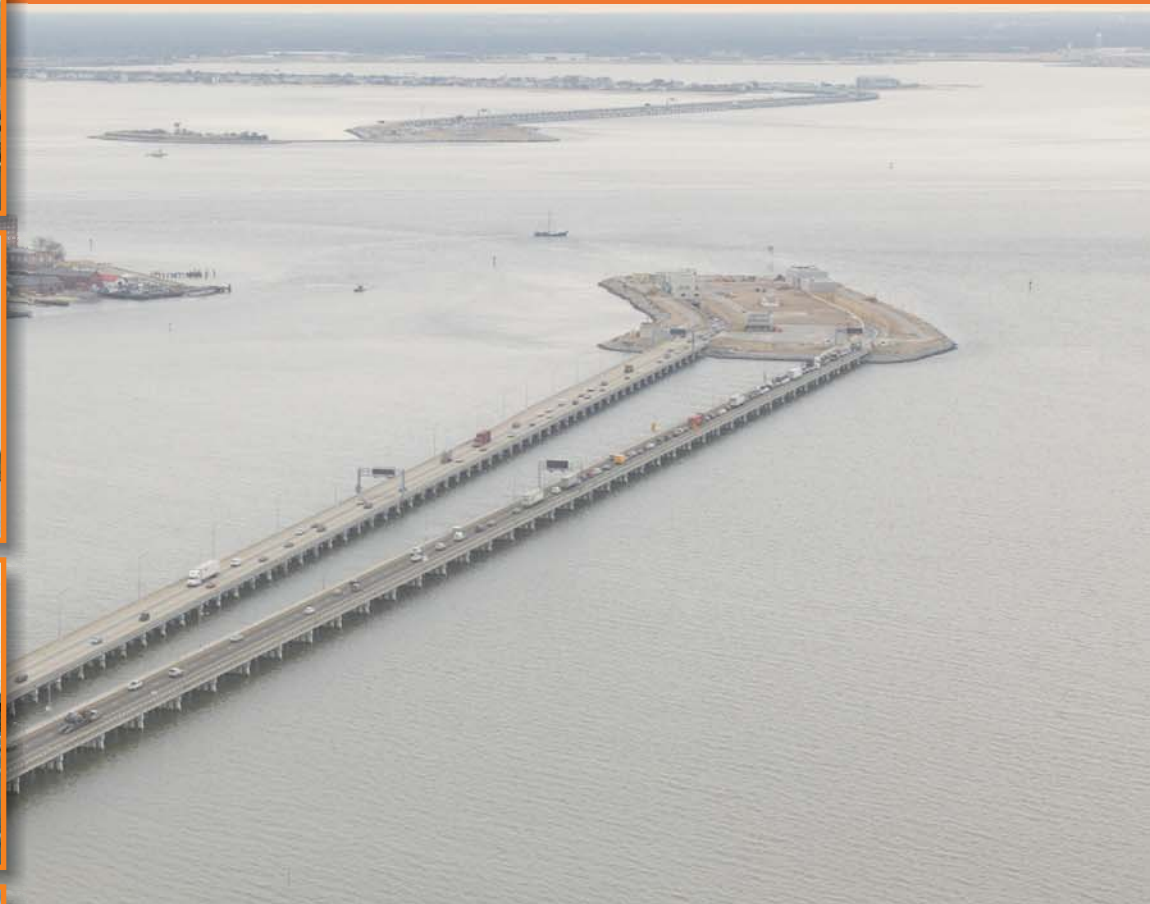


I-64 HAMPTON ROADS BRIDGE-TUNNEL



DRAFT ENVIRONMENTAL IMPACT STATEMENT and DRAFT SECTION 4(f) EVALUATION



December 2012

I-64 HAMPTON ROADS BRIDGE-TUNNEL

VDOT PROJECT NUMBER: 0064-965-004, P101; UPC 99037

From: Interstate 664 in the City of Hampton

To: Interstate 564 in the City of Norfolk

DRAFT ENVIRONMENTAL IMPACT STATEMENT and DRAFT SECTION 4(f) EVALUATION

Submitted Pursuant to:

42 U.S.C. 4332(2)(c) and 49 U.S.C 303

Submitted by:

U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

and

VIRGINIA DEPARTMENT OF TRANSPORTATION

December 12, 2012

Date of Approval



Stephen J. Long, Environmental Administrator
Virginia Department of Transportation

December 12, 2012

Date of Approval



Irene Rico, Division Administrator
Federal Highway Administration

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This Draft Environmental Impact Statement identifies alternatives which address the current and future needs to improve capacity and geometric deficiencies along Interstate 64 from Interstate 664 in the City of Hampton to Interstate 564 in the City of Norfolk, Virginia. The study area extends approximately 12 miles and includes the 3.5-mile long Hampton Roads Bridge-Tunnel. The evaluated alternatives include the No-Build Alternative and three Retained Build Alternatives: the Build-8 Alternative, Build-8 Managed Alternative, and Build-10 Alternative. The potential impacts of these alternatives on the natural and human environment have been assessed.

