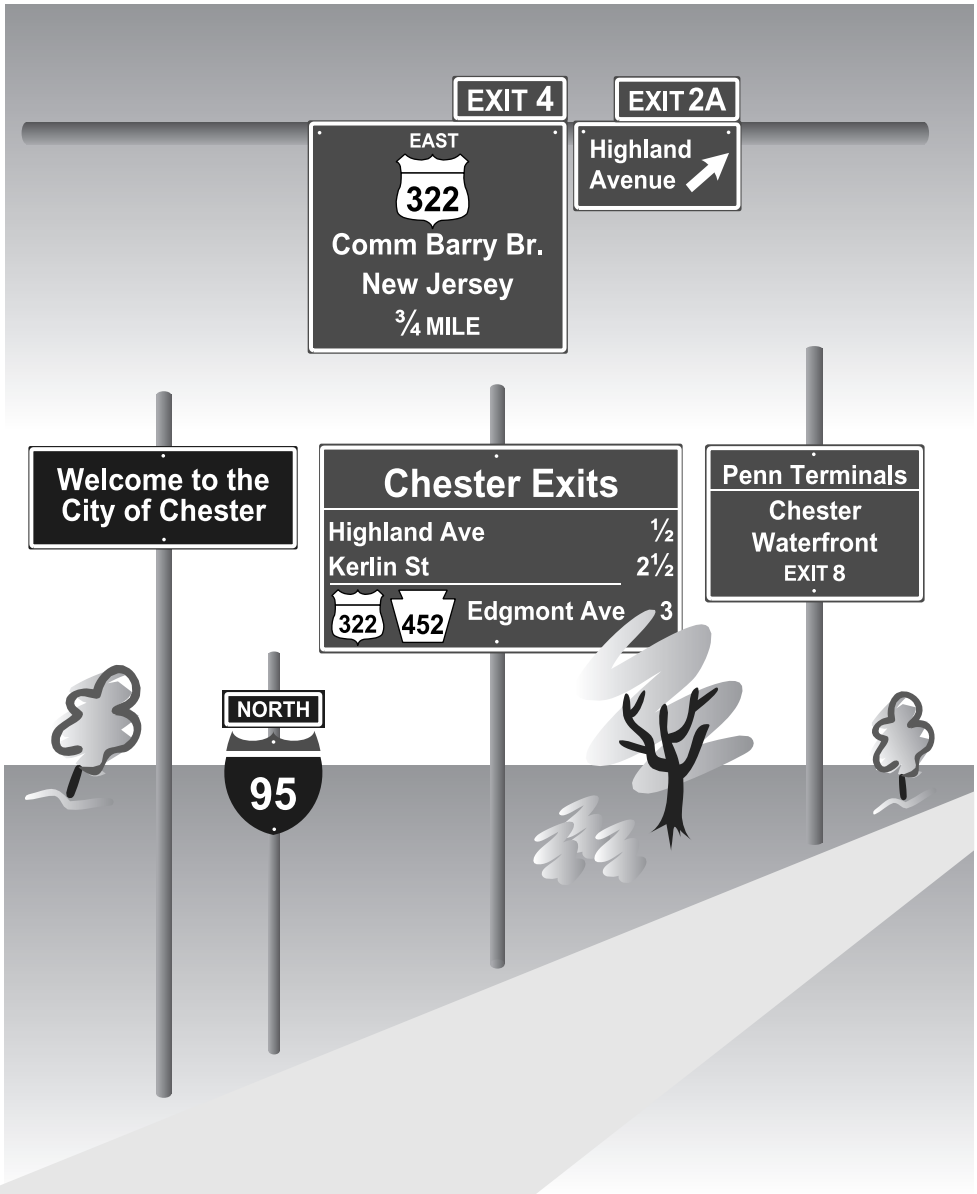
OCTOBER 2001

Conceptual Access Plan for the City of Chester

DELAWARE VALLEY REGIONAL PLANNING COMMISSION



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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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INTRODUCTION

The City of Chester's future economic development depends on good access between the region's highway network, I-95, I-476, and US 322, to the Chester waterfront and central business district (CBD). The waterfront has sizable parcels of land that are slated for future development, including office space and residential housing. The waterfront continues to be an active industrial area, with several large employers who use Chester roadways to transport their goods. Accommodating large tractor trailers is a necessity in order to retain these industries. At the same time, the city must accommodate vehicular traffic destined to new forms of development on the waterfront.

The city also hopes to revive the central business district, which is the heart of Chester. A new CBD circulation plan is in the works, which will complement this conceptual plan whose objective is to direct cars to the CBD on roads compatible with vehicular traffic, while routing large trucks to and from the waterfront via roads east and west of the CBD. Many residential communities in Chester have been negatively impacted by truck traffic, and the establishment of appropriate truck and auto routes should ease this burden and improve safety and aesthetics, while also promoting economic development.

OBJECTIVE

The objective of this study is to direct truck traffic generated at or destined to the Chester waterfront from the regional highway system along prescribed routes within Chester. The intent is to disperse traffic along a series of primary and secondary routes that in effect create a loop system in and around Chester. This plan seeks to capitalize on the recently opened PA 291, commonly known as Industrial Highway, a considerable investment by the state, by utilizing PA 291 as the backbone of the loop along the waterfront. Connectors between PA 291 and the regional highway system will be situated to direct truck traffic around the central business district. Recognizing trucks can exit I-95 or I-476 at multiple locations, depending upon direction of travel and destination within Chester, primary and secondary routes are recommended to capture as much of the truck traffic as feasible. The circulation plan attempts to separate truck and auto traffic, especially vehicular traffic destined to the CBD as distinguished from the traffic destined to the waterfront. Lastly the plan recommends signing and other physical improvements to encourage traffic to use the designated routes. Both short and long-term improvements are offered, so that the city can start receiving benefits from the easy to implement projects while waiting for the long-term improvements which require long lead times to implement.

ISSUES

Currently there are no designated truck access routes, so trucks exit off I-95 or I-476 and use a number of local roads (Chestnut Street, Kerlin Street, etc.) to access the waterfront. To discourage trucks from traveling through residential neighborhoods, the city has promulgated ordinances prohibiting trucks from using specific streets. The traffic code incorporates the following restrictions:

> *No persons shall operate any motor vehicle with a manufacturer's gross vehicle weight exceeding 10,000 pounds over or upon the following streets:*
>
> 1. *Third Street from the westerly City line to the easterly City line.*
> 2. *Highland Avenue from Ninth Street to the northerly City line.*
> 3. *Jeffrey Street between Second and Ninth Streets and on Parker Street between Second and Seventh Streets.*
> 4. *Lloyd Street between Second and Ninth Streets.*
> 5. *Tilghman Street between Second and Ninth Streets.*
> 6. *Twelfth Street between Kerlin Street and Parker Street.*
> 7. *Concord Avenue from its intersection with Butler Street to its intersection with Edward Street.*
>
> *Restricting all truck traffic to State highways (except local deliveries):*
>
> 1. *Specifically, restricting all truck traffic for industrial and commercial enterprises located in the waterfront areas South of Second Street (Rte 291) to the streets that are State highways.*
> 2. *Restricting all "trash and waste" haulers to Second Street (Rte 291).*

With future waterfront and CBD development, the number of both cars and trucks in Chester will increase. Many roads in Chester are inadequate due to:

- Deficient vertical clearances at Amtrak bridges. Most Amtrak bridges are posted because they do not met the minimum threshold of 14 ft. 6 in. vertical clearance.

- Sensitive land uses along the corridor, such as dense housing, schools, parks, churches, are incompatible with tractor-trailer traffic.

- Insufficient roadway width. Most of the north-south streets in Chester are 36 feet wide, which is inadequate for two travel lanes and parking on both sides of the street. Many streets are not marked with centerlines due to this problem.

- Lack of turn lanes and inadequate turning radii for tractor-trailers increases the incidence of accidents and congestion.

- Lack of signing directing cars and trucks to the CBD and waterfront, respectively.

In addition to the above circulation problems, the roadway network in Chester faces a number of general issues as described below:

- Outdated traffic signals that barely conform to modern traffic control standards and are not responsive to current traffic conditions. Motorists frequently wait at signals when there is no cross traffic.

- Existing signing in poor condition, including faded, bent, damaged, conflicting and obstructed signs, many of which are not in compliance with federal and state regulations.

- Faded roadway markings, including centerlines, stop bars, and pedestrian crosswalks.

RECOMMENDED ACCESS ROUTES

Truck Routes

The proposed primary and secondary truck routes to the waterfront are shown in Figure 1: Chester City Truck Access Routes. At the eastern edge of Chester the proposed plan provides two alternative routes to PA 291, one from I-95 and the other from I-476. At the western edge of the city, the truck routes provide linkages to the I-95/US 322 interchange and to Delaware via US 13. Long-term recommendations, including a direct connection between I-95 and the waterfront via new US 322 ramps, are also provided. A complete description of each segment is provided below.

Short-Term Truck Recommendations

T1. The primary truck route from Philadelphia on I-95 South is ***Exit 8/Ridley Park***, which is just east of Chester proper, and exits onto Stewart Lane, which functions as a connector to PA 291. This segment of PA 291 is a low volume four-lane route that does not disrupt any neighborhoods or sensitive land uses. Signs on I-95 already direct motorists to use Exit 8 to access the Chester waterfront and Penn Terminals.

T2. The secondary truck route from Philadelphia on I-95 South utilizes the ***Exit 6/Edgmont Avenue*** exit (also called Widener University, Providence Avenue exit), then proceeds left onto Chestnut Street, left onto 10th Street, right onto Morton Avenue, and right onto PA 291. Use of this route is discouraged because of insufficient turning radii at the I-95 ramp/Chestnut Street intersection and at the Chestnut Street/12th Street intersection. However, since it is not really possible to prevent this movement, minimal efforts should be undertaken to mitigate its impact.

T3. The primary truck route from Wilmington on I-95 North is the ***Naamans Road Exit*** in Delaware, which trucks can then follow to US 13, then make a right to PA 291. Trucks using I-495 can exit directly onto US 13.

T4. If trucks choose not to exit at Naamans Road, a secondary truck route from Wilmington on I-95 North is provided for at ***Exit 2A/Highland Avenue***. Trucks traveling north would exit, take a left at the end of the ramp onto Township Line Road, then a right onto Highland Avenue. The trucks would follow Highland, make a left turn onto East 9th

Street (US 13), a right turn to Flower Street, and then proceed to PA 291.

T5. The primary truck route from the King of Prussia area on I-476 is ***Exit 1/MacDade Boulevard***. Taking MacDade Boulevard west, trucks would make a left onto Bullens Lane, a four-lane roadway, then a right onto Morton Avenue, which feeds into PA 291.

T6. The primary truck route from New Jersey is via the ***Commodore Barry Bridge/US 322***. Trucks would exit at Flower Street, then proceed south to PA 291.

Trucks are not precluded from using other exits or routes, but are encouraged to use the above recommendations as part of the waterfront loop vision.

Long-Term Truck Recommendations

T7. Constructing an exit ramp from eastbound US 322 at the ***I-95/Flower Street/US 322 Interchange*** is a long-term solution that will allow direct access from I-95 to the waterfront via Flower Street with minimal intrusion on local streets.

Construction of the Flower Street/9th Street ramps would offer trucks an alternative to the short-term routes. By bisecting the proposed Chester Truck Loop, it improves access to the center of the waterfront, avoiding traveling arterial roads on the long legs of the loop. In the return direction, direct access to I-95 south is not possible, forcing southbound trucks to use surface streets (via routes T3 and T4).

Car Routes

Car routes focus on two distinct destinations, the central business district and the waterfront in the vicinity of the PECO Energy property between Highland Avenue and the Commodore Barry Bridge, where the proposed waterfront development, The Wharf at Rivertown, is concentrated. Figure 2: Chester City Car Access Routes details the alternative car routes.

