

ALIGNMENT SEGMENTS & OPERATIONALLY INDEPENDENT SECTIONS

During the Draft SEIS it was anticipated that the Preferred Alternative would be constructed in stages or operationally independent sections (OIS). An OIS is a portion of an alternative that could be built and function as a viable transportation facility even if other portions of the alternative are not advanced (FHWA, 2007). The OISs are comprised of various roadway alignments and were developed by identifying sections of roadway improvements that if constructed, could function independently. Additionally, different sections within an OIS also could be replaced with another.

The alignment segments that make up each Build Alternative are shown on **Figure A-1** and summarized in **Table A-1**. **Figures A-2 through A-5** show each Build Alternative broken down by alignment segment. For the alignment segments that are included under two or more alternatives, **Figure A-1** lists the letter of the corresponding alternatives with the numbered segment. The OISs are shown on **Figure A-6**. Environmental impacts for the Build Alternatives have been quantified by roadway alignment segment and are presented in detail in **Table A-2**.

Since publication of the Draft SEIS, the CTB identified Alternative A as the Preferred Alternative for the HRCS. HRTAC set aside \$4.031 Billion, in year of expenditure dollars, for a Preferred Alternative in the HRTPO L RTP (HRTPO January 19, 2017 Board Meeting Notes, Item #13). FHWA will only issue a ROD to complete the NEPA process for improvements that are fully funded for construction in the region's L RTP. Because the Preferred Alternative has been fully funded for construction in the region's L RTP, it is anticipated that a ROD would be issued for the entire Preferred Alternative.

Alternative alignment segments that comprise the Preferred Alternative are the same as Alternative A and summarized in **Table A-1** and shown in **Figure A-1**. Environmental impacts for the Preferred Alternative have been quantified for the entire alternative and are presented in detail in **Table A-3**.

Table A-1: Alternative Alignment Segments

Segment	Roadway Segment Description
Alternative A	
8	I-64 north of HRBT
9	I-64 from HRBT to I-564
Alternative B	
8	I-64 north of HRBT
9	I-64 from HRBT to I-564
10	I-564 and I-564 Connector
12	I-564 Connector and VA 164 Connector Interchange
13	VA 164 Connector
14	VA 164
Alternative C	
7	I-664 from I-64 to and including Terminal Avenue Interchange. Proposed design includes 8 lanes plus 2 transit only lanes
6	Terminal Avenue Interchange. Proposed interchange to connect with I-664 design that includes 8 lanes plus 2 transit only lanes
5	I-664 from Terminal Avenue Interchange to I-664 Connector. Proposed design includes 8 lanes plus 2 transit only lanes

Segment	Roadway Segment Description
11	I-664 Connector including I-664 interchange. Proposed interchange to connect with I-664 design that includes 8 lanes plus 2 transit only lanes
4	I-664 from I-664 Connector to VA 164
3	I-664 and VA 164 Interchange
2	I-664 from VA 164 to US 58 (Bowers Hill)
1	I-664 from US 58 (Bowers Hill) to I-264
13	VA 164 Connector
12	I-564 Connector, I-664 Connector, and VA 164 Connector Interchange. Proposed interchange to connect with I-564 design that includes 4 lanes plus 2 transit only lanes
10	I-564 and I-564 Connector. Proposed design includes 8 lanes plus 2 transit only lanes
Alternative D	
8	I-64 north of HRBT
9	I-64 from HRBT to I-564
7	I-664 from I-64 to and including Terminal Avenue Interchange. Proposed design includes 8 lanes
6	Terminal Avenue Interchange. Proposed interchange to connect with I-664 design that includes 8 lanes
5	I-664 from Terminal Avenue Interchange to I-664 Connector. Proposed design includes 8 lanes
11	I-664 Connector including I-664 interchange. Proposed interchange to connect with I-664 design that includes 8 lanes
4	I-664 from I-664 Connector to VA 164
3	I-664 and VA 164 Interchange
2	I-664 from VA 164 to US 58 (Bowers Hill)
1	I-664 from US 58 (Bowers Hill) to I-264
14	VA 164
13	VA 164 Connector
12	I-564 Connector, I-664 Connector, and VA 164 Connector Interchange. Proposed interchange to connect with I-564 design that includes 4 lanes
10	I-564 and I-564 Connector. Proposed design includes 8 lanes