Comments on this Draft Environmental Impact Statement are due by **February 13, 2013** and should be sent to Ms. Angel Deem at the above address or to the following email address: hrtbcomments@vaprosjects.com. Comments also can be submitted by using the online comment form at www.virginiadot.org/projects/hamptonroads/i-64_hrtb_study.asp.

S SUMMARY

S.1 STUDY DESCRIPTION AND LOCATION

The Virginia Department of Transportation (VDOT), in cooperation with the Federal Highway Administration (FHWA), is studying the environmental consequences of transportation improvements along Interstate 64 (I-64), including the Hampton Roads Bridge-Tunnel (HRBT), in the Cities of Hampton and Norfolk, Virginia, and the potential environmental consequences of these alternatives. **Figure S-1** shows the study area location and boundaries. The study area extends approximately 12 miles along I-64 from the I-664 interchange in Hampton to the I-564 interchange in Norfolk. This study arose from a need to address inadequate capacity and geometric deficiencies of the existing facilities of I-64 and the HRBT in the study corridor. Funding for this location study was included in the Virginia Six-Year Improvement Program by the Commonwealth Transportation Board.

This document serves as the Draft Environmental Impact Statement (EIS), which is required by the National Environmental Policy Act (NEPA) for all federal projects or actions that are likely to have a significant impact on the environment. This Draft EIS is a tool for VDOT and FHWA to make informed decisions regarding the study alternatives. The document includes the review of a reasonable range of alternatives, their ability to meet the needs of the study, and their likely impacts to the social, cultural, and natural environment. After publication of this Draft EIS and the subsequent public hearing, the Commonwealth Transportation Board (CTB) will identify a preferred alternative from among the alternatives evaluated in the Draft EIS. Once a preferred alternative has been adopted by the CTB, VDOT will prepare a Final EIS that further analyzes the preferred alternative and addresses comments received on the Draft EIS. All technical reports and memoranda referenced in the Draft EIS are available for review on VDOT's study website at www.virginiadot.org/projects/hamptonroads/i-64_hrbt_study.asp.

