

C PROJECT COST ESTIMATE FOR THE PREFERRED ALTERNATIVE 3 MODIFIED

Preliminary cost estimates were prepared for each of the three Candidate Build Alternatives and were published in the October 2013 EA. The cost estimates were based upon the conceptual level designs developed for the preliminary alignments, and associated profile and typical sections of Broad Branch Road. A comparable cost estimate has been prepared for the Preferred Alternative 3 Modified using the same cost items, assumptions and exclusions as those used for the original Candidate Build Alternatives.

Costs were developed at a conceptual level for both “TOTAL CONSTRUCTION COST” for the construction effort under a traditional Design-Bid-Build approach, and “TOTAL PROJECT COST”, which includes funding for design and construction management. Costs for the original Candidate Build Alternatives 2, 3 and 4 were escalated to 2018 dollars to match the estimate prepared for the Preferred Alternative 3 Modified. **Table C-1** summarizes the current cost estimates for each of the alternatives. Detailed cost estimates for the Preferred Alternative are presented in **Table C-2**.

Table C-1. Conceptual Level Cost Estimate

ALTERNATIVE	TOTAL CONSTRUCTION COST	DDOT PROGRAM MANAGEMENT COST ¹	TOTAL PROJECT COST
Alternative 2	\$24,935,000	\$12,467,500	\$37,402,500
Alternative 3	\$29,160,000	\$14,580,000	\$43,740,000
Alternative 4	\$38,325,000	\$19,162,500	\$57,487,500
Alternative 3 Modified	\$37,500,000	\$18,750,000	\$56,250,000

¹ DDOT Program Management Cost estimated to be 50% of the Total Construction Cost.

ASSUMPTIONS

The following assumptions were made in support of the construction cost estimates for the Preferred Alternative and each of the original Candidate Build Alternatives. Not all alternatives included all of the elements.

ROADWAY

1. Complete reconstruction of the roadway with the following:
 - a) Travel Lanes and Bike Lanes – 2” Superpave AC Surface Course, 5” Superpave AC Base Course, 6” Graded Aggregate Base Course (GAB)
 - b) Curb and Curb & Gutter – Combined 8” wide PCC curb and 12” wide PCC gutter
 - c) Driveways – Concrete Driveway - 7” PCC; Asphalt Driveway 4” AC, 4” GAB
2. Sidewalks with the following:
 - a) Sidewalk – 4” PCC, 4” Graded Aggregate Base Course (GAB)

UTILITIES

1. DC Water – Water and Sewer Relocations: Based on communications with DC Water design staff, the water and sewer lines are considered for relocation if the existing line falls within 1 foot of the curb/curb & gutter line; if the line falls within swale/ditch alignment; if the depth of cover is reduced to less than 3 feet; if the line falls underneath the wheelchair/bicycle ramp; or if the line falls within the footprint of other utilities.
2. PEPCO, VERIZON, and COMCAST – It is assumed that all overhead lines are on joint-use PEPCO poles and if PEPCO lines are impacted then they all need to be relocated. PEPCO lines are considered for relocation if the existing poles fall within the footprint of the roadway or excavation takes place within 1 foot. Some of the existing poles are outside of the right-of-way and they will remain as they are.
3. WASHINGTON GAS – Gas lines are considered for relocation if the existing line falls within 1 foot of the curb/curb & gutter line; if the line falls within swale/ditch alignment; if the depth of cover is reduced to less than 3 feet; the line falls underneath the wheelchair/bicycle ramp; or within the foot print of other utilities.
4. DC STREETLIGHT - Existing street lights are assumed to be DC-owned, leased lights on PEPCO poles. All existing old type light fixtures and arms will be replaced with new 250 Watt High Pressure Sodium Luminaries cut-off type fixtures with 8-, 12- or 14-foot arms.

STORMWATER / DRAINAGE

1. In general, the roadway will have a normal cross slope and runoff will be directed toward the curb and collected in drainage systems to be installed on the east and west sides of the roadway. Water collected in the system will be directed to existing outfall locations along the east side of the roadway.
2. Cross culverts will be used along the Broad Branch Road, where it is necessary and feasible, to prevent the offsite runoff from entering the roadway and to divert it to the existing outfalls.
3. For Candidate Build Alternatives 2, 3, and 4, concrete ditches behind the retaining walls would direct the offsite runoff to the proposed drainage system.
4. Given the rolling topography of the project area, it is assumed that sufficient grades exist to enable new systems to outfall at the existing outfall inverts.
5. Water quality catch basins will be used, wherever feasible, to screen debris and filter sediment before discharging runoff to the existing outfalls.
6. Rain gardens will be incorporated on the west side of the roadway at the north end of project area and at the intersection with Brandywine Street using Low Impact Development (LID) techniques. The following features will be included in the rain gardens:

- a) A bioretention area will be located adjacent to the roadway to act as a filter, applying Best Management Practices (BMPs). Runoff from the roadway would flow to the bioretention area as sheet flow, where it would filter through the 2.5 to 4 feet thick layer of sand media and into perforated underdrain pipes surrounded by aggregate and geotextile to filter material before being discharged to the existing storm drain system through an inlet structure connected to the existing drain system.
- b) The inlet structure will also serve as an overflow structure to divert excess water out of the rain garden.

