II. ALTERNATIVES CONSIDERED

The following section describes the initial set of alternatives considered and the reasons for eliminating them from further consideration. It also describes the physical and operating characteristics, and the estimated capital costs for each alternative retained for consideration in the U.S. 50 Crossing Study.

A. ALTERNATIVES PRESENTED AT THE ALTERNATIVES PUBLIC WORKSHOP

A total of eight alternatives were developed to take to the Alternatives Public Workshop in June 2006. The alternatives presented were Alternative 1 (No-Build), Alternative 2 (Rehabilitation), Alternative 3 (One-Way Pair), Alternative 4 (1st Street Connection), Alternative 5 (South Parallel Bridge), Alternative 5A (North Parallel Bridge), Alternative 6 (9th Street Connection), and Alternative 7 (Remove and Replace). The following is a description of the alternatives presented at the Alternatives Public Workshop.

Alternative 1 – No-Build - No major improvements are proposed under Alternative 1, the No-Build Alternative. Minor short-term improvements would occur as part of routine maintenance and safety improvements. This alternative does not address the Purpose and Need for the project. However, it serves as a baseline for judging the impacts and benefits associated with the other alternatives.

Build Alternatives – Assumptions - Each of the build alternatives assumes the existing channel would remain in its current location due to the environmental agencies' comments concerning the probable negative effects of moving it. The new structures in the alternatives are either a fixed span or a higher draw span. For the fixed span alternatives, the design was based on a bridge clearance height of 45 feet. The higher draw bridge alternatives were designed using a height of 30 feet. These heights were based on results from a mast height survey conducted for an entire year – from December 2004 to December 2005.

For all of the build alternatives, the emergency response time in the study area is expected to improve as a result of the implementation of the proposed project. The project has been and will continue to be coordinated with emergency service providers throughout the project planning process.

The environmental impacts analysis for all of the build alternatives considered potential impacts to wetlands based on direct fill and shading impacts (width to height ratios greater than 1:1 are considered shading impacts). In addition, although none of the alternatives directly impact Skimmer Island, the proximity to Skimmer Island and the potential impacts to the birds and habitat were of utmost concern. All build alternatives are within the ¼-mile bird protection zone (Alternative 6 is located to the north of Skimmer Island, while the other build alternatives are located to the south).

Alternative 2 – Rehabilitation - This alternative included rehabilitation of the existing bridge with a pedestrian aerial tram servicing the park-and-ride transit lot just west of the bridge; a separate fishing pier for fishermen; wider sidewalks for pedestrians and cyclists; and additional aesthetic improvements such as lighting and archways.

The pedestrian aerial tram greatly added to the cost of this alternative. Rehabilitation of the bridge would extend its life by 30 to 40 years; however, it would not decrease the number of draw span openings. The rehabilitation would include major repairs to the piers and the draw span, as well as resurfacing. This alternative also would not require taking any homes or businesses and would not impact any wetlands.

Alternative 3 – One-Way Pair - This alternative included a new, three-lane bridge with a higher draw span for outbound traffic. The new structure would begin slightly west of the existing bridge and connect near 2nd Street in Ocean City. Traffic could either go outbound on the new structure or continue straight on MD 528 (Philadelphia Avenue), which is one-way southbound. The existing bridge would be used for inbound traffic only and would be re-striped to have a total of three lanes with shoulders on both sides. To service the inbound traffic, major repairs would be done to the existing bridge to extend its life. The higher draw span would help reduce congestion due to reduced bridge openings for the outbound traffic; however, the inbound traffic would still experience delays due to the frequent openings of the existing draw bridge.

Alternative 4 – 1st Street Connection - This alternative included a new parallel bridge that begins slightly west of the existing bridge and connects near 1st Street in Ocean City (in the area of the concrete plantvia ramps to Philadelphia and Baltimore Avenues. The bridge would be a high-level fixed span with six lanes carrying both inbound and outbound traffic. The inbound traffic would continue onto MD 378, which is one-way northbound, and a new connection would be added to continue the inbound right-turn movement for traffic heading south into Ocean City.

Alternative 5 – South Parallel Bridge - This alternative included a new parallel bridge just south of U.S. 50, tying back into Division Street. The bridge would have a higher draw span and carry inbound and outbound traffic on six lanes. This alternative would not change the flow of traffic, but would possibly help with congestion due to the wider roadway. The higher draw span would also reduce congestion due to the need for fewer bridge openings.

Alternative 5A – North Parallel Bridge - This alternative, which is a mirror concept of Alternative 5, included a new parallel bridge just north of U.S. 50, tying back into Division Street. The bridge would have a higher draw span and carry inbound and outbound traffic on six lanes. This alternative would not change the flow of traffic, but would possibly help with congestion due to the wider roadway and higher draw span.

Alternative 6 – 9th Street Connection - This alternative included a new bridge that begins west of MD 611 and connects to 9th Street in Ocean City (new alignment behind the White Marlin Mall). This would be a fixed span, four-lane structure (a four-lane section was considered appropriate for Alternative 6, based on the higher design speed and the need to keep construction costs in line with the other alternatives). This alternative would take a majority of traffic away from the congested area south of 9th Street and is the farthest from Skimmer Island, an

environmentally sensitive area. This alternative has the longest proposed bridge and is the most costly, even though it includes four lanes instead of six.

Alternative 7 – Remove & Replace - This alternative included a new bridge that would replace the existing bridge at its current location, have a higher draw span, and carry inbound and outbound traffic on six lanes. This alternative would not change the flow of traffic, but would possibly help with congestion due to the wider roadway. The higher draw span would also help reduce congestion due to the need for fewer bridge openings.

B. ALTERNATIVES NOT RECOMMENDED FOR DETAILED STUDY

Based on the project team's review of the viability of these alternatives, consideration of input from the public at the Alternatives Public Workshop, and comments from the environmental agencies, the following alternatives were not recommended for detailed study. The following summary provides reasons why each specific alternative was not recommended for detailed study.

Alternative 3 – One-Way Pair - This alternative would still require the use of the existing bridge for inbound traffic and would still necessitate replacement of this bridge to accommodate vehicles in the future. Although this alternative would reduce the existing roadway section from the current four lanes to three, providing more space for other users, the fishermen, pedestrians, and bicyclists would still have to share the bridge with vehicular traffic. In addition, the existing bridge would require significant repairs and eventual replacement since it would continue to carry vehicular traffic. Inbound traffic would also still have to contend with the frequent opening of the existing bridge draw span. This alternative was among the least popular with the public and has relatively heavy residential and commercial displacements. Due to the above considerations, Alternative 3 was not recommended for detailed study.