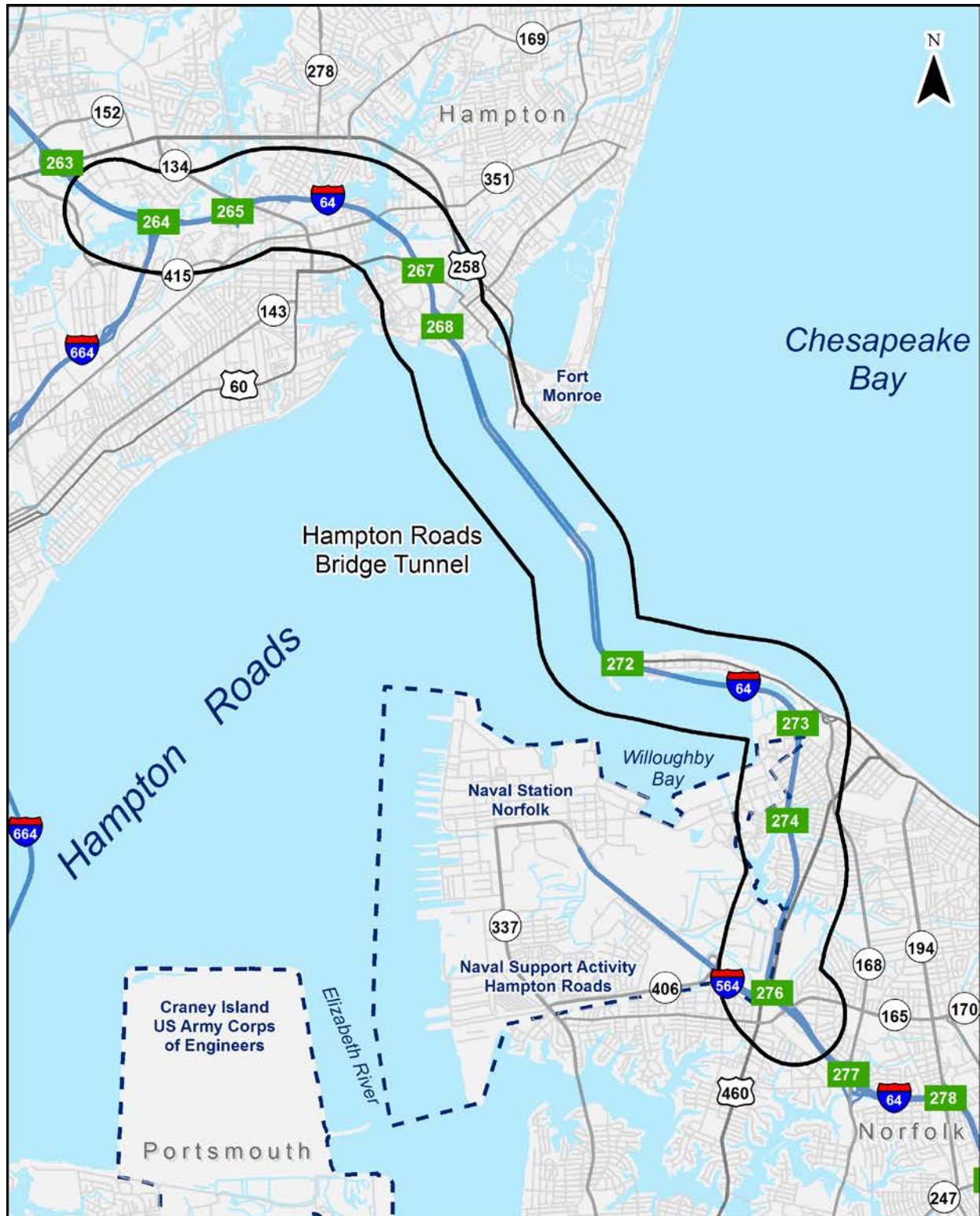
S.2 PURPOSE AND NEED

I-64 and the HRBT provide a critical link in the regional transportation network of the Hampton Roads region, serving multiple travel purposes, e.g., commuting, tourism, military mobility, freight movement and hurricane evacuation. Two principal transportation problems are the subject of this study:

- Inadequate capacity of existing facilities to accommodate existing and forecasted travel demand at acceptable levels of traffic service, operating speeds, and travel times; and
- Geometric deficiencies of the existing facilities that impede operating efficiency and contribute to decreased levels of traffic service.

S.2.1 Inadequate Capacity

Traffic volumes on some sections of I-64 routinely exceed capacity during peak hours. When travel demand exceeds capacity, congestion occurs, characterized by unstable traffic flow, reduced travel speeds, stop-and-go movements, queuing, and travel delays. A 2010 report by the Hampton Roads



Legend

-  Study Area
-  123 Interstate Exit
-  Department of Defense Facility



Study Location



Figure
 S-1

Transportation Planning Organization (HRTPO) identifies the HRBT as the most congested freeway in the Hampton Roads Region.¹

With traffic volumes on all sections of I-64 within the study area expected to grow by 12-26% by 2040, exceedance of capacity during peak periods will become progressively worse. Periods of congestion will become longer, as will the queues resulting from that congestion. Levels of service along I-64 are expected to decline in most sections of the study area as traffic volumes continue to climb. Average travel speeds will decline further, resulting in longer and less reliable travel times. The ability to provide efficient transit services also will be further diminished. Additionally, over time, the continued aging of the tunnel, bridge, and road infrastructure will result in greater maintenance needs. With deficient capacity even now, and with no convenient detour routes, the ability to maintain traffic flow during future maintenance and construction efforts will become increasingly difficult.

S.2.2 Geometric Deficiencies

Several elements of the existing I-64 and HRBT facilities are geometrically deficient in the study area. Deficient components include inadequate shoulder width and substandard vertical tunnel clearance, both of which cause congestion and safety problems. These elements fail to meet VDOT interstate design standards, the American Association of State Highway and Transportation Officials (AASHTO) *A Policy on Geometric Design of Highways and Streets*, and AASHTO's *Guide Specifications for Bridges Vulnerable to Coastal Storms*. Vertical tunnel clearance in the existing HRBT tunnels is 13'-6" westbound and 14'-6" eastbound, whereas VDOT interstate standards call for a clearance of no less than 16'-6". An average of 80 to 90 over-height trucks per month must be stopped and inspected on the HRBT, causing disruption to traffic flow. Low existing vertical clearance on approach bridges does not meet AASHTO standards. During a storm, water could overtop the bridge, saltwater could contact the bottom of the girders causing deterioration, and a high storm surge could potentially lift the bridge from its bearings.

Safety problems also are associated with congestion, which is expected to continue to increase throughout the HRBT corridor. Crash data from 2006-2008 indicates that congested conditions on the HRBT results in distinctive spikes in the number of crashes as well as the crash rate approaching the HRBT in both directions.

Over time, the bottleneck in the eastbound direction caused by three lanes reducing to two lanes will become progressively worse. Similarly, the height restrictions of the existing tunnels will continue to restrict and impede movements of vehicles that are taller than those limits. The substandard dimensions of the shoulders also will continue to contribute to less efficient movement of traffic. While ongoing maintenance will be conducted as needed to preserve the structural integrity of the existing facilities, the service life of these facilities likely cannot be extended indefinitely without more extensive rehabilitation or reconstruction in the future.

