

Unit Cost and Quantity Summary - Highway, BRT and CRT

I-287 / Tappan Zee Bridge Corridor Project
DEIS Cost Estimates
18 April 2011

Westchester Corridor

Rockland Corridor

Elements	Unit Cost (2011 \$)	Unit	Busway				HOV / HOT			
			Initial Quantity	Initial Subtotal	Final Quantity	Final Subtotal	Initial Quantity	Initial Subtotal	Final Quantity	Final Subtotal
THRUWAY										
Clear and Grub										
<i>Clear and Grub</i>	\$ 8,172	acre	80	\$ 656,612			149	\$ 1,219,421		
Earthwork										
<i>Cut to Fill - Average Soils (short cycle)</i>	\$ 15	cy	82,407	\$ 1,227,870			296,759	\$ 4,421,713		
<i>Cut to Fill - Average Soils (long cycle)</i>	\$ 18	cy	82,407	\$ 1,446,250			296,759	\$ 5,208,125		
<i>Cut to Dispose - Haul offsite</i>	\$ 23	cy								
<i>Fill - From Cut</i>	\$ 6	cy	318,519	\$ 1,911,111			664,815	\$ 3,988,889		
<i>Fill - Import</i>	\$ 25	cy	153,704	\$ 3,804,167			71,296	\$ 1,764,583		
Rock Excavation										
<i>Excavate and Remove Rock - Rippling</i>	\$ 361	cy								
<i>Excavate and Remove Rock - Drill & Blast</i>	\$ 614	cy	170,370	\$ 104,626,148			705,556	\$ 433,288,722		
Vegetated Rock Slope										
<i>Vegetated Rock Slope</i>	\$ 13	sf	6,784	\$ 91,245			4,187,400	\$ 56,320,530		
Retaining Wall - for Retained Fill										
<i>Retained fill: < '6</i>	\$ 1,378	lf					1,650	\$ 2,274,179		
<i>Retained fill: 6' to 15'</i>	\$ 3,333	lf					2,750	\$ 9,166,438		
<i>Retained fill: 16' to 25'</i>	\$ 6,851	lf					1,850	\$ 12,674,350		
<i>Retained fill: > 25'</i>	\$ 12,816	lf					750	\$ 9,612,000		
Retaining Wall - for Retained Cut										
<i>Retained cut: < '6</i>	\$ 3,486	lf					6,360	\$ 22,170,960		
<i>Retained cut: 6' to 15'</i>	\$ 8,123	lf					3,900	\$ 31,679,700		
<i>Retained cut: 16' to 25'</i>	\$ 15,814	lf					1,750	\$ 27,674,500		
<i>Retained cut: > 25'</i>	\$ 23,528	lf					3,600	\$ 84,700,800		
<i>Flood Bound Wall</i>	\$ 7,900	lf								
Noise Walls										
<i>Noise Walls</i>	\$ 1,759	lf	200	\$ 351,800			9,875	\$ 17,370,125		
<i>Remove existing noise walls</i>		lf					8,300	\$ -		
Bridge - with Concrete Superstructure	\$ 285									
<i>New Bridge - xx over I-287</i>	\$ 285	sf	132,714	\$ 37,823,490	110,546	\$ 31,505,610	312,780	\$ 89,142,300		
<i>New Bridge - I-287 Over xx</i>	\$ 285	sf	91,742	\$ 26,146,470	25,400	\$ 7,239,000	149,736	\$ 42,674,760		
<i>Temporary Bridges</i>	\$ 143	sf	132,714	\$ 18,911,745	110,546	\$ 15,752,805	312,780	\$ 44,571,150		
<i>Existing Bridge Demo</i>	\$ 60	sf	106,171	\$ 6,385,136	88,437	\$ 5,318,589	250,224	\$ 15,048,471		