Alternative 6 – 9th Street Connection - This is the most expensive option due to the length of the alignment and requires the purchase of the most acres of right-of-way (ROW). Traffic would be routed to the north, bypassing many of the existing businesses and the park-and-ride lot along U.S. 50 west of the bay, and traffic patterns within Ocean City would be changed, requiring significant upgrade of the 9th Street intersections. This alternative would result in approximately 3.2 acres of impacts to tidal wetlands and would impact the expanded (100-foot) buffer of Elliott's Pond, a Wetland of Special State Concern. This was the most heavily opposed alternative by the public at the Alternatives Public Workshop due to impacts to the community, particularly west of the bay, and an adjacent school site. Due to the above considerations, Alternative 6 was not recommended for detailed study.

The Maryland Department of Natural Resources (DNR) advocated that Alternative 6 be retained for detailed study. The DNR favored the optimization Alternative 6 provided in minimizing impacts to the sensitive colonial waterbird habitat on Skimmer Island. After additional coordination with the Maryland State Highway Administration (SHA) and a review of the potential resource impacts, engineering constraints, cost estimates, economic concerns, and public comments, the DNR concurred with the SHA's decision to drop Alternative 6 from the Alternatives Retained for Detailed Study (ARDS).

Alternative 7 – Remove & Replace - This alternative was dropped due to the need to remove the existing bridge, which is eligible for the National Register of Historic Places, in order to construct the new bridge in its place. This would also present significant challenges for maintaining traffic during construction, as the existing bridge would be removed in sections as the new bridge was constructed. Removing the draw span in sections would also be difficult from a construction standpoint. This alternative was among the least popular with the public. Due to the above considerations, Alternative 7 was not recommended for detailed study.

C. ALTERNATIVES RETAINED FOR DETAILED STUDY (ARDS) AND PRESENTED AT THE PUBLIC HEARING

A wide range of alternatives were developed and refined to minimize impacts to the natural, socioeconomic, and cultural environment while addressing the Purpose and Need for the project. The initial ARDS included the No-Build Alternative, Alternative 2, Alternative 4 – 1st Street Connection, Alternative 5 – South Parallel Bridge, and Alternative 5A – North Parallel Bridge. **Section VI – Comments and Coordination** contains the agencies' comments and concurrence on the ARDS.

Before the Location/Design Public Hearing and development of the *Draft Environmental Impact Statement* (DEIS) (April 2008), Alternative 4 – 1st Street Connection was modified to minimize impacts to Skimmer Island.

The following ARDS were presented in the 2008 DEIS and at the May 29, 2009 Joint Location/Design Public Hearing at the Roland E. Powell Convention Center in Ocean City. These alternatives include the No-Build Alternative, Alternative 2, Alternative 4 Modified – Fixed Span Bridge, Alternative 5 – South Parallel Bridge, and Alternative 5A – North Parallel Bridge.

All build alternatives would provide a total of four lanes of traffic. The four-lane design was based on the fact that Ocean City's streets limit traffic volumes and cannot support three lanes of inbound traffic. In addition, the Highway Needs Inventory lists U.S. 50 as a four-lane highway. In general, the typical section for all build alternatives (except Alternative 2) would provide four 12-foot lanes of traffic, a 6-foot median, two 7-foot shoulders, two 5-foot 8-inch sidewalks, and two 2-foot parapets for a total out-to-out width of 87 feet 4 inches (**Figure II-1**). Detailed mapping of the alternatives retained for detailed study is included as **Figure II-2** through **Figure II-5**.

Alternative 1 – No-Build - No major improvements are proposed under Alternative 1, the No-Build Alternative. Minor short-term improvements would occur as part of routine maintenance and safety improvements. This alternative does not address the Purpose and Need for the project. However, it serves as a baseline for judging the impacts and benefits associated with the other alternatives.

Alternative 2 – Rehabilitation - This alternative involves rehabilitation of the existing bridge with the addition of a separate fishing pier for fishermen, wider sidewalks for pedestrians and cyclists, and aesthetics such as lighting and archways. This alternative received support from approximately half of the people who commented on the project from the Alternatives Public

Workshop. Alternative 2 would not replace the existing structure, but it would add 30 to 40 years of life expectancy to the bridge structure. The initial concept of providing an aerial tram for pedestrians was removed from this alternative after the Alternatives Public Workshop due to lack of public interest and high cost.

Alternative 4 Modified – Fixed Span Bridge - Alternative 4 was presented at the Alternatives Public Workshop as the "1st Street Connection," but has since been re-named because the alternative no longer connects in the vicinity of 1st Street; instead, it connects into Ocean City north of 1st Street. This alternative was modified after the Alternatives Public Workshop to minimize impacts to homes and businesses. The modifications include a new slightly curved bridge to the north of the existing bridge that connects into Philadelphia Avenue (one-way southbound) and Baltimore Avenue (one-way northbound) to allow the bridge to maintain distance from Skimmer Island while tying in further to the north in Ocean City than the original Alternative 4 to allow for impacts to more properties that currently do not have structures.

The bridge would be a 45-foot high fixed span with four lanes carrying both inbound and outbound traffic. The inbound traffic would continue northbound one-way onto Baltimore Avenue (MD 378), and a new connection would be added onto Philadelphia Avenue to continue the inbound right-turn movement for traffic heading south into Ocean City. As with Alternative 4, this alternative would require longer ramps into Ocean City due to the height needed for a fixed span. Parking would need to be removed from 5th Street to allow for an additional left turn lane at Philadcelphia Avenue, and Baltimore Avenue would need to be widened by one lane from the ramp to 5th Street to accommodate two lanes from the ramp and two from Baltimore Avneue. Baltimore Avenue would also need to be transitioned from three lane to two south of the ramp to accommodate the ramp lanes.

This alternative received support from the majority of participants at the Alternatives Public Workshop. It would eliminate the need for draw span openings and would provide a separate facility for pedestrians, bicyclists, and fishermen on the existing bridge. While it would have significant ROW impacts in Ocean City, it would provide direct connections from the bridge to Baltimore and Philadelphia Avenues.

Removal of the current bridge's bascule span is proposed with this alternative, however, future studies would be needed to decide whether to retain or remove any remaining portion of the existing bridge after construction of the new crossing. Minor short-term improvements would occur as part of routine maintenance and safety improvements.