S.3 ALTERNATIVES

A wide range of alternatives was considered initially, based on the identified purpose and need and a comprehensive process that incorporated input from the public as well as local, state, and federal government agencies. A screening process was used to identify alternatives to retain for detailed evaluation based on each prospective alternative's ability to meet the study's purpose and need, and public and agency input. The alternatives carried forward for detailed evaluation include the No-Build Alternative and three Retained Build Alternatives.

¹ HRTPO, Hampton Roads Congestion Management Process 2010 Update, September 2010.

S.3.1 No-Build Alternative

Under the No-Build Alternative, I-64 would remain predominantly three lanes per direction within the Hampton section of the study area. The 3.5-mile HRBT would continue with current operations. Within the Norfolk section of the study, I-64 would remain two lanes per direction, including the I-64 bridges across Willoughby Bay. There would be no rehabilitation or reconstruction of the HRBT; however, VDOT would continue maintenance and repairs of I-64 and the HRBT as needed. There would be no substantial changes to lane management based on tolls or vehicle occupancy. The No-Build Alternative would include those projects funded for construction in HRTPO's *2034 Long Range Transportation Plan*.

S.3.2 Retained Build Alternatives

Three build alternatives, each of which were determined to address the study's purpose and need, were carried forward for detailed evaluation. The Retained Build Alternatives – the Build-8, the Build-8 Managed, and the Build-10 Alternatives – are summarized in **Table S-1**.

S.3.3 Alternatives Eliminated from Detailed Consideration

Except for the No-Build Alternative, alternatives deemed not reasonably capable of meeting the identified purpose and need of increasing capacity and improving geometric deficiencies or deemed too disruptive in comparison to the transportation benefit achieved were not retained for further evaluation. **Table S-2** lists alternatives preliminarily considered but then eliminated from detailed consideration, and the reasons for their elimination.

S.4 ENVIRONMENTAL CONSEQUENCES

Potential environmental consequences of the Retained Alternatives were estimated based on the alternative's limit of disturbance (LOD). The LOD has been estimated for alternative comparison purposes and decision-making during the NEPA process, but would be further refined during final design. **Table S-3** presents the comparative environmental impacts of the alternatives. Values provided include both permanent and temporary impacts.

S.5 COMMENTS AND COORDINATION

VDOT, in cooperation with FHWA, has coordinated with local, state, regional, and federal agencies and conducted a public involvement program that has included two citizen information meetings and solicitation of public comments. Two meetings were held on July 18 and 19, 2011 in Norfolk and Hampton, respectively. The purpose of the meetings was to obtain citizen input for use in defining the scope of the study and input regarding study objectives, ideas for resolving transportation challenges, and important environmental and social issues. A total of 152 citizens signed the attendance logs. Additional citizen information meetings were held on April 18 and 19, 2012 in Hampton and Norfolk, respectively, to provide an update on study activities and to obtain input regarding the study's purpose and need, existing and future traffic, alternatives, and environmental conditions. A total of 93 citizens attended the meetings. A location public hearing will be held approximately 30 days following public availability of this Draft EIS to present the findings of the document and to obtain input and comments from the community.

Table S-1: Retained Build Alternatives

	Build-8 Alternative	Build-8 Managed Alternative	Build-10 Alternative
General Location	Along I-64 between I-564 and I-664	Along I-64 between I-564 and I-664	Along I-64 between I-564 and I-664
Mainline Cross Section	4 lanes each direction with median and shoulders throughout	4 lanes each direction with median and shoulders throughout; and buffer between managed and GP lanes	5 lanes each direction with median and shoulders throughout
Approach Bridges Cross Section	2 existing bridges would carry 4 westbound lanes; new bridge would carry 4 eastbound lanes	2 existing bridges would carry 4 westbound lanes; new bridge would carry 4 eastbound lanes with a buffer between managed and GP lanes	2 existing bridges would carry 4 westbound lanes; new bridge would carry 1 westbound and 5 eastbound lanes with a barrier between westbound and eastbound lanes
Tunnel Cross Section	2 existing tunnels would carry 4 westbound lanes; new tunnel would carry 4 eastbound lanes	2 existing tunnels would carry 4 westbound lanes; new tunnel would carry 4 eastbound lanes with a buffer between managed and GP lanes	2 existing tunnels would carry 4 westbound lanes; new tunnel would carry 1 westbound lane and 5 eastbound lanes. The westbound lane would be physically separated from the eastbound lanes in the new tunnel
Interchanges	I-64 interchanges in the study corridor would be modified to accommodate higher volumes and the widened mainline	I-64 interchanges in the study corridor would be modified to accommodate higher volumes and the widened mainline	I-64 interchanges in the study corridor would be modified to accommodate higher volumes and the widened mainline
Strategy Management	All lanes General Purpose	One or more lanes would be managed based on tolls or occupancy	All lanes General Purpose
Transit Capability	Expanded bus service or bus rapid transit not precluded, would operate with auto traffic	Expanded bus service or bus rapid transit not precluded and could operate in managed lanes	Expanded bus service or bus rapid transit not precluded, would operate with auto traffic
Potential Limit of Disturbance*	360 feet or 425 feet depending on topographic variability and needed width for auxiliary lanes	370 feet or 435 feet depending on topographic variability and needed width for auxiliary lanes	400 feet or 465 feet depending on topographic variability and needed width for auxiliary lanes
Engineering/ Construction Cost **	\$4.4 to \$5.5 billion	\$4.7 to \$5.9 billion	\$5.3 to \$6.7 billion

