# Attachment 2 Cost Estimate Information

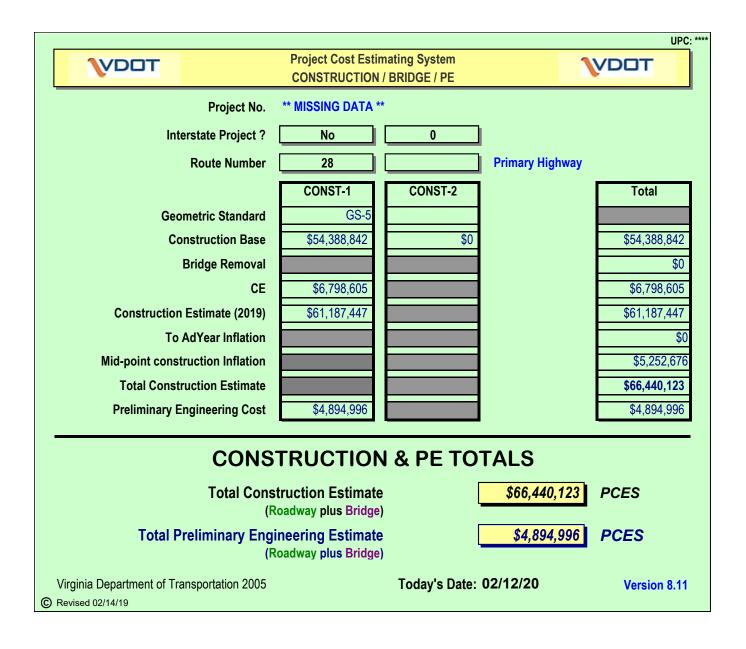
Note: This cost estimate is based on the Route 28 Environmental Study limits for Alternative 4 (from Liberia Avenue to North of Bull Run)

## **VDOT PCES Documentation Roadway and Bridge Estimates**

UPC: \*\*\*\*

VDOT	Project Cost Estimating System  Draft Estimate	VDOT					
ENTER PROJECT DATA REQUIRED TO COMPUTE A DRAFT ESTIMATE							
District:	NORTHERN VIRGINIA						
Project Number:	N/A						
UPC:	N/A						
Project Manager:	Parsons						
Project Description:	Route 28						

			UPC:	
VDOT Project (	Cost Estim	nating S	System	
SUMMARY	PAGE			
DISTRICT	NORTH	HERN VIRG	INIA	
PROJECT NUMBER		N/A		
CONSTRUCTION END YEAR	FY2025	UPC	N/A	
AD YEAR	FY2019	RATE OF INFLATION TO AD	N/A	
ESTIMATE YEAR	FY2019	INFLATION RATE	8.58%	
Date of previous estimate	N/A			
PROJECT MANAGER / DESIGNER		Parsons		
Preliminary Engineering Estimate:	PCE	S		
Construction Estimate:	PCE	PCES		
Right-of-Way Estimate:	MANU	JAL		
Utilities Estimate:	MANU	JAL		
DATE	2/12/2020			
THE FOLLOWING DATA WILL BE PROVIDED UPON WORKBOOK, WHICH IS ACCESSED BY SELECT				
Bridge PE ESTIMATE	\$0			
Bridge CN ESTIMATE	\$0			
Bridge RW ESTIMATE	\$0			
PRELIMINARY ENGINEERING ESTIMATE (excluding Bridge PE)	\$4,894,	,996		
CONSTRUCTION ESTIMATE (excluding Bridge CN)	\$66,440			
RIGHT-OF-WAY & UTILITIES ESTIMATE(excluding Bridge RW)	\$0			
TOTAL PROJECT ESTIMATE (excluding Bridge estimate)	\$71,335	5,119		
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UPC: **						
Project Cost E CONSTRUCTI		VDOT				
Project No.	** MISSING DATA **	k				
Interstate Project ?	No *					
Maintenance Project ?	No					
Route Number	28 *	Primary Highway				
Geometric Standard	GS-5	Urban Principal Arteri	al System			
Ad Date	2019	Design Year =	2041			
Design Year ADT	*	Project Terrain				
OR Current (Recent) ADT						
	*	Minimum				
Enter Design Speed (MPH) (30, 40, 45, 50 or 60)	50	Design Speed =				
Box Must Be Empty						
Box Must Be Empty		Number of	Length of Add'l.			
Project Length (mi.)	3.50	Additional Lanes:	Lanes (mi.):			
Total Length -Adding or Building Two Lanes (mi.)	*	None				
Total Length - Adding or Building Four Lanes (mi.)	3.50	+ Two Add'l. Lanes	3.50			
Total Length - Building Ramps and Loops (mi.)	*	None				
Shoulder or Curb & Gutter? (Select S or C&G)	C&G *	Enter Lane Width (ft)				
Median Type - Graded, Raised, or None ?	R	Normal Lane Width(ft)	12			
Number of Crossovers (Divided Highways ONLY)	*					
Length - Curb & Gutter - Left PLUS Right Side (ft.)	31,117	Bike/Ped Construction C				
Length - Sidewalk - Left PLUS Right Side (ft.)	15,560 *	Length (ft)	15,557			
Bike / Pedestrian Type	10' shared use	CE Cost	¢222.000			
Total Length - Raised Median (ft.)	15,315	PE Cost	\$332,999			
Number of Right Turn Lanes - Left PLUS Right Side	0 *	1.01.10.10.1	\$2,996,989			
Number of Left Turn Lanes - (Undivided Only)		illiated const.cost	NORTHERN VIRGINIA			
(Charles Chij)	*	120				
		Construction Costs				
Signals, ITS, Signs and Lighting Costs*	\$5,968,841	Base #1 (PCES)	\$54,388,842			
Cost of Large Drainage Structures	\$0	Base #2	\$0			
In-Plan Utility Costs*	\$0	Enter Const CE Cost	t >\$0			
Adjustment for Unusual Construction Costs	\$10,251,440	CE (12.5%)	\$6,798,605			
* Totals include district factor calculations		Estimate (2019)	\$61,187,447			
Additional (or Unusual) P. E. Costs						
Select % of PE to be performed by Consultants		PE Cost (PCES)	\$4,894,996			