EXCLUSIONS

The following items were not included in the construction cost estimates:

- 1. Unforeseen subsurface condition
- 2. Stream stabilization
- 3. Right-of-way acquisition including temporary construction easements
- 4. Accuracy of the survey
- 5. Location of existing utilities

Table C-2. Conceptual Construction Cost Estimate – Alternative 3 Modified

ITEM NO.	ITEM DESCRIPTION	UNITS	QUANTITY	UNIT COST	AMOUNT
GRAD	GRADING				
	Common Excavation	CY	16,943	\$41	\$694,663
	Borrow Embankment	CY	779	\$54	\$42,066
	Structural Excavation	CY	445	\$54	\$24,030
	Undercut	CY	13,822	\$68	\$939,896
	Subgrade Stabilization	CY	13,822	\$54	\$746,388
RDWY	ROADWAY				
	Full-Depth Asphalt Pavement (2" HMA Surface Course + 5" HMA Base Course + 6" GAB)	SY	18,658	\$63	\$1,175,468
	Asphalt Driveway (4" HMA + 4" GAB)	SY	620	\$41	\$25,431
	7" PCC Driveway	SY	351	\$94	\$32,970
	PCC Sidewalk (4" PCC + 4" GAB)	SY	5,393	\$68	\$366,747
	PCC Wheelchair Ramps 7" PCC	EA	32	\$1,000	\$32,000
	Shared Path (4" HMA + 4" GAB)		0	\$41	\$0
	Mountable Curb	CY	2	\$680	\$1,225
	Mountable Curb and Gutter	CY	870	\$340	\$295,644
	PCC Bus Stop Pads	CY	133	\$340	\$45,220
STWM	STORMWATER				
	Water Quality Catch Basin	EA	19	\$8,000	\$152,000
	Closed Storm Drain	LF	4,700	\$95	\$446,500
	Catch Basin	EA	54	\$5,000	\$270,000
	Outfall Improvements	EA	19	\$750	\$14,250
	Manhole	EA	46	\$5,000	\$230,000
	Culvert (Broad Branch)	EA	1	\$12,000	\$12,000
	Culvert (Driveway Crossing)	EA	3	\$2,000	\$6,000
	PCC Headwall	EA	19	\$1,500	\$28,500
	Rain Garden	SY	1,800	\$160	\$288,000
STRU	STRUCTURES				
	Coping Wall 8" to 18" Height	LF	172	\$40	\$6,880
	Retaining Wall 1-6" to 5' Height w/ Safety Railing	LF	1,328	\$700	\$929,600
	Retaining Wall 5' to 10' Height w/ Safety Railing	LF	3,408	\$1,000	\$3,408,000
	Retaining Wall 10' to 15' Height w/ Safety Railing	LF	1,395	\$1,400	\$1,953,000
	Retaining Wall 15' to 20' Height w/ Safety Railing	LF	378	2000	\$756,000
	Soapstone Creek Culvert Replacement Bridge	LS	1	\$405,000	\$405,000
	Stone Facing	SF	67,500	\$42	\$2,835,000
UTIL	UTILITIES				
	8" Watermain Replacement	LF	1,900	\$225	\$427,500
	12" Watermain Replacement	LF	3,000	\$250	\$750,000
	10" Sanitary Sewer Replacement	LF	2,500	\$225	\$562,500

► *Continued.*

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ITEM NO.	ITEM DESCRIPTION	UNITS	QUANTITY	UNIT COST	AMOUNT
	12" Sanitary Sewer Replacement	LF	750	\$250	\$187,500
	2" Gasline Replacement	LF	500	\$70	\$35,000
	4" Gasline Replacement	LF	2,300	\$90	\$207,000
	Street Light Upgrading	LF	9,000	25	\$225,000
	Pepco Relocations	LF	7,500	\$81	\$607,500
	Verizon Relocations	LF	7,500	\$10	\$75,000
	Comcast Relocations	LF	7,500	\$10	\$75,000
LASP	LANDSCAPING				
	Tree Removal				
	within Roadway & Shoulder	EA	290	\$340	\$98,600
	within Graded Slope	EA	89	340	\$30,260
	New Tree - 2" DBH	EA	260	340	\$88,400
	Tree Pruning	EA	50	95	\$4,750
	Seeding/Sodding	SY	11,508	7	\$80,557
PMSG	PAVEMENT MARKINGS AND SIGNING				
	Roadway Pavement Markings	LF	31,184	7	\$218,288
	Traffic Signs	SF	900	30	\$27,000
	Traffic Sign Supports	LF	1,064	30	\$31,920
	SUBTOTALS				
				SUBTOTAL	\$19,894,252
	Maintenance of Traffic (25% Of Subtotal)				\$4,973,563
	Mobilization (10% Of Subtotal)				\$1,989,425
	Erosion and Sediment Control (10% Of Subtotal)				\$1,989,425
				NEW SUBTOTAL	\$28,846,665
	Contingency (30% Of New Subtotal)				\$8,653,999
				TOTAL	\$37,500,664
	TOTAL ESTIMATED CONSTRUCTION COST				\$37,500,000