

## Introduction

Previously, the memo “Summary of Mandated Preliminary Alternatives”, dated 04/23/2020, summarized the mandated segments to be reviewed under the Regional Connectors Study (RCS). The mandated segments summarized were those not selected for funding from the 2016 Hampton Roads Crossing Study SEIS – Alternatives Technical Report (2016 HRCS)<sup>1</sup>. The 2016 HRCS included cost estimates for construction, right of way and preliminary engineering (PE). This memo summarizes the revisions to and updates of the cost estimates for the mandated segments from the 2016 HRCS.

## Updating & Revising 2016 HRCS Cost Estimates

Several adjustments were made to the previous cost estimates in producing the updated cost estimates of the mandated segments. Below are the listed adjustments:

- A. The project input data from the prior estimates was input into the latest version of the VDOT Project Cost Estimating System. The 2016 HRCS used version 6.0 of PCES spreadsheet tool and version 7.1 was used for the updated estimates.
- B. Project elements included in the estimate as lump sum items were inflated 2.5% annually from the previous estimate year of 2016 to the base estimate year in the spreadsheet of 2018.
- C. The spreadsheet tool was adjusted to provide costs for the 2021 Fiscal Year.
- D. The variable for percentage of PE work to be performed by consultants was revised from 30% to 80%. It is the opinion of the RCS consultant team that with such large projects, it is likely the overwhelming majority of PE work will be done by consultants and the PE estimates should be higher to reflect this.
- E. The right of way estimates were carried forward from the 2016 HRCS study and were inflated 2.5% annually to FY 2021 and included in the PCES tool. The tool does not automatically inflate the right of way values.

## Summary of Alignment Segments

The Build Alternatives from the 2016 HRCS were composed of the alignment segments listed in the table below. These numbers correspond to the alignment segments shown in **Figure 1** an extracted figure from the 2016 HRCS SEIS. The mandated segment of I-664 is comprised of sub-segments 1-7. Sub-segments 10, 11, 13 and 14 are the I-564 Connector, I-664 Connector, VA 164 Connector and VA 164, respectively. Sub-segment 12 is the interchange between the I-564, I-664 and VA 164 Connectors. This was separated out due to the different combinations of segments in the 2016 HRCS.

<sup>1</sup> Virginia Department of Transportation, *Hampton Roads Crossing Study SEIS – Alternatives Technical Report*, (2016)

[https://www.hrbtexpansion.org/documents/201608/finaltechnicalreports/alternatives\\_technical\\_report.pdf](https://www.hrbtexpansion.org/documents/201608/finaltechnicalreports/alternatives_technical_report.pdf)

Number	2016 HRCS SEIS Segment
1*	I-664 from US 58 (Bowers Hill) to I-264
2*	I-664 from VA 164 to US 58 (Bowers Hill)
3*	I-664 and VA 164 Interchange
4*	I-664 from I-664 Connector to VA 164
5*	I-664 from Terminal Avenue Interchange to I-664 Connector
6*	I-664 Terminal Avenue Interchange
7*	I-664 from I-64 to Terminal Avenue Interchange
10	I-564 and I-564 Connector
11	I-664 Connector including I-664 Interchange
12	I-564 Connector, I-664 Connector, and VA 164 Connector Interchange
13	VA 164 Connector
14	VA 164

\* Segments 1 – 7 from the 2016 HRCS SEIS comprise the I-664 segments within the RCS study



Figure 1

**Revised Cost Estimates**

Below in Table 1 are the revised (FY 2021) cost estimates for segments 1-7 and 10 – 14. The cost estimates below also include the variations of segments discussed in the Summary of Mandated Preliminary Alternatives. For comparison, Table 2 is the summary of cost estimates from the 2016 HRCS.