Figure 1: Chester City Truck Access Routes

LEGEND
- Major Access Highways
- Industrial Highway
- 14' 1" AMTRAK Clearances
- XX ft. Street Width
- Major Destinations
- Central Business District

0 1 MILES

Brookhaven
Parkside
Upland
NETHER PROVIDENCE
RIDLEY
Ridley Park
RIDLEY
Eddystone
UPPER CHICHESTER
CHESTER
LOWER CHICHESTER
Trainer
Marcus Hook
DELAWARE CO
DELAWARE CO
CHESTER
LAMOKIN
INDUSTRIAL CENTER
PECO
WST
KIMBERLY CLARK
CHESTER T.C.
EDDYSTONE
CRUM LYNNE
MARCUS HOOK
HIGHLAND AVE
From I-476
From I-95 South
From I-95
From NJ
From I-95 North/US 322
From I-95 North (in Wilmington)
30 ft.
40 ft.
36 ft.
12' 9"
12' 6"
14' 3"
14' 1"
95
476
320
352
291
322
452
13
CONRAIL
AMTRAK
CSXT
SEPTA
COMMODORE BARRY BRIDGE

T1: Primary Route from Philadelphia (Exit 8/ Ridley Park) -- short-term improvement

T2: Secondary Route from Philadelphia (Exit 6/ Edgmont Avenue) -- short-term improvement

T3: Primary Route from Wilmington (Naamans Road Exit) -- short-term improvement

T4: Secondary Route from Wilmington (Exit 2A/ Highland Avenue) -- short-term improvement

T5: Primary Route from King of Prussia (Exit 1/ MacDade Boulevard) -- short-term improvement

T6: Primary Route from New Jersey (Commodore Barry Bridge/US 322) -- short-term improvement

T7: Primary Route from Philadelphia and Wilmington (I-95/ Flower Street/ US 322 Interchange) -- long-term improvement

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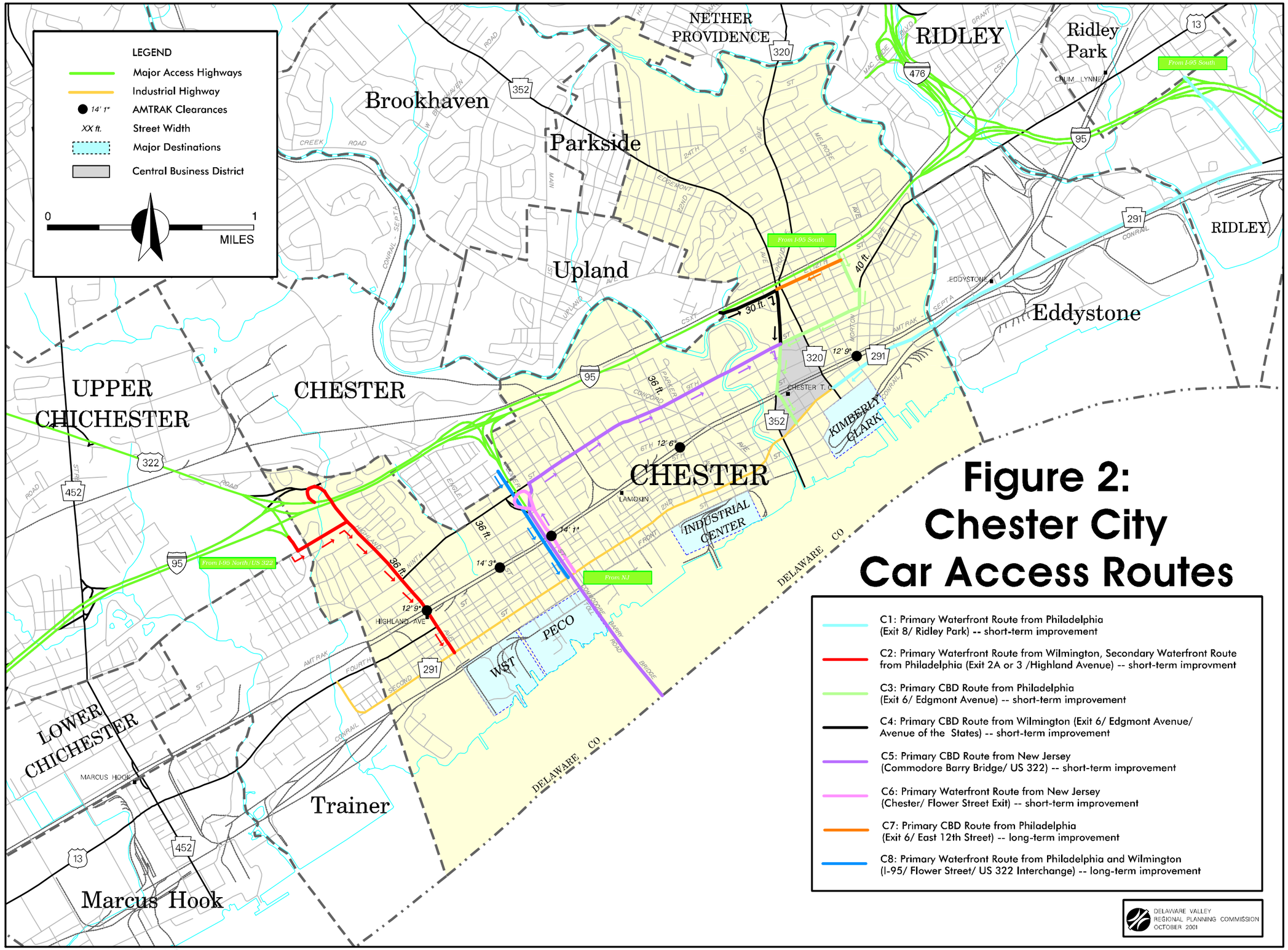

Figure 2: Chester City Car Access Routes

- C1: Primary Waterfront Route from Philadelphia (Exit 8/ Ridley Park) -- short-term improvement
- C2: Primary Waterfront Route from Wilmington, Secondary Waterfront Route from Philadelphia (Exit 2A or 3 /Highland Avenue) -- short-term improvment
- C3: Primary CBD Route from Philadelphia (Exit 6/ Edgmont Avenue) -- short-term improvement
- C4: Primary CBD Route from Wilmington (Exit 6/ Edgmont Avenue/ Avenue of the States) -- short-term improvement
- C5: Primary CBD Route from New Jersey (Commodore Barry Bridge/ US 322) -- short-term improvement
- C6: Primary Waterfront Route from New Jersey (Chester/ Flower Street Exit) -- short-term improvement
- C7: Primary CBD Route from Philadelphia (Exit 6/ East 12th Street) -- long-term improvement
- C8: Primary Waterfront Route from Philadelphia and Wilmington (I-95/ Flower Street/ US 322 Interchange) -- long-term improvement

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Short-Term Car Recommendations

C1. The primary waterfront route recommendation for cars from Philadelphia is to exit at **Exit 8/Ridley Park**, Stewart Lane to PA 291. Although PA 291 already receives waterfront-bound truck traffic, and has been recommend as a primary truck route, recent improvements to the road should make it possible to accommodate both truck and car traffic.

C2. The primary car route from Wilmington to the waterfront is I-95 to **Exit 2A Highland Avenue**, a left onto Township Line Road, and a right turn onto Highland Avenue where they will travel southward to PA 291. This route can also be used as a secondary route for I-95 southbound traffic from Philadelphia or King of Prussia who would use **Exit 3 Highland Avenue**.

C3. The primary short-term central business district car route from Philadelphia on I-95 South is ***Exit 6/Edgmont Avenue***, where cars will make a left onto Chestnut Street, a left onto10th Street, a right onto Morton Avenue, another right onto East 9th Street (US 13), a left at Edgmont Avenue, leading to Avenue of the States and the central business district.

C4. The primary central business district car route from Wilmington on I-95 North is ***Exit 6/Edgmont Avenue/Avenue of the States***, a right onto Edgmont Avenue, which leads to Avenue of the States. The proposed southbound entrance ramp from Edgmont Avenue to I-95 is on DVRPC's FY 2001 Transportation Improvement Program for FY 2002 construction.

C5. The primary central business district car route from New Jersey is via the ***Commodore Barry Bridge/US 322***, the Chester exit, then turning right onto West 9th Street, making a right at Edgmont Avenue, which then leads to Avenue of the States.

C6. The primary waterfront car route from New Jersey is via the Commodore Barry Bridge, using the ***Chester/Flower Street exit***, and continuing on Flower Street to either the waterfront or PA 291.

Long-Term Car Recommendations

C7. Short-term routing to the central business district from Exit 6/Edgmont Avenue via

Chestnut Street and East 9th Street (US 13) while functional from a traffic perspective, does not serve as an appropriate gateway to the city. A long-term solution involving widening East 12th Street would be ***Exit 6/East 12th Street***, directing cars from the Chestnut Street exit to make a right onto East 12th Street, then a left onto Edgmont Avenue and eventually Avenue of the States and the central business district. This might require acquiring about 40 to 45 homes along East 12th Street to widen the roadway, making it a two-way street, and incorporating landscaping, street scape, and other appropriate treatment.

C8. While primarily a truck route, construction of an exit ramp from eastbound US 322 at the proposed ***I-95/Flower Street/US 322 Street Interchange*** is a long-term solution that will also give cars access from I-95 directly to the waterfront via Flower Street.

RATIONALE FOR SELECTING PROPOSED TRUCK AND CAR ROUTES

The following information, along with extensive fieldwork and discussions with municipal and county officials, was used as the basis for the recommendations. A review of key characteristics of corridors can be found in Table 1: Matrix of Possible Truck Routes, and Table 2: Matrix of Significant Land Uses Along City of Chester Corridors. Eight routes were studied for their potential as truck routes, using the following criteria:

- Presence of an I-95 exit
- Presence of truck generators along the corridor
- Sufficient height under Amtrak bridges for trucks
- Sufficient street width to accommodate trucks
- Sensitive land uses that would be adversely impacted by trucks
- Least number of turns to access the waterfront
- Amount of on-street parking that might have to be relocated due to truck traffic
- Ownership of the road
- Road classification (higher the functional classification, the better suited for trucks)

The rationale for the recommended routes is discussed below.

Truck Routes

Seven truck routes were selected, as described below. The primary waterfront truck routes from Philadelphia at Stewart Avenue (Exit 8/Ridley Park), from Wilmington at Naamans Road, and from New Jersey off the Commodore Barry Bridge are obvious choices, given the quality of these facilities, ease of access to PA 291, and their location away from dense residential areas.

Truck Route T1: Exit 8/Ridley Park (short-term recommendation)

Exit 8 to Stewart Avenue to PA 291 is a fairly direct route, approximately 2.7 miles long from the I-95 exit to the Morton Avenue/PA 291 intersection. It consists mostly of four-lane highways, with moderate speed limits. It passes through an industrial area, with Boeing as the only significant development. The roads all operate under capacity, making it competitive with I-95, which is frequently congested in the vicinity of I-476 (the Blue Route). There are no turning radius problems or other physical limitations to impede truck flow.

