

CHESAPEAKE CONNECTOR FREIGHT AND PASSENGER RAIL BENEFITS STUDY

DATE: 01-10-11 DRAFT

ORDER OF MAGNITUDE CAPITAL COST ESTIMATE

Total RF: 33,500

Total Mi: 6.3

**ALIGNMENT SEGMENT NAME: OPTION A; GRADE SEPARATED OPTION - DRAFT**

Green cell indicates equation copy from another workbook

Grey cell indicates equation

Cat. No.	Description	Unit	Quantity	Unit Cost	Base Amount	Allocated Contingency	Total Amount
<b>10 GUIDEWAY &amp; TRACK ELEMENTS</b>							
<b>TRACKWORK</b>							
10.1	Trackway Preparation: At Grade - Ballasted, Open (includes 50' by 12" nominal topsoil / muck grading = 50cf per TF = 1.9cy/TF = @\$25/CY = \$48/TF)	TF	33,500	\$20	\$670,000	15%	\$770,500
10.2	Concrete Tie Track (Single Track) - at grade	TF	33,500	\$225	\$7,537,500	10%	\$8,291,250
10.3	No. 20 Concrete Tie Turnout	EA	2	\$ 365,000	\$730,000	15%	\$839,500
10.4	No. 20 Concrete Tie Cross-over	EA	0	\$ 805,000	\$0	15%	\$0
10.5	No. 10 Concrete Tie Turnout	EA	0	\$ 150,000	\$0	15%	\$0
10.6	Remove No. 20 Concrete Tie Cross-over	EA	0	\$ -	\$0	15%	\$0
10.7	Remove No. 20 Concrete Tie Turnout	EA	0	\$ -	\$0	15%	\$0
10.8	Shift Existing Track (Up to 8 feet)	TF	10,000	\$ 100	\$1,000,000	20%	\$1,200,000
<b>Subtotal - Trackwork</b>					<b>\$9,937,500</b>		<b>\$11,101,250</b>
<b>STRUCTURAL WORK</b>							
10.10	UG 51.030 North East Creek (ALLOWANCE for structural improvements 130 feet long by 20 feet wide )	SF	2,600	\$ 250	\$650,000	25%	\$812,500
10.11	UG 51.120 Culvert - includes rating the structure only	LS	1	\$ 8,000	\$8,000	15%	\$9,200
10.12	UG 51.140 McCullough Dr. / Railroad Ln.- New structure required for third track: 25 feet by 20 feet	SF	500	\$ 800	\$400,000	20%	\$480,000
10.13	UG 51.330 Ped Underpass / North Main Street- New structure required for third track: 25 feet by 20 feet	SF	500	\$ 800	\$400,000	20%	\$480,000
10.14	OH 51.430 Northeast Road / Maudlin Ave. - (MD RT 272) 40 foot long by 2.5 foot wide by 6 foot high crash wall addition	CY	23	\$ 2,000	\$46,000	20%	\$55,200
10.15	UG 51.880 Post Road - (MD RT 7) New structure required for third track: 75 feet by 20 feet	SF	1,500	\$ 800	\$1,200,000	20%	\$1,440,000
10.16	BA 51.940 Stoney Run (ALLOWANCE for structural improvements 25 feet long by 20 feet wide )	SF	500	\$ 250	\$125,000	25%	\$156,250
10.17	UG 52.640 Pedler's Run (ALLOWANCE for structural improvements 40 feet long by 20 feet wide )	SF	800	\$ 250	\$200,000	25%	\$250,000
10.18	UG 52.960 Broad Creek - New structure required for third track: 50 feet by 20 feet	SF	1,000	\$ 800	\$800,000	20%	\$960,000
10.19	OH 53.510 Heisler's Road / Bladen St. (MD RT 267) 40 foot long by 2.5 foot wide by 6 foot high crash wall addition	CY	23	\$ 2,000	\$46,000	20%	\$55,200
10.20	UG 54.290 Stream - New structure required for third track: 40 feet by 20 feet	SF	800	\$ 800	\$640,000	20%	\$768,000
10.21	OH 54.750 Weaver's RD / Ogle Rd. / Baltimore St. (MD RT 267) 40 foot long by 2.5 foot wide by 6 foot high crash wall addition	CY	23	\$ 2,000	\$46,000	20%	\$55,200