Abbreviations: GP = General Purpose; HOT = High Occupancy Toll; HOV= High Occupancy Vehicle

* Environmental consequences of the alternatives were estimated based on these potential limits of disturbance.

** Derived using the accepted VDOT planning level cost estimate methodology and standard cost items, and specific cost opinions for non-standard elements.

Table S-2: Alternatives Not Retained for Detailed Evaluation

Alternative	Basis for Elimination
Transportation System Management / Transportation Demand Management (TSM/TDM)	TSM/TDM improvements maximize the efficiency of the current transportation system or reduce the demand for travel on the system through the implementation of low-cost improvements. Examples of TSM activities include the addition of turn lanes, optimized signalization at intersections, and Intelligent Transportation Systems. Examples of TDM activities include ride sharing, van and carpooling, installation of park and ride facilities, and encouragement of telecommuting. TSM/TDM improvements, by their nature, are minor and therefore would not address inadequate capacity or geometric deficiency needs. Notwithstanding, the Retained Build Alternatives do not preclude TSM/TDM elements.
Rehabilitation or Reconstruction of the Existing HRBT	This alternative would include rehabilitation of the superstructure or reconstruction of the substructure and superstructure of the HRBT approach bridges. Bridge rehabilitation would consist of the removal and replacement of the existing bridge superstructure, crack sealing, repair, jacketing existing piling, replacement of piling, and the replacement of parapets. Reconstruction would consist of complete substructure (piers/foundations) and superstructure replacement, including raising and widening the structures to meet the current design standards. This alternative would not increase roadway capacity to alleviate current or future unacceptable and unreliable levels of traffic service; operating speeds; or travel times. While not a standalone alternative, rehabilitation or reconstruction has been included as a component of the Retained Build Alternatives.
Replacement of the Existing HRBT	This alternative would include complete removal of an existing bridge-tunnel in conjunction with reconstruction of a new crossing facility in the same location. Geometrically deficient roadway infrastructure would be replaced by a new facility that would meet current design standards for shoulder widths, vertical clearance in tunnels, and vertical clearance above water for approach bridges. However, this alternative would not address the identified capacity needs as it only replaces the existing HRBT and would not provide additional capacity. This alternative would result in an unreasonably high level of disruption to regional travel during the construction period.
Reversible Lanes	This alternative would add one or two reversible travel lanes to I-64. Construction of reversible lanes would partially address geometric deficiencies at the existing crossing, because the reversible lanes would be on a new bridge-tunnel that would meet current design standards for shoulders, vertical clearance in tunnels, and vertical clearance above water. However, travel patterns along I-64 through this study area do not allow for effective operation of reversible lanes since there is not a clear directional peak volume. Thus, reversible lanes would add capacity in one direction during any given peak period, but the capacity needs in the opposite direction would not be met.
Build-6 Alternative	This alternative would include construction of two additional lanes of capacity on I-64 at the Hampton Roads crossing and within the Norfolk section of the corridor, so that a continuous six-lane facility would extend from I-664 to I-564. The alternative would include a new two-lane bridge-tunnel at the Hampton Roads crossing. This alternative would partially address geometric deficiencies of existing facilities by constructing a new bridge-tunnel that would meet current design standards for shoulders, vertical clearance in tunnels, and vertical clearance over water. However, two additional lanes of roadway would not provide adequate capacity to alleviate congestion for current or future traffic within the study corridor.
Build-12 Alternative	The Build-12 Alternative would construct six additional lanes of capacity on I-64 within the Hampton portion of the corridor, and eight additional lanes of capacity on I-64 on the Hampton Roads Bridge-Tunnel and within the Norfolk section of the corridor. This expansion would result in a continuous twelve-lane facility that would extend from I-664 to I-564. The alternative would improve capacity and address geometric deficiencies of existing facilities by constructing a new bridge-tunnel that would meet current design standards for shoulders, vertical clearance in tunnels, and vertical clearance above water. However, the Build-12 Alternative would likely result in proportionally greater impacts to right-of-way, wetlands, streams, historic properties, and community facilities compared to the other retained alternatives. The alternative has not been advanced because the Retained Build Alternatives address the transportation needs with less environmental impact.
High Bridge	The high bridge option would involve a new cable-stayed or suspension bridge parallel to the existing HRBT over the Hampton Roads channel. The bridge would be built to carry a sufficient number of lanes of I-64 over Hampton Roads to address the capacity need. This option would fully address the geometric deficiencies of existing facilities by constructing a new bridge that would have full shoulders, no vertical clearance issues, and meet or exceed the minimum height above mean high water (MHW). However, a high bridge creates logistical challenges in terms of shipping and vulnerability, and presents environmental impacts that a tunnel does not. Although a high bridge option over Hampton Roads could be a feasible alternative from an engineering perspective and would address the stated transportation needs, the option creates additional problems that make it unreasonable to retain.