Table 1: Matrix of Possible Truck Routes

Criteria	Highland	Engle	Flower	Lloyd
Presence of I-95 Exit?	Yes	No	Yes	No
Truck Generator Along Corridor?	Westinghouse	Teledyne Wirz	PECO	Several
Sufficient Height Under Amtrak Bridge?	No -- 12' 9"	No -- 14' 3"	No -- 14' 1"	n/a
Sufficient Street Width for Trucks?	Yes -- 36 ft.	Yes -- 36 ft.	n/a	n/a
Sensitive Land Uses	3 schools, 1 church, public housing	2 parks, library	1 school, public housing	Minimal
# of Turns to Access Waterfront	1 turn	2 or 3 turns	1 turn	2 or 3 turns
Impact on On-Street Parking?	High	High	Low	n/a
Ownership of Road	State, City	City	State	City
Road Classification	Minor Arterial	Collector	Minor Arterial	Collector

Criteria	Kerlin	Concord	Chestnut	Morton
Presence of I-95 Exit?	Yes	No	Yes	No
Truck Generator Along Corridor?	Several	Several	None	Several, Prison
Sufficient Height Under Amtrak Bridge?	No -- 12' 6"	No -- 13" 1"	None	No --12' 9"
Sufficient Street Width for Trucks?	Yes -- 36 ft.	n/a	n/a	Yes -- 40 ft.
Sensitive Land Uses	1 park, 1 church	Minimal	Minimal	Minimal
# of Turns to Access Waterfront	1 turn	2 turns	1 turn	2-3 turns
Impact on On-Street Parking?	High	n/a	Low	Low
Ownership of Road	State, City	State, City	City	State
Road Classification	Principal & Minor Arterial	Collector & Local	Minor Arterial	Principal Arterial

Table 2: Matrix of Significant Land Uses Along City of Chester Corridors (excluding residential and predominance of row homes along most corridors)

Corridor	Land Use Classification	Location	Name
Highland Ave.	Community Services	north of 15th St.	William Penn Elementary School
	Community Services	north of 9th St, east side	Church, Chester Charter School
	Community Services	north of 9th St, west side	Life of Christ Church
	Community Services	behind Highland, between 7th and 9th St	Pulaski Middle School
	Multifamily Residential	north of 9th St	McCaffrey Village reconstruction
	Housing	between Amtrak and 4th St	housing opportunity area
Engle St.	Community Services	north of 9th St, in Chester Twp	William Mitchell vest pocket park
	Recreation	south of 9th St.	Veterans Memorial Park (renovation planned)
	Community Services	in Memorial Park	J. Lewis Crozer Library
Flower St.	Community Services	south of 9th St	World Impact Elementary School
	Multifamily Residential	between Amtrak and 7th St	Lamokin Village reconstruction
Kerlin St.	Wooded	north of I-95	
	Recreation	north of I-95	Crozer Park
	Community Services	between 3rd and 5th St	Church
Ave. of the States	Office	north of I-95	high intensity office proposed
	Multifamily Residential	between 10th and 12th St	Chester Towers (senior units)
	Wooded	north of 9th St, west side	Alfred O. Deshong Memorial Park
	Community Services	south of 9th St, west side	large church with bell tower
	Recreation	by Chester Creek	Ethel Waters Public Park
Chestnut/Morton	Community Services	north of I-95	Widener University
	Office	Chestnut St, south of I-95	high intensity office proposed
	Community Services	on Morton Ave, north of dogleg	Jeffries Public School-- closed, now housing
East 12th St.	Wooded	western edge	Alfred O. Deshong Memorial Park
	Community Services	near Morton Ave	Jeffries Public School-- closed, now housing
PA 291	Community Services	by Chester Creek	William Penn Landing Park
	Recreation	by Chester Creek	Ethel Waters Public Park
	Vacant	at PA 320	

Truck Route T2: Exit 6/Edgmont Avenue (short-term recommendation)

The secondary truck route from Philadelphia is Exit 6/Edgmont Avenue to Chestnut Street to Morton Avenue. It is secondary because of the tight turning radius from the I-95 off-ramp onto Chestnut Street, the jog at the Chestnut Street/10th Street/Morton Avenue intersection, and the substandard acceleration lane at the on-ramp to I-95. By making it a secondary truck route, it dedicates the Exit 6/Edgmont Avenue on and off-ramps to car traffic traveling to and from the central business district.

Truck Route T3: Naamans Road Exit (short-term recommendation)

This route, from Wilmington via Naamans Road to US 13 to PA 291, offers many advantages from Chester's perspective. It offers an alternative for trucks using Highland Avenue, which will become more critical when the new shopping center on Highland Avenue opens. When Penn DOT completes the lower segment of PA 291, trucks will not impinge on any residential areas in Chester. From a trucker's perspective however, the route offers several disadvantages. Even though the route is approximately 3.5 miles long (Naamans Road Exit to PA 291/Highland Avenue), it is almost exclusively a two-lane highway. It is not uncommon for traffic to get stuck behind slower moving vehicles. Commercial activity in the vicinity of US 13/PA 452 is also a constant impairment to traffic. Even so, most of the route passes by the Sun Oil Refinery where there is minimal traffic, and there are no height clearance problems.

From an institutional perspective, the biggest problem associated with this route is that it mostly falls outside of the City of Chester. Truck route signs would need to be posted in Delaware, Marcus Hook, and Trainer. Cooperation from these three entities and Penn DOT will be required. Marcus Hook Borough officials have indicated they do not want Marcus Hook to become a truck gateway for Chester.

Truck Route T4: Exit 2A/Highland Avenue (short-term recommendation)

For those trucks coming from the south who choose not to take Naamans Road but rather stay on I-95, Exit 2A/Highland Avenue, approximately 3 miles to the north, is the next logical exit. Highland Avenue is a major Chester thoroughfare. There is some on-street parking in the vicinity of 9th Street that effectively eliminates any storage capacity for left turning trucks. This situation can be remedied by banning parking on Highland Avenue and relocating the existing parking to Grace Street,

which parallels Highland Avenue. Most homes on Highland have rear garages or parking spaces fronting Grace Street. If necessary, additional off-street parking spaces can be created by using vacant lots on Grace Street. Truck movements continuing southbound on Highland Avenue to PA 291 is problematic given Highland Avenue's 12 feet 9 inch clearance under the Amtrak bridge. Most large trucks will not fit under this clearance, since it is well under the standard vertical clearance of 14 feet 6 inches. Based upon a review of alternative routes and clearances, a combination of West 9th Street and Flower Street was selected to link Highland Avenue to the waterfront.

West 9th Street, US 13, was chosen since it is the most significant east-west street in Chester, after PA 291, and the other east-west roads in Chester are incapable of handling large trucks. The width of West 9th Street is 36 feet, which is sufficient. There is no on-street parking except between Engle and Yarnall Streets, which could be removed, since there is an alleyway (Congress Street) that parallels West 9th Street that may be used for parking. The only sensitive land uses along West 9th Street are Crozier Chester Hospital and Veterans Memorial Park.

Grace Street alleyway paralleling Highland Avenue.

Rather than continue too far on West 9th Street, passing schools and other sensitive land uses (and to avoid trucks using the central business district streets), another path to the waterfront had to be chosen. A number of north-south streets were evaluated as potential connectors, using the truck route criteria and information

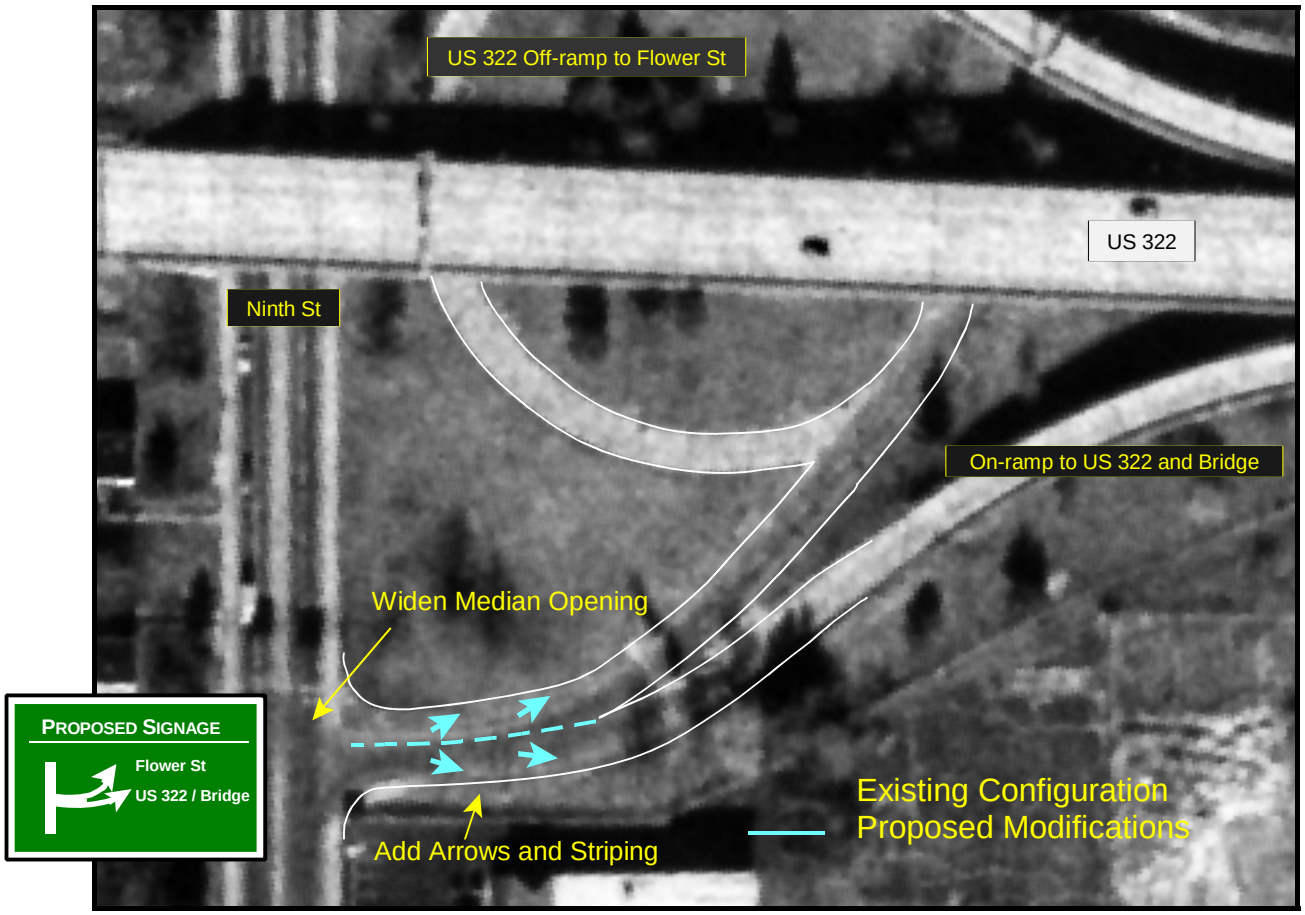
gathered in Tables 1 and 2, displayed at the beginning of this chapter. Kerlin and Engle Streets were rejected based on their sensitive land uses (library, park, churches, and residences). Lloyd Street was rejected due to its questionable bridge. Flower Street was chosen as the connector since it has less intense residential uses overall, as it is bounded by the Commodore Barry Bridge on one side, and trucks already use this as an access route to PA 291. This route would not disrupt as many residents as other possible streets investigated. A new housing development has been constructed along the east side of Flower Street. However, because of the contemplated widening of Flower Street by Chester officials, the development has been provided with a landscaped berm to buffer traffic and noise.

Utilization of the existing 9th Street/Flower Street interchange presents a significant operational problem, see Figure 3. Traffic destined to Flower Street and the Commodore Barry Bridge share the same ramp for approximately 140 feet, at which point the ramp splits with Flower Street traffic going to the left, and US 322 traffic to New Jersey to the right. The short distance between West 9th Street and the split provides motorists inadequate decision time to evaluate the options, in terms of which ramp to follow. This is especially true for trucks traveling east on 9th Street turning onto Flower Street, as the split comes up very fast. The existing signs do not adequately warn of this situation. To address this problem, the ramp should be widened to two lanes, one for Flower Street and the other for eastbound US 322, thus alerting motorists about the upcoming split in the roadway. Ideally, it would be beneficial to split the two movements by relocating the Flower Street ramp to the east of the US 322 ramp; however, this could interfere with a long-term recommendation for direct access from I-95 that would pass through this area. Since PennDOT and the Delaware River Port Authority jointly share responsibility to approve any major modifications to this interchange, this short-term improvement will actually involve a significant lead time. A short term solution to remedy this problem is to install overhead signs that diagrammatically shows the split. Such a sign is illustrated on Figure 3.