Figure A-1: Alignment Segments



Figure A-2: Alternative A Segments



Figure A-3: Alternative B Segments



HRCS SEIS
Hampton Roads Crossing Study SEIS
Alternative B Segments

Figure A-4: Alternative C Segments



HRCS SEIS
Hampton Roads Crossing Study SEIS
Alternative C Segments

Figure A-5: Alternative D Segments



Figure A-6: Operationally Independent Sections



Table A-2: Environmental Impacts by Segment

Resource	Segment 1	Segment 2	Segment 3	Segment 4	Segment 5C	Segment 5D	Segment 6C	Segment 6D	Segment 7C	Segment 7D	Segment 8	Segment 9	Segment 10BD	Segment 10C	Segment 11C	Segment 11D	Segment 12B	Segment 12C	Segment 12D	Segment 13	Segment 14
Right-of-Way (# / acres)	8 (0.9)	20 (2.7)	1 (0.4)	8 (13.2)	3 (21.1)	2 (21.0)	5 (16.0)	4 (12.7)	111 (22.3)	75 (18.9)	20 (2.8)	66 (7.5)	7 (65.0)	8 (89.4)	0	0	1 (6.7)	1 (7.5)	1 (7.5)	36 (167.0)	0
Residential	2 (<0.1)	9 (0.2)	0	0	0	0	0	0	42 (1.7)	29 (1.3)	1 (0.1)	23 (0.5)	0	0	0	0	0	0	0	5 (0.1)	0
Commercial	1 (<0.1)	0	0	1 (<0.1)	0	0	0	0	17 (3.3)	11 (2.8)	2 (0.1)	4 (1.2)	0	0	0	0	0	0	0	4 (1.4)	0
Industrial	0	3 (0.3)	0	0	3 (21.1)	2 (21.0)	4 (15.8)	4 (12.7)	16 (6.7)	10 (5.4)	0	6 (0.9)	1 (28.5)	2 (34.9)	0	0	0	0	0	7 (25.4)	0
Institutional	0	1 (<0.1)	0	1 (0.3)	0	0	1 (0.2)	0	7 (6.0)	4 (5.7)	8 (1.9)	1 (0.9)	0	0	0	0	1 (6.7)	1 (7.5)	1 (7.5)	4 (103.8)	0
Military	0	0	0	0	0	0	0	0	0	0	0	4 (0.6)	2 (10.2)	2 (11.4)	0	0	0	0	0	1 (11.7)	0
Open Space	5 (0.9)	7 (2.2)	1 (0.4)	6 (12.9)	0	0	0	0	27 (4.8)	20 (3.7)	3 (0.1)	11 (0.9)	2 (0.3)	2 (0.3)	0	0	0	0	0	11 (22.5)	0
Other	0	0	0	0	0	0	0	0	2 (<0.1)	1 (<0.1)	6 (0.7)	17 (2.4)	2 (26.0)	2 (42.7)	0	0	0	0	0	4 (2.1)	0
Potential Residential Displacements	0	0	0	0	0	0	0	0	11	11	0	9	0	0	0	0	0	0	0	0	0
Potential Commercial Displacements	0	0	0	0	1	1	0	0	4	3	0	0	0	0	0	0	0	0	0	0	0
Potential Other* Displacements	0	0	0	1	0	0	2	2	3	2	2	0	1	1	0	0	0	0	0	1	0
Military Facilities (#/acres)	0	0	0	0	0	0	0	0	0	0	0	1 (22.4)	1 (14.7)	1 (41.5)	0	0	1 (6.7)	1 (7.5)	1 (7.5)	3 (119.1)	0
Community Facilities	0	0	0	0	0	0	0	0	3	2	1	1	1	1	0	0	0	0	0	0	0
Park & Recreation	0	0	0	0	0	0	0	0	1	1	0	1	1	1	0	0	0	0	0	0	0
Place of Worship	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Cemetery	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
School / University	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0
Land Use*	0.9	3.1	0.7	16.4	21.8	21.6	16.1	12.8	22.6	19.0	2.6	25.2	61.1	79.1	0	0	6.7	7.5	7.5	164.8	0
Residential	0	0.6	0	0	0	0	0	0	2.0	1.5	0.1	0.5	0	0	0	0	0	0	0	0.1	0
Commercial	0	0	0	1.3	0	0	0	0	3.6	3.0	0.5	1.2	0	0	0	0	0	0	0	1.4	0
Industrial	0	0.2	0	0.2	21.8	21.6	15.9	12.8	6.2	5.0	0	0.7	46.0	50.2	0	0	0	0	0	25.3	0
Institutional	0	0	0	0	0	0	0.2	0	5.9	5.7	1.9	0.9	0	0	0	0	6.7	7.5	7.5	103.8	0
Military	0	0	0	0	0	0	0	0	0	0	0	20.8	14.8	28.6	0	0	0	0	0	11.7	0
Open Space	0.9	2.3	0.7	14.9	0	0	0	0	4.9	3.7	0.1	1.1	0.3	0.3	0	0	0	0	0	22.5	0
Section 4(f) Properties (# / acres)	0	0	0	1 (27.0)	1 (254.2)	1 (233.8)	1 (0.3)	1 (0.4)	3 (1.6)	3 (1.5)	2 (1.8)	4 (304.6)	2 (48.7)	2 (98.3)	1 (151.7)	1 (123.5)	1 (25.6)	1 (69.8)	1 (64.0)	1 (6.7)	0