**CHESAPEAKE CONNECTOR FREIGHT AND PASSENGER RAIL BENEFITS STUDY**

DATE: 01-10-11 DRAFT

**ORDER OF MAGNITUDE CAPITAL COST ESTIMATE**

Total RF: **33,500**

Total Mi: **6.3**

**ALIGNMENT SEGMENT NAME: OPTION A; GRADE SEPARATED OPTION - DRAFT**

Green cell indicates equation copy from another workbook

Grey cell indicates equation

Cat. No.	Description	Unit	Quantity	Unit Cost	Base Amount	Allocated Contingency	Total Amount
10.22	UG 56.260 Long Hollow Creek- includes rating the structure only	LS	0	\$ 8,000	\$0	15%	\$0
10.23	UG 56.510 Carpenter Rd. / Mountain Hill Rd.- New structure required for third track: 50 feet by 20 feet	SF	0	\$ 800	\$0	20%	\$0
10.24	UG 56.920 Principo Creek- New structure required for third track: 80 feet by 20 feet	SF	1,600	\$ 800	\$1,280,000	20%	\$1,536,000
10.25	Retaining Wall Soldier Pile and Lagging (ALLOWANCE one Mile @ 8 feet high)	SF	42,240	\$ 300	\$12,672,000	25%	\$15,840,000
10.26	Retaining Wall Soldier Pile and Lagging at North East River (2600 LF by 8 feet high)	SF	20,880	\$ 500	\$10,440,000	30%	\$13,572,000
10.27	Retained Fill Structure - T- Wall - for grade separated option (3600 feet in length)	SF	4,500	\$ 65	\$292,500	15%	\$336,375
10.28	Bridge Structure Adjacent to NEC (7400 feet by 24 feet)	SF	176,000	\$ 500	\$88,000,000	15%	\$101,200,000
10.29	Bridge Structure Over NEC (500 feet by 24 feet)	SF	12,000	\$ 1,210	\$14,520,000	25%	\$18,150,000
<b>Subtotal - Structural Work</b>					<b>\$131,765,500</b>		<b>\$156,155,925</b>
<b>TOTAL CATEGORY 10</b>					<b>\$141,703,000</b>		<b>\$167,257,175</b>
<b>20 STATIONS, STOPS, TERMINALS, INTERMODAL</b>							
<b>TOTAL CATEGORY 20</b>					<b>\$0</b>		<b>\$0</b>
<b>30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS</b>							
<b>TOTAL CATEGORY 30</b>					<b>\$0</b>		<b>\$0</b>
<b>40 SITEWORK &amp; SPECIAL CONDITIONS</b>							
40.1	Utility Relocation - FOU	MI	2	\$ 60,000	\$120,000	25%	\$150,000
40.2	Utility Relocation - ALLOWANCE	TF	33,500	\$ 350	\$11,725,000	25%	\$14,656,250
40.3	Clearing and Grubbing	AC	19	\$ 4,000	\$76,905	20%	\$92,287
40.4	Embankment Construction (@ 14 CY / TF - @ \$25/CY))	TF	12,500	\$ 350	\$4,375,000	20%	\$5,250,000
40.5	General Excavation (@9 CY / TF - \$20 / CY)	TF	6,700	\$ 180	\$1,206,000	20%	\$1,447,200
40.6	Ditch Excavation (@0.75 CY / TF - 20 / CY)	TF	19,200	\$ 15	\$288,000	20%	\$345,600
40.7	Drainage ALLOWANCE (Perforated Pipe)	TF	5,280	\$15	\$79,200	20%	\$95,040
40.8	Drainage ALLOWANCE (Storm Sewer - Pipes Inlet Structures and Manholes)	TF	5,280	\$10	\$52,800	20%	\$63,360
40.9	Environmental (E&S)	TF	33,500	\$ 35	\$1,172,500	10%	\$1,289,750
40.10	Mobilization @ 3% of \$200MM	LS	1	\$ 6,000,000	\$6,000,000	15%	\$6,900,000
40.11	Temporary Maintenance of Traffic	LS	1	\$ 500,000	\$500,000	20%	\$600,000