Truck Route T5: Exit 1/MacDade Boulevard (short-term recommendation)

For I-476 traffic from King of Prussia, Exit 1/MacDade Boulevard to Bullens Lane to Morton Avenue, is recommended over the I-95 Chestnut Street route (Exit 6/Edgmont Avenue), due to inadequate turning radii for trucks trying to maneuver onto Chestnut Street from the I-95 exit ramp. The sight distance limitations at the intersection of Chestnut Street with East 12th Street are also insufficient, as is the lack of queuing space, where no more than one large truck can properly queue at this intersection.

Figure 3: Flower St/US 322 Interchange Existing & Proposed Configuration Short-Term Improvements



PROBLEMS

- Short merge area for choosing between Flower St and US 322 (approximately 140 feet)
- Signage does not give adequate warning for ramp split

IMPROVEMENTS NEEDED

- Widen ramp entrance to accommodate two-lane weaving area
- Add striping to indicate ramp split and merge area
- Install diagrammatic signage on 9th St for ramp, clearly indicating split (see sample sign above)

At the I-476/MacDade Boulevard exit, during certain times of the day, there will be a problem traveling from the off-ramp across two lanes of traffic to the left turn lane to Bullens Lane, since Bullens Lane is only 400 feet from the ramp. During most of the day, a traffic signal located upstream at the I-476 westbound on-ramp, located 1,500 feet from the off-ramp, will help break up vehicle platoons, providing sufficient gaps for trucks to cross MacDade Boulevard. There might be a problem during peak periods; however large trucks tend not to travel during peak hours. The main obstacle with this route is the 12 ft. 9 in. Amtrak bridge underclearance on Morton Avenue, which would have to be raised before Morton becomes a main truck route. Regardless, MacDade Boulevard and Bullens Lane are both excellent multilane facilities with the proper width to accommodate trucks. Bullens Lane, however, is situated in Ridley Township, who may object to additional truck traffic.

Truck Route T6: Commodore Barry Bridge/US 322 (short-term recommendation)

For traffic from New Jersey, trucks follow US 322 over the Commodore Barry Bridge, exiting onto Flower Street and proceeding south to PA 291. This is a more direct route than continuing to I-95 and using one of the I-95 exits.

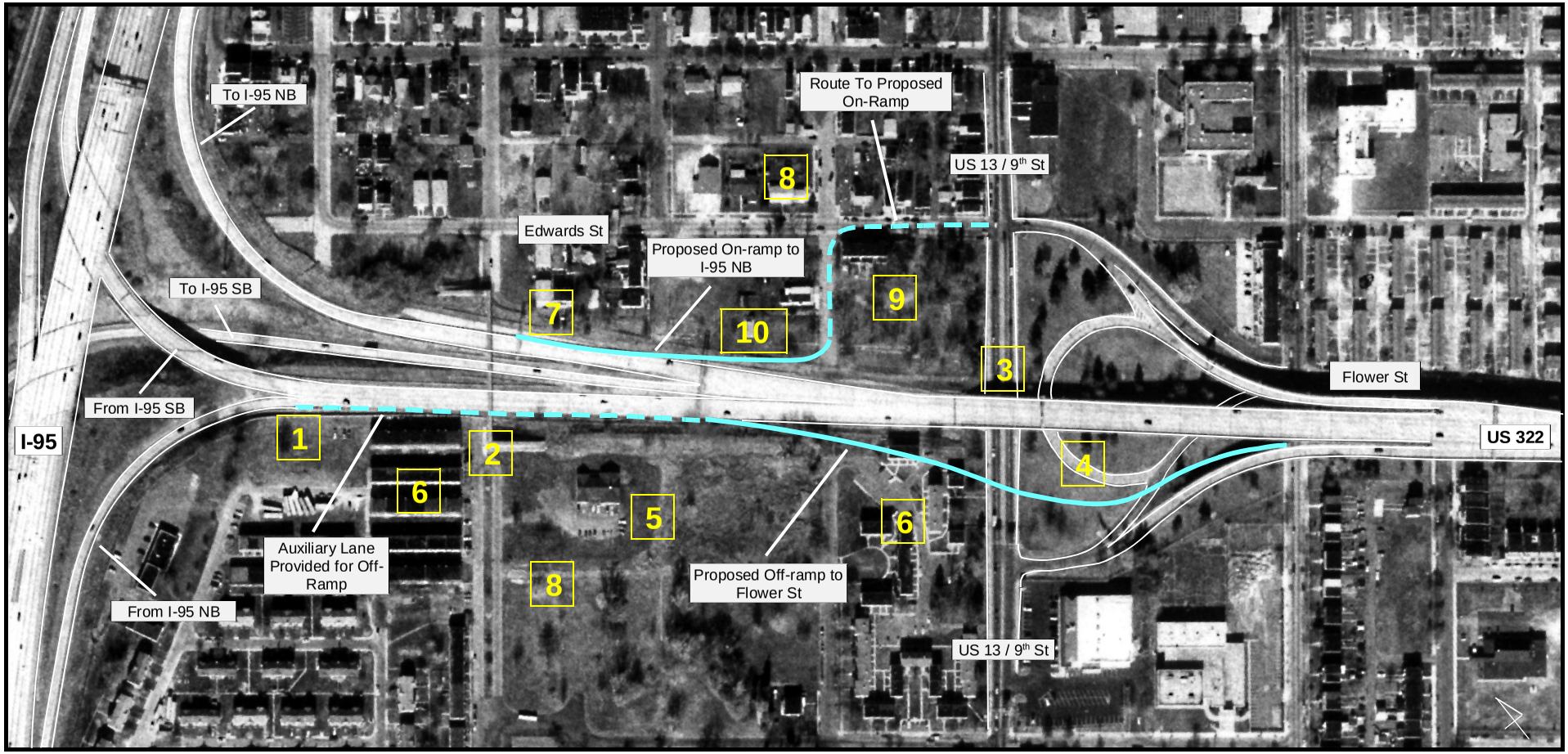
Truck Route T7: I-95/Flower Street/US 322 Interchange (long-term recommendation)

Using Exit 8/Ridley Park (Route T1), Naamans Road Exit (Route T3) or Exit 2A/Highland Avenue (Route T4) are only temporary solutions. From a trucker's perspective they involve considerable travel on arterial highways and from the city's perspective intrusions into residential areas. They represent the least objectionable options using the existing street network. Constructing a new interchange off of I-95/US 322 at Flower Street represents a high speed approach for access to the waterfront. Trucks can remain on I-95 without diverting to local streets. Flower Street is centrally located with respect to the waterfront, many industrial users are situated nearby. There are no intrusions into residential neighborhoods.

Constructing new ramps involves many problems, as shown on Figure 4, ranging from community impacts, to design issues and interagency coordination. On the west side of US 322 there are two government housing projects, a pedestrian overpass and a community center. Even with attempting to minimize community impacts, it will not be possible to avoid taking at least some of the housing overlooking West 9th Street. On the east side of US 322, trucks will have to utilize portions of Edwards and West 10th Streets to reach I-95, disrupting that community.

FIGURE 4: I-95 / FLOWER STREET / US 322 INTERCHANGE

Issues Pertaining to Long-Term Improvements



1. Weave of I-95 northbound and southbound traffic to US 322
2. Existing pedestrian bridge
3. Vertical clearance
4. Maintain loop configuration and proposed short-term construction plans (shown in Figure 3)
5. Community center
6. Public housing
7. Partially constructed ramp and corresponding right-of-way
8. Jurisdictional issues
9. Community disruption
10. At-grade access to I-95 Southbound from Ninth St/Flower St interchange is not feasible; overhead or under-grade ramp needs further study as part of preliminary engineering

One of the most significant design issues is whether the weaving section is long enough to permit trucks from the southbound I-95 ramp to cross traffic from the northbound I-95 ramp and safely enter the exit ramp to Flower Street. A more thorough technical analysis based upon projected traffic volumes, roadway geometry and preliminary ramp characteristics is required to answer this issue. The ramp must then pass over 9th Street, maintaining the minimum vertical clearance, and then drop down between the existing Commodore Barry Bridge ramps. Visual observation indicates this is feasible; however, a more detailed engineering study is needed. In the reverse direction, it is not possible to thread a new ramp over 9th Street because of the existing ramp configurations. Traffic must continue from Flower Street onto Edwards Street, 10th Street, and then onto I-95 via an old abandoned ramp (that is visible on the aerial photograph on Figure 4). At this point the northbound and southbound ramps have already split and it is not possible to access the southbound I-95 ramp. Traffic to southbound I-95 will have to use local streets.

Jurisdiction issues may be as critical to advancing the project as community impacts and design issues. On the west side of US 322 the area north of 10th Street falls in Chester Township, who would have to be involved in any discussions involving ramp improvements. The east side of US 322 is entirely within the City of Chester. Ownership of US 322 is divided between PennDOT and the Delaware River Port Authority (DRPA). An investigation of PennDOT route diagrams shows all the significant roadway features north of 9th Street, including the ramps to/from I-95, and the roadway under the pedestrian overpass is under PennDOT jurisdiction (SR 8017). By inference the diagrams imply the roadway south of 9th Street, including the Flower Street ramps, falls under DRPA jurisdiction. The exact point of demarcation between PennDOT and DRPA is unclear.

Car Routes

Car Route C1: Exit 8/Ridley Park (short-term recommendation)

The primary waterfront car route from Philadelphia is Exit 8, Stewart Avenue, and PA 291. It is a fairly direct route, approximately 2.7 miles long from the I-95 exit to the Morton Avenue/PA 291 intersection. During peak hours, when I-95 is congested at the I-476 interchange, this corridor would probably be very competitive to I-95 in terms of travel times. Unlike truckers, motorists are more sensitive to safety and positive visual experiences. PA 291 is an industrial corridor that, even with landscaping, is not very attractive to motorists. Many spots along the corridor feel isolated, particularly in Eddystone, and present potential security problems at night. Mixing truck traffic and automobiles on the same route could also intimidate

motorists. Even with these concerns, PA 291 should be considered the primary short-term route to the waterfront.

Car Route C2: Exit 2A or 3/Highland Avenue (short-term recommendation)

The primary waterfront car route from Wilmington is along Highland Avenue, which is accessible from northbound I-95 via Exit 2A, and offers a direct path to PA 291. Highland Avenue is also a secondary route from Philadelphia to the waterfront via I-95 South using Exit 3.

While mostly a residential street, Highland Avenue is becoming increasingly commercial, given the shopping center under construction by Township Line Road. Kerlin Street was rejected as a primary waterfront car route because of existing congestion, a tight ramp configuration on and off I-95, no opportunity to displace on-street parking, and the problematic intersection of Kerlin Street, Concord Avenue and West 9th Street.

Car Route C3: Exit 6/Edgmont Avenue (short-term recommendation)

The primary central business district car route from Philadelphia off I-95 South is Edgmont Avenue/Avenue of the States, where cars will be directed to turn left and use Chestnut Street (then onto Morton Avenue to 9th Street to Edgmont Avenue and Avenue of the States), rather then take a right turn off of I-95 and travel by Widener University's campus to access Edgmont Avenue. The streets by Widener have residential and institutional uses along them and are not designed for major traffic.

Car Route C4: Exit 6/Edgmont Avenue/Avenue of the States (short-term recommendation)

The primary central business district car route from Wilmington off I-95 North is also Edgmont Avenue/Avenue of the States due to its easy access to the main thoroughfares of the central business district.

Car Route C5: Commodore Barry Bridge/US 322 (short-term recommendation)

Auto traffic from New Jersey wishing to access the central business district would use

the Commodore Barry Bridge/US 322 route, then travel eastward on West 9th Street to Edgmont Avenue. As West 9th Street is a major thoroughfare with some significant commercial and institutional uses, this might add to this street's economic development potential.