Alternative 5 – South Parallel Bridge - This alternative includes a new parallel bridge just south of U.S. 50, tying back into Division Street on the Ocean City side. The bridge would have a higher draw span and carry inbound and outbound traffic on four lanes. The higher draw span is expected to reduce the number of bridge openings. This alternative received considerable support from the public at the Alternatives Public Workshop, has relatively low ROW and environmental impacts.

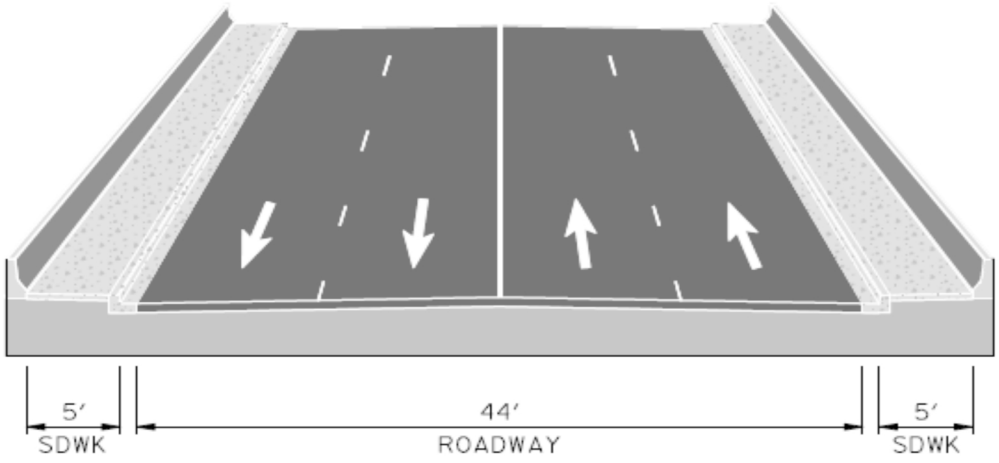
This alternative presents challenges at the western tie-in to U.S. 50. In West Ocean City, a new waterfront townhouse development, the Villas at Inlet Isle, is located adjacent to Alternative 5. A retaining wall has been included in this alternative to minimize impacts. None of the homes are

physically impacted. The residences in this development have boat slips behind the homes, which access the Sinepuxent Bay. Currently, boat slips at the Villas at Inlet Isle have bay access for all boats. Under Alternative 5, approximately 17 feet of vertical clearance would be provided over the entrance to the lagoon for boat slips. As a result, only boats under 17 feet in height would have access to the bay. During construction, access to some homes at the east end of the development could be impacted. This alternative would also impact the Angler Restaurant on the east approach.

Removal of the current bridge's bascule span is proposed with this alternative, however, future studies would be needed to decide whether to retain or remove any remaining portion of the existing bridge after construction of the new crossing. Minor short-term improvements would occur as part of routine maintenance and safety improvements.

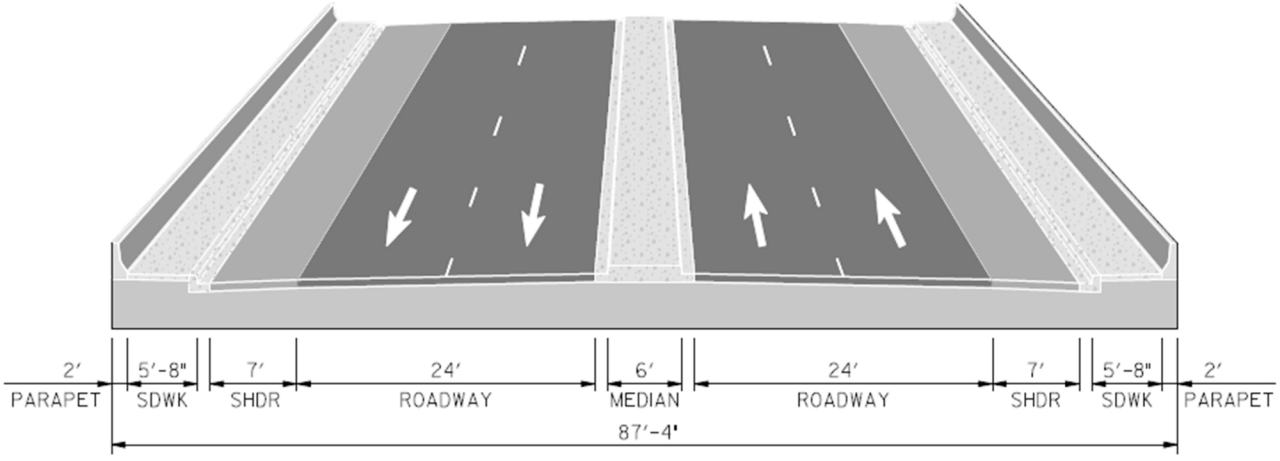
Alternative 5A – North Parallel Bridge - This alternative, which is a mirror concept of Alternative 5, includes a new parallel bridge just north of U.S. 50, tying back into Division Street. The bridge would have a higher draw span and carry inbound and outbound traffic on four lanes. The higher draw span is expected to reduce the number of bridge openings. This alternative received considerable support from the public at the workshop and has relatively low ROW and environmental impacts.

Removal of the current bridge's bascule span is proposed with this alternative, however, future studies would be needed to decide whether to retain or remove any remaining portion of the existing bridge after construction of the new crossing. Minor short-term improvements would occur as part of routine maintenance and safety improvements.



Existing Typical Section

Existing Typical Section



New Typical Section
(Alternatives 4 Modified Signal, 5 and 5A)

FIGURE II-1
TYPICAL SECTIONS

MAY 2012

ISLE OF WIGHT BAY

SKIMMER ISLAND
WATERBIRD COLONY

ZONE 1 WATERBIRD PROTECTION AREA

ZONE 2 WATERBIRD PROTECTION AREA

ZONE 3 WATERBIRD PROTECTION AREA

NAVIGATION CHANNEL

HARRY KELLEY MEM. BRIDGE

DRAWBRIDGE

PROPOSED FISHING PIER
(LOCATION & SIZE TO BE DETERMINED)

OCEAN GATEWAY

SINEPUXENT BAY

3 RD ST.

2 ND ST.

1 ST ST.

BAXTER TA.

SAINT LOUIS AVE.

MD 528

MD 376

DIVISION ST. N.

CAROLINE ST.

TALBOT ST.