<i>Temp Bridge Demo</i>	\$ 60	sf	132,714	\$ 7,981,420	110,546	\$ 6,648,236	312,780	\$ 18,810,589		
Thruway Pavement & Finishes - New	\$ 16	sf	904,319	\$ 14,550,493			4,504,018	\$ 72,469,650		
<i>1.5" HMA Wearing Course / Top Course</i>	\$ 126.00	ton								
<i>2" Binder Course</i>	\$ 104.00	ton								
<i>4.5" Base Course</i>	\$ 93.00	ton								
<i>Subbase</i>	\$ 53.00	cy								
<i>Fine Grade</i>	\$ 0.64	sf								
<i>Lane Markings</i>	\$ 2.10	lf								
<i>Signage</i>	\$ 188.00	lf								
Thruway Pavement & Finishes - Mill / Pave	\$ 9	sf	8,136,962	\$ 69,164,177			7,064,404	\$ 60,047,434		
<i>1.5" HMA Wearing Course / Top Course</i>	\$ 126.00	ton								
<i>2" Binder Course</i>	\$ 104.00	ton								
<i>4.5" Base Course</i>	\$ 93.00	ton								
<i>Subbase</i>	\$ 53.00	cy								
<i>Cold Mill</i>	\$ 1.52	sf								
<i>Lane Markings</i>	\$ 2.10	lf								
<i>Signage</i>	\$ 188.00	lf								
Interchange Ramps - includes earthwork, pave, a										
<i>Ramp: < 6'</i>	\$ 96.17	sf	56,886	\$ 5,470,727			91,543	\$ 8,803,690		
<i>Ramp: 6' to 15'</i>	\$ 132.95	sf	132,623	\$ 17,632,228			640,480	\$ 85,151,816		
<i>Ramp: 16' to 25'</i>	\$ 188.40	sf	284,142	\$ 53,532,353			319,632	\$ 60,218,669		
<i>Ramp: > 25'</i>	\$ 288.75	sf								
<i>Additional Ramp Demolitions</i>	\$ 7.00	sf							87,500	\$ 612,500
STATE AND LOCAL ROADS										
Earthwork										
Local Road Pavement & Finishes	\$ 35	sf	238,794	\$ 8,357,790	695,870	\$ 24,355,450	1,747,159	\$ 61,150,565		
<i>1.5" HMA Wearing Course / Top Course</i>	\$ 5	sf								
<i>2" Binder Course</i>	\$ 2	sf								
<i>3" Base Course Lift - Crushed Stone</i>	\$ 52	cy								
<i>1" Subbase - Drain Rock</i>	\$ 55	cy								
<i>Sidewalk - Concrete CIP</i>	\$ 11	sf								
<i>Edge Drain</i>	\$ 65	lf								
<i>Fine Grade</i>	\$ 2	sf								
<i>Striping</i>	\$ 1	lf								
<i>Lighting</i>	\$ 50	lf								
<i>Signage</i>	\$ 5	lf								
PEDESTRIAN FACILITIES										
Tool Booth (allowance)	\$ 60,000,000	ls								
Pedestrian Facilities (allowance)	\$ 25,000,000	ls	1	\$ 12,500,000	1	\$ 12,500,000	1	\$ 25,000,000		
DRAINAGE										
Drainage										
<i>Water Quality Treatment Areas</i>	\$ 13	sf			565,625	\$ 7,172,125			524,375	\$ 6,649,075
<i>Storm Drainage- RCP 48"</i>	\$ 388	lf	87,000	\$ 33,756,000	197,000	\$ 76,436,000	212,000	\$ 82,256,000	190,000	\$ 73,720,000
<i>Drainage (allowance)</i>	\$ 10,000,000	ls								
UTILITIES										
Electric - Duct Bank	\$ 195	lf	26,000	\$ 5,070,000	73,000	\$ 14,235,000	61,000	\$ 11,895,000	74,000	\$ 14,430,000