Car Route C6: Chester/Flower Street Exit (short-term recommendation)

As a waterfront access route, this is also an obvious choice. Flower Street is an exit off of the Commodore Barry Bridge and it bisects the Chester waterfront. In fact, it is an entry road into the PECO site, where most of the initial non-industrial waterfront development is expected to occur.

Car Route C7: Exit 6/East 12th Street (long-term recommendation)

Normally this would not be considered a primary route to the business district due to a narrow roadway, on-street parking that restricts the street to one-way operation, sight distance problems at the Chestnut Street/East 12th Street intersection, potential turn problems at Edgmont Avenue and poor delineation of traffic controls. In addition to traffic issues, the street is not a very attractive gateway to Chester's business district. There are dilapidated houses lining the southern curb and fencing/empty lots along the I-95 frontage. Chester has indicated a commitment to create an appropriate gateway to the business district. Removing the row of houses fronting East 12th Street presents an opportunity to widen the street for two-way traffic; also, by shifting the roadway the south could address many of the sight distance and turning radius issues.

Car Route C8: I-95/Flower Street/US 322 Interchange (long-term recommendation)

Another long-term recommendation that would be beneficial to cars is construction of the I-95/US 322/Flower Street Interchange. Just as construction of the interchange would open the waterfront up to trucks, cars would now also have access to the waterfront without using PA 291 or Highland Avenue.

Major Improvements Needed for Access Plan

Below are the major improvements that would be needed to implement this access plan, they are also summarized in Table 3 by corridor. All recommendations are characterized as either short-term or long-term improvements. Short-term improvements can generally be implemented within 1-3 years, they are further subdivided into minor and major categories indicating those improvements requiring a more substantial effort. Long-term improvements, either because of the need to conduct more detail studies, the requirement for more extensive coordination with PennDOT, or the requirement of substantial outside funding, will take more than three years. The Appendix contains corridor diagrams and land use maps that illustrate the improvements listed below.

PA 291's reconstruction as a five-lane roadway to the Trainer municipal line, two lanes in each direction with a center turn lane, is on the DVRPC Transportation Improvement Program for construction in 2002 and 2003.

I-95 Signs

The recommendations contained in this report are contingent upon I-95 signing directing trucks and cars to the appropriate exits. To help determine if any change in signing is required, a survey of I-95 destination signs in the vicinity of Chester was conducted. Existing northbound signs are shown on Figure 5 and southbound signs on Figure 6. PennDOT has recently converted their interstate exit numbering system from a sequential numbering system to a mile post based system. Because of the costs associated with renumbering all the exit signs in Pennsylvania, they are unlikely to be very receptive to any changes to the newly installed signs, especially the overhead signs. Therefore, the following sign recommendations were restricted to post mounted signs located along the shoulders of I-95, which are far less costly to construct.

In the northbound direction, there should be a sign directing motorists to take Exit 2A Highland Avenue to the "Chester Waterfront." There is a similar sign between Exit 7 and Exit 8 identifying Exit 8 for Penn Terminals and the Chester Waterfront. Generally, PennDOT does not post signs directing motorists to local business districts. If PennDOT is not amenable to adding a sign before Edgmont Avenue specifying Exit 6 for the "Chester Business District," a sign for the "Chester Transportation Center" may be an appropriate substitute. The term Chester Transportation Center has the connotation of a special place, not simply just a train station.

Table 3: Comprehensive List of Improvements

Corridor	Time Frame	Improvement
Chestnut St./Morton Ave.	Short-Term Minor	• Prohibit parking on East 12th St at Chestnut St • Replace trailblazer signs at top of I-95 off-ramp • Install trailblazer signs: Chestnut/12th St, Chestnut/10th St/Morton Ave, Morton Ave/PA 291 • Stripe a left turn lane on Morton Ave at 10th St/Chestnut St
	Short-Term Major	• Remove traffic signal at Morton Ave/7th St • Install stop signs on 7th St approaches • Retime traffic signal at Morton Ave/PA 291
	Long-Term	• Cut back curbs and walls at Chestnut/12th St • Replace traffic signal Morton/9th St, increase turning radii • Increase clearance under Amtrak bridge • Channelize/sign Morton/5th St/Amtrak bridge intersection
	Long-Term Study	• Examine feasibility of realigning Chestnut St directly to Morton Ave
Highland Ave.	Short-Term Minor	• Add eastbound right turn lane at Township Rd/Highland Ave • Retime Highland Ave/Township Line Rd traffic signal • Install trailblazer signs at Highland Ave/9th St • Extend/restripe southbound left turn lane on Highland Ave at 9th St • Relocate on-street parking on Highland Ave in vicinity of 9th St to Grace St. • Prohibit/enforce parking restrictions on 9th & 10th St at Grace St • Stripe center line on Highland from 4th St to PA 291 • Relocate parking to east side of Highland Ave 4th St to PA 291 • Install left turn lane on Highland Ave at PA 291 • Upgrade pedestrian crosswalks: Highland Ave/9th St, Highland Ave/4th St
	Short-Term Major	• Install street lights on Grace St • Pave SEPTA Highland Ave parking lot, install lighting • Upgrade Highland Ave/9th St traffic signal • Integrate traffic signal with PennDOT plans for 9th St signals
	Long-Term	• Replace traffic signals on Highland Ave at 2nd St, 3rd St, and 4th St • Actuate traffic signals at: 2nd , 3rd, 4th, and 7th St
	Study	• Examine need/feasibility of constructing parking lot(s) on Grace St

Table 3: Comprehensive List of Improvements (cont.)

Corridor	Time Frame	Improvement
Bullens Ln./Morton Ave.	Short-Term Minor	• Install trailblazer signs at MacDade Blvd/Bullens Ln, Bullens Ln/Morton Ave • Install oversized stop sign on Bullens Ln at Toth Dr • Extend left turn lane on Morton Ave to Bullens Ln • Relocate parking to west side of Morton Ave Terrill St to Bullens Ln • Upgrade street lighting on Morton Ave at curve by Ridley Ave
	Short-Term Major	• Evaluate need for flashing beacon on Bullens Ln prior to Toth Dr • Reverse direction of Terrill St and Johnson St • Remove Morton Ave/Johnson St traffic signal • Replace Morton Ave/12th St traffic signal
	Long-Term	• Increase clearance under Amtrak bridge • Channelize/sign Morton/5th St/Amtrak bridge intersection
9th St.	Short-Term Minor	• Prohibit/enforce parking restrictions on 9th St at Highland Ave • Relocate stop line on 9th St further back from Highland Ave • Upgrade pedestrian signals on 9th St at: Highland Ave, Wilson St. • Upgrade/install pedestrian crosswalks on 9th St at: Highland Ave, Wilson St, Engle St • Enforce parking restrictions at auto repair shop on 9th St by Engle St • Relocate on-street parking on 9th St between Engle St and Yarnall St to Congress St
	Short-Term Major	• Install trailblazer/overhead diagrammatic signs at 9th St/Flower Street/US 322 interchange
Commodore Barry Bridge	Long-Term	• Reconstruct interchange to separate US 322 and Flower St traffic movements • Lower Flower St under the Amtrak bridge • Complete widening of Flower St to waterfront
	Long-Term Study	• Initiate preliminary engineering study for I-95/US 322/Flower St ramps
East 12th St	Long-Term Study	• Evaluate feasibility and effectiveness of widening 12th St to provide two-way traffic
I-95	Short-Term Major	• Install new destination signs

Recommendations for southbound signing are very similar. A post mounted sign for the "Chester Central Business District" or the "Chester Transportation Center" should be located between I-476 and the Edgmont Avenue exit ramp. A "Chester Waterfront" sign should be installed between Exit 4 and Exit 3.

Morton Avenue/Chestnut Street Corridor (see Figure A1)

Short-Term Improvements:

- Prohibit parking on both sides of East 12th Street at its intersection with Chestnut Street to improve the sight distance.

- Replace trailblazers on Chestnut Street at top of I-95 off-ramp. Install trailblazers at the intersection of Chestnut Street/East 12th Street; near the intersection of Chestnut Street, 10th Street, and Morton Avenue; and at the Morton Avenue/PA 291 intersection.

- Stripe a northbound left turn lane onto 10th Street/Chestnut Street from Morton Avenue.

- Remove the traffic signal at the Morton Avenue/ East 7th Street intersection due to low traffic volumes on East 7th Street. Place stop signs on the East 7th Street approaches. Install pedestrian crosswalks with appropriate signage at the Morton Avenue/East 7th Street intersection because of an adjacent church.

- Retime the traffic signal at the PA 291/Morton Avenue intersection to give more time for trucks to turn onto Morton Avenue. Implementation of this recommendation is contingent upon how successful Morton Avenue is as a truck route.

Long-Term Improvements:

- Cut back curbing at northeast corner of Chestnut Street/East 12th Street to make it easier for vehicles to enter the I-95 on-ramp. Cut back or lower the concrete wall at the northwest corner of the intersection to improve sight distance for southbound vehicles on Chestnut Street.

- Replace the traffic signal at the intersection of Morton Avenue/East 9th Street. Improve turning radii in both southwest and northeast quadrants of the intersection.

