, state or local bonding initiatives and capital programs of toll authorities.

Management systems planning, conducted and maintained by the state transportation departments and DVRPC, seeks to identify and evaluate transportation needs with an emphasis given to efficiently implementing improvements. This may occur by adding the improvement as a new project through the regular TIP process, by expanding the scope of a nearby capital improvement project to envelop the suggestion(s), and/or by including an improvement project in a relevant maintenance program.

Financing transportation improvements is a competitive and complex process. Given that public funding sources and levels are limited — advocacy and active project initiation are the operative conditions in obtaining funding assistance. Often higher priority can be assigned to those projects which: display multi-jurisdictional support; provide alternate funding sources (i.e., other than state highway monies) as a match to the federal share, and/or independently advance pre-construction project development steps (e.g., preliminary engineering, environmental clearances, final design, right-of-way acquisition, etc.) outside of the normal public financing process. More information about the TIP can be obtained by: visiting DVRPC's world-wide-web site (www.dvrpc.org/transportation/tip.htm), or by contacting the Assistant Executive Director for Transportation Planning at DVRPC.

Table 3: Selected Categorical Improvement Programs applicable to NHS Connectors

source: DVRPC FY 2001 Transportation Improvement Program (TIP)

TIP #	Programmed Improvement		
	Name	Description	Funding Source(s) / Amount ($)
Pennsylvania's TIP (covering fiscal years 2001 - 2004)			
0515	Betterment Projects ('3R') - Regionwide	Reconstruction / restoration / resurfacing to bring the road up to current standards	State and federal hwy maintenance funds / $62,500,000
0517	Railroad / Highway Grade Crossings	Install / upgrade warning devices and/or new crossing surface adjacent to or between the tracks	State and federal maintenance / safety funds / $11,200,000
New Jersey's TIP (covering fiscal years 2001 - 2003)			
2324	Camden County Traffic Sign Management Program	Traffic sign improvement program for county maintained roadways in Camden County. Applicable activities include: inventory, maintenance, installation and replacement	Federal hwy STP-STU funds / $500,000
2343	Camden City Traffic Signal Upgrade	Upgrade signalized intersections, including: new controllersand/or loops at various locations throughout the City	Federal hwy STP-STU funds / $3,150,000
2376	Camden City Resurfacing	Reconstruction / resurfacing various streets in the City	Federal hwy STP-STU funds / $6,885,000
0047	Restriping Program, DVRPC	Application of new pavement markings and raised pavement markers on the state highway system	Federal highway STP funds / $4,500,000
0046	Rail - Highway Grade Crossing Program, Federal DVRPC	Applicable to funding projects which eliminate hazards and/or install protective warning devices for highways on and off the federal-aid highway system	Federal hwy STP and safety funds / $4,500,000
0048	Signs Program, DVRPC	Systematic upgrade, including: refurbishing, new installation, and updating messages of state highway signs	Federal hwy NHS funds / $2,100,000

Table 3: Selected Categorical Improvement Programs applicable to NHS Connectors

source: DVRPC FY 2001 Transportation Improvement Program (TIP)

TIP #	Programmed Improvement		
	Name	**Description**	**Funding Source(s) / Amount ($)**
0066	Local County Aid, DVRPC	Improvement funds allocated to NJ counties within the DVRPC MPO for transportation improvements	Funded through the NJ Transportation Trust Fund Act / total regional allocation = $37,545,000 for three years. For FY 2001 only, regional allocation = $11,351,000, of which $3,860,000 is allocated to Camden County
0068	Local Municipal Aid, DVRPC	Improvement funds allocated to NJ municipalities within the DVRPC MPO for transportation improvements	Funded through the NJ Transportation Trust Fund Act / total regional allocation = $31,576,000 for three years. For FY 2001 only, regional allocation = $9,546,000, of which $3,002,000 is allocated to municipalities in Camden County
X186B	Economic Development, Statewide	Provides assistance to counties or municipalities for Economic Development Authority projects, and funds for public / private partnerships	State hwy and bond funds / $25,000,000 statewide
SW-36	Freight Program	Provides for the rehabilitation and improvement of key elements of the State's freight network	Federal hwy CMAQ and state hwy and bond funds / $40 million statewide

RECOMMENDATIONS

A comprehensive set of improvements was assembled through the analyses to address the connector network's needs (Table 4). The program is arrayed by intermodal facility, and includes projects which are:

- proposed as part of the region's long-range plan for 2025,
- part of the region's FY 2001 TIP, and/or
- new projects identified through evaluations performed for this study.

Cost estimates are provided for the recommendations and potential funding sources, or other means to implement the projects, are identified. The program offers estimates of daily truck activity associated with each intermodal freight terminal as a surrogate for actual truck counts at the facility gates. This latter item is provided as a site activity indicator — to use in combination with actual traffic volume data along the connectors (shown on the fact sheets) — for consideration in prioritizing the improvements.

The improvement program also includes the existing Novolog facility (Site #11) in Falls Township - Bucks County, and the proposed FastShip port terminal (Site #12) in the Port Richmond section of Philadelphia. As the data in Table 4 indicates, the principal roadways serving these facilities do or will meet warrants for inclusion in the official NHS connector network. As such, effort should be made to amend the network as the opportunity is presented.

Two observations regarding the existing connector system's alignment and continuity suggests that:

1) Funding opportunities provided through the National Highway System, and other federal-aid programs, suggests that serious consideration be given to dedicating any potential internal or proposed new access roadways serving the South Philadelphia complex to the public's ownership and use. The roadways will interconnect and provide for more efficient site traffic distribution with the external highway network — which are designated NHS routes. It is also very likely that these new roadways will serve sufficient heavy truck movements to be considered candidates for addition to the NHS connector inventory.
2) The NHS connector roadway network serving the CSX Philadelphia Bulk Terminal (Site #5) should be extended southward along Maiden Lane, 28th Street and then eastward along Passyunk Avenue to provide access to I-76 westbound. The movement is not provided for in the current official network serving the facility.

Where any recommendation to amend the NHS connector system of highways is pursued, a corollary change to the federal functional classification of highways is also required. □

Table 4: Candidate NHS-Freight Connectors Improvement Program

Facility (est'd. total truck trips per day)		Improvement Description	Cost Estimate	Implementation Strategy / Potential Funding Source(s)
Site #1 NORFOLK SOUTHERN INTERMODAL FACILITY (290)	a	Construct turning lanes and other safety improvements at the interchange Oxford Valley Rd at US 1	$ 1,050,000	PA TIP # 5716 - Congressional earmark and state funds
	b	Design and acquire right-of-way for safety improvements, including a center left turn lane or turning lanes at intersections along Oxford Valley Rd from Lincoln Hwy to US 1 (*NOTE 10/01: project has been constructed*)	$ 8,100,000*	Total costs cited. Design and R/W = $1,650,000 per PA TIP # 5725 - State and federal HWY funds. Construction estimated at $6,450,000, also state and federal HWY funds
	c	Increase storage area for left turns from Oxford Valley Rd to E. Cabot Blvd	$ 300,000	Possible expansion to scopes of PA TIP # 5716 or PA TIP # 5725
	d	Resurface E. Cabot Blvd from Oxford Valley Rd to terminal entrance	$ 225,000	Possible expansion to scope of PA TIP #s 5716 or 5725, OR candidate component of PA TIP # 0515 - Regionwide Reconstruction / Restoration / Resurfacing Program
	e	Facility sign on US 1; trailblazer and directional signing on E. Cabot Rd	$ 30,000	Possible extension of PA TIP proj # 5716 - Oxford Valley Rd / US 1 interchange improvements OR PA TIP# 5725 Oxford Valley Rd improvements
	f	Conduct access study examining the feasibility of alternative and/or additional access at Stony Hill Rd	$ 60,000	Candidate for DVRPC's Annual Planning Work Program - PA Highway Planning Program Funds
		Subtotal:	**$ 1,665,000***	***** costs for item #1b excluded**

Table 4: Candidate NHS-Freight Connectors Improvement Program

Facility (est'd. total truck trips per day)		Improvement Description	Cost Estimate	Implementation Strategy / Potential Funding Source(s)
Site #2 CROWLEY INTERMODAL TERMINAL (280)	a	Reconstruct grade crossing and install crossing warning device on River Rd and Tipton Blvd intersection	$ 225,000	Possible component of NJ TIP # 0517 - Regionwide Railroad/Highway Grade Crossings Program
	b	Reconstruct River Rd bridge over NJ 73	$ 2,000,000	NJ TIP - HWY funding
	c	Reconstruct River Rd under Delair Bridge to remove height restriction and alleviate flooding	$ 1,510,000	Integrate into DVRPC LRP's proposed study # C054 - evaluating the bridge's condition or possible component of NJ TIP # 0515 - Regionwide Reconstruction / Restoration / Resurfacing program
	d	Provide directional signing to facility from NJ 73; and trailblazer signs from facility to NJ 73	$ 30,000	Possible component of NJ TIP # 2324 - Camden Co Traffic Sign Management Program
	e	Reconstruct / realign 37th St. between Petty's Island Bridge and River Rd. as new access route to the terminal	$ 1,000,000	DVRPC LRP proj # B019
		Subtotal:	**$ 4,765,000**	

Table 4: Candidate NHS-Freight Connectors Improvement Program

Facility (est'd. total truck trips per day)		Improvement Description	Cost Estimate	Implementation Strategy / Potential Funding Source(s)
Site #3 TIOGA PIPELINE & PORT FACILITIES (310)	a	Conduct needs study examining feasibility and benefits provided by reconfiguring I-95 and Allegheny Av interchange - including a full diamond interchange	$ 500,000	Study only - DVRPC LRP proj # B001. Possible implementation via I-95 reconstruction project - PA TIP #9761
	b	Extend Delaware Ave. from Lewis St to Bridge St, including a new bridge across Frankford Cr. (currently in preliminary design)	$ 7,200,000	DVRPC LRP proj # B017 and PA TIP # 9740
	c	Construct new access to facility to eliminate on-street truck marshaling	$ 1,500,000	PA TIP # 9749
	d	Remove four abandoned grade crossings; four located on Delaware Ave (one located at intersection of Delaware Ave. and Allegheny Av)	$ 250,000	Possible component of PA TIP # 9749 - Tioga Marine Terminal improvement project
	e	Reconstruct 3 active grade crossings (two parallel crossings on Castor Ave. and one on Delaware Ave. into facility).	$ 850,000	Possible component of PA TIP # 9749 - Tioga Marine Terminal Improvement project OR PA TIP # 0517 - Regionwide Railroad/Highway Grade Crossing Program OR PA TIP #0515 - Regionwide Betterment Program
	f	Increase turning radius for left turns from Castor Av to I-95 nb on ramp (also an element in item #3a)	$ 50,000	PA TIP HWY funding
	g	Increase radius from I-95 nb off ramp to Bath / Westmoreland Sts (also an element in item #3a)	$ 50,000	PA TIP HWY funding
	h	Install trailblazer signing, and facility directional signing to/from I-95 on Allegheny, Delaware and Castor avs.	$ 25,000	Possible expansion of Tioga Terminal access improvements - PA TIP# 9749
	i	Implement landscaping improvements identified in the "*Plan for the Richmond Corridor Association*" (2001)	$ 110,000	Possible transportation enhancement project
		Subtotal:	**$ 10,535,000**	

Table 4: Candidate NHS-Freight Connectors Improvement Program

Facility (est'd. total truck trips per day)		Improvement Description	Cost Estimate	Implementation Strategy / Potential Funding Source(s)
Site #4 BECKETT STREET TERMINAL (320)	a	Reconstruct three grade crossings: two on 2nd St, and one on Atlantic Av	$ 725,000	Possible component of NJ TIP# 0517 - Regionwide Railroad/Highway Grade Crossings
	b	Reconstruct 3rd St (Mickle to Clinton), Clinton St (3rd to 2nd), 2nd St (Clinton to Ferry), and Atlantic Ave (Broadway to I-676)	$ 7,000,000	Possible component of NJ TIP# 0515 - Regionwide Reconstruction / Restoration / Resurfacing OR NJ TIP# 2376 - Camden City Resurfacing
	c	Increase turning radii at 2nd St / Beckett St intersection	$ 30,000	Possible component of NJ TIP# 2376 - Camden City Resurfacing
	d	Provide consistent road name signing along Mickle Blvd / Martin Luther King Blvd / Alicia Santos Blvd. Provide trailblazers from I-676 and US 30 to terminal. Provide directional signs to I-676 and US 30 from terminal	$ 40,000	Possible component of NJ TIP# 2324 - Camden Traffic Sign Management Program
	e	Conduct study examining landside connection between Beckett Street and Broadway terminals via rail or roadway (also see Site #7 -- Port of Camden - South	to be determined	DVRPC LRP project A041, South Jersey Port Corp. / DRPA grant / DVRPC annual planning work program funding
	f	Widen I-676 SB on-ramp from MLKing, Jr. Blvd, and widen MLKing, Jr. Blvd. for a separate WB left-turn lane	$ 4,650,000	NJ TIP #2370
	g	Drainage improvements on Atlantic Avenue at the I-676 SB on-ramp	$ 500,000	NJ TIP #2373 - $50,000 programmed for preliminary engineering using Federal interstate maintenance funding
	h	Re-time traffic signals on Atlantic Av through I-676 interchange	$ 2,000	Candidate for NJDOT / City of Camden ongoing traffic signal maintenance programs
	i	Reconstruct Front Street from Clinton to Ferry for truck marshaling area	$ 2,000,000	Candidate for City of Camden / South Jersey Port Corporation funds
		Subtotal:	**$ 14,947,000**	

Table 4: Candidate NHS-Freight Connectors Improvement Program

Facility (est'd. total truck trips per day)		Improvement Description	Cost Estimate	Implementation Strategy / Potential Funding Source(s)
Site #5 CSX PHILADELPHIA BULK TERMINAL (60)	a	Resurface Moore St. from Warfield St. to terminal entrance.	$ 50,000	Possible component of PA TIP# 0515 - Regionwide Reconstruction / Restoration / Resurfacing
	b	Improve drainage at Maiden St. / Warfield St. intersection to alleviate flooding.	$ 100,000	Candidate for PA TIP - HWY funding
	c	Reconstruct I-76 eb exit to 28th St to provide a separate deceleration lane (alternate: close exit and direct traffic to Passyunk Av interchange).	$ 1,500,000	Candidate for PA TIP - HWY funding (interstate maintenance)
	d	Reconstruct Warfield St. on ramp to I-76 eb ramp to provide a longer acceleration lane (alternate: close entrance and direct traffic to 34th St eb on ramp).	$ 1,500,000	Candidate for PA TIP - HWY funding (interstate maintenance)
	e	Provide directional signing to facility from I-76, and provide new / replace trailblazer signs to I-76 from facility.	$ 50,000	Candidate for PA TIP - HWY funding
	f	Add new overhead mast arm and sign ("to I-76 West") at Passyunk Av interchange	$ 50,000	PA TIP - HWY funding / Interstate Maintenance funding. Possible component of TIP #9817 - Passyunk Av signal modernization (Broad St to 63rd St)
		Subtotal:	**$ 3,250,000**	