Fiber - Duct Bank	\$ 550	lf	84,480	\$ 46,464,000	84,480	\$ 46,464,000	84,480	\$ 46,464,000	84,480	\$ 46,464,000
Gas - Welded Steel Pipe 8"	\$ 284	lf	21,000	\$ 5,964,000	45,000	\$ 12,780,000	45,000	\$ 12,780,000	40,000	\$ 11,360,000
Telephone / Info Cable - Duct Bank	\$ 185	lf	19,000	\$ 3,515,000	56,000	\$ 10,360,000	39,000	\$ 7,215,000	51,000	\$ 9,435,000
Sewer - RCP 30"	\$ 277	lf	13,000	\$ 3,601,000	46,000	\$ 12,742,000	51,000	\$ 14,127,000	40,000	\$ 11,080,000
Cable - Duct Bank	\$ 185	lf	7,000	\$ 1,295,000	21,000	\$ 3,885,000	15,000	\$ 2,775,000	13,000	\$ 2,405,000
Water - Ductile Iron 12"	\$ 202	lf	17,000	\$ 3,434,000	55,000	\$ 11,110,000	47,000	\$ 9,494,000	47,000	\$ 9,494,000
General Relocate (allowance)	\$ 10,000,000	ls								
BUS RAPID TRANSIT										
Viaduct - Single Lane		lf								
<i>CRT Viaduct: < 20'</i>	\$ 7,963	lf								
<i>CRT Viaduct: 20' to 30'</i>	\$ 10,036	lf								
<i>CRT Viaduct: 30' to 40'</i>	\$ 10,246	lf								
<i>CRT Viaduct: 40' to 50'</i>	\$ 10,456	lf								
<i>CRT Viaduct: + 50'</i>	\$ 14,295	lf								
Viaduct - Two Lane										
<i>CRT Viaduct: < 20'</i>	\$ 9,579	lf								
<i>CRT Viaduct: 20' to 30'</i>	\$ 11,652	lf								
<i>CRT Viaduct: 30' to 40'</i>	\$ 11,862	lf								
<i>CRT Viaduct: 40' to 50'</i>	\$ 12,072	lf								
<i>CRT Viaduct: + 50'</i>	\$ 15,912	lf								
Clear and Grub										
<i>Clear and Grub</i>	\$ 8,172	acre			69	\$ 562,810				
Earthwork										
<i>Cut to Fill - Average Soils (short cycle)</i>	\$ 15	cy								
<i>Cut to Fill - Average Soils (long cycle)</i>	\$ 18	cy								
<i>Cut to Dispose - Haul offsite</i>	\$ 23	cy								
<i>Fill - From Cut</i>	\$ 6	cy								
<i>Fill - Import</i>	\$ 25	cy								
Rock Excavation										
<i>Excavate and Remove Rock - Rippling</i>	\$ 361	cy								
<i>Excavate and Remove Rock - Drill & Blast</i>	\$ 614	cy			329,167	\$ 202,144,542				
Vegetated Rock Slope										
<i>Vegetated Rock Slope</i>	\$ 13	sf								
Retaining Wall - for Retained Fill										
<i>Retained fill: < '6</i>	\$ 1,378	lf			3,700	\$ 5,099,673				
<i>Retained fill: 6' to 15'</i>	\$ 3,333	lf			9,500	\$ 31,665,875				
<i>Retained fill: 16' to 25'</i>	\$ 6,851	lf			8,900	\$ 60,973,900				
<i>Retained fill: > 25'</i>	\$ 12,816	lf			2,100	\$ 26,913,600				
Retaining Wall - for Retained Cut										
<i>Retained cut: < '6</i>	\$ 3,486	lf			3,400	\$ 11,852,400				
<i>Retained cut: 6' to 15'</i>	\$ 8,123	lf			16,000	\$ 129,968,000				
<i>Retained cut: 16' to 25'</i>	\$ 15,814	lf			8,200	\$ 129,674,800				