FIGURE 5: EXISTING I-95 NORTHBOUND SIGNS

CITY OF CHESTER, PA

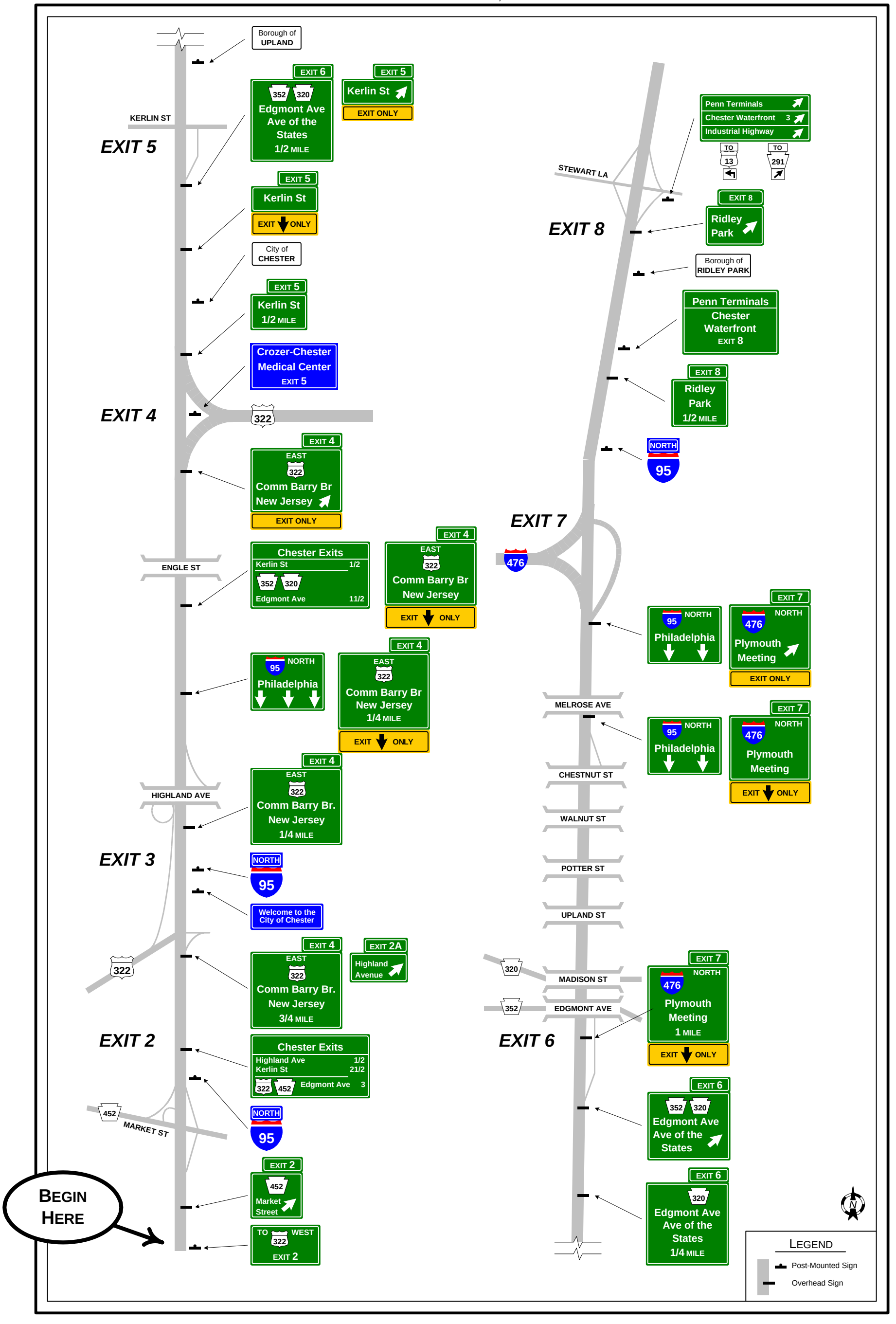
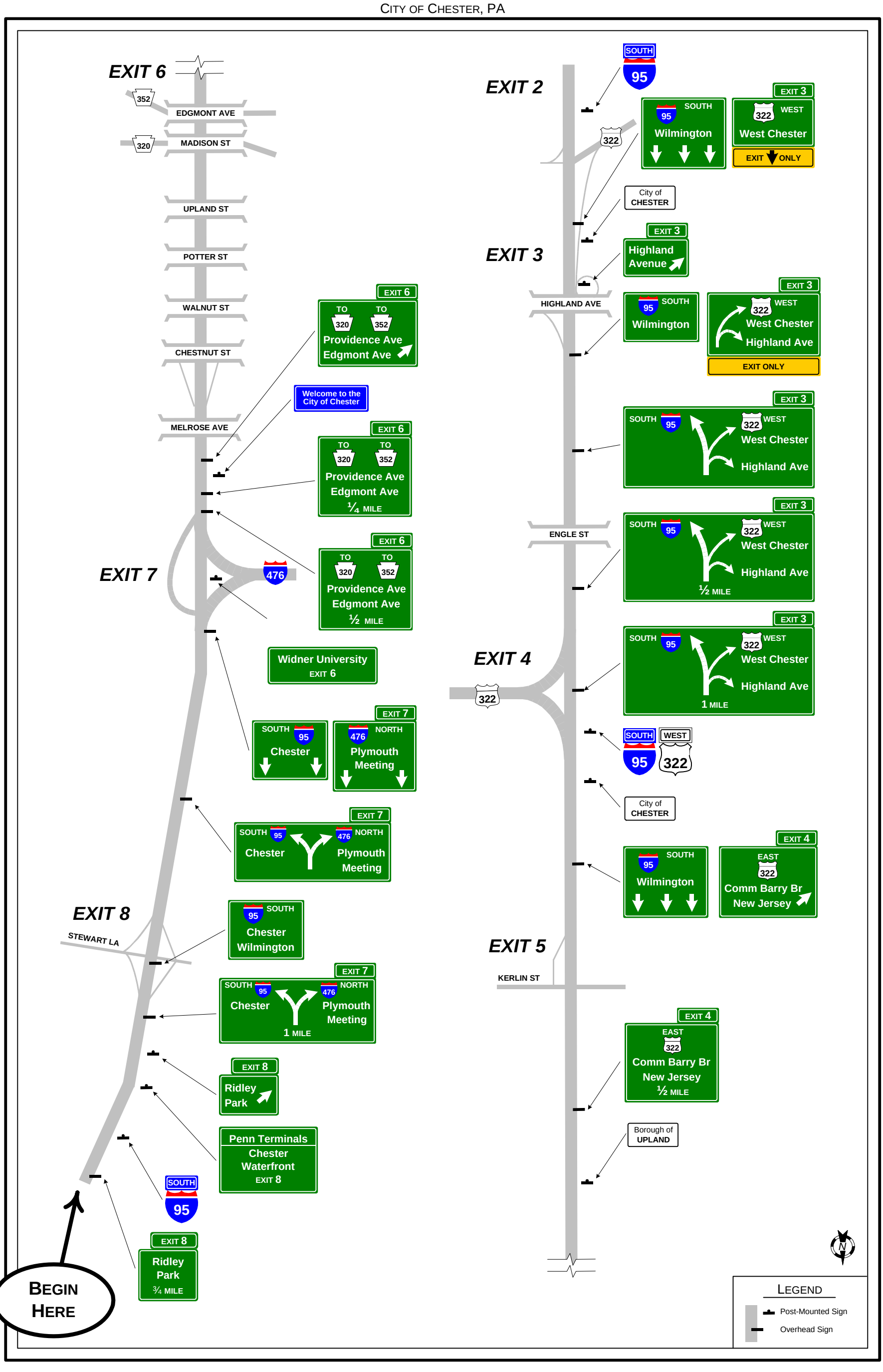


FIGURE 6: EXISTING I-95 SOUTHBOUND SIGNS

CITY OF CHESTER, PA



- Increase Amtrak bridge clearance by lowing the roadway under the bridge to bring it up to standards. The existing clearance, 12'9", is not suitable for truck traffic. The City of Chester should initiate discussions with Amtrak about conducting a feasibility study.

- Channelize intersection and implement appropriate signing at the Morton Avenue/East 5th Street intersection under the Amtrak Bridge. Improvements can be done as part of a reconstruction of the bridge.

- Examine the feasibility of realigning the southern portion of Chestnut Street directly to Morton Avenue. This will involve taking an old abandoned building and constructing a new road through the property. Grades and turning radii for trucks may present problems.

Highland Avenue Corridor (see Figure A3)

Short-Term Improvements:

- Add an eastbound right turn lane on Township Line Road at the Highland Avenue intersection, and retime traffic signal timing at the intersection.

- Extend and restripe the southbound left turn lane and upgrade the turn signal on Highland Avenue onto West 9th Street. This will require relocating 5-10 parking spaces from Highland Avenue to Grace Street. As a consequence of relocating parking to Grace Street, restrict parking at the intersection of 10th Street and Grace Street, and 9th Street and Grace Street. Install street lights on Grace Street and explore the feasibility of purchasing vacant lot(s) for the displaced residential and church parking. Even though all of the homes either have a rear garage or a parking area fronting Grace Street, an overflow lot for visitor parking might be needed. There is a church located on Highland Avenue near the northwest corner of the intersection, where the left turn lane will be extended; its congregation will need additional parking.

- Integrate existing Highland Avenue and West 9th Street signal optimization plans with these recommendations. Repair pedestrian signal at intersection of Highland Avenue/West 9th Street. Extend, restripe, and upgrade signal for the westbound left turn lane on West 9th Street.

- Restripe pedestrian crosswalks and stop bars on all approaches of the Highland Avenue/West 9th Street intersection. Install trailblazer signs at the intersection.

- Install pedestrian crosswalks on all approaches to Highland Avenue/4th Street

intersection to improve access to the St. Hedwig School. Stripe a centerline on Highland Avenue from 4th Street to the waterfront area. This will necessitate relocating parking on Highland Avenue from west side of street to the east side from 4th Street to the waterfront area.

On-street parking on Highland Avenue approaching the 9th Street intersection.

- Pave the SEPTA Highland Avenue train station lot, provide street lighting. A paved and well lit lot could also serve a parking area for adjoining Highland Avenue businesses whose customers currently park on Highland Avenue.

- Install additional turn lane on Highland Avenue at PA 291.

Long-Term Improvements:

- Replace and actuate traffic signals on Highland Avenue at West 2nd, 3rd, and 4th Streets.

- Actuate Highland Avenue/West 7th Street traffic signal.

Bullens Lane/Morton Avenue Corridor (see Figure A5)

Short-Term Improvements:

- Install trailblazer signs on MacDade Boulevard and at Bullens Lane/Morton

Avenue intersection to indicate truck route.

- Install an oversized stop sign at and the intersection of Bullens Lane/Toth Drive. Install an advanced Stop Ahead sign prior to the intersection. If experience shows these two improvements do not provide adequate warning for vehicles to stop at the intersection, a supplemental flashing beacon may be required.

- Evaluate the need for signal timing changes to accommodate northbound left turns from Morton Avenue to Bullens Lane. Either extend northbound exclusive left turn lane and/or add protected left turn phase.

- Relocate parking on Morton Avenue from the east curb to the west curb from Terrill Street to Bullens Lane. Morton Avenue's 40-foot roadway width will permit parking only on one side of the street. Due to the number of residences lining the west side of Morton Avenue and the auto related businesses along the east side, a parking ban on the east side is the preferred option.

Morton Avenue at Bullens Lane intersection, note left turn lane.

- Upgrade street lighting at curve on Morton Avenue near Ridley Avenue.

- Reconfigure one-way direction of side streets near the problematic intersection of East 12th Street and Morton Avenue. Reverse Terrill Street to one-way northbound. Reverse Johnson Street to one-way southbound. Remove traffic signal at Morton Avenue and Johnson Street. Replace traffic signal at East 12th

Street and Morton Avenue. Remove parking at and around the intersection of East 12th Street and Morton Avenue. Install "Do Not Block Intersection" sign at the Johnson Street intersection.

Long-Term Improvements:

Modify the intersection of Morton Avenue and Amtrak bridge, according to applicable standards, with possible major reconstruction of the existing bridge support structure. This is due to Morton Avenue's 12'9" Amtrak underclearance, which is currently insufficient for truck traffic.

Morton Avenue at intersection of East 12th Street and Johnson Street.

Ninth Street Corridor (see Figure A7)

Short-Term Improvements:

- Restrict and enforce parking limits on West 9th Street, near Highland Avenue intersection. Relocate stop bar on the 9th Street westbound approach further east of intersection to minimize conflicts with turning trucks.

- Install pedestrian crosswalks on all approaches to West 9th Street and Wilson Street. Upgrade traffic signal at this intersection to include pedestrian signal faces with pedestrian actuation.

- Add stop bars and pedestrian crosswalks on all approaches of the West 9th Street/Engle Street intersection.

- Enforce parking restrictions at the auto repair shop on West 9th Street near Engle. Relocate parking along south curb of West 9th Street between Engle and Yarnall to Congress Street which parallels West 9th Street. This would affect approximately fourteen parking spaces.

- Install trailblazers, including overhead diagrammatic signs, on West 9th Street near the Flower Street/Commodore Barry Bridge interchange.

Commodore Barry Bridge (see Figures 3 and 4)

Long-Term Improvements:

- Widen the Flower Street/US 322 ramp to two lanes, one for Flower Street and the other for eastbound US 322.

- Initiate a preliminary engineering study for ramps to and from I-95 to Flower Street.

- Upgrade Flower Street for additional traffic by widening the southern half of the roadway and lowering the road under the Amtrak structure.