Note: <u>Do Not Include Bridge P. E. Costs Here</u>

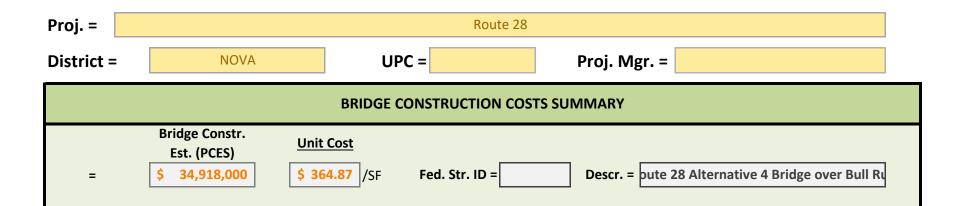
Roadway P. E. / Roadway Const. = 8.0%

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					UPC: ****
VDOT	-	Estimating System TION / BRIDGE / PE			VDOT
	Project No.	** MISSING DATA **	*	Select / Enter Data into	All Applicable White
	Interstate Project ?	,	*	Boxes (in order from	
	Route Number		*		
	Geometric Standard		*		
	Ad Date	2019		Design Year =	2041
	Design Year ADT OR	· ·	*	Project Terrain	
	Current (Recent) ADT		*	Minimum	
	Box Must Be Empty			Design Speed =	
	Box Must Be Empty				
	Box Must Be Empty				
	Project Length (mi.)	,	*	Number of Additional Lanes:	Length of Add'l. Lanes (mi.):
Total L	ength -Adding or Building Two Lanes (mi.)		*	None	
Total Le	ength - Adding or Building Four Lanes (mi.)	,	*	None	
Tota	l Length - Building <u>Ramps</u> and <u>Loops</u> (mi.)	,	*	None	
Sho	ulder or Curb & Gutter? (Select S or C&G)	,	*	Enter Lane Width (ft.)	
	Median Type - Graded, Raised, or None ?	,	*	Normal Lane Width (ft.)	0
Numb	er of Crossovers(Divided Highways ONLY)	,	*		
Length	- Curb & Gutter - Left PLUS Right Side (ft.)				
Le	ength - Sidewalk - Left PLUS Right Side (ft.)				
	Bike / Pedestrian Type	None	*		
	Total Length - Raised Median (ft.)	,	*		
Number	of Right Turn Lanes - Left PLUS Right Side	,	*		
Nun	mber of Left Turn Lanes - (Undivided Only)		*		
				Construction Costs	
				Base #2	\$0
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VDOT	Project Cost Estimating System Miscellaneous Cost Estimates	VDOT
	COST OF LARGE DRAINAGE STRUCTURES	
Job# Descript	ion	Cost ()
		\$0
A	ADJUSTMENT FOR UNUSUAL CONSTRUCTION COST	ī <b>S</b>
Туре	Description	Cost ()
	Unsuitable Material Excavation / Backfill	
	MOT / Concrete Barrier / Temporary Pavement	\$3,633,920
	Soundwalls	
	Retaining Walls / MSE Walls	
	Unusual Borrow / Fill (Anything over 3ft of cut/fill)	
	Wetlands / Stream relocation / Nutrient Credits	
	Stormwater Management Costs	\$6,056,520
	Unusual Risks / Contingency for unknowns	
	Railway Flagger	
	Pavement Resurfacing / Buildup	
	Impacted Streams	\$105,000
	Impacted Wetlands	\$6,000
	Impacted Haz Mat	\$450,000
		<b></b>
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		7
	1	7
	-	\$10,251,440
		Version 8.11