Resource	Segment 1	Segment 2	Segment 3	Segment 4	Segment 5C	Segment 5D	Segment 6C	Segment 6D	Segment 7C	Segment 7D	Segment 8	Segment 9	Segment 10BD	Segment 10C	Segment 11C	Segment 11D	Segment 12B	Segment 12C	Segment 12D	Segment 13	Segment 14
Farmland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Stream Impacts (linear feet)	292.7	143.0	0	112.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Navigable Waters (acres)	0	0.6	0	26.7	97.2	97.2	0.2	0.2	0	0	0.1	147.3	44.4	53.9	116.8	95.7	20.5	71.3	65.6	3.4	0
Wetlands (acres)	23.6	5.8	4.8	7.8	0	0	0	0	5.7	5.3	0.6	7.2	0.2	1.9	0	0	0	0	0	61.6	3.0
Resource Protection Areas (acres)	17.8	13.6	0	27.3	0	0	0	0	0	0	0	0	0	0	64.8	52.1	1.0	1.3	1.3	15.0	0
Floodplains (acres)	0	3.5	0	4.0	23.6	25.0	5.6	4.5	0.4	0.4	3.3	109.3	25.4	31.1	43.5	38.7	10.3	36.8	34.4	64.9	0
Hampton Roads Aquatic Habitat (acres)	0	0	0	27.4	249.0	227.8	2.5	2.4	0	0	0	155.7	45.5	57.8	151.7	123.5	30.7	79.9	74.1	4.4	0
Benthic Communities	0	0	0	15.1	0	0	0	0	0	0	0	0	0	0	180.0	149.0	5.4	50.0	44.2	0	0
Essential Fish Habitat, Habitat Areas of Particular Concern, and Anadromous Fish Use Areas (acres)	0	0	0	26.1	247.7	226.4	2.9	2.7	0	0	0	138.4	45.4	57.4	151.7	123.5	30.5	79.7	73.9	0	0
Threatened & Endangered Species Habitat (acres)	22.2	4.2	1.2	13.5	0	0	0.4	0.0	0.6	0.6	0	1.0	3.0	14.1	0	0	6.3	7.0	7.0	101.7	0
Submerged Aquatic Vegetation (acres)	0	0	0	0	0	0	0	0	0	0	0	1.8	0	0	0	0	0	0	0	0	0
Terrestrial Habitat (Forested Area) (acres)	54.6	12.3	6.6	13.6	0	0	0	0	18.2	17.3	0	14.9	7.2	23.1	0	0	0	0	0	51.0	0
Water Quality	Short-term and minor, beneficial long-term impacts																				
Historic Architecture Resources	0	0	0	1	1	1	1	1	1	1	3	3	2	2	1	1	1	1	1	2	0
Archaeology Resources	8	12	2	1	0	0	0	0	0	0	4	2	0	0	0	0	0	0	0	3	1
Visual Impacts	Minor to moderate impacts																				
Energy Requirements and Conservation Potential	Minor energy requirements																				
Total Cost	\$53.6M	\$195.1M	\$123.2M	\$423.6M	\$3.9B	\$2.5B	\$356.0M	\$284.6M	\$511.2M	\$432.8M	\$64.1M	\$3.2B	\$2.6B	\$4.5B	\$1.5B	\$1.1B	\$229.2M	\$577.1M	\$514.3M	\$407.7M	\$119.5M

Notes: Right-of-Way data was gathered from each of the localities. Land use data was gathered from HRTPO.

*Other includes Military, Institutional, and Industrial zoning classifications.

Table A-3: Preferred Alternative Environmental Impacts

Resource	Preferred Alternative
Right-of-Way (# / acres)	78 (7.3)
Residential	23 (0.5)
Commercial	2 (0.0)
Industrial	6 (0.9)
Institutional	6 (1.1)
Military	0 (0.0)
Open Space	14 (1.1)
Other	23 (3.1)
Potential Residential Displacements	9
Potential Commercial Displacements	0
Potential Other* Displacements	2
Military Facilities (#/acres)	0
Community Facilities	0
Park & Recreation	0
Place of Worship	0
Cemetery	0
School / University	0
Land Use	3.3
Residential	0.5
Commercial	<0.1
Industrial	0.7
Institutional	1.1
Military	0
Open Space	0.9
Section 4(f) Properties (# / acres)	2 (164.2 and 137.2)
Farmland	0
Stream Impacts (linear feet)	0
Navigable Waters (acres)	175.9
Wetlands (acres)	7.6

Resource	Preferred Alternative
Resource Protection Areas (acres)	0.9
Floodplains (acres)	149.2
Hampton Roads Aquatic Habitat (acres)	174.4
Benthic Communities	154.5
Essential Fish Habitat, Habitat Areas of Particular Concern, and Anadromous Fish Use Areas (acres)	157.7
Threatened & Endangered Species Habitat (acres)	1.0
Submerged Aquatic Vegetation (acres)	0.1
Terrestrial Habitat (Forested Area) (acres)	14.9
Water Quality	Short-term and minor, beneficial long-term impacts
Historic Architecture Resources	3
Archaeology Resources	5
Visual Impacts	Minor to moderate impacts
Energy Requirements and Conservation Potential	Minor energy requirements
Total Cost	\$3.3B

Notes: Right-of-Way data was gathered from each of the localities.

Land use data was gathered from HRTPO.

**Other includes Institutional and Industrial classifications.*