Table 4: Candidate NHS-Freight Connectors Improvement Program

Facility (est'd. total truck trips per day)		Improvement Description	Cost Estimate	Implementation Strategy / Potential Funding Source(s)
Site #6 SOUTH PHILADELPHIA RAIL & PORT COMPLEX (1,280)	a	Design and construct additional site access via Delaware Avenue extension on the east thus improving access to the intermodal rail facility and minimizing highway-railroad conflicts (includes study investigating new additional access to Greenwich Yard from Pattison Av)	$ 4,200,000	PA TIP #9748
	b	Design and construct completion of League Island Blvd / 26th St extension thus improving access to the site of the intermodal rail facility on the west	$ 3,000,000	PA TIP - HWY funding, DRPA, Economic Development and Pennsylvania State opportunity grants, associate with site development costs, and City of Philadelphia funding
	c	Conduct Phase II of the I-95/Walt Whitman Bridge Interchange access-egress study	$ 75,000	Candidate DVRPC Annual Planning Work Program project
	d	Conduct feasibility study examining improved, enlarged and integrated access between I-95, the South Philadelphia Rail & Port Terminal Complex and the Philadelphia International Airport	$ 100,000	Candidate DVRPC Annual Planning Work Program project
		Subtotal:	**$ 7,375,000**	

Table 4: Candidate NHS-Freight Connectors Improvement Program

Facility (est'd. total truck trips per day)		Improvement Description	Cost Estimate	Implementation Strategy / Potential Funding Source(s)
Site #7 PORT OF CAMDEN (SOUTH) (1,020)	a	Reconstruct three active grade crossings. Remove abandoned grade crossing on King St.	$ 700,000	Possible component of NJ TIP# 0517 - Regionwide Railroad/Highway Grade Crossings
	b	Replace 10 ton weight limit signs on bridge on Broadway.	$ 2,000	County maintenance funding OR possible component of NJ TIP #2343 - Camden Co. Traffic Sign Management OR NJ TIP #0048 Signs Program
	c	Provide separate left turn lane on Morgan Blvd at Broadway.	$ 100,000	NJ TIP - HWY funding
	d	Signalize Broadway / King St intersection.	$ 120,000	NJ TIP - HWY funding
	e	Provide facility directional signs from I-676 off ramps to facility. Provide sign at Broadway Terminal to identify facility.	$ 15,000	Possible component of NJ TIP #2343 - Camden Co. Traffic Sign Management OR NJ TIP #0048 Signs Program, OR Interstate, NJDOT, or County maintenance funding
	f	Conduct study examining landside connection between Broadway and Beckett Street terminals via rail or roadway (also see Site #4 -- Beckett Street Terminal)	to be determined	DVRPC LRP project A041, South Jersey Port Corp. / DRPA grant / DVRPC annual planning work program funding
		Subtotal:	**$ 937,000**	

Table 4: Candidate NHS-Freight Connectors Improvement Program

Facility (est'd. total truck trips per day)		Improvement Description	Cost Estimate	Implementation Strategy / Potential Funding Source(s)
Site #8 PHILADELPHIA INTERNATIONAL AIRPORT (not available)	a	Construct interchange improvements between I-95 and the Airport - realign SB I-95 off-ramp; create new direct NB I-95 / Airport off-ramp, and; realign PA 291 to support new Terminal 1 (anticipated completion: Fall 2002)	$ 75,770,000	PA TIP # 9745
	b	Provide facility directional signs to UPS and Sunoco facilities; provide trailblazer signs to I-95 from Enterprise Ave, Fort Mifflin Rd, and Cargo City.	$ 15,000	Possible expansion of PA TIP #9745 - I-95 / Airport Ramp Revision project
	c	Hog Island Road extension to Tinicum Island Road (anticipated completion: May 2002)	$ 5,500,000	In development using Delaware County Community Development Block Grant, DRPA, and Pennsylvania State Opportunity Grant monies
		Subtotal:	**$ 81,285,000**	
Site #9 PENN TERMINALS (340)	a	Reconstruct Saville Av / PA 291 intersection to increase turning radius and provide traffic signal with left turn phase.	$ 250,000	Possible component of PA TIP # 0515 - Regionwide Reconstruction / Restoration / Resurfacing, plus PA TIP HWY funding
	b	Reconstruct Saville Av under railroad bridge to eliminate height restriction.	$ 1,010,000	Possible component of PA TIP # 0515 - Regionwide Reconstruction / Restoration / Resurfacing
	c	Provide directional signs to the facility from I-95, and; provide trailblazers to I-95 on Saville Av and PA 291 from the terminal.	$ 15,000	Candidate for PennDOT maintenance
		Subtotal:	**$ 1,275,000**	

Table 4: Candidate NHS-Freight Connectors Improvement Program

Facility (est'd. total truck trips per day)		Improvement Description	Cost Estimate	Implementation Strategy / Potential Funding Source(s)
Site #10 CSX TWIN OAKS AUTO (240)	a	Reconstruct US 322 / Bethel Rd interchange to provide acceleration / deceleration lanes.	$ 5,000,000	PA TIP - HWY funding
	b	Relocate facility driveway and signalize to provide for all ingress and egress movements.	$ 450,000	CSX / Economic development grants
	c	Provide trailblazers from facility to I-95 and US 322; provide directional signing to facility from US 322 and I-95.	$ 30,000	PennDOT maintenance funding
	d	Conduct access and safety study of the US 322 and I-95 interchange and surrounding area to address three nearby industrial parks and the CSX Twin Oaks facility.	$ 22,000,000	Total costs cited. Study = $3,000,000 per DVRPC LRP project C009 and PA TIP # 7883 - State and federal HWY funds. Implementation (right-of-way acq and construction) estimated at $19,000,000, also state and federal HWY funds
	e	Improve lighting along the connector	$ 150,000	PA TIP - HWY funding
		Subtotal:	**$ 27,630,000**	
Site #11 NOVOLOG PORT TERMINAL (*potential*) (210)	a	Reconstruct Pennsylvania Av under Amtrak overpass to eliminate height restriction.	$ 1,010,000	Possible component of PA TIP # 0515 - Regionwide Reconstruction / Restoration / Resurfacing Program
	b	Signalize Pennsylvania Av / Bristol Pk intersection.	$ 150,000	Candidate for PA TIP - HWY funding
	c	Increase turning radius at US 1 nb off ramp and Pennsylvania Av	$ 1,500,000	Possible component of TIP# 0515 - Regionwide Reconstruction / Restoration / Resurfacing Program
	d	Provide directional signs to terminal from US 1; and trailblazer signing from facility to US 1.	$ 15,000	Possible PennDOT maintenance project
		Subtotal:	**$ 2,675,000**	

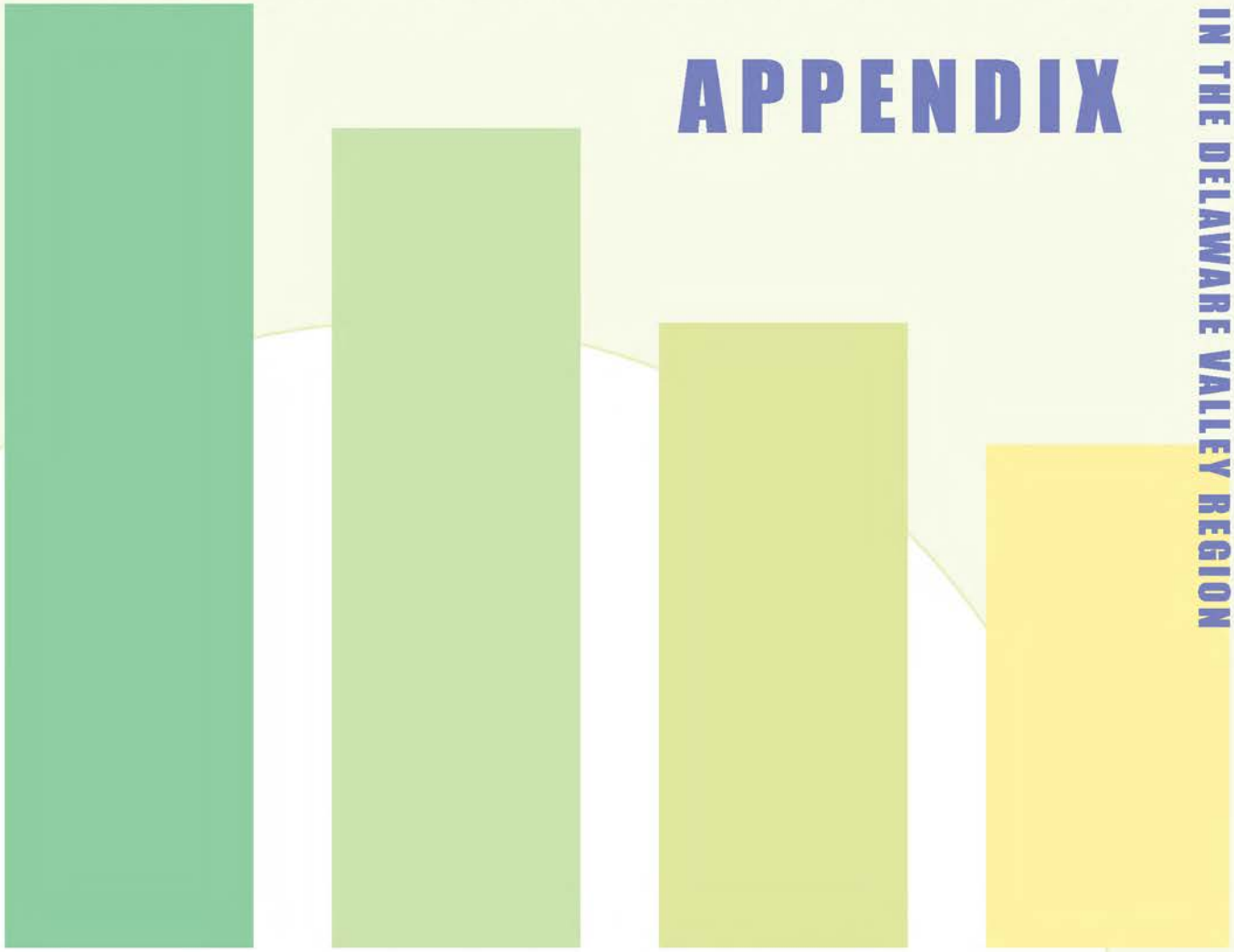
Table 4: Candidate NHS-Freight Connectors Improvement Program

Facility (est'd. total truck trips per day)		Improvement Description	Cost Estimate	Implementation Strategy / Potential Funding Source(s)
Site #12 FASTSHIP PORT & RAIL TERMINAL IN PORT RICHMOND (*proposed*) (*Projected* 1,600)	a	Construct southward extension of Delaware Av - from Allegheny Av to Cumberland St - to serve the terminal and provide access to/from I-95 sb. Include proper traffic control at Allegheny Av and new roadway	$ 6,000,000	Associate with site development costs / DRPA / City of Philadelphia funding / PA TIP HWY funding
	b	Reconstruct Cumberland St between new Delaware Av extension and Richmond St. Signalize Cumberland and Richmond Sts intersection	$ 550,000	Associate with site development costs / DRPA / City of Philadelphia funding / PA TIP - HWY funding
	c	Improve drainage on Delaware Av at Allegheny Av to eliminate flooding.	$ 100,000	Possible extension of PA TIP# 9740 - N. Delaware Av Extension scope, OR address in constructing proposed southward extension of Delaware Av associated with FastShip Terminal (see item #a, above)
	d	Provide directional signs to terminal from I-95 ramps (6 signs); and trailblazer signing to I-95 ramps from the facility (3 signs)	$ 10,000	Associate with site development costs
	e	Determine umbrella title for the enlarged port area (Tioga and FastShip terminals)	$ 0	Delaware Valley Goods Movement Task Force
	f	Revise port terminal placard sign legends on I-95 nb (exit at Girard/Lehigh Aves) and I-95 sb (use Alegheny Av)	$ 25,000	Candidate for PennDOT maintenance funds
	g	Add directional sign to terminal on Betsy Ross Bridge	$ 50,000	Candidate for DRPA maintenance funds
		Subtotal:	**$ 6,735,000**	

Grand Total:	**$ 163,074,000**

NATIONAL HIGHWAY SYSTEM CONNECTORS TO FREIGHT FACILITIES IN THE DELAWARE VALLEY REGION

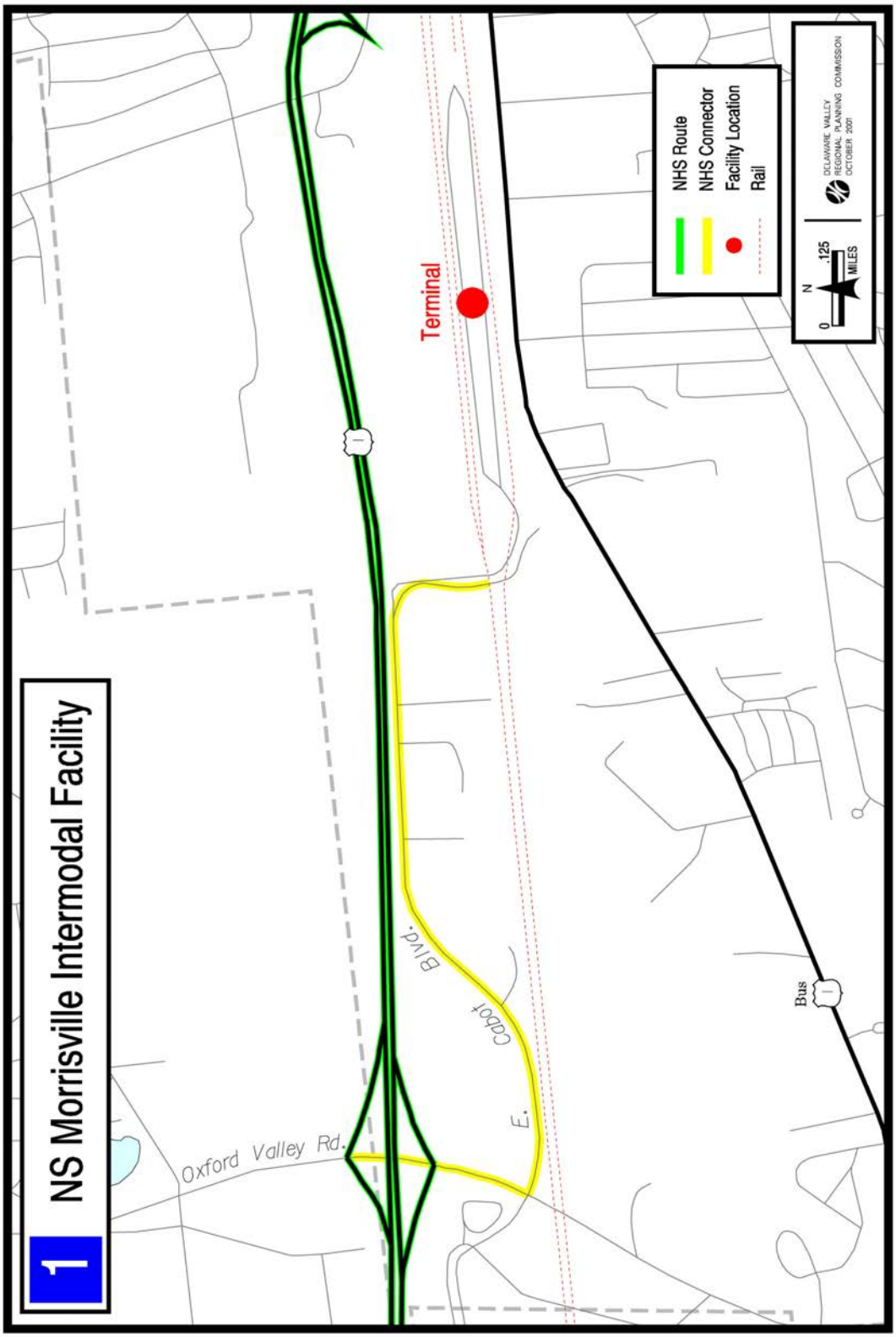
APPENDIX



DELAWARE VALLEY REGIONAL PLANNING COMMISSION

1 Norfolk Southern Intermodal Facility (Morrisville)

Connector Description: **From terminal to US 1 via E. Cabot Blvd. & Oxford Valley Rd.**
Connector Length: **1.884 miles**



1 Norfolk Southern Intermodal Facility (Morrisville)

Traffic Volumes	
Location:	E. Cabot Blvd.
Year:	1999
AADT:	4,471

Bridge / Structure ID		
ID #	**On**	**Over**
2029014000001656	✓	

Pavement Conditions			
Condition	**Description**	**Percent**	**Location**
Very Good	Newly built or resurfaced and distress free.		
Good	Smooth surface with little to no cracking or rutting.	20%	Oxford Valley Rd.
Fair	Serviceable with shallow rutting and moderate cracks beginning to occur, but does not affect travel speed.		
Poor	Same problems as fair but worse, cause some reduction in speed.	40%	East Cabot Blvd.
Very Poor	Major problems with potholes, etc., causing substantial reductions in speed	40%	East Cabot Blvd.