DORCHESTER ST.

SOMERSET

WICOMICO ST.

N

1 inch equals 300 feet

ISLE OF WIGHT BAY

WUS	TIDAL WATERS OF U.S.
	TIDAL WETLAND
B B	CRITICAL AREA 100' BUFFER
	100-YEAR TIDAL FLOODPLAIN
	PROJECT LIMITS

US 50 CROSSING STUDY
MD 611 TO MD 378
Worcester County

ALTERNATIVE 2
Rehabilitation

SHA | MAY 2012 | FIGURE II-2

PLOTTED: 1/9/2007
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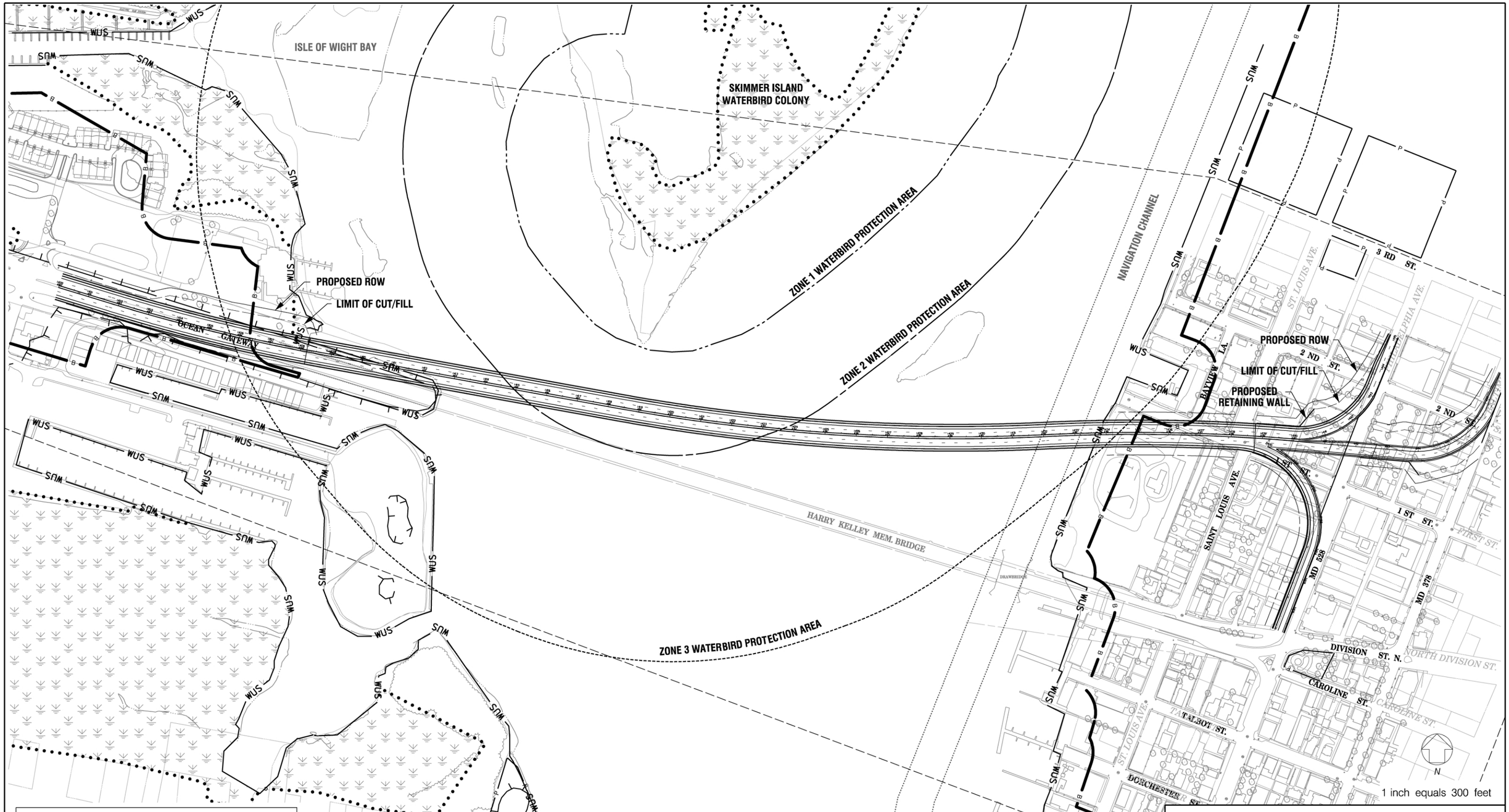

US 50 CROSSING STUDY
MD 611 TO MD 378
Worcester County

ALTERNATIVE 4 Modified Fixed Span Bridge

SHA | MAY 2012 | FIGURE II-3

PLOTTED: 11/9/2007
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ISLE OF WIGHT BAY

SKIMMER ISLAND
WATERBIRD COLONY

ZONE 1 WATERBIRD PROTECTION AREA

ZONE 2 WATERBIRD PROTECTION AREA

ZONE 3 WATERBIRD PROTECTION AREA

NAVIGATION CHANNEL

PROPOSED ROW
LIMIT OF CUT/FILL

PROPOSED RETAINING WALL

OCEAN GATEWAY

HARRY KELLEY MEM. BRIDGE

DRAWBRIDGE

SINEPUXENT BAY

3 RD ST.

2 ND ST.

1 ST ST.

BAYVIEW LA.

SAINT LOUIS AVE.

MD 528

MD 378

DIVISION ST. N.

CAROLINE ST.

TALBOT ST.

DORCHESTER ST.

SOMERSET

WICOMICO ST.