Table S-2: Alternatives Not Retained for Detailed Evaluation

Alternative	Basis for Elimination
Light or Heavy Rail Transit	This alternative would include dedicated light or heavy rail transit on a new structure across Hampton Roads. The existing bridge-tunnels would remain. The Light or Heavy Rail Transit Alternative was not retained for further evaluation because it would not address the geometric deficiency needs identified by this study. The alternative would have limited ability to address capacity on the HRBT given the limited potential ridership. It also would require substantial new rail transit connections on the peninsula and Southside, and it would have limited ability to accommodate existing and future traffic volumes on the HRBT.
Bus Transit	This alternative would include expansion of existing bus transit services within the study corridor and across Hampton Roads. This could be in the form of an increase in bus service, or a dedicated (express bus or bus rapid transit) facility. As a stand-alone alternative, increased bus service or a dedicated bus facility would not involve roadway or bridge-tunnel improvements; therefore, it would not address the identified geometric deficiencies. Expansion of the existing bus transit network alone would not attract enough riders to substantially address the capacity need within the I-64 HRBT corridor based on current and future bus ridership across the HRBT. Further, any increased bus service would also continue to rely on the existing HRBT facility, and its operation would be hampered by current capacity and deficiencies of existing facilities. Although a bus transit option is not a viable stand-alone alternative because it does not address capacity and geometric deficiency needs, it may be considered as a component of the Retained Build Alternatives.
Ferry Service	This alternative would provide a service to carry vehicles across Hampton Roads via water transport (hydrofoil or ferry). This alternative would not address the geometric deficiencies of the existing facilities, because no improvements would be made to the I-64 roadway or existing bridge-tunnel. It also would not address capacity needs because ridership would be expected to range between 600 and 1100 vehicles daily, or approximately one percent of the existing traffic volume and less than one percent of the projected 2040 No-Build volume on the HRBT. Consequently, ferry service does not meet the purpose and need of the study.

Table S-3: Potential Environmental Consequences

Impact Category	No-Build	Build-8	Build-8 Managed	Build-10	Notes
Land use conversions (acres)	0	281	287	304	Land use conversion is measured by amount of right-of-way required. Most conversion in Hampton would be of institutional land; in Norfolk, most conversion would be of military land.
Community facilities	0	11	11	11	Implementation of any of the Retained Build Alternatives would require portions of community facility lands.
Parks and recreational facilities impacted (number/acres)	0/0	14/24.6	14/25.2	14/26.4	Implementation of any of the Retained Build Alternatives would require the acquisition of right-of-way comprising portions of parks and recreational lands. Additional information is available in Appendix C .

Table S-3: Potential Environmental Consequences

Impact Category	No-Build	Build-8	Build-8 Managed	Build-10	Notes
Potential residential relocations	0	261	275	315	Right-of-way acquisition and relocation would be in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. Encroachment of I-64 into neighborhoods would impact community cohesion.
Potential business displacements	0	16	16	17	Right-of-way acquisition and relocation would be in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.
Env. Justice Populations impacted (number of Census Tracts with residential displacements)	0	2	2	2	Right-of-way acquisition and relocation would occur within communities with high minority and/or low-income populations.
Stream impacts (No. of crossings/linear feet of stream channel)	0	12/18,200	12/18,300	12/18,500	The Retained Build Alternatives would include the extension of existing bridges and culverts, new HRBT approach bridges with piers, a new tunnel beneath Hampton Roads, and the expansion of existing islands to accommodate tunnel portals.
Water quality	0	Short-term and minor long-term impacts	Short-term and minor long-term impacts	Short-term and minor long-term impacts	Short-term impacts of all Retained Build Alternatives may include increased sedimentation, turbidity, and stormwater-borne pollutants. Minor long-term impacts may include increased quantities of pollutants due to increases in impervious surface.
Wetlands impacts (acres)	0	52	52	53	Information based on field-verified GIS data. Additional minimization efforts would be considered during Section 404 permitting.
Chesapeake Bay Resource Protection Area impacts (acres)	0	536	542	560	Public roads and their associated structures are conditionally exempt from Resource Protection Area regulation provided they are constructed in accordance with the Virginia Erosion and Sediment Control Law.