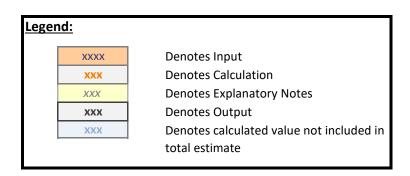
SIGNALS, ITS, SIGNS and LIGHTING COST WORKSHEET														
Stand Alone Traffic Proje	ct:	No	]											UPC: ****
SIGNALS	New/	Intersection		М	ajor			Cro	nss					
Permanent Signals	Mod.	Type	Direction		Direction	Lanes	Direction	_		Lanes	Poles	Detection	Pre-emption	Cost
Location/Description		Fa	Namble		Cavith		- Fast		10/224	1	Maat Ama	Lasm	Na	¢244 445
1 Route 28/Liberia A 2 Route 28/Manassa	Mod Mod	Four-way Four-way	North North	5 6	South South	6	East East	5 5	West West	3	Mast Arm Mast Arm	Loop Loop	No No	\$211,115 \$215,115
3 Route 28/Old Cent	New	Four-way	North	4	South	4	East	1	West	1	Mast Arm	Loop	No	\$175,115
4 Route 28/Browns	Mod	Four-way	North	4	South	5	East	1	West	3	Mast Arm	Loop	No	\$187,115
5 Route 28/Maplew		Four-way	North	4	South	4	East	1	West	1	Mast Arm	Loop	No	\$175,115
6 Route 28/Leland R		Offset	North	4	South	4	East	1	West	1	Mast Arm	Loop	No	\$188,853
7 Route 28/Yorkshir 8 Route 28/Patton L	Mod Mod	Four-way Tee	North North	3	South South	5 4	East East	0	West West	2	Mast Arm Mast Arm	Loop Loop	No No	\$183,115 \$159,836
9 Route 28/Orchard		Tee	North	5	South	5	East	4	West	0	Mast Arm	Loop	No	\$183,836
10								-						\$0
													Quantity	Cost
									Tempora	ry Sign	als - New Equipme	nt		\$0
										-	als - Modified Equi			\$0
		n/Description	ı										1 1	Cost
	Pedestr	ian Signals												\$120,000
SIGNAL WORK 2													ļ	
											Signa	ls Construc	tion Subtotal	\$1,799,214
<u>ITS</u>	Locatio	n/Description	1										,	Cost
ITS WORK 1														
2														
											П	ΓS Construc	tion Subtotal	\$0
MAJOR SIGN STRUCTUR	RES						Lighted							Extended
Type of Sign		Comment		1	Quantity	Unit Ea.	Y/N	1			Cost/Sig	n	1 1	Cost
2						Ea.								
3						Ea. Ea.								
5						Ea.								
6						Ea.								
/	Locatio	n/Description	1			Ea.		J						Cost
MISCELLANEOUS 1	Minor S													\$60,000
SIGN WORK 2														
											Sign	ns Construc	tion Subtotal	\$60,000
<u>LIGHTING</u>												No		
Continuous Roadw		ype of Lightin	na	Comme	ents				N	o. Lan	es	Number of Miles		Cost
1	Conven		-9						]	6	ĺ	3.31		\$3,114,820
	Froows	y Type of Ligi	hting	Comme	nte				N	o. Lan	ne .	Number of Miles		Cost
1	Treewa	y Type of Ligi	itilig		1110				] "	o. Luii		Of Millos		\$0
late velo en ve	lutavala	T			T		-4!		-			Number of		C4
Interchange 1	intercha	ange Type		1	Тур	e of Ligi	nung		1		'	Interchange	s 	Cost \$0
2														\$0
3				J					]					\$0
Miscellaneous	Locatio	n/Description	l										1 1	Cost
1 2														
											Lightii		tion Subtotal	\$3,114,820 <b>\$4,974,034</b>
									Dietwi-t f-		e applied when the tota		TION TOTAL	
PROJECT COMMEN	NTS								DISTINCT FACE	or will b	е аррией wifer ите (ота	i cost is passe	u to the const-1	WUINSTIE <del>G</del> L
Prepared by				Dat	te Prepared/N	Modified:								Version 8.11