N

1 inch equals 300 feet

ISLE OF WIGHT BAY

WUS	TIDAL WATERS OF U.S.
	TIDAL WETLAND
B B	CRITICAL AREA 100' BUFFER
	100-YEAR TIDAL FLOODPLAIN
	PROJECT LIMITS

US 50 CROSSING STUDY
MD 611 TO MD 378
Worcester County

ALTERNATIVE 5
South Parallel Bridge

SHA | MAY 2012 | FIGURE II-4

PLOTTED: 11/6/2007
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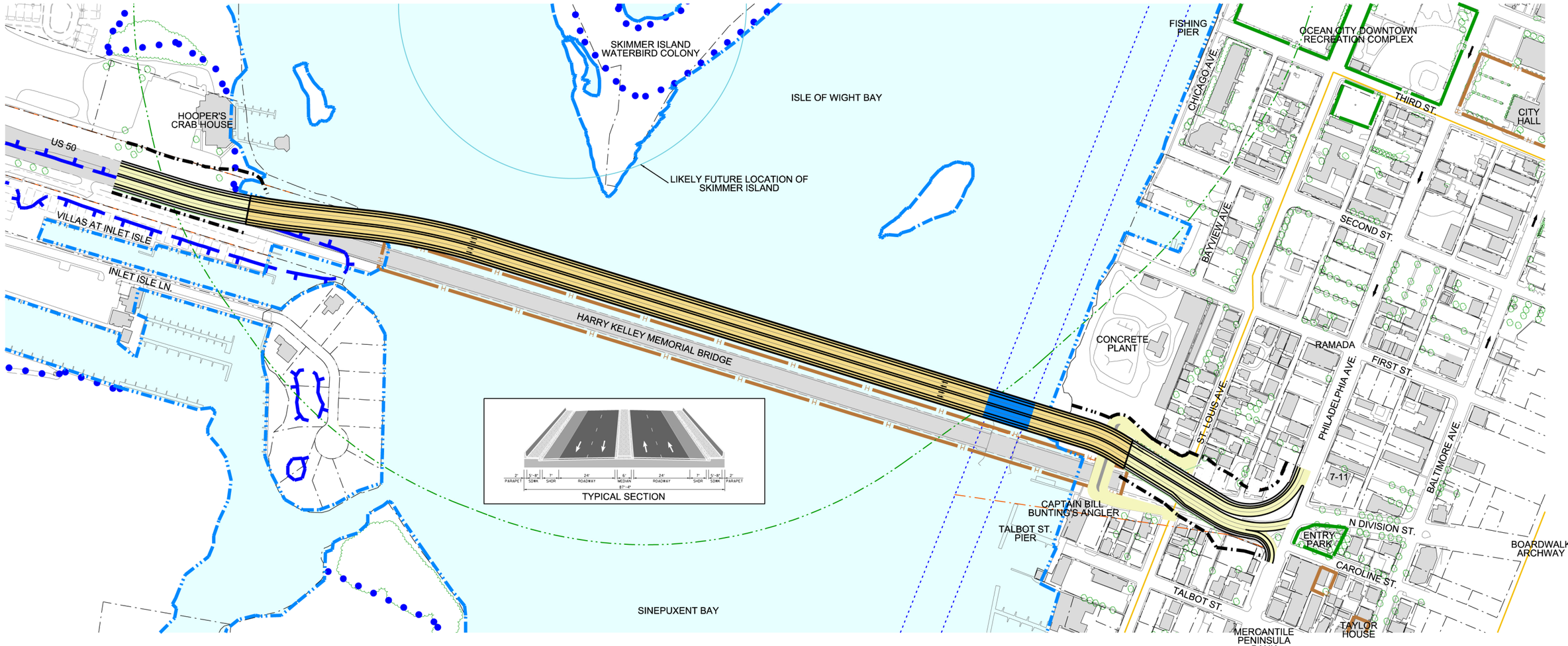
ALTERNATIVE 5A: NORTH PARALLEL BRIDGE
30' HIGH DRAW SPAN



LEGEND

- Proposed Roadway
- Proposed Bridge
- Proposed Drawbridge
- Proposed Right of Way
- Existing Right of Way
- Retaining Wall
- Potential Residential Displacement
- Potential Commercial Displacement
- Property Line
- FEMA 100 Year Floodplain
- Wetland
- Waters of the U.S.
- Park Boundary
- National Register Eligible
- Waterbird Colony Protection Zone
- Navigational Channel
- Ocean City Survey District

US 50 CROSSING STUDY
ALTERNATIVE 5A
(Preferred Alternative)

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
PROJECT PLANNING DIVISION
SCALE: 1" = 150'

BACKGROUND MAPPING SOURCE
MD SHA
MAY 2012

Figure II-5

D. ALTERNATIVES MODIFIED AND DEVELOPED AFTER THE PUBLIC HEARING

1. Alternative Modification

After the public hearing, Alternative 4 Modified was further modified to become Alternative 4 Modified Signal Option (MSO). One of the main reasons for the modifications was to remove a weave created by the northbound off-ramp onto Baltimore Avenue. Below are the details of the modifications including Alternative 4 MSO:

Alternative 4 – Modified Signal Option (MSO) Fixed Span Bridge - As with the original Alternative 4 Modified, the new proposed bridge would be a fixed span with 45 feet of clearance over the water and four lanes carrying inbound and outbound traffic. This alternative would require longer ramps into Ocean City than the alternatives with less clearance due to the height needed for the fixed span. As a result, traffic signals would be required on (1) the bridge ramp south of 3rd Street, (2) at Baltimore Avenue and 4th Street, and (3) at Philadelphia Avenue and 3rd and 4th Streets (**Figure II-6**).

With Alternative 4 MSO, the inbound Ocean City traffic would continue northbound one-way onto Baltimore Avenue via a two-lane ramp touching down between 2nd and 3rd Streets, or southbound onto Philadelphia Avenue via a one-lane ramp touching down between Division and 1st Street. The northbound ramp would tie into Baltimore Avenue at a signalized intersection, reducing the need to widen Baltimore Avenue to the north with the elimination of weaving traffic volumes. Outbound traffic would utilize the two-lane ramp from southbound Philadelphia Avenue (beginning between 2nd and 3rd Streets) to the bridge. With the addition of the traffic signal on the ramp junction with Baltimore Avenue, Baltimore Avenue would not need to transition from three to two lanes as it approaches the ramp from the south to accommodate the merge of the ramp as it did with the original Alternative 4 Modified. Also, due to the addition of this traffic signal, Alternative 4 MSO allows the north leg of the Baltimore Avenue/Bridge Ramp intersection to remain at its current three lanes which would reduce potential impacts to St. Paul's by-the-Sea Episcopal Church and Ocean City's City Hall.

The alignment is designed so that the curvature of the bridge allows for the eastern tie-in further to the north in Ocean City, while providing horizontal clearance between the bridge and Skimmer Island. The bridge alignment would still tie into U.S. 50 just west of the existing bridge, on the west side of the bay.

Modifications to signalization control of intersections on Baltimore and Philadelphia Avenues would be needed with the expected changes in local traffic patterns resulting from the partial closings of 1st and 2nd Streets between St. Louis and Baltimore Avenues.