Geometric / Physical Features				
Problem	**No Problem**	**Short Section**	**Most of Length**	**Description**
Inadequate Travelway Width	✓			
Inadequate Shoulder Width	✓			
Lack of Stabilized Shoulder	✓			
Tight Turning Radii at Intersections	✓			
Road Not Paved	✓			
Bridge / Overpass Vertical Clearance	✓			
Weight Limitation on Road / Bridge	✓			
Narrow Bridge / Tunnel	✓			
Rough Abandoned Railroad Crossing	✓			
Drainage / Flooding				Unknown
Other No pavement markings		✓		At E. Cabot Blvd. / Oxford Valley Rd. intersection

1

Norfolk Southern Intermodal Facility (Morrisville)

Traffic Operations / Safety Problems / Delays (on the connector)			
Problem	**No Problem**	**Problem Exists**	**Description**
Heavy Traffic / Congested		✓	During AM/PM Peak
Long Delays at Traffic Signals		✓	During AM/PM Peak
Difficulty Making Left or Right Turns	✓		
Lack of Turning Lanes at Intersections	✓		
Lack of Traffic Signals	✓		
Truck Queues at Gates	✓		
Frequent Accidents			Unknown
On-Street Parking Conflicts	✓		
Moveable Span Bridge Openings	✓		
Other _____			

Traffic Operations / Safety Problems / Delays (at the connector / NHS junction)			
Problem	**No Problem**	**Problem Exists**	**Description**
Heavy Traffic on Mainline NHS		✓	During AM/PM Peak
Lack of Merge Area on to Mainline	✓		
Lack of Traffic Signals	✓		
Poorly Designed Ramps	✓		
Tight Turning Radii at Intersections	✓		
Lack of Turning Lanes	✓		
Other _____			

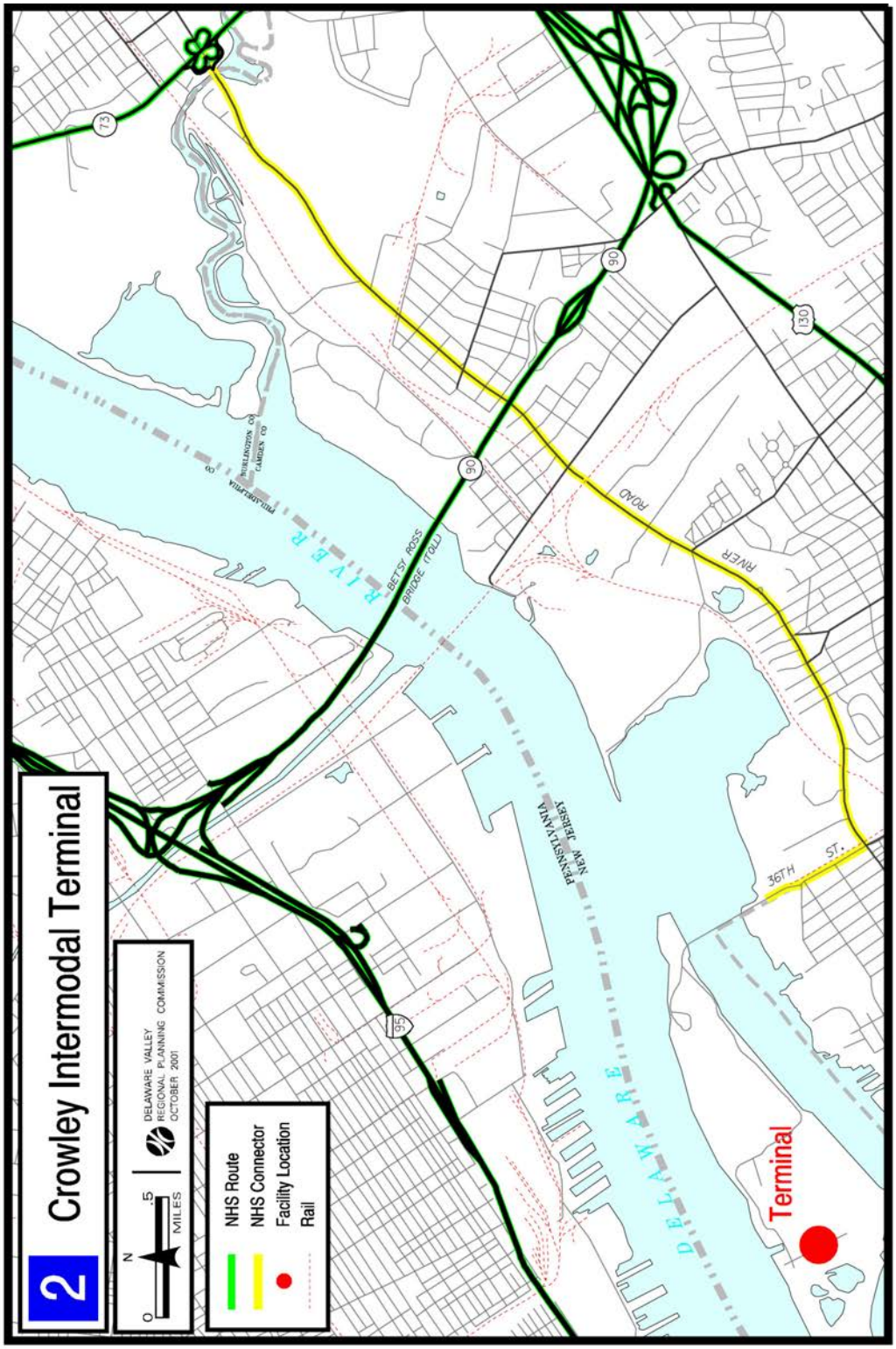
Destination Signing / Trailblazers

Is there adequate signing from the mainline NHS to the terminal; and from the terminal back to the mainline NHS? Yes _____ No ✓

New / Replacement Signs Recommended	Location
Sign with terminal name	At intersection of Oxford Valley Rd and E. Cabot Blvd.
Sign for US 1	At intersection of E. Cabot Blvd. and Oxford Valley Rd.
Signs for terminal	On US 1

2 Crowley Intermodal Terminal (Petty's Island)

Connector Description: **From terminal to NJ 73 via 36th St. & River Rd. (CR 543)**
Connector Length: **4.125 miles**



2

Crowley Intermodal Terminal (Petty's Island)

Traffic Volumes

Location:	River Rd. (Union to Penn Twp.)	River Rd. (Cove to Browning)
Year:	1995	1989
AADT:	9,216	10,485

Railroad Crossings

	ID# / Location
1	River Rd and John Tipton Blvd intersection

Railroad Crossing Problems

Problem	1	Description
Delays at Railroad Crossing		
Switching / Make-up Operations		
Crossing Warning Devices	✓	Crossbucks, but no flashing lights
Inadequate Sight Distance at Crossing		
Rough Railroad Crossing Surface	✓	
Vehicle Underclearance (Humped Crossing)		
Lack of Alternate Route		
Other crossing located at intersection	✓	train may interrupt traffic at intersection; traffic signal must protect traffic

Pavement Conditions

Condition	Description	Percent	Location
Very Good	Newly built or resurfaced and distress free.	65%	River Rd. (NJ 73 to Cove Rd.)
Good	Smooth surface with little to no cracking or rutting.	20%	River Rd. (Cove Rd. to 36th St.)
Fair	Serviceable with shallow rutting and moderate cracks beginning to occur, but does not affect travel speed.	10%	36th Street
Poor	Same problems as fair but worse, cause some reduction in speed.		
Very Poor	Major problems with potholes, etc., causing substantial reductions in speed	5%	Bridge at River Rd. / NJ 73 interchange

2

Crowley Intermodal Terminal (Petty's Island)

Geometric / Physical Features				
Problem	**No Problem**	**Short Section**	**Most of Length**	**Description**
Inadequate Travelway Width		✓		36th Street
Inadequate Shoulder Width	✓			
Lack of Stabilized Shoulder		✓		36th Street East side
Tight Turning Radii at Intersections		✓		At River Rd./ 36th Street intersection
Road Not Paved	✓			
Bridge / Overpass Vertical Clearance		✓		13'8" under Delair Bridge
Weight Limitation on Road / Bridge	✓			
Narrow Bridge / Tunnel	✓			
Rough Abandoned Railroad Crossing		✓		At John Tipton Blvd.
Drainage / Flooding		✓		Under Delair Bridge
Other No Pavement Markings		✓		On 36th Street

Traffic Operations / Safety Problems / Delays (on the connector)			
Problem	**No Problem**	**Problem Exists**	**Description**
Heavy Traffic / Congested	✓		
Long Delays at Traffic Signals	✓		
Difficulty Making Left or Right Turns		✓	At 36th St./ River Rd. Intersection
Lack of Turning Lanes at Intersections		✓	At 36th St./ River Rd. Intersection
Lack of Traffic Signals	✓		
Truck Queues at Gates	✓		
Frequent Accidents			Unknown
On-Street Parking Conflicts	✓		
Moveable Span Bridge Openings	✓		
Other _____			

2

Crowley Intermodal Terminal (Petty's Island)

Traffic Operations / Safety Problems / Delays (at the connector / NHS junction)			
Problem	**No Problem**	**Problem Exists**	**Description**
Heavy Traffic on Mainline NHS		✓	On NJ 73
Lack of Merge Area on to Mainline		✓	At River Rd./ NJ 73 junction
Lack of Traffic Signals	✓		
Poorly Designed Ramps		✓	Acceleration / deceleration lanes are short
Tight Turning Radii at Intersections	✓		
Lack of Turning Lanes	✓		
Other _____			

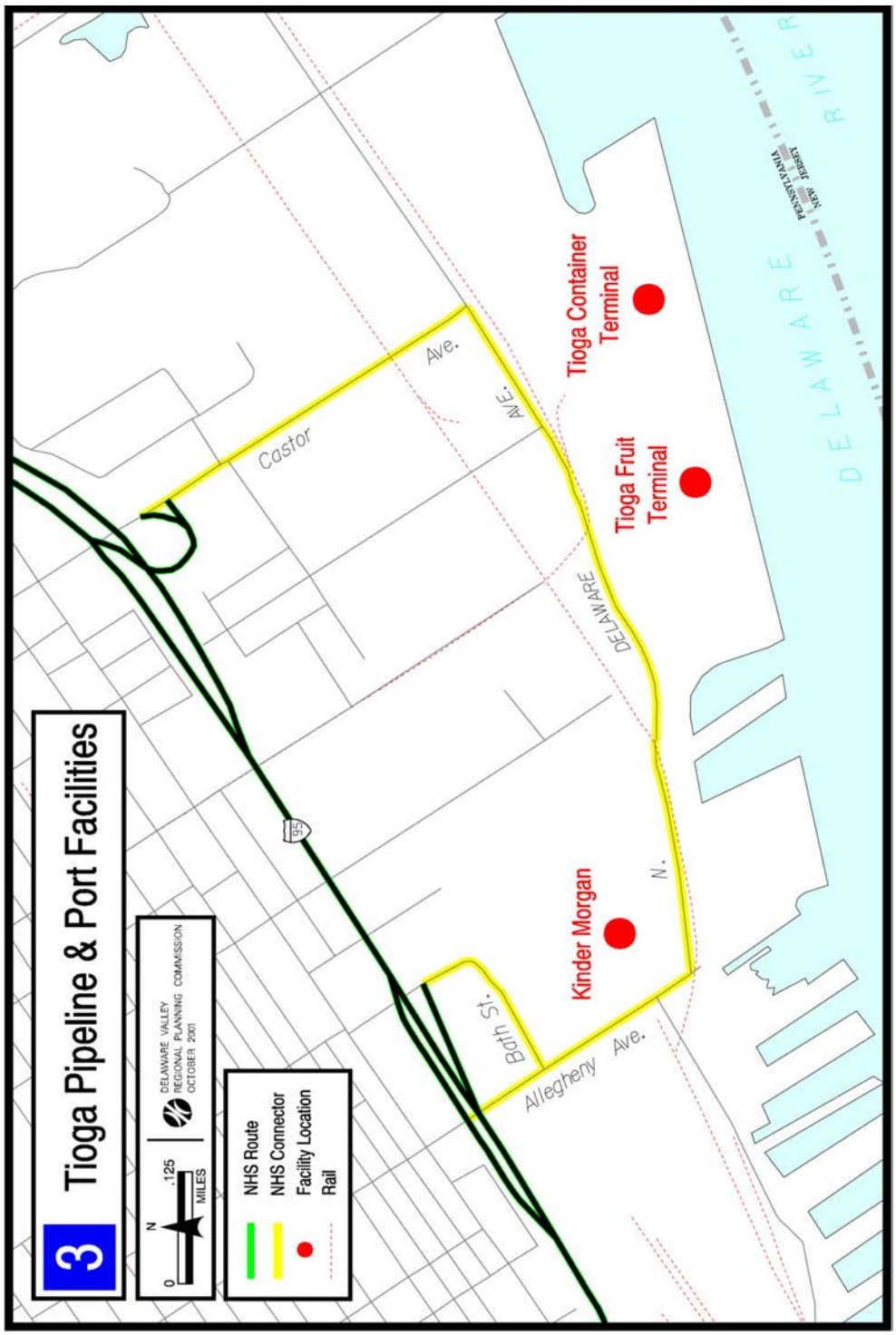
Destination Signing / Trailblazers	
Is there adequate signing from the mainline NHS to the terminal; and from the terminal back to the mainline NHS?	Yes ____ No ✓
New / Replacement Signs Recommended	**Location**
Trailblazers to Petty's Island	From both directions on NJ 73 and along the connector where applicable
Trailblazers to NJ 73	From the facility to NJ 73 where applicable

3

Tioga Pipeline & Port Facilities

Connector Description: **1) Between I-95 to/from the south & from I-95 sb to terminal via: Bath St., Allegheny Ave. & Delaware Ave., and; 2) From terminal to I-95 nb via Delaware Ave. & Castor Ave.**

Connector Length: **1.614 miles**



3

Tioga Pipeline & Port Facilities

Traffic Volumes

Location:	I-95 nb off	I-95 sb on	I-95 sb off	I-95 nb on	Allegheny Ave	Bath St
Year:	1990	1990	1990	1990	1997	1998
AADT:	8,415	8,504	9,137	9,265	11,365	3,495

Bridge / Structure ID

ID #	On	Over
67100500200000		✓
67801700101096		✓
67009502540000		✓

Railroad Crossings

	ID# / Location
1	Delaware Ave; into Tioga Marine Terminal
2	Castor Ave, north of Delaware Ave
3	Castor Ave, north of Delaware Ave

There are seven railroad crossings on the connector, none with an ID number. Four of the crossings appear to be abandoned and should be removed or paved over.