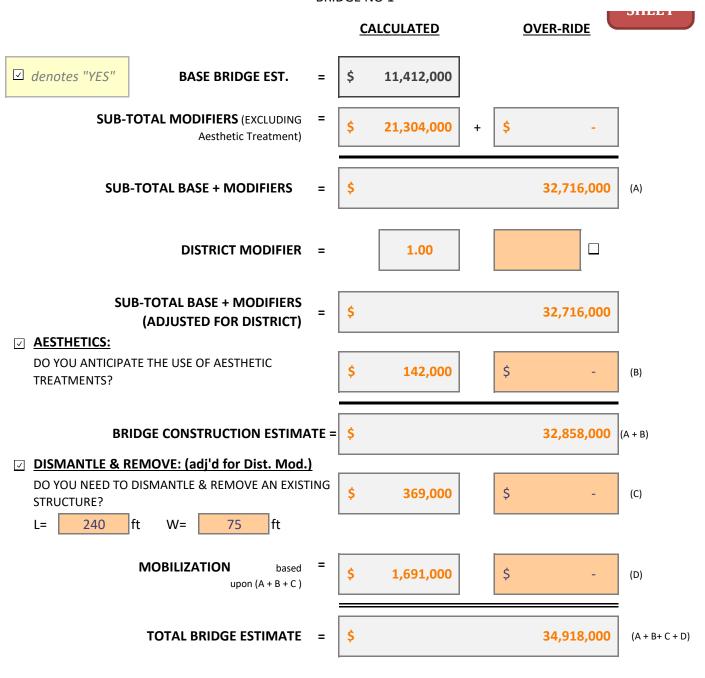
ease date 7/16

Bridge No. 1		
Bridge No.:	Fed. Str. ID:	roj. No.:
Description:	Route 28 Alternative 4 Bridge	over Bull Run
Length = 725 ft.	Width = 132 ft.	Skew = 0 deg

BRIDGE CONSTRUCTION AND PRELIMINARY ENGINEERING COSTS SUMMARY							
Estimate Created =		2/12/2020					
Base Bridge Estimate =	\$	11,412,000					
Sub-total Modifiers =	\$	21,304,000					
Sub-total Base + Modifiers =	\$	32,716,000	(A)				
Base + Mod. (Adj'd District Modifier) =	\$	32,716,000					
Aesthetics =	\$	142,000	(B)				
Bridge Construction Est. (PCES) =	\$	32,858,000	(A +B)				
Dismantle & Remove =	\$	369,000	(C)				
Mobilization =	\$	1,691,000	(D)				
Total Bridge Estimate (2020) =	\$	34,918,000	(A + B + C + D) USE				
			·				







#### **BRIDGE MODIFIERS**

		CA	LCULATED	OVER-RIDE		
<u>F(</u>	OUNDATIONS:					
D	O YOU ANTICIPATE ANY OF THE FOLLOWING:	\$	3,700,000	\$	-	
	Are pre-boring or rock excavation anticipated?	\$	-			
<b>✓</b>	Are drilled shafts or micropiles anticipated?	\$	3,700,000			

DO YOU ANTICIPATE ANY OF THE FOLLOWING ATTACHMENTS TO THE BRIDGE?	\$ -	\$	-
Gas lines	\$ -		
Water lines or Sewer lines	\$ -		
Telephone conduits	\$ -		
Please note: this does not include conduits located in the deck or parapet.			