The intersections of Philadelphia Avenue with 3rd and 4th Streets, and Baltimore Avenue with 4th Street would need new signals, although some signals could be removed at other locations. Parking on 5th Street would not need to be removed to allow for the addition of a left turn lane from 5th Street to Philadelphia Avenue, as was the case with the original Alternative 4 Modified, however, 3rd Street, which is two-way today, would need to be converted to one-way westbound between Baltimore and Philadelphia Avenues.

Alternative 4 MSO was developed as a result of SHA's Office of Traffic and Safety's concern that the original Alternative 4 Modified would result in potentially dangerous weaving movements along Baltimore Avenue. This alternative would eliminate the need for draw span openings and provide a separate facility for pedestrians and cyclists on the existing bridge. The alternative would provide direct connections from the bridge to Baltimore and Philadelphia Avenues. The result of these direct connections would be significant ROW impacts in Ocean City (including the removal of several hundred existing offsite parking spaces used by area businesses and residents). Eliminating the need for a draw span would result in smaller maintenance and operating costs than the lower height build alternatives. Based on discussions with the Ocean City Mayor and City Council and the Worcester County Commissioners, the SHA has determined that this alternative would have significant impacts on Ocean City.

2 Alternatives Developed

Subsequent to the Public Hearing, two additional alternatives were investigated based on comments from local elected officials and the Ocean City Town Manager.

Alternative 5B – 45-Foot North Parallel Fixed Span Bridge - This alternative includes a new fixed span bridge with 45 feet of clearance over the water and four lanes carrying inbound and outbound Ocean City traffic. It would follow the same horizontal alignment of Alternative 5A as it crosses the water, instead of veering to the north similar to Alternative 4 Modified Signal Option. The bridge alignment would tie into U.S. 50 just west of the existing bridge on the west side of Sinepuxent Bay. Removal of the current bridge's bascule span is proposed with this alternative, however, future studies would be needed to decide whether to retain or remove any remaining portion of the existing bridge after construction of the new crossing. Minor short-term improvements would occur as part of routine maintenance and safety improvements.

This alternative would require longer ramps into Ocean City than the alternatives with less clearance, due to the height needed for the fixed span. Inbound Ocean City traffic would continue northbound one-way onto Baltimore Avenue via a two-lane ramp touching down between 2nd and 3rd Streets, or southbound onto Philadelphia Avenue via a one-lane ramp touching down between Talbot and Dorchester Streets. Outbound traffic would utilize the two-lane ramp from southbound Philadelphia Avenue (beginning south of 1st Street) to the bridge. Baltimore Avenue would need to transition from three lanes to two as it approaches the northbound ramp from the south to accommodate the merge of the ramp. North of the ramp, Baltimore Avenue would need to be widened to four lanes to its intersection with 5th Street to accommodate the merging of the two lanes from the ramp and the two lanes from Baltimore Avenue.

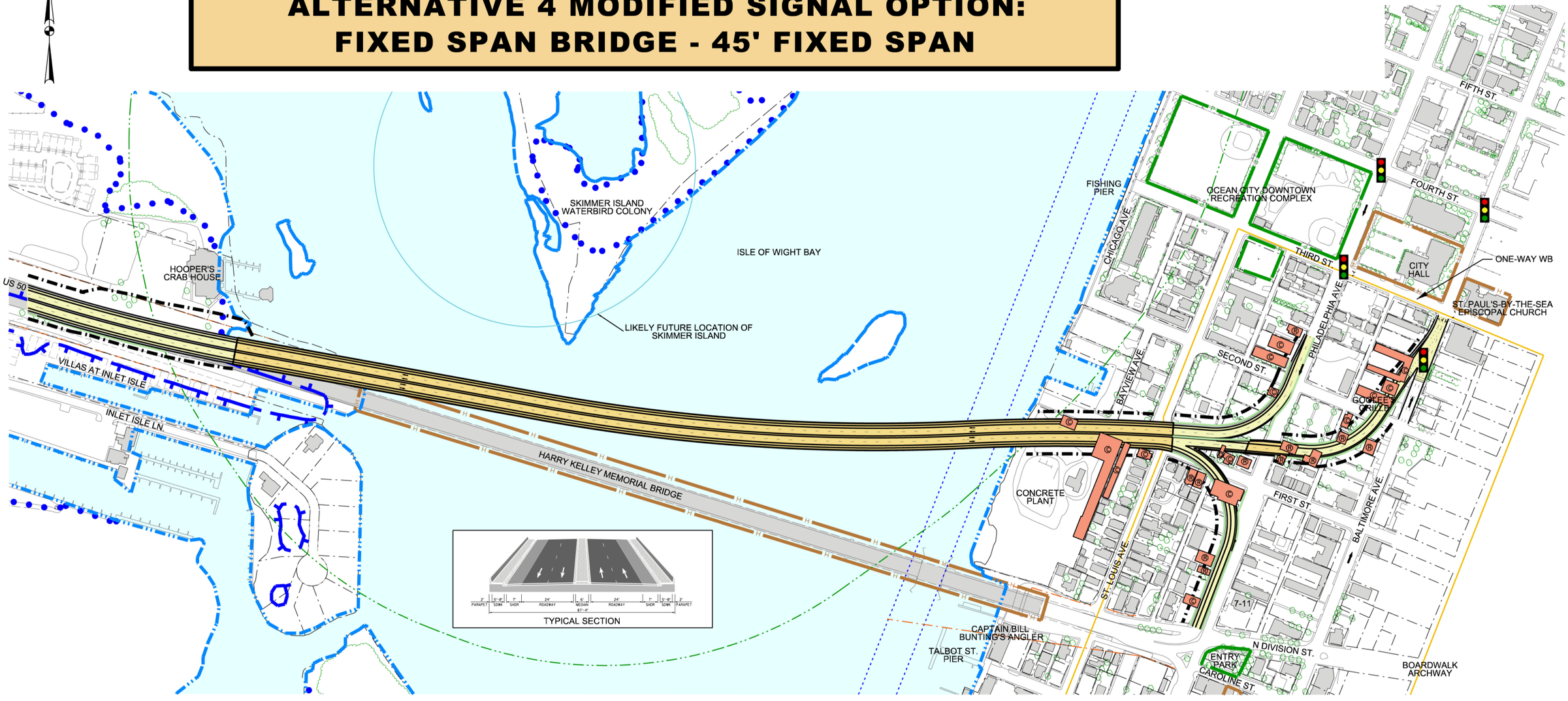
To access the bridge from the south along Baltimore Avenue, traffic would utilize 1st Street, which runs under the northbound ramp to access the ramp onto the bridge from Philadelphia Avenue.