Railroad Crossing Problems

Problem	1	2	3	Description
Delays at Railroad Crossing				
Switching / Make-up Operations				
Crossing Warning Devices		✓	✓	on Castor Ave.
Inadequate Sight Distance at Crossing				
Rough Railroad Crossing Surface	✓	✓	✓	on Delaware Ave.and Castor Ave.
Vehicle Underclearance (Humped Crossing)				
Lack of Alternate Route				
Other_____				

3

Tioga Pipeline & Port Facilities

Pavement Conditions			
Condition	**Description**	**Percent**	**Location**
Very Good	Newly built or resurfaced and distress free.		
Good	Smooth surface with little to no cracking or rutting.	80%	Bath, Allegheny, and Delaware, except at railroad crossings
Fair	Serviceable with shallow rutting and moderate cracks beginning to occur, but does not affect travel speed.		
Poor	Same problems as fair but worse, cause some reduction in speed.	20%	Castor Ave.
Very Poor	Major problems with potholes, etc., causing substantial reductions in speed		

Geometric / Physical Features				
Problem	**No Problem**	**Short Section**	**Most of Length**	**Description**
Inadequate Travelway Width	✓			
Inadequate Shoulder Width	✓			
Lack of Stabilized Shoulder	✓			
Tight Turning Radii at Intersections		✓		Bath St. at I-95 sb off ramp
Road Not Paved	✓			
Bridge / Overpass Vertical Clearance	✓			No sign posted, but I-95 overpass bridge on Allegheny Ave. shows signs of impact.
Weight Limitation on Road / Bridge	✓			
Narrow Bridge / Tunnel	✓			
Rough Abandoned Railroad Crossing		✓		On Delaware Ave.
Drainage / Flooding		✓		On Delaware Ave.
Other _____				

3

Tioga Pipeline & Port Facilities

Traffic Operations / Safety Problems / Delays (on the connector)			
Problem	**No Problem**	**Problem Exists**	**Description**
Heavy Traffic / Congested	✓		
Long Delays at Traffic Signals	✓		
Difficulty Making Left or Right Turns	✓		
Lack of Turning Lanes at Intersections	✓		
Lack of Traffic Signals	✓		
Truck Queues at Gates		✓	At Tioga Fruit and Container Entrance on Delaware Ave.
Frequent Accidents			Unknown
On-Street Parking Conflicts	✓		
Moveable Span Bridge Openings	✓		
Other _____			

Traffic Operations / Safety Problems / Delays (at the connector / NHS junction)			
Problem	**No Problem**	**Problem Exists**	**Description**
Heavy Traffic on Mainline NHS		✓	
Lack of Merge Area on to Mainline	✓		
Lack of Traffic Signals		✓	No left turn phase at Allegheny Ave. and I-95 sb on ramp; results in delays
Poorly Designed Ramps	✓		
Tight Turning Radii at Intersections		✓	At I-95 sb off ramp on Bath St.
Lack of Turning Lanes		✓	At Allegheny Ave and I-95 sb on ramp; results in delays
Other _____			

Destination Signing / Trailblazers

Is there adequate signing from the mainline NHS to the terminal; and from the terminal back to the mainline NHS? Yes ___ No ✓

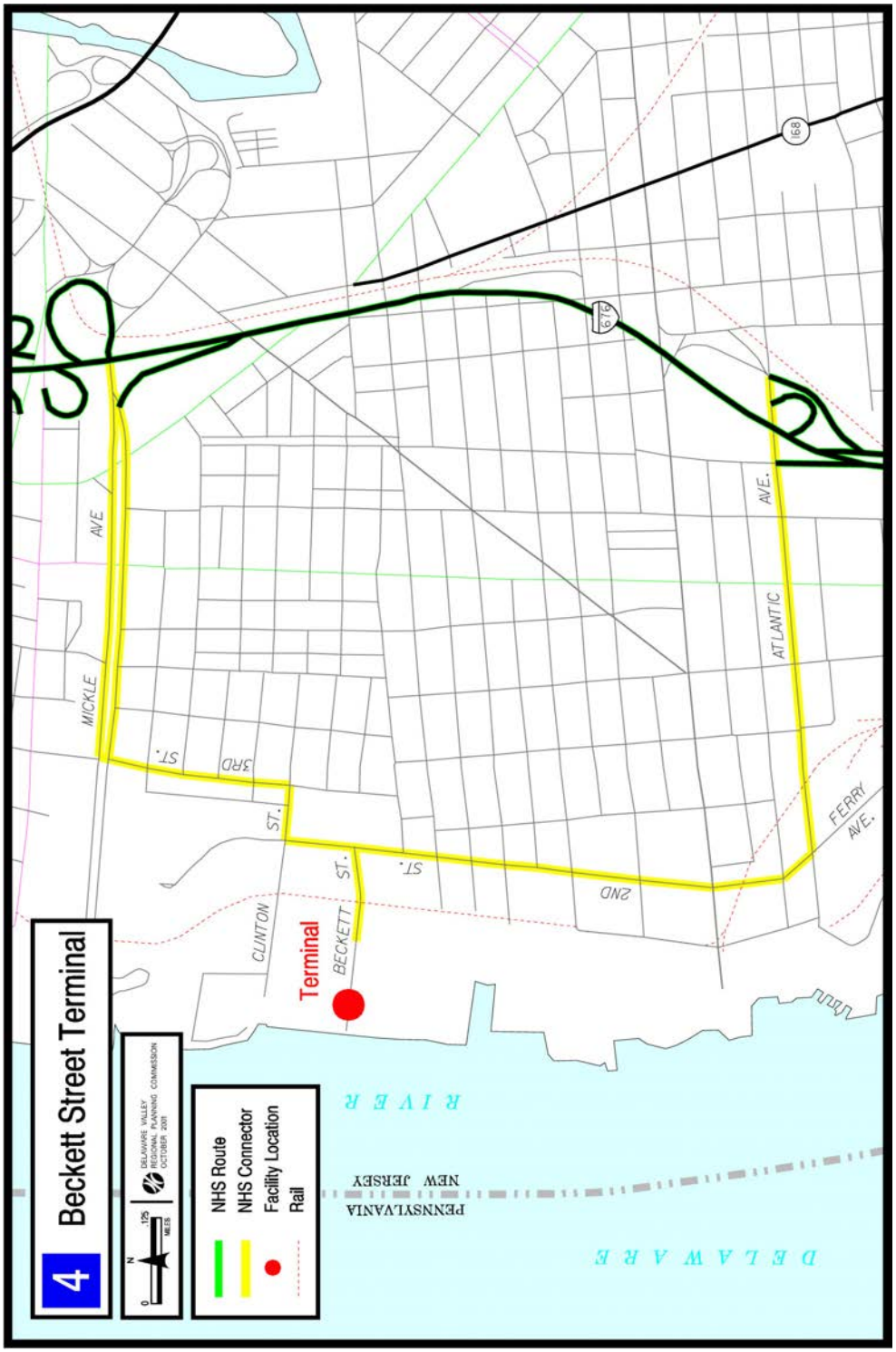
New / Replacement Signs Recommended	Location
Sign to I-95 nb on ramp	Delaware Ave. and Castor Ave.
Larger and more complete signs to terminals	I-95 nb and sb off ramps, at Bath St. / Allegheny Ave. intersection

4

Beckett Street Terminal

Connector Description: **1) Between I-676 to/from the west and the terminal via: Mickle Blvd., 3rd St., Clinton St, & 2nd St. 2) Between terminal and I-676 to/from the south via: Beckett St.,2nd St., Ferry Ave., & Atlantic Ave.**

Connector Length: **2.160 miles**



4

Beckett Street Terminal

Traffic Volumes

Location:	3rd St. (Mickle to Clinton)	2nd St. (Walnut to Beckett)	Atlantic Ave (Broadway to Ferry)
Year:	2001	2001	2001
AADT:	4,203	2,415	3,171

Railroad Crossings

	ID# / Location
1	2nd Street - between Beckett St and Line St
2	2nd Street - between Kaighn Ave and Mechanic St
3	Atlantic Ave - between Ferry Ave and Emma St

Railroad Crossing Problems

Problem	1	2	3	Description
Delays at Railroad Crossing				
Switching / Make-up Operations				
Crossing Warning Devices	✓	✓	✓	There are no warning devices at all of the crossings
Inadequate Sight Distance at Crossing				
Rough Railroad Crossing Surface	✓	✓	✓	All of the crossings are very rough
Vehicle Underclearance (Humped Crossing)				
Lack of Alternate Route				
Other No pavement markings				

Pavement Conditions

Condition	Description	Percent	Location
Very Good	Newly built or resurfaced and distress free.		
Good	Smooth surface with little to no cracking or rutting.		
Fair	Serviceable with shallow rutting and moderate cracks beginning to occur, but does not affect travel speed.	50%	Mickle Ave., Atlantic Ave (Ferry Ave. to Broadway)
Poor	Same problems as fair but worse, cause some reduction in speed.	40%	3rd Street, Clinton St., 2nd Street, Beckett St.
Very Poor	Major problems with potholes, etc., causing substantial reductions in speed	10%	Atlantic Ave. (Broadway to I-676

4

Beckett Street Terminal

Geometric / Physical Features				
Problem	**No Problem**	**Short Section**	**Most of Length**	**Description**
Inadequate Travelway Width	✓			
Inadequate Shoulder Width	✓			
Lack of Stabilized Shoulder	✓			
Tight Turning Radii at Intersections		✓		At Beckett St. / 2nd St. Intersection
Road Not Paved	✓			
Bridge / Overpass Vertical Clearance	✓			
Weight Limitation on Road / Bridge	✓			
Narrow Bridge / Tunnel	✓			
Rough Abandoned Railroad Crossing		✓		Possibility that the rough grade crossings are abandoned
Drainage / Flooding		✓		Flood Area on Atlantic Ave.
Other _____				

Traffic Operations / Safety Problems / Delays (on the connector)			
Problem	**No Problem**	**Problem Exists**	**Description**
Heavy Traffic / Congested		✓	At Mickle Blvd. and Broadway intersection
Long Delays at Traffic Signals	✓		
Difficulty Making Left or Right Turns	✓		
Lack of Turning Lanes at Intersections	✓		
Lack of Traffic Signals	✓		
Truck Queues at Gates		✓	On Beckett St.
Frequent Accidents			Unknown
On-Street Parking Conflicts		✓	Atlantic Ave. (Ferry Ave. to Broadway)
Moveable Span Bridge Openings	✓		
Other Humped Intersection		✓	At Atlantic Ave, and Broadway

4

Beckett Street Terminal

Traffic Operations / Safety Problems / Delays (at the connector / NHS junction)			
Problem	**No Problem**	**Problem Exists**	**Description**
Heavy Traffic on Mainline NHS		✓	Possible at I-676 / Atlantic Ave. Junction
Lack of Merge Area on to Mainline	✓		
Lack of Traffic Signals	✓		
Poorly Designed Ramps	✓		
Tight Turning Radii at Intersections	✓		
Lack of Turning Lanes	✓		
Other _____			

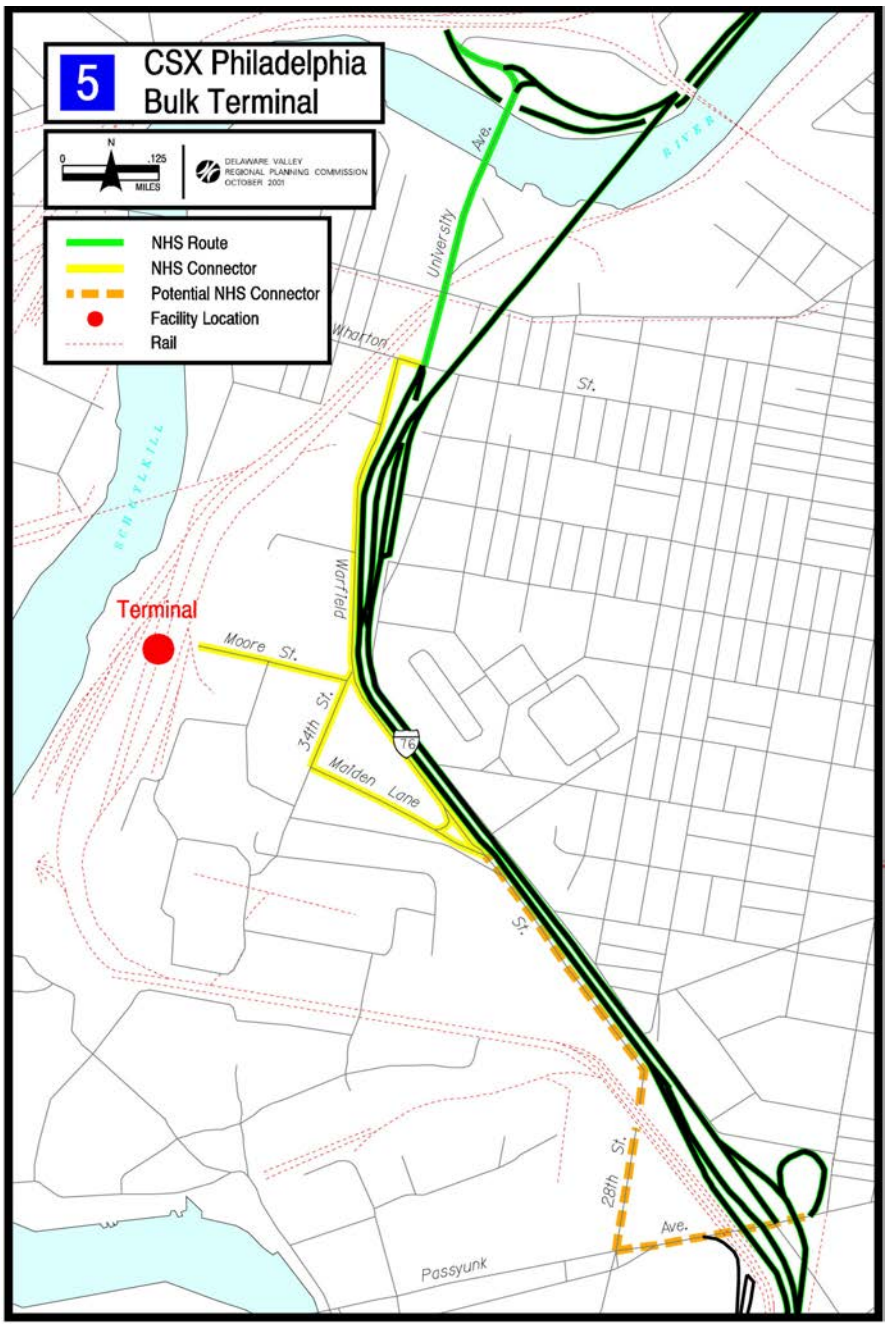
Destination Signing / Trailblazers	
Is there adequate signing from the mainline NHS to the terminal; and from the terminal back to the mainline NHS? Yes _____ No _✓_	
New / Replacement Signs Recommended	**Location**
Trailblazers from I-676 and NJ 30 to terminal	All appropriate intersections
Trailblazers from terminal to I-676	All appropriate intersections
Trailblazers from terminal to NJ 30	All appropriate intersections
Consistent signing for Mickle Blvd. / Martin Luther King Blvd. / Alicia Santos Blvd.	Along Mickle Blvd.
Larger street name signs - current signs are very small	Along all connector roadways

5

CSX Philadelphia Bulk Terminal

Connector Description: **1) Between I-76 to/from the east and the terminal via: 34th St., Wharton St., Warfield St. & Moore St. 2) Between I-76 eb and the terminal via: 28th St. slip ramp, Warfield St., Maiden La., 34th St. & Moore St. *3) Between the terminal and I-76 wb via: Moore St., 34thSt., Maiden La., Warfield St., 28th St. & Passyunk Ave.*** [1]

Connector Length: ***2.380 miles***



[1] Access to I-76 wb is missing in FHWA's approved connector network supporting the CSX Philadelphia Bulk Terminal. The linkage described above is DVRPC staff''s recommended connection to serve the movement. The total additional mileage to complete the connection (0.833 mile) has been included in the Connector Length shown above.