**CHESAPEAKE CONNECTOR FREIGHT AND PASSENGER RAIL BENEFITS STUDY**

DATE: 01-10-11 DRAFT

**ORDER OF MAGNITUDE CAPITAL COST ESTIMATE**

**Total RF: 33,500**

**Total Mi: 6.3**

**ALIGNMENT SEGMENT NAME: OPTION A; GRADE SEPARATED OPTION - DRAFT**

Green cell indicates equation copy from another workbook

Grey cell indicates equation

Cat. No.	Description	Unit	Quantity	Unit Cost	Base Amount	Allocated Contingency	Total Amount
40.12	Environmental Mitigation - ALLOWANCE @ \$100k / mi	LS	6	\$ 100,000	\$634,470	25%	\$793,087
40.13	Environmental Mitigation at North East River- ALLOWANCE	AC	4.5	\$ 200,000	\$900,000	50%	\$1,350,000
<b>TOTAL CATEGORY 40</b>					<b>\$27,129,875</b>		<b>\$33,032,574</b>
<b>50 SYSTEMS</b>							
50.1	Traction Power Substation Modifications - ALLOWANCE	EA	1	\$100,000	\$100,000	25%	\$125,000
50.2	Electrification - OCS Using Existing Structure (Wire and Hardware Only)	TF	22,100	\$100	\$2,210,000	15%	\$2,541,500
50.3	Electrification - OCS Using Proposed Cantilever Structure - Single Track	TF	11,400	\$350	\$3,990,000	15%	\$4,588,500
50.4	Remove and Install Catenary Structure (Cantilever Structure)	EA	0	\$90,000	\$0	20%	\$0
50.5	Remove and Install Catenary Portal Structure (3 - 4 Track Structure)	EA	24	\$275,000	\$6,600,000	20%	\$7,920,000
50.6	Train Control System (TCS) for New Track	MI	6.3	\$1,000,000	\$6,344,697	20%	\$7,613,636
50.7	Signal Modifications at Bacon Interlocking	LS	1	\$850,000	\$850,000	20%	\$1,020,000
50.8	Signal Modifications at Prince Interlocking	LS	1	\$850,000	\$850,000	20%	\$1,020,000
<b>TOTAL CATEGORY 50</b>					<b>\$20,944,697</b>		<b>\$24,828,636</b>
<b>CONSTRUCTION SUBTOTAL (Sum Categories 10 - 50)</b>					<b>\$189,777,572</b>		<b>\$225,118,385</b>
<b>60 Right-of-Way</b>							
60.1	Right-of-Way	AC	1.5	\$ 2,200,000	\$3,300,000	50%	\$4,950,000
60.2	Temporary Construction Easement	LS	1	\$ 2,000,000	\$2,000,000	50%	\$3,000,000
<b>TOTAL CATEGORY 60</b>					<b>\$3,300,000</b>		<b>\$7,950,000</b>
<b>70 VEHICLES</b>							
70.1	Vehicles	Ea	0		\$0		\$0
<b>TOTAL CATEGORY 70</b>					<b>\$0</b>		<b>\$0</b>
<b>80 PROFESSIONAL SERVICES (Calc. on Subtotal 10 - 50)</b>							
80.1	Preliminary Engineering	LS	1	3.0%	\$6,753,552	5%	\$7,091,229
80.2	Final Design	LS	1	9.0%	\$20,260,655	5%	\$21,273,687
80.3	OWNER, PM, CM, ADMIN, BOND	LS	1	13.0%	\$29,265,390	5%	\$30,728,660
80.4	Insurance	LS	1	4.0%	\$9,004,735	5%	\$9,454,972
80.5	Legal; Permits; Review Fees by other agencies, cities, etc.	LS	1	2.0%	\$4,502,368	5%	\$4,727,486

**CHESAPEAKE CONNECTOR FREIGHT AND PASSENGER RAIL BENEFITS STUDY**

DATE: 01-10-11 DRAFT

**ORDER OF MAGNITUDE CAPITAL COST ESTIMATE**

Total RF: **33,500**  
Total Mi: **6.3**

**ALIGNMENT SEGMENT NAME: OPTION A; GRADE SEPARATED OPTION - DRAFT**

Green cell indicates equation copy from another workbook

Grey cell indicates equation

Cat. No.	Description	Unit	Quantity	Unit Cost	Base Amount	Allocated Contingency	Total Amount	
80.6	Surveys, Testing, Investigation, Inspection	LS	1	2.0%	\$4,502,368	5%	\$4,727,486	
80.7	Systems Testing (Percent of 50.1 - 50.7)	LS	1	2.0%	\$418,894	5%	\$439,839	
<b>TOTAL CATEGORY 80</b>					<b>\$74,707,961</b>		<b>\$78,443,359</b>	
<b>90 UNALLOCATED CONTINGENCY (Calculated on Subtotal Cat. 10 - 70)</b>								
90.1	Project Reserve	%	1	20%	\$37,955,514	1	\$37,955,514	
<b>TOTAL CATEGORY 90</b>					<b>\$37,955,514</b>		<b>\$37,955,514</b>	
<b>Total Project</b>								
		<b>Mi</b>	<b>6.34</b>		<b>\$305,741,047</b>		<b>\$349,467,258</b>	
					Cost ( per Mile)	\$	48,188,440	\$55,080,213

- Notes:**
1. Estimate does not include cost for railroad flag protection.
  2. Estimate in 2011 dollars. (not escalated)
  3. This estimate is based on a 5% engineering study effort. The estimate should not be used for purposed of applying for funding for construction.