Alternative 5B was developed because Ocean City Department of Public Works staff was concerned with ROW impacts from Alternative 4 MSO and wanted to know what options existed

for moving that alignment farther south, and for reducing the potential traffic weaving on Baltimore Avenue with the relocation of the northbound traffic heading to the bridge to 1st Street.

Alternative 5C – Low Level North Parallel Draw Bridge **-** This alternative consists of a new parallel bridge just north of U.S. 50, following the horizontal alignment of Alternative 5A and tying back into Division Street east of Sinepuxent Bay. The bridge alignment would tie into U.S. 50 just west of the existing bridge on the west side of the bay. The bridge would have a draw span with the same clearance as the existing bridge (15 to 20 feet) and carry inbound and outbound traffic on four lanes. The draw span would require the same number of openings as the existing bridge, but would have less visual impact and slightly less ROW impacts than Alternative 5A.

ALTERNATIVE 4 MODIFIED SIGNAL OPTION:
FIXED SPAN BRIDGE - 45' FIXED SPAN



LEGEND

- Proposed Roadway
- Proposed Bridge
- Proposed Drawbridge
- Proposed Right of Way
- Existing Right of Way
- Retaining Wall
- Potential Residential Displacement
- Potential Commercial Displacement
- Property Line
- FEMA 100 Year Floodplain
- Wetland
- Waters of the U.S.
- Park Boundary
- National Register Eligible
- Waterbird Colony Protection Zone
- Navigational Channel
- Ocean City Survey District
- Proposed Signal

US 50 CROSSING STUDY

ALTERNATIVE 4 MODIFIED SIGNAL OPTION

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
PROJECT PLANNING DIVISION
SCALE: 1"=160'

BACKGROUND MAPPING SOURCE
MD SHA
MAY 2012

Figure II-6

E. ALTERNATIVES NOT SELECTED

Following the May 29, 2008 Public Hearing, SHA, in consultation with the FHWA, reviewed citizen and agency comments to assist in identifying SHA's Preferred Alternative for the U.S. 50 Crossing Study. Based on information developed for the study and comments received from the agencies and the public, the following alternatives were not selected as SHA's Preferred Alternative:

Alternative 1 – No-Build **-** Alternative 1 will not provide transportation improvements to the bridge or satisfy the project's Purpose and Need so it was not selected.

Alternative 2 – Rehabilitation - Alternative 2 was initially considered a viable solution, with rehabilitation extending the life of the existing bridge 30 to 40 years. This alternative met the project's Purpose and Need, although not as well as the preferred alternative, in terms of its long-term viability. Upon further analysis and consultation with SHA's Office of Structures, Alternative 2 was not selected because it would not be the best long-term solution for this project as options for rehabilitation beyond those being routinely conducted now by SHA are not feasible. During this planning study, the existing bridge was rehabilitated in 2008 and its life span is now expected to be 20 to 25 years.

Alternative 4 – Modified Signal Option (MSO) Fixed Span Bridge **-** Alternative 4 MSO was not selected due to ROW costs and socioeconomic impacts. A number of residential and commercial property impacts would be caused by the ramps that tie into Ocean City. These ramps, which would change the character of downtown Ocean City, were a source of concern to residents, business owners, and local elected officials. This alternative impacted 32 more properties, one more acre of residential ROW and three more acres of commercial ROW. It resulted in approximately $100M more ROW costs than the SHA Preferred Alternative.

Alternative 5 – South Parallel 30-Foot Bascule Span Bridge **-** Alternative 5 was dropped due to impacts from the alignment to the Villas at Inlet Isle, the marina of Villas Inlet Isle, the homes at the end of Inlet Isle Lane, and at the Angler Inn Restaurant. Impacts included placing the bridge within close proximity to the new homes and requiring height restrictions for boat traffic using the boat slips behind the Villas. It would also have impacted the Angler Inn Restaurant on the east approach of the bridge.

Alternative 5B – North Parallel 45-Foot Fixed Span Bridge **-** This alternative was not selected due to major ROW and socioeconomic impacts. A number of residential and commercial property impacts would be caused by the ramps that tie into Ocean City. These ramps, which would change the character of downtown Ocean City, were a source of concern to residents, business owners, and local elected officials. Because of these concerns, the alternative has been dropped at the request of the Ocean City Mayor and City Council and the Worcester County Commissioners.

Alternative 5C – North Parallel 18-Foot Bascule Span Bridge **-** Alternative 5C was dropped because it would have the same impacts and cost as the SHA Preferred Alternative, but without the benefits. The number of draw-bridge openings would remain the same as today, and the

lower 15 to 20 feet height clearance would result in more traffic delays and fewer boats able to pass beneath the bridge than with the SHA Preferred Alternative.

F. SHA'S PREFERRED ALTERNATIVE

1. Description of the SHA Preferred Alternative

Based on information developed for the study, analysis of the environmental impacts associated with each alternative (**Table II-1)**, and input from regulatory agencies and the public, SHA has selected Alternative 5A as the SHA Preferred Alternative. Alternative 5A includes a new parallel bridge just north of U.S. 50, tying back into Division Street. The bridge would have a 30-foot high draw span and carry inbound and outbound traffic on four lanes (**Figure II-5**). The higher draw span should also reduce the number of bridge openings. The typical section includes a 7-foot shoulder and 5-foot 8-inch sidewalk along both sides of the roadway with a 6-foot median. This typical section is designed to improve safety for all users of the U.S. 50 crossing including bicyclists and pedestrians.

With this alternative, St. Louis Avenue would need to be relocated underneath U.S. 50 to continue the north/south connection. The Preferred Alternative also incorporates removal of the current bridge's bascule span. Future studies would be required to determine whether to retain or remove any portion of the existing bridge after construction of the new bridge. There would be minor short-term improvements as part of routine maintenance and safety improvements. Alternative 5A – North Parallel Bridge is fully endorsed by the Worcester County Council and the Ocean City Mayor and City Council. The general public's opinion of the SHA Preferred Alternative is favorable, as conveyed from the May 29, 2008 Location/Design Public Hearing.

2. SHA Preferred Alternative and Conceptual Mitigation Package

The SHA Preferred Alternative and Conceptual Mitigation (PACM) package was presented to the agencies at the Interagency Review Meeting (IAR) on March 16, 2011. **Section VI – Comments and Coordination** contains the agencies' comments and concurrence on the PACM.