*Table 1 – Updated (FY 2021) Cost Estimates for Mandated Segments*

Segment	Construction Estimate	Preliminary Engineering Estimate	Right of way & Utilities Estimate	Estimated Total Cost
<b>1</b>	\$53,426,052	\$5,984,054	\$3,951,240	\$63,361,346
<b>2</b>	\$196,065,348	\$21,959,319	\$14,336,475	\$232,361,142
<b>3</b>	\$128,430,959	\$14,384,267	\$8,380,969	\$151,196,195
<b>4</b>	\$457,358,537	\$51,224,156	\$43,071,967	\$551,654,660
<b>5C</b>	\$4,008,571,040	\$448,959,956	\$7,264,600	\$4,464,795,596
<b>5D</b>	\$2,543,206,449	\$284,839,122	\$7,045,913	\$2,835,091,484
<b>6C</b>	\$392,335,132	\$43,941,535	\$35,655,404	\$471,932,071
<b>6D</b>	\$313,758,472	\$35,140,949	\$29,272,205	\$378,171,626
<b>7C</b>	\$509,861,995	\$57,104,543	\$55,948,011	\$622,914,549
<b>7D</b>	\$434,252,067	\$48,636,232	\$46,935,970	\$529,824,269
<b>10B/D</b>	\$2,626,350,652	\$294,151,273	\$33,913,788	\$2,954,415,713
<b>10C</b>	\$4,693,499,197	\$525,671,910	\$56,546,839	\$5,275,717,946
<b>11C</b>	\$1,705,853,682	\$191,055,612	\$135,499,698	\$2,032,408,992
<b>11D</b>	\$1,185,624,665	\$132,789,963	\$94,114,870	\$1,412,529,498
<b>12B</b>	\$255,847,127	\$28,654,878	\$23,874,105	\$308,376,110
<b>12C</b>	\$651,953,124	\$73,018,750	\$55,266,776	\$780,238,650
<b>12D</b>	\$578,800,548	\$64,825,661	\$49,523,455	\$693,149,664
<b>13</b>	\$373,135,205	\$41,791,143	\$111,629,060	\$526,555,408
<b>14</b>	\$124,553,422	\$13,949,983	\$7,189,791	\$145,693,196

*Table 2 - 2016 HRCS Cost Estimates*

Segment	Construction Estimate	Preliminary Engineering Estimate	Right of way & Utilities Estimate	Estimated Total Cost
<b>1</b>	\$45,989,670	\$4,027,384	\$3,492,315	\$53,509,369
<b>2</b>	\$168,229,912	\$14,130,200	\$12,671,335	\$195,031,447
<b>3</b>	\$107,443,742	\$8,323,689	\$7,407,544	\$123,174,975
<b>4</b>	\$368,697,088	\$16,771,219	\$38,069,282	\$423,537,589
<b>5C</b>	\$3,539,420,549	\$325,626,691	\$6,420,839	\$3,871,468,079
<b>5D</b>	\$2,245,544,255	\$206,590,072	\$6,227,551	\$2,458,361,878
<b>6C</b>	\$312,560,648	\$11,924,751	\$31,514,132	\$355,999,531
<b>6D</b>	\$249,424,681	\$9,258,682	\$25,872,323	\$284,555,686
<b>7C</b>	\$429,926,467	\$31,742,267	\$49,449,811	\$511,118,545
<b>7D</b>	\$364,812,625	\$26,492,455	\$41,484,492	\$432,789,572
<b>10B/D</b>	\$2,317,457,349	\$212,732,318	\$29,974,800	\$2,560,164,467
<b>10C</b>	\$4,015,591,421	\$367,398,736	\$49,979,087	\$4,432,969,244
<b>11C</b>	\$1,339,225,237	\$40,244,145	\$119,761,800	\$1,499,231,182
<b>11D</b>	\$930,848,401	\$28,324,098	\$83,183,700	\$1,042,356,199
<b>12B</b>	\$201,721,357	\$6,609,239	\$21,101,197	\$229,431,793
<b>12C</b>	\$511,972,714	\$16,210,040	\$48,847,700	\$577,030,454
<b>12D</b>	\$455,805,660	\$14,640,987	\$43,771,448	\$514,218,095
<b>13</b>	\$287,556,400	\$21,453,672	\$98,663,667	\$407,673,739
<b>14</b>	\$104,093,232	\$8,959,721	\$6,354,718	\$119,407,671