	<b>REINFORCING:</b> (refer to Structure & Bridge II&M 8	1.5)	
	DO YOU ANTICIPATE THE USE OF CLASS III CRR IN THE DECK?	\$ -	\$ -
	TEMPORARY SHEETING/SHORING:		
	DO YOU ANTICIPATE ANY OF THE FOLLOWING:	\$ -	\$ -
	The use of temporary sheet piles? The use of temporary retaining structures? The use of temporary shoring?		
	COFFERDAMS:	\$ -	\$ -
	DO YOU ANTICIPATE THE USE OF COFFERDAMS?		Ψ
	If anticipated, how many?		
	CONSTRUCTION ACCESS:		
	DO YOU ANTICIPATE ANY OF THE FOLLOWING?	\$ -	\$ -
	The use of a causeway? A Construction Access bid item? A temporary work bridge?		
	<b>TOOTH EXPANSION JOINTS:</b> (refer to Vol. V Part 3)	; BEJ 6-10)	
	DO YOU ANTICIPATE THE USE OF A TOOTH EXPANSION JOINT? (Such as with a Virginia Abutment).	\$ -	\$ -
	If anticipated, how many?	]	
П	VIRGINIA ABUTMENTS: (refer to Vol. V Part 2; File	2 17-01.9)	
	DO YOU ANTICIPATE THE USE OF A VIRGINIA ABUTMENT?	\$ -	\$ -
	If anticipated, how many?		
<b>✓</b>	APPROACH SLABS: (refer to Vol. V Part 3; BAS)		
	DO YOU ANTICIPATE THE USE OF AN APPROACH SLAB?	\$ 165,000	\$ -
<b>V</b>	RAISED SIDEWALKS/MEDIANS:		
_	DO YOU ANTICIPATE ANY OF THE FOLLOWING:	\$ 16,651,000	\$ -
	Sidewalks on the bridge? Raised median on the bridge?		
	If yes, enter:		
	TOTAL width ALL SIDEWALKS & MEDIANS (in feet)		
	AVG. HEIGHT of sidewalk/medians (in inches)		

☐ DETOUR BRIDGE:							
DO YOU ANTICIPATE THE USE OF A TEMPORARY DETOUR BRIDGE?	\$ -	\$ -					
✓ STAGED BRIDGE CONSTRUCTION:							
DO YOU ANTICIPATE STAGED BRIDGE CONSTRUCTION?	\$ 615,000	\$ -					
✓ PEDESTRIAN FENCE: (refer to Vol. V Part 3; BPF-3)							
DO YOU ANTICIPATE PEDESTRIAN FENCE?	\$ 173,000	\$ -					
Anticipated Lenath = 1450							

☐ CURVED BRIDGE:										
	DO YOU ANTICIPATE CURVED GIRDERS?			\$	-		\$	-		
	PREFABRICATE	<u></u>								
	DO YOU ANTICIPATE THE USE OF PREFABRICATED TRUSS(ES)?			\$	-		\$	-		
	ASPECT RATIO > 1.5:									
	MODIFIER NOT RI RATIO (W/L) OF T	SPECT	\$	-						
OTHER ITEMS NOT LISTED ABOVE:										
	DO YOU ANTICIPA NOT LISTED ABOV	ATE OTHER NON-STANDARD ITEI /E?	MS,							
	Description:	Roadway Approaches (Bridg projects)	e only							
	Description:									
	Description:									
	Description:									
						-				
		SUB-TOTAL MODIFIERS	=	\$	21,304,000		\$	-		
<u>NOTE:</u> The following items and considerations are not considered:										
		s (e.g. pump stations)	oric Structures							
				rvironmental Factors fficult site access ccelerated Bridge Construction Methods						
	Roadway lightin Navigation light									
				Crash Walls						
	Fender System			Pier Protection Systems						
	This list is not meant to be all-inclusive. If you anticipate an item not listed here-in, the PCES estimate should be adjusted accordingly with use of the OTHER ITEMS below.									

### **Right-of-Way Estimate**

#### Alternative 4

Impact Type	Tallied Cost
No Take	\$0.00
Building Take	\$88,237,700.00
Percent Take	\$11,920,003.28
	\$100,157,703.28
FINAL TOTAL	\$144,276,553.28

### **Utilities Estimate**

#### Alternative 4

#### Utilities

Number	<b>Units</b>	<b>Price</b>	<b>Units</b>	<b>Total</b>
3.5	mi	\$3,500,000	per mile	\$12,250,000
4	poles	\$1,000,000	per pole	\$4,000,000
			Total	\$16,250,000