Table II-1: Comparison of Environmental Impacts

	Alt. 1 (No-Build)	Alt. 2	Alt. 4 Mod. w/ Signal Option	Alt. 5	Alt. 5A	Alt 5B*	Alt 5C*
Residential Displacements (number)	0	0	14	8	6	19	6
Commercial Displacements (number)	0	0	12	2	2	15	2
Right-of-Way Required (acres)	0	0	7	2	3	6	3
Properties Impacts (number)	0	0	48	19	16	57	16
Farmland Impacts (acres)	0	0	0	0	0	0	0
Park Impacts (acres)	0	0	0	0	0	0	0
Historic Sites (number)	0	0	1	1	1	1	1
Waters of the U.S. Impacts (permanent)(acres)	0	0	0.80	0.83	0.84	0.76	0.83
Wetlands Impacts (permanent)(acres)	0	0	0.03	0	0.02	0.02	0.02
100-Year Floodplain Impacts (acres)	0	0	4.0	2.0	2.2	3.5	2.1
Forest Impacts (acres)	0	0	0	0	0	0	0

Table II-1: Comparison of Environmental Impacts

	Alt. 1 (No-Build)	Alt. 2	Alt. 4 Mod. w/ Signal Option	Alt. 5	Alt. 5A	Alt 5B*	Alt 5C*
Hazardous Materials (number of properties affected)	0	0	9	2	0	N/A	N/A
RTE Species (acres of habitat directly impacted)	0	0	0	0	0	0	0
Significant Trees (number)	0	0	0	0	0	0	0
Critical Area Disturbance (acres)	0	0	5.8	2.2	2.5	N/A	N/A
Critical Area 100-Foot Buffer Disturbance (acres)	0	0	1.0	1.0	1.2	N/A	N/A
Impervious Surface (acres)	0	0.5	5.6	5.2	5.3	N/A	N/A
Noise Abatement	0	0	0	0	0	N/A	N/A
Cost (millions)	$20-25	$130-140	$525-535	$310-325	$310-325	$525-535	$310-325

* Detailed environmental impacts were not evaluated for Alternatives 5B and 5C. These alternatives were developed by SHA at the request of local elected officials and the Ocean City Town Manager. They were immediately dropped because they were determined not to be reasonable or feasible alternatives for this study.
** The No-Build Alternative cost estimate represents the expense for routine maintenance (structural, mechanical, and electrical) and operation of the existing bridge over the next 20 years

a. Cultural Resources

Mitigation measures have been incorporated into the SHA Preferred Alternative to minimize harm to historic properties and Section 4(f) resources. SHA, MHT and FHWA signeda Memorandum of Agreement (MOA) dated August 19, 2011 with MHT to mitigate for the adverse effect to SHA's Bridge No. 2300700, MIHP No. WO-461 (**Section VI – Comments and Coordination**). The mitigation would be to photo document the bascule span and install one to four interpretive panels approximately 24x36 inches that will discuss the history of transportation in the Ocean City proximity. The MOA is the official agreement between FHWA, SHA and MHT that documents the appropriate mitigation required to satisfy Section 106 requirements per 36 CFR 800.

b. Chesapeake and Atlantic Coastal Bays Critical Area

The SHA Preferred Alternative will impact approximately 2.5 acres of the Critical Area - IDA and approximately 1.2 acres of the 100-foot buffer. The impacts are due to the disturbance required for the tie-in of the bridge to existing U.S. 50 on the west end and to city streets on the east end, including removal of vegetation, placement of fill, and increased impervious area. Mitigation for any disturbance to the buffer would be required at 3:1 ratio and mitigation for disturbance to vegetation outside the 100-foot buffer would be required at a 1:1 ratio. All mitigation would be shown on a planting plan identifying species, stocking density, and a planting schedule. SHA will continue coordination of the project with CAC during the design phase of the project.

c. Tidal Wetland and Waters Mitigation Requirements

The SHA Preferred Alternative's impacts to tidal waters would be dependent on the removal of the existing bridge. If the existing bridge is to remain, impacts associated with placement of abutments and piers in tidal waters would total approximately 0.84 acre. If the entire or a portion

of the existing structure is removed, the acreage associated with removal of piers from the existing structure would be used as credit for placement of new piers for the proposed structure. Also, the proposed improvements associated with the SHA Preferred Alternative would impact 0.02 acre of tidal wetlands.

d. Rare, Threatened and Endangered Species

Colonial Nesting Waterbirds

The sand migration model will be used to modify the pier placement locations and/or adjust the pier spacing of the SHA Preferred Alternative in an effort to direct the flows in such a way that impacts to Skimmer Island and other shoal systems are minimized. Additional studies will be needed to minimize the possible migration and degradation of Skimmer Island. Options may include the full or partial removal of the current bridge and scour protection under the existing bridge to reduce the "weir" effect and provide increased sand availability to Skimmer Island. SHA will continue to refine the bridge pier spacing/size options and scour protection options in an effort to avoid and minimize impacts to Skimmer Island.

Since the project will not be constructed in the foreseeable future, continued coordination with DNR will be conducted to ensure that the SHA Preferred Alternative's design and ultimate construction will not adversely affect the state-listed endangered species or their habitat. If adverse impacts are unavoidable, SHA will coordinate with DNR to ensure that the appropriate mitigation is used.

Marine Turtles

During construction, sound dampening techniques to reduce the effects of pile driving, which can cause the marine turtles to leave the area, will be used. Also, only a mechanical clamshell or hydraulic cutter head pipeline dredge will be used for dredging, which is a much safer to use in areas around marine turtle habitat.

Aquatic Species

The impacts to fish are most likely to occur during construction. Pile driving of hollow steel piles greater than four feet in diameter can cause oscillations that are lethal to fish. If larger sized piles are required, sound dampening techniques would be required. BMPs, such as turbidity curtains, will likely be employed to minimize re-suspended sediment movement and transport away from the construction site. In addition, dredging, power-driving of large hollow steel piles (exceeding four feet in diameter), and cofferdam installation and removal will be restricted between April 1st through June 30th, which is the period of maximum abundance of early juvenile summer flounder in the coastal bays. Bubble curtains contained by a "can" will likely be used to minimize the shock wave effects of power driving large diameter hollow steel piles. Consultation with the DNR, USFWS and NMFS is ongoing and will continue throughout the planning, design and construction process in an effort to avoid, or minimize impacts to fish and other important aquatic species.