Table S-3: Potential Environmental Consequences

Impact Category	No-Build	Build-8	Build-8 Managed	Build-10	Notes
Floodplains impacts (acres)	0	419	436	439	The Retained Build Alternatives would not increase flood levels, the probability of flooding, or the potential for property loss. A detailed hydraulic survey and study would be performed during final design.
Sediment Transport, Bank Erosion, Shoaling, and Hydrodynamic Modeling	0	No anticipated impacts	No anticipated impacts	No anticipated impacts	The Retained Build Alternatives would result in a negligible impact on the James River surface current curve, the Elizabeth River tidal prism and eddies, and sedimentation potential near Hampton Flats.
Aquatic Habitat impacts	0	Short-term and minor long-term impacts to 491 acres	Short-term and minor long-term impacts to 497 acres	Short-term and minor long-term impacts to 514 acres	This acreage includes the total width of proposed bridges and tunnels. A more detailed assessment of aquatic habitat impacts would be provided during final design and permitting.
Water Bird Nesting impacts	0	0	0	0	No impact.
Benthic Communities	0	Short-term and minor long-term impacts to 400 acres	Short-term and minor long-term impacts on up to 400 acres	Short-term and minor long-term impacts on up to 415 acres	Limited benthic footprint of the Retained Build Alternatives would limit long-term impacts. In the short term, dredging for tunnel installation and within potential aquatic borrow sites would temporarily result in the disruption of benthic communities.
Essential Fish Habitat, habitat Areas of Particular Concern, and Anadromous Fish Use Areas	0	Short-term impacts on 345 acres	Short-term impacts on 345 acres	Short-term impacts on 360 acres	Short-term impacts due to dredging. Acreage figure is for Anadromous Fish Use Areas only; information on Essential Fish Habitat and Habitat Areas of Particular Concern are not detailed enough to quantify.
Threatened and Endangered Species Habitat	0	Short-term impacts to 400 acres	Short-term impacts to 400 acres	Short-term impacts to 415 acres	Potential short-term impacts may occur to Kemp's Ridley, Hawksbill, Leatherback, Green, and Loggerhead sea turtle habitat, and shortnose and Atlantic sturgeon habitat as a result of disturbance from dredging for tunnel and bridge construction.
Submerged Aquatic Vegetation (SAV) impacts (acres)	0	5.6	5.7	6.2	Any disturbance or removal of SAV would be subject to approval from the Virginia Marine Resources Commission.

Table S-3: Potential Environmental Consequences

Impact Category	No-Build	Build-8	Build-8 Managed	Build-10	Notes
Terrestrial Habitat impacts (acres)	0	290	295	312	Impacts are comprised of developed land and roads. Implementation of the Retained Build Alternatives would disturb a limited amount of vegetated upland habitat.
Historic Architectural Resources impacted (No. of properties/ acres)	0	13/687.6	13/692.7	13/714.2	Impacts to resources would include the removal of residences from historic districts, impacts to Hampton National Cemetery, and the partial acquisition of right-of-way from other resources.
Archaeological Resources	0	Up to 16 sites	Up to 16 sites	Up to 16 sites	Additional archaeological investigations would be conducted pursuant to a Programmatic Agreement.
Air Quality	0	Minor short-term impacts	Minor short-term impacts	Minor short-term impacts	The Retained Build Alternatives meet all applicable air quality conformity requirements. No appreciable increase in air pollutant emissions is expected.
Number of sites impacted by noise	817	1019	1017-1019	1017	Construction activities and increased capacity would result in noise impacts.
Potential Hazardous Material Sites impacted	0	15	15	15	Prior to the acquisition of right-of-way or construction, thorough site investigations would be conducted to determine the existence and extent of any contamination.
Visual impacts	0	Minor to moderate	Minor to moderate	Minor to moderate	The impact of adding lanes to I-64 would be minor to moderate because the existing visual environment already is urban and is characterized by a major interstate.
Energy Requirements and Conservation Potential	Impacts related to vehicle idle time and usage of less direct alternative routes	Minor impacts in terms of energy requirements	Minor impacts in terms of energy requirements	Minor impacts in terms of energy requirements	The impact of the Retained Build Alternatives would be associated with the energy use for maintenance and lighting, which would increase for each lane added.
Farmland and Agricultural/ Forestal Districts	0	0	0	0	There are no farmlands or agricultural and forestal districts located in the study area.

Agencies were contacted early in the study and asked to assist in determining and clarifying issues relative to the study. The public was notified about the study and invited to provide comments about transportation needs, Retained Build Alternatives, and environmental issues throughout the study. The agency and public comments received in response to these coordination efforts were used in defining the purpose and need, potential alternatives, environmental issues and methodologies addressed in the Draft EIS.

FHWA published a Notice of Intent (NOI) to prepare an EIS in the Federal Register on May 20, 2011. Thirty-three federal, state and local governmental agencies and quasi-governmental organizations were contacted by letter and invited to provide scoping comments and attend an agency scoping meeting held in July 2011. Participating agency meetings were also held in November 2011 and April 2012. Input received from these agencies was used to inform the development of the study.