5

CSX Philadelphia Bulk Terminal

Traffic Volumes

Location:	Warfield St. (Moore St. to Wharton St.)	I-76 eb on (at 34th St.)	I-76 wb off (at 34th St.)	I-76 wb on at Passyunk Ave.
Year:	1995	1993	1993	1993
AADT:	2,706	12,965	11,016	18,468

Pavement Conditions

Condition	Description	Percent	Location
Very Good	Newly built or resurfaced and distress free.		
Good	Smooth surface with little to no cracking or rutting.		
Fair	Serviceable with shallow rutting and moderate cracks beginning to occur, but does not affect travel speed.	85%	Wharton St., Warfield St., 34th St., Passyunk Ave.
Poor	Same problems as fair but worse, cause some reduction in speed.	15%	Moore St.
Very Poor	Major problems with potholes, etc., causing substantial reductions in speed		

Geometric / Physical Features

Problem	No Problem	Short Section	Most of Length	Description
Inadequate Travelway Width		✓		Wharton St.
Inadequate Shoulder Width		✓		Wharton St., Warfield St., Moore St.
Lack of Stabilized Shoulder	✓			
Tight Turning Radii at Intersections		✓		Wharton St., Warfield St., and Moore St. intersections
Road Not Paved	✓			
Bridge / Overpass Vertical Clearance	✓			
Weight Limitation on Road / Bridge	✓			
Narrow Bridge / Tunnel	✓			
Rough Abandoned Railroad Crossing	✓			
Drainage / Flooding		✓		At the Maiden Lane / Warfield St. intersection
Other No pavement markings				Warfield St., and 28th St.

5

CSX Philadelphia Bulk Terminal

Traffic Operations / Safety Problems / Delays (on the connector)			
Problem	**No Problem**	**Problem Exists**	**Description**
Heavy Traffic / Congested	✓		
Long Delays at Traffic Signals		✓	At University Ave. / Wharton St. Intersection; and at Passyunk Ave. / I-76 wb on ramp intersection
Difficulty Making Left or Right Turns	✓		
Lack of Turning Lanes at Intersections	✓		
Lack of Traffic Signals	✓		
Truck Queues at Gates	✓		
Frequent Accidents			Unknown
On-Street Parking Conflicts	✓		There is parking along Warfield St., but it is not a problem
Moveable Span Bridge Openings	✓		
Other _____			

Traffic Operations / Safety Problems / Delays (at the connector / NHS junction)			
Problem	**No Problem**	**Problem Exists**	**Description**
Heavy Traffic on Mainline NHS		✓	I-76
Lack of Merge Area on to Mainline		✓	short deceleration lane to 28th St. exit
Lack of Traffic Signals	✓		
Poorly Designed Ramps		✓	short acceleration lane to I-76 eb from Warfield St.
Tight Turning Radii at Intersections	✓		
Lack of Turning Lanes	✓		
Other _____			

Destination Signing / Trailblazers

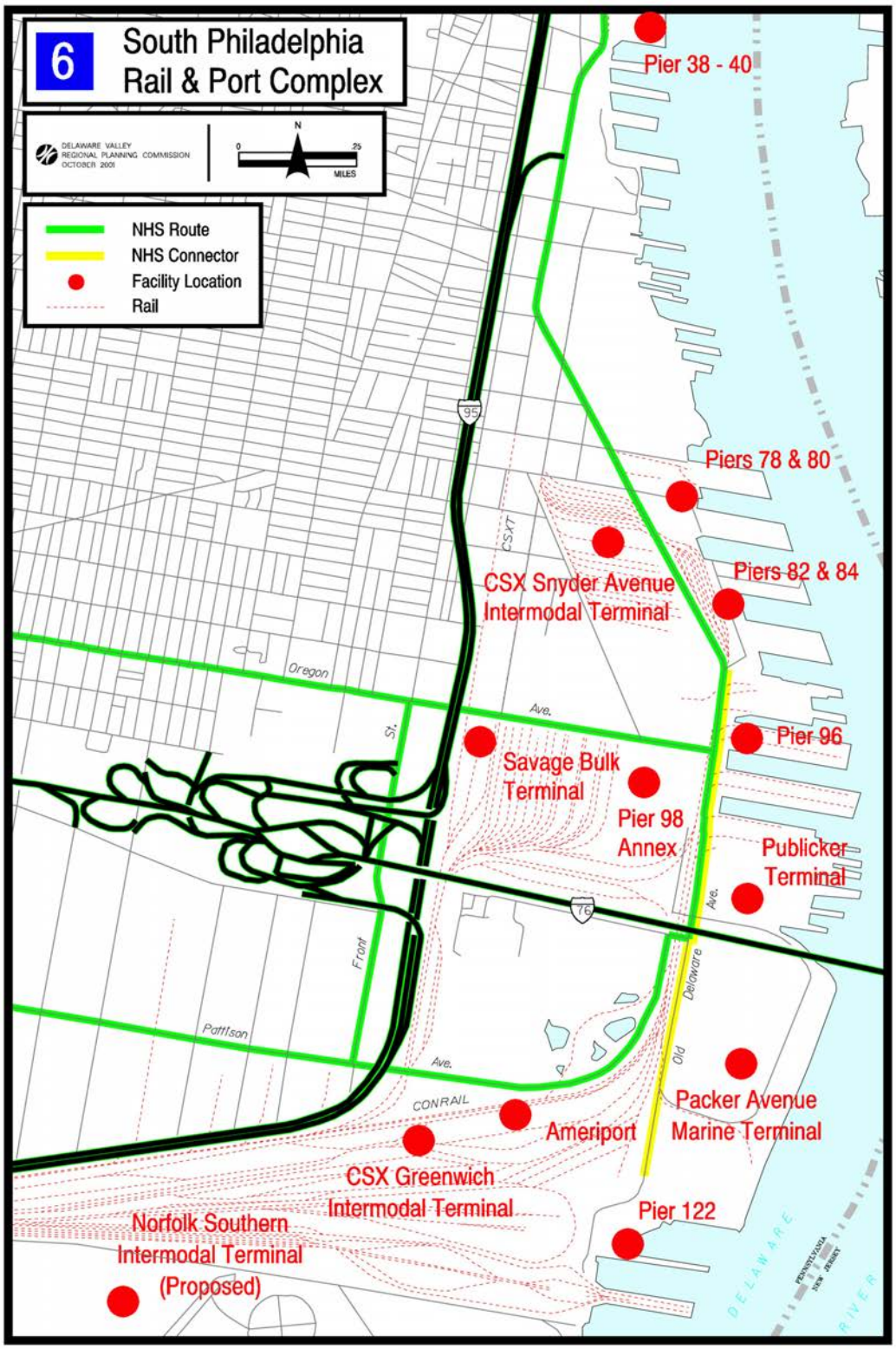
Is there adequate signing from the mainline NHS to the terminal; and from the terminal back to the mainline NHS? Yes _____ No ✓

New / Replacement Signs Recommended	Location
Trailblazers to facility from the mainline NHS	At all intersections leading to the facility
Directional signs from facility to mainline NHS	At all intersections from the facility to I-76
Replace old overhead sign reading “Schuylkill Expressway North” with “I-76 West” overhead mast arm	Passyunk Ave. and I-76 interchange

6 South Philadelphia Rail and Port Complex

Connector Description: **From Packer Ave. Marine Terminal's southern driveway to Columbus Blvd. via: Old Delaware Ave.**

Connector Length: **1.074 miles**



6 South Philadelphia Rail and Port Complex

Traffic Volumes	
Location:	Old Delaware Ave
Year:	1999
AADT:	2,728

Bridge / Structure ID		
ID #	**On**	**Over**
67B3		✓

Railroad Crossings	
	ID# / Location
1	Oregon Ave / Old Delaware Ave intersection; parallel to Old Delaware Ave
2	Old Delaware Ave; approximately 50 yards south of Oregon Ave
3	Old Delaware Ave; approximately 150 yards south of Old Delaware Ave
There are 12 railroad grade crossings on this connector, none with an ID number. Three of the crossings are still in use, and the other nine crossings appear abandoned.	

Railroad Crossing Problems				
Problem	**1**	**2**	**3**	**Description**
Delays at Railroad Crossing	✓			
Switching / Make-up Operations				
Crossing Warning Devices	✓	✓	✓	
Inadequate Sight Distance at Crossing	✓			
Rough Railroad Crossing Surface				
Vehicle Underclearance (Humped Crossing)				
Lack of Alternate Route				
Other No pavement markings	✓			Intersection of Old Delaware Ave. and Oregon: There is no defined stop bar for the traffic signal at the intersection. Some trucks could stop across the railroad tracks.

6

South Philadelphia Rail and Port Complex

Pavement Conditions			
Condition	**Description**	**Percent**	**Location**
Very Good	Newly built or resurfaced and distress free.		
Good	Smooth surface with little to no cracking or rutting.	100%	All connector roadways
Fair	Serviceable with shallow rutting and moderate cracks beginning to occur, but does not affect travel speed.		
Poor	Same problems as fair but worse, cause some reduction in speed.		
Very Poor	Major problems with potholes, etc., causing substantial reductions in speed		

Geometric / Physical Features				
Problem	**No Problem**	**Short Section**	**Most of Length**	**Description**
Inadequate Travelway Width	✓			
Inadequate Shoulder Width	✓			
Lack of Stabilized Shoulder	✓			
Tight Turning Radii at Intersections		✓		At Intersection of Oregon Ave. and Columbus Blvd. and the short stacking area from Old Delaware Ave. to those roadways.
Road Not Paved	✓			
Bridge / Overpass Vertical Clearance	✓			
Weight Limitation on Road / Bridge	✓			
Narrow Bridge / Tunnel	✓			
Rough Abandoned Railroad Crossing	✓			
Drainage / Flooding				Unknown
Other No pavement markings		✓		At the intersection of Old Delaware Ave. and Oregon Ave., see description under Railroad Crossing Problems

6 South Philadelphia Rail and Port Complex

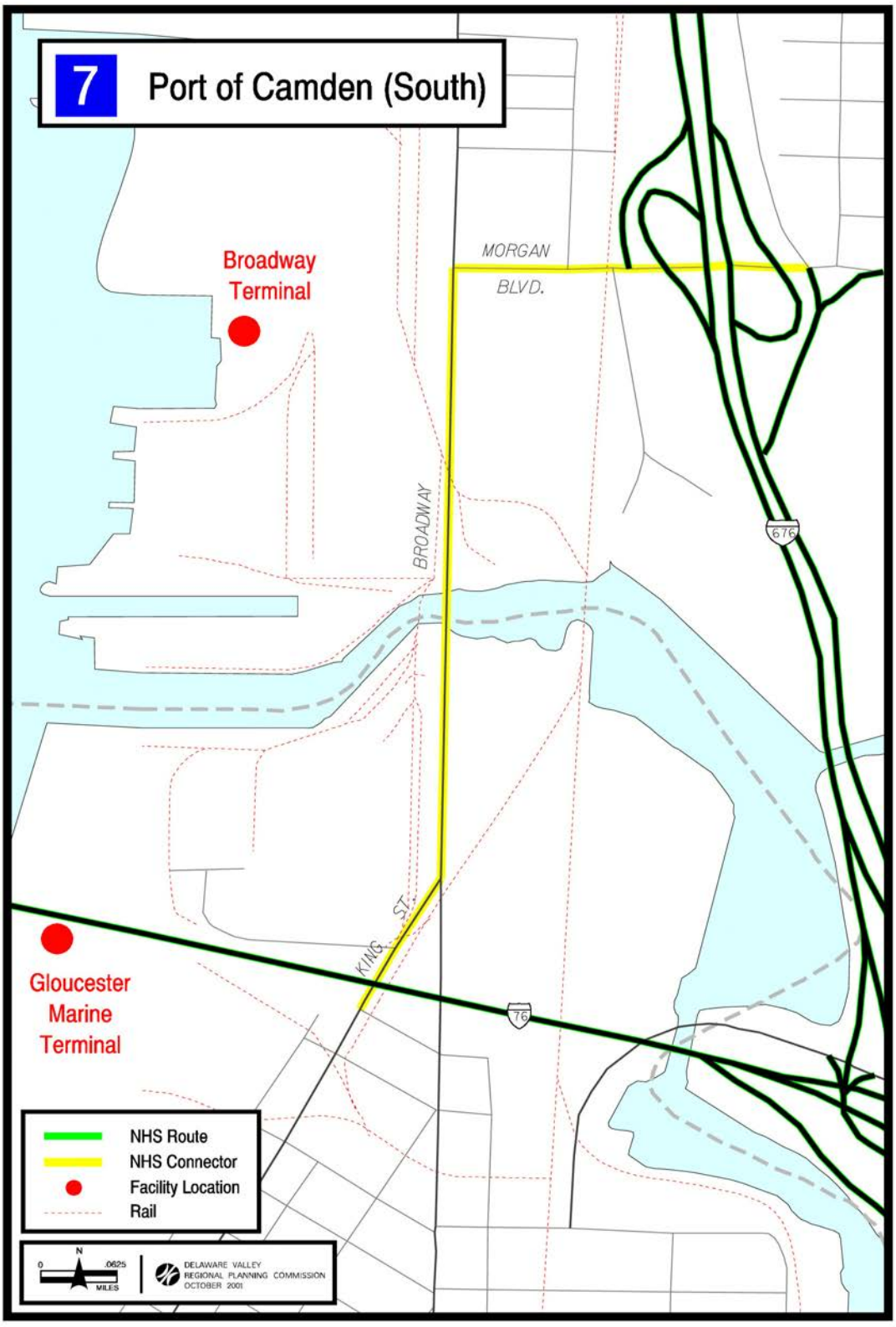
Traffic Operations / Safety Problems / Delays (on the connector)			
Problem	**No Problem**	**Problem Exists**	**Description**
Heavy Traffic / Congested	✓		
Long Delays at Traffic Signals	✓		
Difficulty Making Left or Right Turns	✓		
Lack of Turning Lanes at Intersections	✓		
Lack of Traffic Signals	✓		
Truck Queues at Gates	✓		
Frequent Accidents	✓		
On-Street Parking Conflicts	✓		
Moveable Span Bridge Openings	✓		
Other _____			

Traffic Operations / Safety Problems / Delays (at the connector / NHS junction)			
Problem	**No Problem**	**Problem Exists**	**Description**
Heavy Traffic on Mainline NHS	✓		
Lack of Merge Area on to Mainline	✓		
Lack of Traffic Signals	✓		
Poorly Designed Ramps	✓		
Tight Turning Radii at Intersections		✓	Old Delaware Ave. at Oregon Ave.
Lack of Turning Lanes	✓		
Other _____			

Destination Signing / Trailblazers	
Is there adequate signing from the mainline NHS to the terminal; and from the terminal back to the mainline NHS?	Yes ✓ No ____
New / Replacement Signs Recommended	**Location**
Consolidated directory of showing the locations of all the facilities within the South Philadelphia Port and Rail Complex.	At the base of Oregon Ave. at Old Delaware Ave.