Appendix

Corridor Maps:

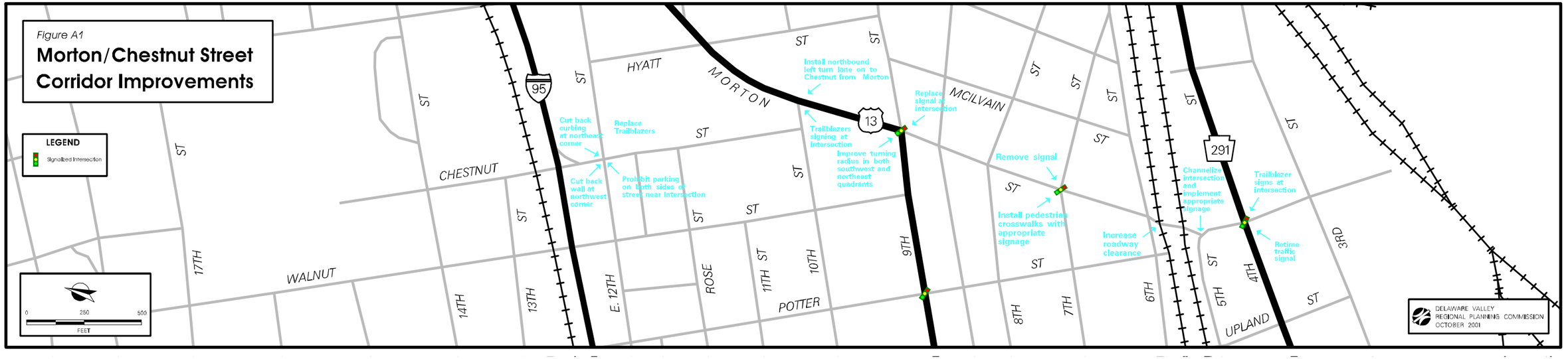


Figure A1
Morton/Chestnut Street Corridor Improvements
LEGEND
Signalized Intersection
Cut back curbing at northeast corner
Replace Trailblazers
Cut back wall at northwest corner
Prohibit parking on both sides of street near intersection
Trailblazers signing at intersection
Improve turning radius in both southwest and northeast quadrants
Install northbound left turn lane on to Chestnut from Morton
Replace signal at intersection
Remove signal
Install pedestrian crosswalks with appropriate signage
Increase roadway clearance
Channelize intersection and implement appropriate signage
Trailblazer signs at intersection
Retime traffic signal
HYATT
MORTON
MCILVAIN
CHESTNUT
WALNUT
UPLAND
POTTER
ROSE
E. 12TH
17TH
14TH
13TH
11TH ST
10TH
9TH
8TH
7TH
6TH
5TH
4TH
3RD
ST
95
13
291
0 250 500
FEET
DELAWARE VALLEY REGIONAL PLANNING COMMISSION
OCTOBER 2001

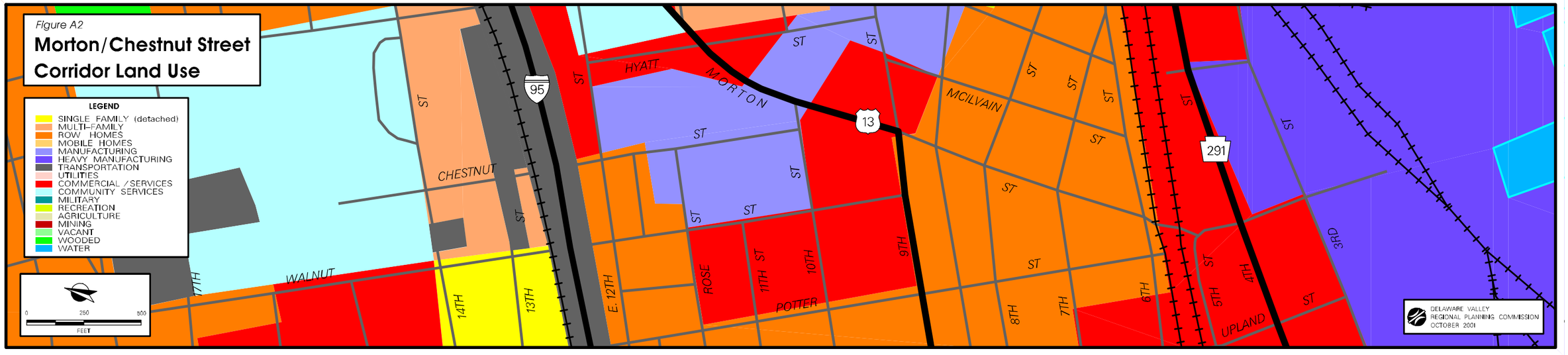


Figure A2
Morton/Chestnut Street Corridor Land Use
LEGEND
SINGLE FAMILY (detached)
MULTI-FAMILY
ROW HOMES
MOBILE HOMES
MANUFACTURING
HEAVY MANUFACTURING
TRANSPORTATION
UTILITIES
COMMERCIAL /SERVICES
COMMUNITY SERVICES
MILITARY
RECREATION
AGRICULTURE
MINING
VACANT
WOODED
WATER
HYATT
MORTON
MCILVAIN
CHESTNUT
WALNUT
UPLAND
POTTER
ROSE
E. 12TH
17TH
14TH
13TH
11TH ST
10TH
9TH
8TH
7TH
6TH
5TH
4TH
3RD
ST
95
13
291
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DELAWARE VALLEY REGIONAL PLANNING COMMISSION
OCTOBER 2001

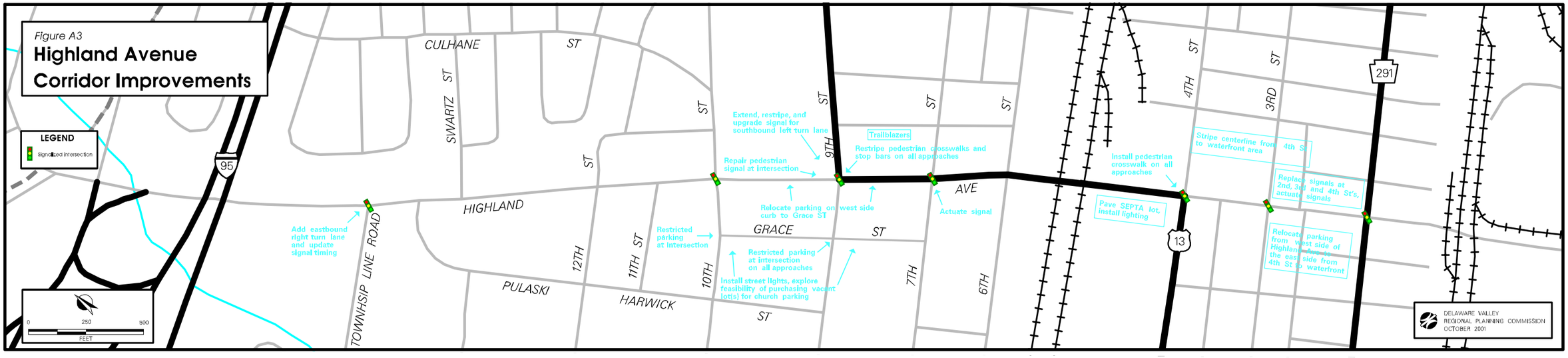
Figure A3
Highland Avenue
Corridor Improvements
LEGEND
Signalized intersection
CULHANE ST
SWARTZ ST
HIGHLAND
PULASKI
HARWICK ST
GRACE ST
AVE
TOWNSHIP LINE ROAD
12TH ST
11TH ST
10TH ST
9TH ST
7TH ST
6TH ST
4TH ST
3RD ST
95
13
291
Add eastbound right turn lane and update signal timing
Restricted parking at intersection
Relocate parking on west side curb to Grace ST
Repair pedestrian signal at intersection
Extend, restripe, and upgrade signal for southbound left turn lane
Restripe pedestrian crosswalks and stop bars on all approaches
Trailblazers
Actuate signal
Restricted parking at intersection on all approaches
Install street lights, explore feasibility of purchasing vacant lot(s) for church parking
Install pedestrian crosswalk on all approaches
Pave SEPTA lot, install lighting
Stripe centerline from 4th St to waterfront area
Replace signals at 2nd, 3rd and 4th St's, actuate signals
Relocate parking from west side of Highland Ave to the east side from 4th St to waterfront
0 250 500
FEET
DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
OCTOBER 2001

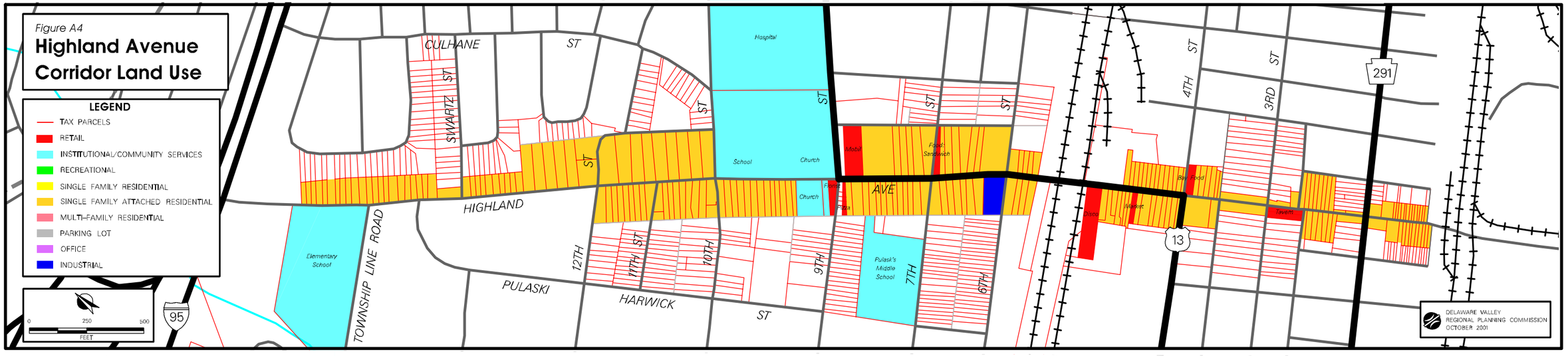
Figure A4
Highland Avenue
Corridor Land Use
LEGEND
TAX PARCELS
RETAIL
INSTITUTIONAL/COMMUNITY SERVICES
RECREATIONAL
SINGLE FAMILY RESIDENTIAL
SINGLE FAMILY ATTACHED RESIDENTIAL
MULTI-FAMILY RESIDENTIAL
PARKING LOT
OFFICE
INDUSTRIAL
CULHANE ST
SWARTZ ST
HIGHLAND
PULASKI
HARWICK ST
AVE
TOWNSHIP LINE ROAD
12TH ST
11TH ST
10TH ST
9TH ST
7TH ST
6TH ST
4TH ST
3RD ST
95
13
291
Hospital
School
Church
Elementary School
Pulask's Middle School
Mobil
Food/ Sandwich
Pizza
Bar/ Food
Disco
Tavern
0 250 500
FEET
DELAWARE VALLEY
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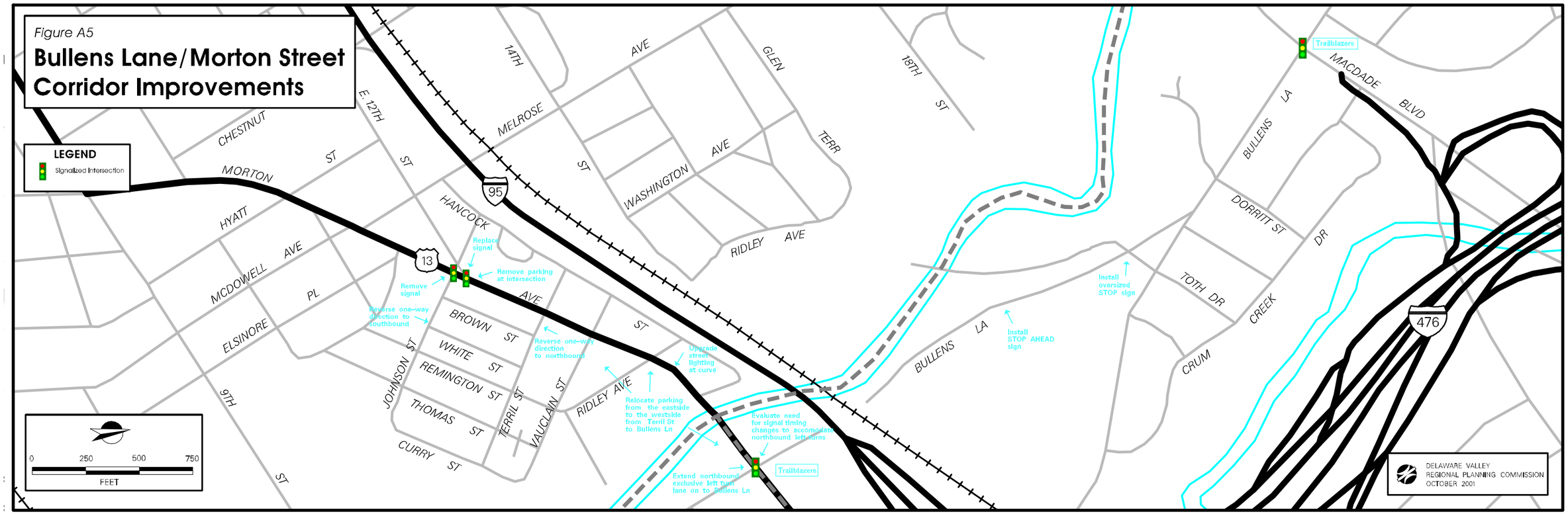
Figure A5