S.6 UNRESOLVED ISSUES

S.6.1 Selection of Alternative

After the location public hearing has been held and comments have been reviewed, the Commonwealth Transportation Board (CTB) would identify a preferred alternative. The preferred alternative may be refined to address comments received from the public and agencies on the Draft EIS and at the public hearing. Responses to substantive comments on the Draft EIS and documentation of the preferred alternative would be presented in a Final EIS. FHWA's alternative selection decision would occur in a Record of Decision (ROD).

S.6.2 Endangered Species Act Section 7 Consultation

During the course of final design, VDOT would continue to conduct Section 7 consultation with the US Fish & Wildlife Service and the National Marine Fisheries Service in order to assess the potential effect to Federally listed species. A Finding of Effect along with any species-specific mitigation measures would be completed at that time. Particular species that would be the subject of continued consultation are the Kemp's Ridley (*Lepidochelys kempii*), Hawksbill (*Eretmochelys imbricate*), Leatherback (*Dermochelys coriacia*), Green (*Chelonia mydas*), and Loggerhead (*Caretta caretta*) sea turtles, and the Short-nose (*Acipenser brevirostrum*) and Atlantic (*Acipenser oxyrinchus*) sturgeon.

S.6.3 Archaeological Investigations/Completion of the National Historic Preservation Act Section 106 Process

Through the selection of a preferred alternative, VDOT would continue to conduct Section 106 consultation with the Virginia Department of Historic Resources and other consulting parties in order to determine effects to historic properties.

It has been determined that implementation of the Retained Build Alternatives would impact two areas where additional archaeological survey work is warranted. An Archaeological Assessment completed by VDOT concluded that additional Phase II level investigation, including close-interval shovel testing as well as larger test units within potential impact areas, is appropriate for these two sites to determine if they are eligible for the National Register of Historic Places (NRHP). Previously identified underwater sites also require additional investigation.

Should a Retained Build Alternative be preferred in the Final EIS, a Programmatic Agreement (PA) would be drafted among FHWA, VDOT, the Virginia Department of Historic Resources (VDHR) and others to ensure that the appropriate level of archaeological investigations are conducted. The PA would include measures for identifying archaeological resources, recommendations for additional studies to be conducted, and present a methodology to assess and address any adverse effects that result from implementation of the preferred alternative.

S.6.4 Clean Water Act Section 404 Compliance

Detailed assessment of potential stream and wetland impacts would be performed following further design and the submittal of a jurisdictional delineation. Impacts to streams and wetlands in the study area would require submittal of a Joint Permit Application to the US Army Corps of Engineers (USACE), the Virginia Department of Environmental Quality (VDEQ) and the Virginia Marine Resources Commission (VMRC). Mitigation for unavoidable stream and wetland impacts would be developed in coordination with these agencies during the permitting process.

S.6.5 Final Section 4(f) Evaluation

Concurrent with Section 106 Consultation and the preparation of the Final EIS, VDOT will revise the Evaluation in compliance with Section 4(f) of the Department of Transportation Act. This evaluation will address the use of publicly owned parks, recreation areas, and wildlife or waterfowl refuges, and historic sites that are included or eligible for the NRHP.

S.6.6 Funding

At this time, there are no identified state or federal funds for the design, right of way acquisition, or construction of any of the Retained Build Alternatives.

S.6.7 HRTPO Action

Should any Retained Build Alternative be proposed for implementation, HRTPO would need to amend or update the Long Range Transportation Plan to include the preferred alternative before FHWA could issue the Record of Decision.

S.7 OTHER FEDERAL ACTIONS AND PERMITS REQUIRED

Federal and state laws require several permits and authorizations before construction can proceed. They include:

- Authorizations from the U.S. Army Corps of Engineers pursuant to Section 404 of the Clean Water Act for discharges of fill material into waters of the United States, including wetlands.
- Authorizations from the Virginia Department of Environmental Quality pursuant to Sections 401 (Virginia Water Protection Permit) and 402 of the Clean Water Act for discharges into waters of the United States.
- Authorizations from the Virginia Marine Resources Commission pursuant to Virginia Water Law for encroachments on subaqueous State-owned stream bottoms.
- Should an alternative be preferred that would adversely affect historic properties, a Programmatic Agreement (PA) to resolve the adverse effects would need to be executed among VDHR, FHWA, VDOT and potentially others. The Federal Advisory Council on Historic Preservation would be given the opportunity to participate in the development of any such PA.
- Because implementation of any of the Retained Build Alternatives would include the construction of a bridge across a navigable waterway of the United States, a Coast Guard Bridge Permit would be required.
- Clearance from the Virginia Department of Conservation & Recreation (VDNR) and from the Cities of Hampton and Norfolk, as appropriate, to construct components of a Retained Build Alternative within the 100-year floodplain.