7 Port of Camden (South) - Broadway Terminal & Gloucester Marine Terminal

Connector Description: **From I-676 to the terminals via: Morgan Blvd., Broadway, King St.**
Connector Length: **0.890 miles**



7 Port of Camden (South) - Broadway Terminal & Gloucester Marine Terminal

Traffic Volumes

Location:	Morgan Blvd. (I-676 to Broadway)	Broadway (Morgan Blvd. to 'Port South' Driveway)	King St. (Broadway to Walt Whitman Br. overpass)
Year:	2001	2001	2001
AADT:	7,120	4,231	1,903

Bridge / Structure ID

ID #	On	Over
Unknown - Walt Whitman Bridge (I-76)		✓

Railroad Crossings

	ID# / Location
1	Morgan Blvd., between I-676 sb off ramp and 6th street
2	Broadway, into the Broadway Terminal
3	King St., into Gloucester Marine Terminal
4	King St, between I-76 and Linden, appears to be abandoned

Railroad Crossing Problems

Problem	1	2	3	4	Description
Delays at Railroad Crossing					
Switching / Make-up Operations					
Crossing Warning Devices	✓	✓	✓	✓	There are no warning devices at any of the crossings
Inadequate Sight Distance at Crossing					
Rough Railroad Crossing Surface	✓	✓	✓	✓	All of the crossings are very rough
Vehicle Underclearance (Humped Crossing)					
Lack of Alternate Route					
Other_____					

7

Port of Camden (South) - Broadway Terminal & Gloucester Marine Terminal

Pavement Conditions			
Condition	**Description**	**Percent**	**Location**
Very Good	Newly built or resurfaced and distress free.		
Good	Smooth surface with little to no cracking or rutting.		
Fair	Serviceable with shallow rutting and moderate cracks beginning to occur, but does not affect travel speed.	100%	All connector roadways
Poor	Same problems as fair but worse, cause some reduction in speed.		
Very Poor	Major problems with potholes, etc., causing substantial reductions in speed		

Geometric / Physical Features				
Problem	**No Problem**	**Short Section**	**Most of Length**	**Description**
Inadequate Travelway Width	✓			
Inadequate Shoulder Width		✓		On King St. and Morgan Blvd.
Lack of Stabilized Shoulder	✓			
Tight Turning Radii at Intersections	✓			
Road Not Paved	✓			
Bridge / Overpass Vertical Clearance	✓			
Weight Limitation on Road / Bridge		✓		10 ton weight limit - sign has been pushed over
Narrow Bridge / Tunnel	✓			
Rough Abandoned Railroad Crossing		✓		
Drainage / Flooding				Unknown
Other _____				

7 Port of Camden (South) - Broadway Terminal & Gloucester Marine Terminal

Traffic Operations / Safety Problems / Delays (on the connector)

Problem	No Problem	Problem Exists	Description
Heavy Traffic / Congested	✓		
Long Delays at Traffic Signals	✓		
Difficulty Making Left or Right Turns	✓		
Lack of Turning Lanes at Intersections		✓	Needs left turn lane from Morgan Blvd onto Broadway
Lack of Traffic Signals		✓	Signal needed at Broadway / King St.
Truck Queues at Gates	✓		
Frequent Accidents			Unknown
On-Street Parking Conflicts	✓		
Moveable Span Bridge Openings	✓		
Other _____			

Traffic Operations / Safety Problems / Delays (at the connector / NHS junction)

Problem	No Problem	Problem Exists	Description
Heavy Traffic on Mainline NHS		✓	Possible on I-676
Lack of Merge Area on to Mainline	✓		
Lack of Traffic Signals	✓		
Poorly Designed Ramps	✓		
Tight Turning Radii at Intersections	✓		
Lack of Turning Lanes	✓		
Other _____			

Destination Signing / Trailblazers

Is there adequate signing from the mainline NHS to the terminal;
and from the terminal back to the mainline NHS? Yes _____ No ✓

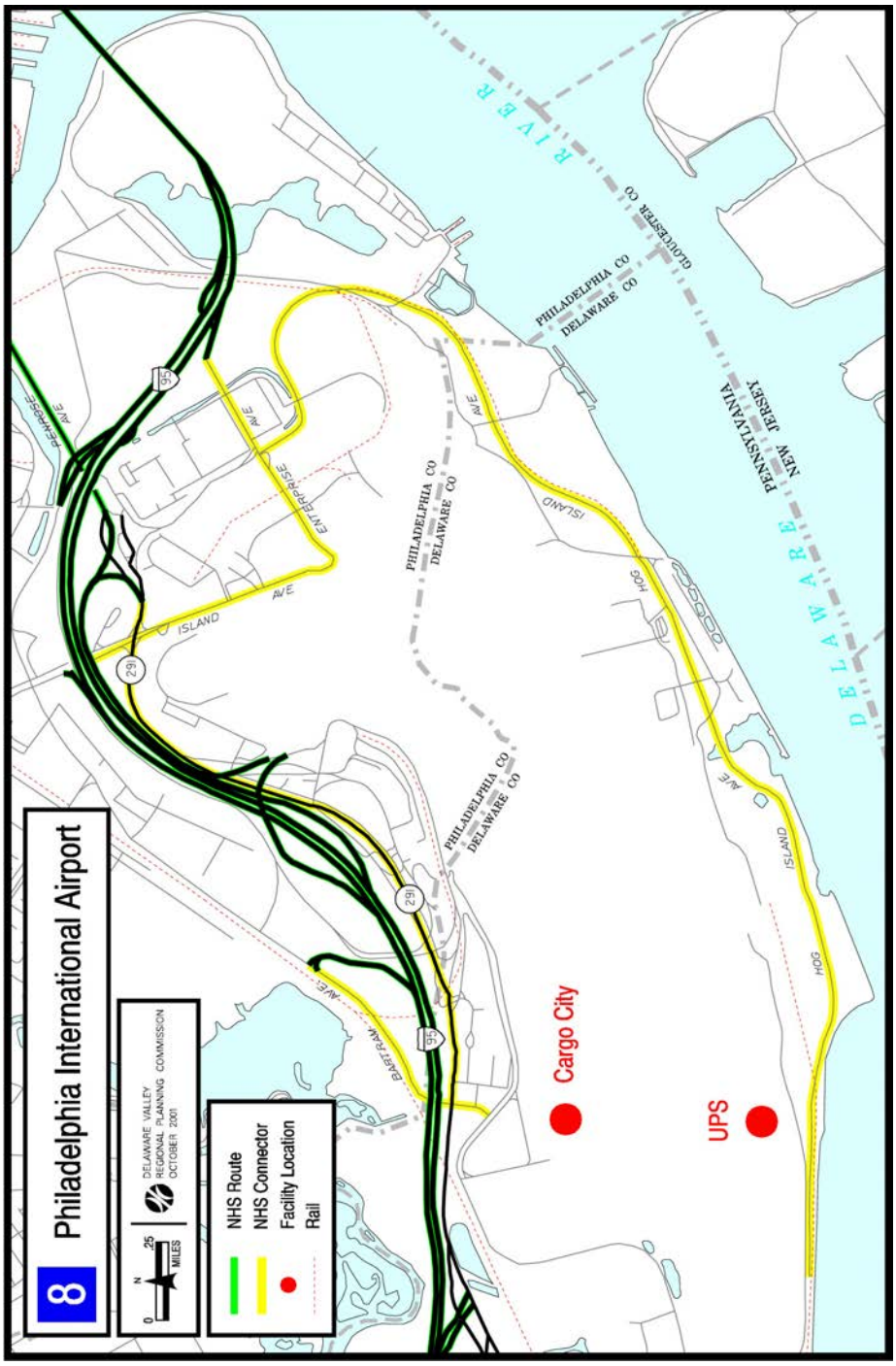
New / Replacement Signs Recommended	Location
Trailblazers to the facilities	At the end of I-676 off ramps, at Morgan Blvd./ Broadway Intersection
Sign to identify Broadway Terminal	At the facility

8

Philadelphia International Airport

Connector Description: **1) For Cargo City terminal: a) to I-95 nb via Scott Way & PA 291 (Penrose Ave.). b) to I-95 sb via Scott Way & Bartram Ave. c) from I-95 nb via Island Ave., Penrose Ave. (PA 291) & Scott Way. d) from I-95 sb via Enterprise Ave., Island Ave., Penrose Ave. & Scott Way. 2) Between the UPS terminal and: a) I-95 to/from the south via Hog Island Rd. and Island Ave. and; b) I-95 to/from the north via Hog Island Rd. & Enterprise Ave.**

Connector Length: **8.291 miles**



8

Philadelphia International Airport

Traffic Volumes

Location:	Bartram Ave	Scott Way	Hog Island Rd	Enterprise Ave	Island Ave	I-95 sb on ramp (at Bartram)	I-95 sb on ramp (at Airport)	PA 291
Year:	1998	1998	1999	1997	1999	1998	1998	1995
AADT:	17,502	12,167	6,666	23,864	10,525	5,537	6,040	25,352

Bridge / Structure ID

ID #	On	Over
67009501140508		✓
67806399009910		✓
67806399009950		✓
67806399024290		✓
67806399024410		✓
67009501341533		✓
67009501351691		✓
23009501040000		✓
67009501301637	✓	
67009501311682	✓	

Pavement Conditions

Condition	Description	Percent	Location
Very Good	Newly built or resurfaced and distress free.	25%	Bartram Ave., Enterprise Ave.
Good	Smooth surface with little to no cracking or rutting.	45%	Scott Way, PA 291, Island Ave., Hog Island Ave. (Enterprise Ave. to Tunnel)
Fair	Serviceable with shallow rutting and moderate cracks beginning to occur, but does not affect travel speed.	30%	Hog Island Ave. (Tunnel to UPS facility)
Poor	Same problems as fair but worse, cause some reduction in speed.		
Very Poor	Major problems with potholes, etc., causing substantial reductions in speed		

8

Philadelphia International Airport

Geometric / Physical Features				
Problem	**No Problem**	**Short Section**	**Most of Length**	**Description**
Inadequate Travelway Width	✓			
Inadequate Shoulder Width		✓		Scott Way, Hog Island Ave., Enterprise Ave.
Lack of Stabilized Shoulder		✓		Scott Way,Hog Island Ave., Enterprise Ave.
Tight Turning Radii at Intersections	✓			
Road Not Paved	✓			
Bridge / Overpass Vertical Clearance	✓			
Weight Limitation on Road / Bridge	✓			
Narrow Bridge / Tunnel	✓			
Rough Abandoned Railroad Crossing	✓			
Drainage / Flooding				Unknown - possible due to proximity to river
Other				

Traffic Operations / Safety Problems / Delays (on the connector)			
Problem	**No Problem**	**Problem Exists**	**Description**
Heavy Traffic / Congested		✓	During peaks
Long Delays at Traffic Signals	✓		Possible on PA 291
Difficulty Making Left or Right Turns	✓		
Lack of Turning Lanes at Intersections		✓	At Hog Island Ave. / Enterprise Ave. intersection
Lack of Traffic Signals		✓	At Hog Island Ave. / Enterprise Ave. intersection
Truck Queues at Gates	✓		
Frequent Accidents			Unknown
On-Street Parking Conflicts	✓		
Moveable Span Bridge Openings	✓		
Other			

8

Philadelphia International Airport

Traffic Operations / Safety Problems / Delays (at the connector / NHS junction)			
Problem	**No Problem**	**Problem Exists**	**Description**
Heavy Traffic on Mainline NHS		✓	I-95
Lack of Merge Area on to Mainline	✓		
Lack of Traffic Signals	✓		
Poorly Designed Ramps	✓		
Tight Turning Radii at Intersections	✓		
Lack of Turning Lanes	✓		
Other			

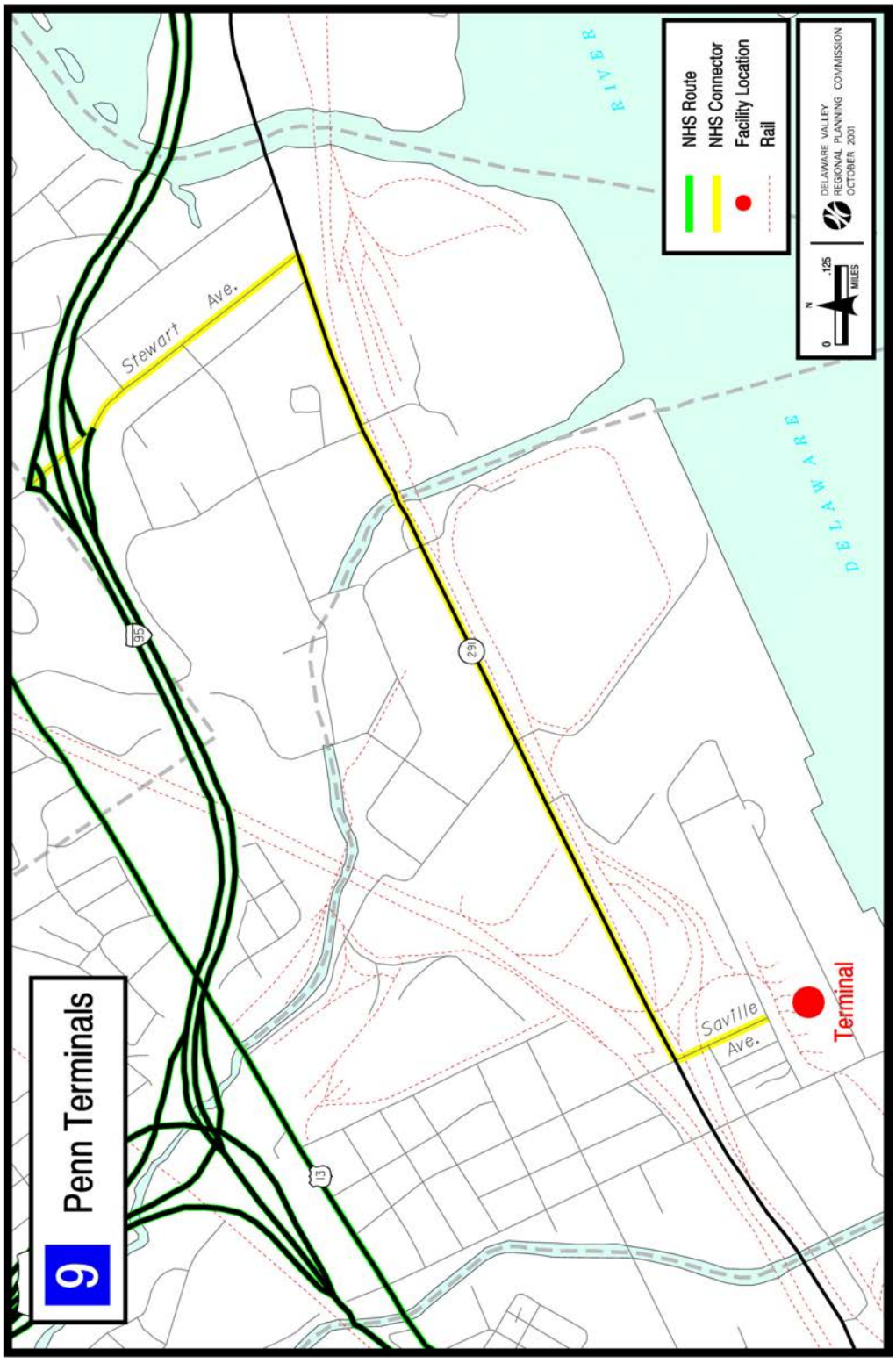
Destination Signing / Trailblazers	
Is there adequate signing from the mainline NHS to the terminal; and from the terminal back to the mainline NHS? Yes _____ No ✓	
New / Replacement Signs Recommended	**Location**
Trailblazers to facilities (UPS, Sunoco), directional signs to I-95	Intersection of Enterprise Ave and Hog Island Ave
Directional signs to I-95	Enterprise Ave, Fort Mifflin Ave, Cargo City