Bullens Lane/Morton Street Corridor Improvements



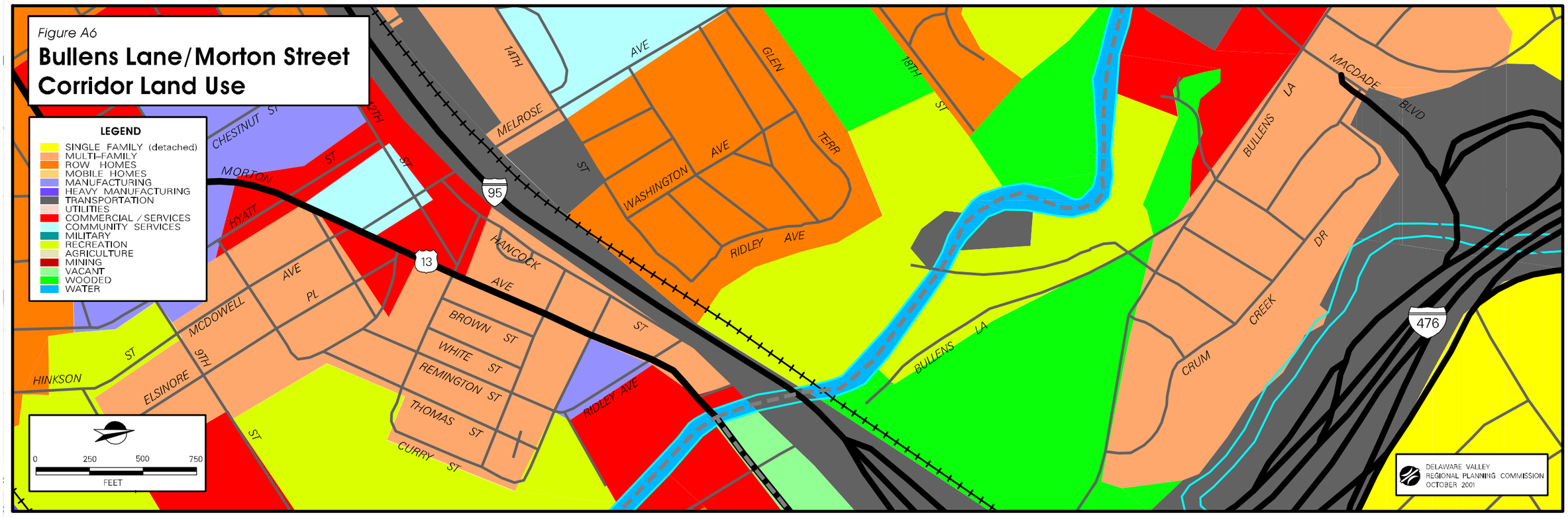


Figure A6
Bullens Lane/Morton Street Corridor Land Use
LEGEND
SINGLE FAMILY (detached)
MULTI-FAMILY
ROW HOMES
MOBILE HOMES
MANUFACTURING
HEAVY MANUFACTURING
TRANSPORTATION
UTILITIES
COMMERCIAL / SERVICES
COMMUNITY SERVICES
MILITARY
RECREATION
AGRICULTURE
MINING
VACANT
WOODED
WATER
0 250 500 750
FEET
CHESTNUT ST
MORTON
HYATT
12TH ST
14TH ST
MELROSE AVE
WASHINGTON AVE
GLEN TERR
18TH ST
RIDLEY AVE
HANCOCK AVE
BROWN ST
WHITE ST
REMINGTON ST
THOMAS ST
CURRY ST
MCDOWELL AVE
9TH ST
HINKSON ST
ELSINORE PL
RIDLEY AVE
BULLENS LA
MACDADE BLVD
CRUM CREEK DR
95
13
476
DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
OCTOBER 2001

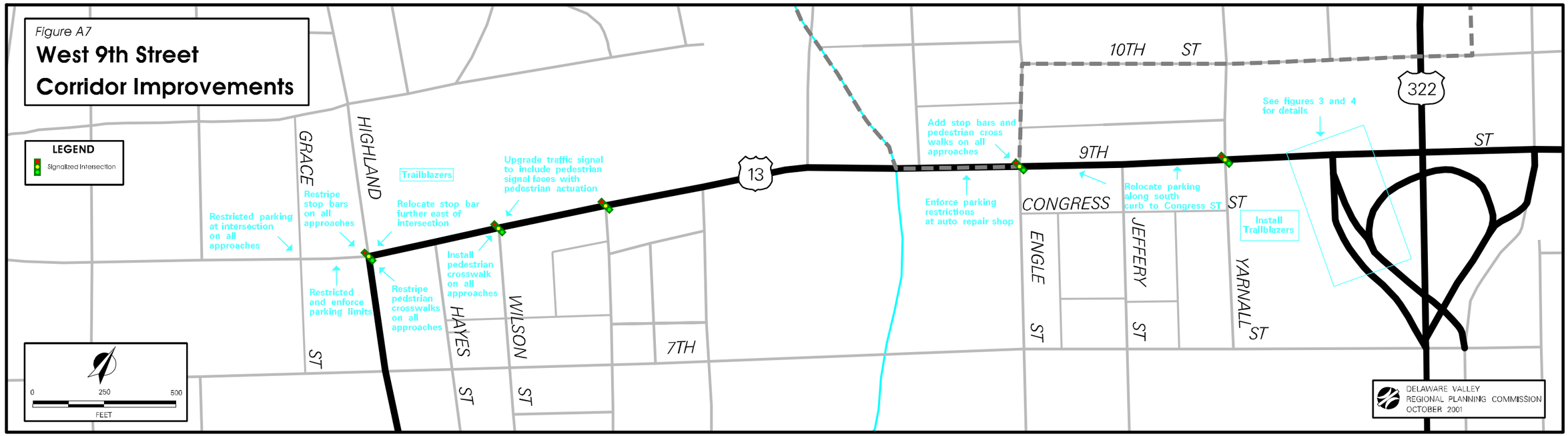


Figure A7
West 9th Street
Corridor Improvements
LEGEND
Signalized Intersection
0
250
500
FEET
GRACE ST
HIGHLAND ST
HAYES ST
WILSON ST
7TH
9TH
10TH ST
CONGRESS ST
ENGLE ST
JEFFERY ST
YARNALL ST
ST
13
322
Trailblazers
Restripe stop bars on all approaches
Restricted parking at intersection on all approaches
Relocate stop bar further east of intersection
Upgrade traffic signal to include pedestrian signal faces with pedestrian actuation
Restricted and enforce parking limits
Restripe pedestrian crosswalks on all approaches
Install pedestrian crosswalk on all approaches
Add stop bars and pedestrian cross walks on all approaches
Enforce parking restrictions at auto repair shop
Relocate parking along south curb to Congress ST
Install Trailblazers
See figures 3 and 4 for details
DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
OCTOBER 2001

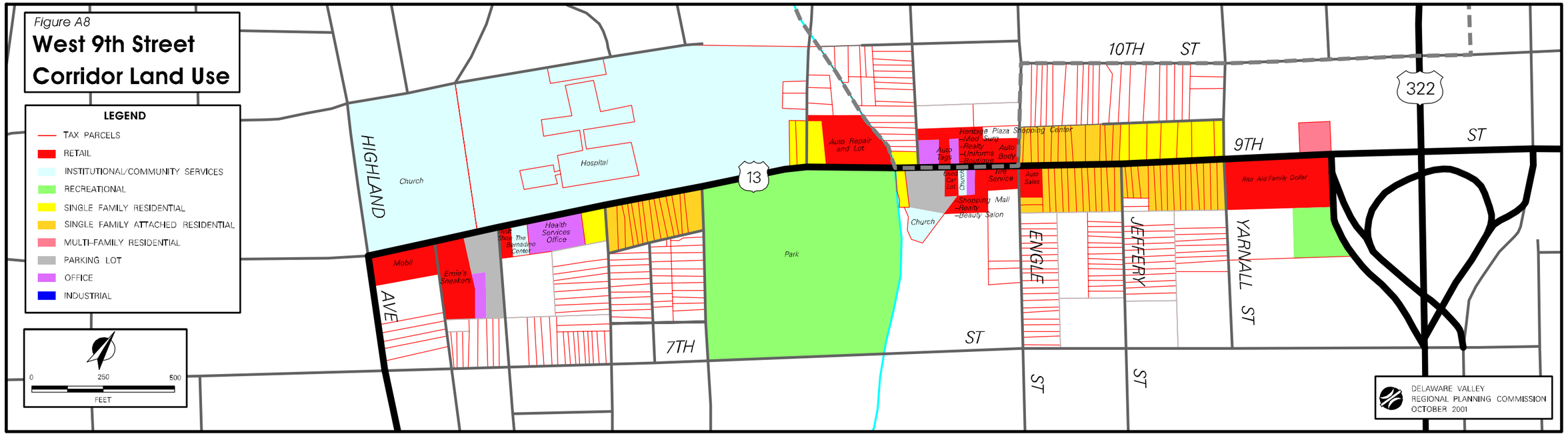


Figure A8
West 9th Street
Corridor Land Use
LEGEND
TAX PARCELS
RETAIL
INSTITUTIONAL/COMMUNITY SERVICES
RECREATIONAL
SINGLE FAMILY RESIDENTIAL
SINGLE FAMILY ATTACHED RESIDENTIAL
MULTI-FAMILY RESIDENTIAL
PARKING LOT
OFFICE
INDUSTRIAL
0
250
500
FEET
HIGHLAND
AVE
Church
Hospital
13
Auto Repair and Lot
Heritage Plaza Shopping Center
-Med. Supp.
-Realty
-Uniforms
-Perfume
Auto Body
Auto Tags
Tire Service
Auto Sales
Church
-Shopping Mall
-Realty
-Beauty Salon
10TH ST
9TH
Rite Aid
Family Dollar
322
ST
Park
Church
ENGLE
JEFFERY
YARNALL ST
Mobil
Emie's Sneakers
Health Services Office
The Bernadine Center
7TH
ST
ST
ST
DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
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Conceptual Access Plan for the City of Chester

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Area Covered: City of Chester, Delaware County

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ABSTRACT

The objective of this report is to recommend an access plan to direct truck traffic to the Chester waterfront, and auto traffic to the CBD and waterfront from the regional highway system. A series of alternative routing schemes were evaluated as to their impact and feasibility. For the recommended access routes, detailed roadway and signing improvements are recommended.

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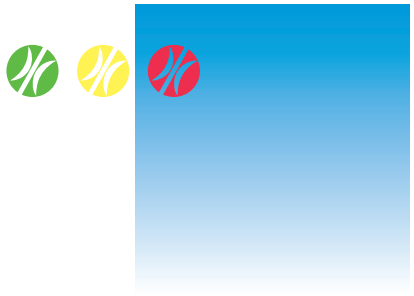

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