9

Penn Terminals

Connector Description: **From terminal to I-95 via Saville Ave., Industrial Hwy. (PA 291) & Stewart Ave.**

Connector Length: **1.430 miles**



9

Penn Terminals

Traffic Volumes					
Location:	I -95 sb on	I-95 sb off	I-95 nb on	I-95 nb off	Stewart Ave.
Year:	1990	1990	1990	1990	1999
AADT:	4,934	4,152	4,191	4,921	13,278

Bridge / Structure ID		
ID #	**On**	**Over**
Unknown - Railroad Bridge on Saville Ave		✓

Pavement Conditions			
Condition	**Description**	**Percent**	**Location**
Very Good	Newly built or resurfaced and distress free.		
Good	Smooth surface with little to no cracking or rutting.	100%	All connector roadways
Fair	Serviceable with shallow rutting and moderate cracks beginning to occur, but does not affect travel speed.		
Poor	Same problems as fair but worse, cause some reduction in speed.		
Very Poor	Major problems with potholes, etc., causing substantial reductions in speed		

Geometric / Physical Features				
Problem	**No Problem**	**Short Section**	**Most of Length**	**Description**
Inadequate Travelway Width	✓			
Inadequate Shoulder Width		✓		PA 291 is curbed with intermittent shoulders
Lack of Stabilized Shoulder	✓			
Tight Turning Radii at Intersections		✓		Saville Ave. nb to PA 291 eb
Road Not Paved	✓			
Bridge / Overpass Vertical Clearance		✓		Railroad bridge over Saville Ave; 14'0"
Weight Limitation on Road / Bridge	✓			
Narrow Bridge / Tunnel	✓			
Rough Abandoned Railroad Crossing	✓			
Drainage / Flooding				Unknown - possible due to proximity to river
Other No pavement markings		✓		Saville Ave. and PA 291

9

Penn Terminals

Traffic Operations / Safety Problems / Delays (on the connector)			
Problem	**No Problem**	**Problem Exists**	**Description**
Heavy Traffic / Congested		✓	Possible delays at I-95 interchange
Long Delays at Traffic Signals	✓		Possible delays at Boeing driveway
Difficulty Making Left or Right Turns	✓		
Lack of Turning Lanes at Intersections		✓	PA 291wb to Saville Ave.
Lack of Traffic Signals	✓		
Truck Queues at Gates	✓		
Frequent Accidents			Unknown; there is a "Dangerous Intersection" sign on Saville Ave. approaching PA 291
On-Street Parking Conflicts	✓		
Moveable Span Bridge Openings	✓		
Other _____			

Traffic Operations / Safety Problems / Delays (at the connector / NHS junction)			
Problem	**No Problem**	**Problem Exists**	**Description**
Heavy Traffic on Mainline NHS		✓	I-95
Lack of Merge Area on to Mainline	✓		
Lack of Traffic Signals	✓		
Poorly Designed Ramps	✓		
Tight Turning Radii at Intersections	✓		
Lack of Turning Lanes	✓		
Other _____			

Destination Signing / Trailblazers

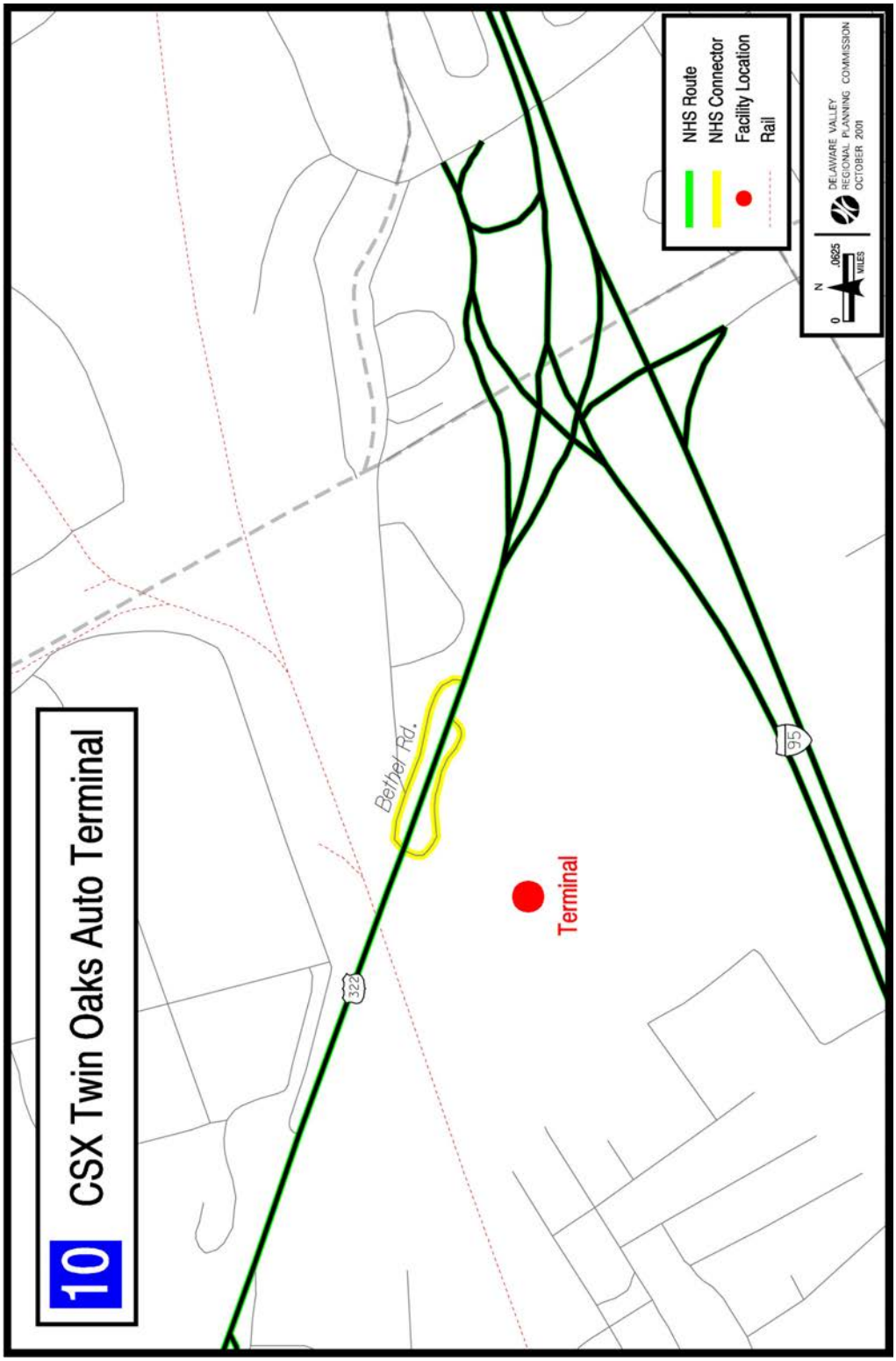
Is there adequate signing from the mainline NHS to the terminal; and from the terminal back to the mainline NHS? Yes ✓ No ____

New / Replacement Signs Recommended	Location
Replace 'To Waterport' sign with one reading 'Penn Terminals'	Intersection of Stewart Ave sb and PA 291
Directional signs to I-95	Saville Ave and PA 291

10

CSX Twin Oaks Auto Terminal

Connector Description: **From terminal to US 322 (Conchester Highway) via Bethel Rd.**
Connector Length: **0.492 miles**



10

CSX Twin Oaks Auto Terminal

Traffic Counts	
Location:	Bethel Rd.
Year:	1993
AADT:	2,873

Bridge / Structure ID		
ID #	**On**	**Over**
23032201200000		✓

Pavement Conditions			
Condition	**Description**	**Percent**	**Location**
Very Good	Newly built or resurfaced and distress free.		
Good	Smooth surface with little to no cracking or rutting.	95%	
Fair	Serviceable with shallow rutting and moderate cracks beginning to occur, but does not affect travel speed.		
Poor	Same problems as fair but worse, cause some reduction in speed.	5%	US 322 wb on ramp
Very Poor	Major problems with potholes, etc., causing substantial reductions in speed		

10

CSX Twin Oaks Auto Terminal

Geometric / Physical Features				
Problem	**No Problem**	**Short Section**	**Most of Length**	**Description**
Inadequate Travelway Width	✓			
Inadequate Shoulder Width			✓	
Lack of Stabilized Shoulder			✓	
Tight Turning Radii at Intersections		✓		Bethel Rd at US 322 under pass - 10 mph curve
Road Not Paved	✓			
Bridge / Overpass Vertical Clearance		✓		14'2" on Highland Ave. to I-95 sb
Weight Limitation on Road / Bridge	✓			
Narrow Bridge / Tunnel		✓		Poor horizontal alignment on Bethel Rd at US 322 underpass
Rough Abandoned Railroad Crossing	✓			
Drainage / Flooding				Unknown - possible because area is low lying
Other Limited Turning Movements		✓		Facility entrance/exit allows on right turns forcing all traffic to/from I-95

Traffic Operations / Safety Problems / Delays (on the connector)				
Problem	**No Problem**	**AM/PM Peak**	**Terminal Peak**	**Description**
Heavy Traffic / Congested	✓			
Long Delays at Traffic Signals	✓			All necessary stop signs are in place
Difficulty Making Left or Right Turns	✓			
Lack of Turning Lanes at Intersections	✓			
Lack of Traffic Signals	✓			
Truck Queues at Gates	✓			None seen
Frequent Accidents				Unknown
On-Street Parking Conflicts	✓			
Moveable Span Bridge Openings	✓			
Other _____				

10

CSX Twin Oaks Auto Terminal

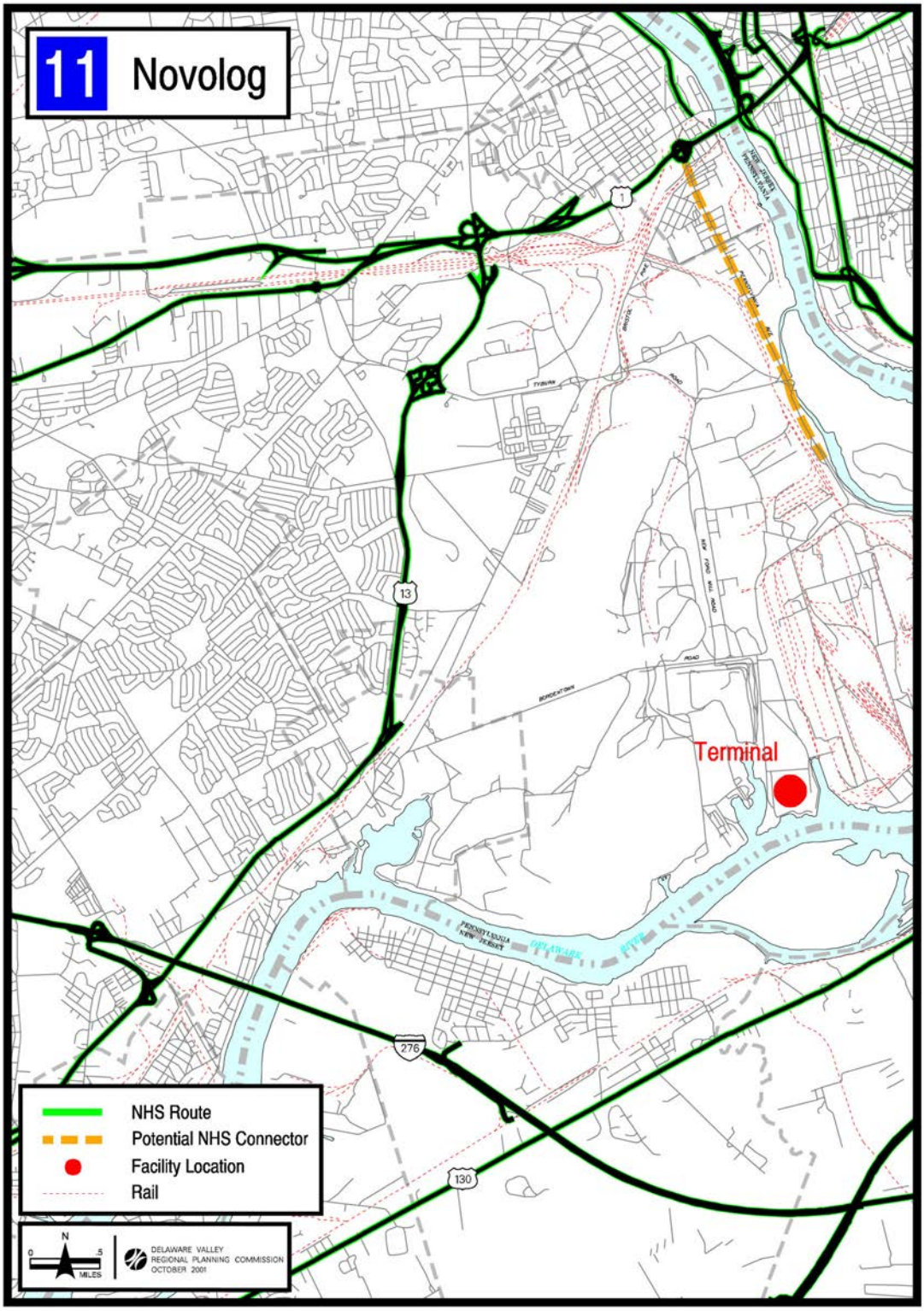
Traffic Operations / Safety Problems / Delays (at the connector / NHS junction)			
Problem	**No Problem**	**Problem Exists**	**Description**
Heavy Traffic on Mainline NHS		✓	I-95
Lack of Merge Area on to Mainline		✓	US 322 eb
Lack of Traffic Signals	✓		
Poorly Designed Ramps		✓	Inadequate acceleration lane from connector onto US 322 eb; Inadequate deceleration lane from US 322 wb onto connector
Tight Turning Radii at Intersections		✓	US 322 eb onto connector
Lack of Turning Lanes		✓	No turning lanes from US 322 to connector
Other _____			

Destination Signing / Trailblazers	
Is there adequate signing from the mainline NHS to the terminal; and from the terminal back to the mainline NHS?	Yes ____ No ✓
New / Replacement Signs Recommended	**Location**
Trailblazers from I-95 (nb & sb) to facility	On I-95 and US 322
Directional signing from the facility to US 322 (eb) and I-95 (nb & sb)	On Bethel Rd.

11

Novolog Port Facility - Potential Addition to NHS

Potential Connector Description: **From US 1: S. Pennsylvania Ave.**
Potential Connector Length: **2.575 miles**



11

Novolog Port Facility - Potential Addition to NHS

Traffic Volumes

Location:	Pennsylvania Ave. (Tyburn Rd. to Bristol Pk.)	Pennsylvania Ave. (RR bridge to Philadelphia Ave)
Year:	1995	1997
AADT:	3,410	11,980

Bridge / Structure ID

ID #	On	Over
Unknown - Amtrak Overpass		✓

Pavement Conditions

Condition	Description	Percent	Location
Very Good	Newly built or resurfaced and distress free.	70%	Pennsylvania Ave. - from US 1 to Tyburn Rd.
Good	Smooth surface with little to no cracking or rutting.	30%	Pennsylvania Ave. - from Tyburn Rd. to facility entrance
Fair	Serviceable with shallow rutting and moderate cracks beginning to occur, but does not affect travel speed.		
Poor	Same problems as fair but worse, cause some reduction in speed.		
Very Poor	Major problems with potholes, etc., causing substantial reductions in speed		

Geometric / Physical Features

Problem	No Problem	Short Section	Most of Length	Description
Inadequate Travelway Width	✓			
Inadequate Shoulder Width	✓			
Lack of Stabilized Shoulder	✓			
Tight Turning Radii at Intersections	✓			
Road Not Paved	✓			
Bridge / Overpass Vertical Clearance		✓		13'6" Amtrak Overpass
Weight Limitation on Road / Bridge	✓			
Narrow Bridge / Tunnel	✓			
Rough Abandoned Railroad Crossing	✓			
Drainage / Flooding				Unknown
Other _____				

11

Novolog Port Facility - Potential Addition to NHS

Traffic Operations / Safety Problems / Delays (on the connector)			
Problem	**No Problem**	**Problem Exists**	**Description**
Heavy Traffic / Congested	✓		
Long Delays at Traffic Signals	✓		
Difficulty Making Left or Right Turns	✓		
Lack of Turning Lanes at Intersections	✓		
Lack of Traffic Signals		✓	No signal at Pennsylvania Ave. / Bristol Pike Intersection
Truck Queues at Gates	✓		
Frequent Accidents			Unknown
On-Street Parking Conflicts	✓		
Moveable Span Bridge Openings	✓		
Other _____			

Traffic Operations / Safety Problems / Delays (at the connector / NHS junction)			
Problem	**No Problem**	**Problem Exists**	**Description**
Heavy Traffic on Mainline NHS		✓	On US 1
Lack of Merge Area on to Mainline	✓		
Lack of Traffic Signals		✓	Stop signs are in place at the ramp ends
Poorly Designed Ramps		✓	Tight turn on US 1 nb off ramp
Tight Turning Radii at Intersections	✓		
Lack of Turning Lanes	✓		
Other _____			

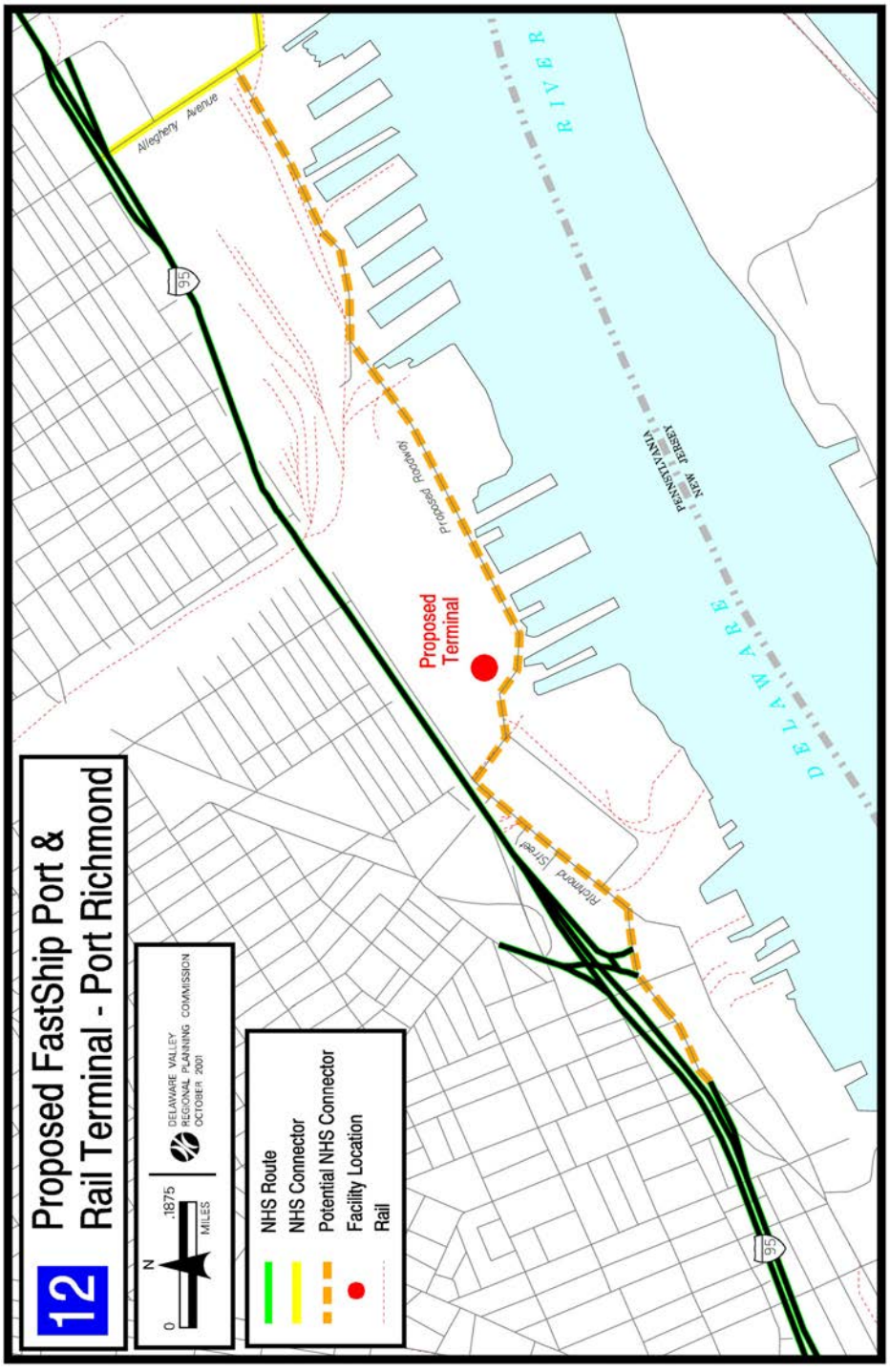
Destination Signing / Trailblazers	
Is there adequate signing from the mainline NHS to the terminal; and from the terminal back to the mainline NHS?	Yes _____ No ✓
New / Replacement Signs Recommended	**Location**
Trailblazers to terminal from US 1	On US 1 and at US 1/ Pennsylvania Ave. junction
Directional signing for US 1 from Terminal	On Pennsylvania Ave. from terminal to US 1

12

Proposed FastShip Port & Rail Terminal - Port Richmond

Potential Connector Description: **1) To terminal from I-95 sb & from terminal to I-95 sb via Allegheny Ave. & potential roadway connecting Cumberland St. & Allegheny Ave., and; 2) To terminal from I-95 nb & from terminal to I-95 nb via Delaware Ave., Richmond St., Cumberland St., & potential roadway**

Potential Connector Length: **1.770 miles *(excludes mileage of existing connector links along Allegheny Ave.)***



12

Proposed FastShip Port & Rail Terminal - Port Richmond

Traffic Volumes

Location:	I-95 sb on	I-95 sb off	Allegheny Ave.	Richmond St.
Year:	1990	1990	1997	2000
AADT:	8,504	9,137	11,365	5,156

Bridge / Structure ID

ID #	On	Over
I-95 over Allegheny Ave.		✓

Railroad Crossings

	ID# / Location
1	Cumberland Ave., south of Richmond St.

Railroad Crossing Problems

Problem	1	Description
Delays at Railroad Crossing		
Switching / Make-up Operations		
Crossing Warning Devices		
Inadequate Sight Distance at Crossing		
Rough Railroad Crossing Surface	✓	on Cumberland Ave.
Vehicle Underclearance (Humped Crossing)		
Lack of Alternate Route		
Other_____		

Pavement Conditions

Condition	Description	Percent	Location
Very Good	Newly built or resurfaced and distress free.	79%	Richmond St. (currently being reconstructed) & the potential roadway (if built)
Good	Smooth surface with little to no cracking or rutting.	16%	Delaware Ave.
Fair	Serviceable with shallow rutting and moderate cracks beginning to occur, but does not affect travel speed.		
Poor	Same problems as fair but worse, cause some reduction in speed.		
Very Poor	Major problems with potholes, etc., causing substantial reductions in speed	5%	Cumberland St. (needs to be reconstructed)

12

Proposed FastShip Port & Rail Terminal - Port Richmond

Geometric / Physical Features				
Problem	**No Problem**	**Short Section**	**Most of Length**	**Description**
Inadequate Travelway Width	✓			
Inadequate Shoulder Width	✓			
Lack of Stabilized Shoulder	✓			
Tight Turning Radii at Intersections	✓			
Road Not Paved		✓		Cumberland St.
Bridge / Overpass Vertical Clearance	✓			No sign posted, but I-95 overpass bridge on Allegheny Ave. shows signs of impact.
Weight Limitation on Road / Bridge	✓			
Narrow Bridge / Tunnel	✓			
Rough Abandoned Railroad Crossing		✓		On Cumberland St.
Drainage / Flooding	✓			
Other _____				

Traffic Operations / Safety Problems / Delays (on the connector)			
Problem	**No Problem**	**Problem Exists**	**Description**
Heavy Traffic / Congested	✓		
Long Delays at Traffic Signals	✓		
Difficulty Making Left or Right Turns	✓		
Lack of Turning Lanes at Intersections	✓		
Lack of Traffic Signals		✓	At the intersection of Richmond St. and Cumberland St, the potential roadway and Cumberland St., and the potential roadway and Allegheny Ave.
Truck Queues at Gates			To be addressed in site design
Frequent Accidents			Unknown
On-Street Parking Conflicts	✓		
Moveable Span Bridge Openings	✓		
Other _____			

12

Proposed FastShip Port & Rail Terminal - Port Richmond

Traffic Operations / Safety Problems / Delays (at the connector / NHS junction)			
Problem	**No Problem**	**Problem Exists**	**Description**
Heavy Traffic on Mainline NHS		✓	
Lack of Merge Area on to Mainline	✓		
Lack of Traffic Signals		✓	No left turn phase at Allegheny Ave. and I-95 sb on ramp; results in delays
Poorly Designed Ramps		✓	I-95 nb on ramp from Richmond St.-two merges within close proximity to one another
Tight Turning Radii at Intersections	✓		
Lack of Turning Lanes		✓	At Allegheny Ave. and I-95 sb on ramp; results in delays
Other _____			

Destination Signing / Trailblazers	
Is there adequate signing from the mainline NHS to the terminal; and from the terminal back to the mainline NHS? Yes _____ No ✓	
New / Replacement Signs Recommended	**Location**
Trailblazers from terminal to I-95 south	On potential roadway approaching Allegheny Ave.
Trailblazers from terminal to I-95 north	On potential roadway approaching Cumberland St. and on Cumberland St. approaching Richmond St.
Directional signing from I-95 nb to Terminal	On Delaware Ave. approaching Richmond St., on Richmond St. approaching Cumberland St., and on Cumberland St. approaching potential roadway
Directional signing from I-95 sb to Terminal	On I-95 sb off ramp approaching Allegheny Ave. and on Allegheny Ave. approaching potential roadway
Change existing Tioga Terminal placard to include FastShip Terminal	On I-95 sb prior to Allegheny Ave.
FastShip Terminal placard	On I-95 nb prior to Girard Ave./Lehigh Ave. exit and the Tioga Terminal placard

DELAWARE VALLEY REGIONAL PLANNING COMMISSION

Publication Abstract

Title:	**National Highway System Connectors to Freight Facilities in the Delaware Valley Region**	**Date Published**	**October 2001**
		Publication No.	**01017**

Geographic Area Covered: portions of the nine county Philadelphia metropolitan area, specifically: Burlington and Camden counties in New Jersey, and; Bucks, Delaware and Philadelphia counties in Pennsylvania

Key Words: Goods movement, truck travel, highway conditions, traffic improvements, intermodal freight facilities, rail / truck / port / pipeline terminals, airports

ABSTRACT

DVRPC conducted a study of important roadway connections between the National Highway System and 12 key intermodal freight terminals to assist the planning needs of the Delaware Valley Goods Movement Task Force. The analytical work includes an inventory and assessment of physical and traffic operating conditions along the connectors (contained in the Appendix). Recommendations to improve deficiencies along the network are also contained in Table 4 in the main report. The candidate improvement program identifies cost estimates and potential funding sources to implement the improvements, and truck trip generation estimates are provided as activity indicators — for establishing priorities.

Through the work — 67 individual projects have been identified representing approximately $163 million in improvement needs for the connector network. The scope of the recommendations include conducting additional studies, improving signing, providing auxiliary lanes and/or new traffic signalization at intersections, completing / reconfiguring interchanges and constructing new access roadways. Many of the improvement recommendations are already contained in existing financing programs, while many of the smaller scale projects can be undertaken through existing maintenance programs.

The work was conducted through DVRPC's Intermodal Management System (IMS) Planning Program. The IMS was one of the six management systems created by ISTEA in 1991, and is carried on through the auspices of the region's current long range plan.

For More Information Contact:

Delaware Valley Regional Planning Commission
Transportation Planning Division
The Bourse Building, 8th Floor
111 South Independence Mall East
Philadelphia, PA 19106-2515
Phone: 215.592.1800 Fax: 215.592.9125 website: http://www.dvrpc.org

Staff contacts:	Direct phone:	E-mail:
Ted Dahlburg, Mgr. of Urban Goods Program	215.238.2844	tdahlburg@dvrpc.org
Christian Bauer, Project Planner	215.238.2881	cbauer@dvrpc.org
Jerry Coyne, Project Manager	215.238.2850	jcoyne@dvrpc.org

DELAWARE VALLEY REGIONAL PLANNING COMMISSION

The Bourse Building

111 South Independence Mall East

Philadelphia, PA 19106-2582

Fax: 215.592.9125

www.dvrpc.org