Unit Cost and Quantity Summary - Highway, BRT and CRT

I-287 / Tappan Zee Bridge Corridor Project
DEIS Cost Estimates
18 April 2011

Westchester Corridor

Rockland Corridor

Elements	Unit Cost (2011 \$)	Unit	Busway				HOV / HOT			
			Initial Quantity	Initial Subtotal	Final Quantity	Final Subtotal	Initial Quantity	Initial Subtotal	Final Quantity	Final Subtotal
Retained cut: > 25'	\$ 23,528	lf			7,100	\$ 167,048,800				
Flood Bound Wall	\$ 7,900	lf								
Interchange Ramps - includes earthwork, pave										
Ramp: < 6'	\$ 96.17	sf			31,176	\$ 2,998,196				
Ramp: 6' to 15'	\$ 132.95	sf			336,342	\$ 44,716,669				
Ramp: 16' to 25'	\$ 188.40	sf			368,095	\$ 69,349,098				
Ramp: > 25'	\$ 288.75	sf								
Additional Ramp Demolitions	\$ 7.00	sf			87,500	\$ 612,500				
Tunnels - Cut / Cover	\$ 35,000	lf			1,400	\$ 49,000,000				
Texas T Ramps - Retained Fill with Pavements	\$ 141	sf							512,165	\$ 72,215,265
Texas T - Over Bridges	\$ 285	sf							43,722	\$ 12,460,770
Texas T - At grade Pavements	\$ 16	sf							639,972	\$ 10,239,552
Texas T - Station Access	\$ 26	sf							47,320	\$ 1,244,516
Stations (allowance)	\$ 6,000,000	ea			6	\$ 36,000,000			6	\$ 36,000,000
At Grade Bus Only Stations (allowance)	\$ 3,000,000	ls								
Depots (allowance)	\$ 10,000,000	ea			1	\$ 10,000,000			1	\$ 10,000,000
Busway Pavement & Finishes	\$ 16	sf			3,303,500	\$ 52,856,000				
Intelligent Transportation Systems (ITS)	\$ 50,000,000	LS			1	\$ 50,000,000			1	\$ 50,000,000
Bridges	\$ 285				104,929	\$ 29,904,765				
COMMUTER RAIL TRANSIT										
Earthwork										
CRT in Retained Cut - no track										
CRT in retained cut: < 6'	\$ 1,378	lf			10,400	\$ 14,334,216				
CRT in retained cut: 6' to 15'	\$ 3,333	lf			17,000	\$ 56,665,250				
CRT in retained cut: 16' to 25'	\$ 6,851	lf			300	\$ 2,055,300			31,300	\$ 214,436,300
CRT in retained cut: + 25'	\$ 12,816	lf			300	\$ 3,844,800			1,350	\$ 17,301,600
CRT on Retained Fill - no track										
CRT on retained fill: < 6'	\$ 3,486	lf			8,200	\$ 28,585,200				
CRT on retained fill: 6' to 15'	\$ 8,123	lf			12,400	\$ 100,725,200			21,050	\$ 170,989,150
CRT on retained fill: 16' to 25'	\$ 15,814	lf			2,180	\$ 34,474,520			5,200	\$ 82,232,800
CRT on retained fill: + 25'	\$ 23,528	lf			2,180	\$ 51,291,040				
Viaduct	\$ 12,215	lf			11,485	\$ 140,293,869			11,485	\$ 140,293,869
CRT Viaduct: < 20'	\$ 9,579	lf								
CRT Viaduct: 20' to 30'	\$ 11,652	lf								
CRT Viaduct: 30' to 40'	\$ 11,862	lf								
CRT Viaduct: 40' to 50'	\$ 12,072	lf								
CRT Viaduct: + 50'	\$ 15,912	lf								
CRT Bridges	\$ 285	sf			102,490	\$ 29,209,650			167,949	\$ 47,865,465
Tunnels - Cut / Cover	\$ 35,000	lf			5,500	\$ 192,500,000			5,500	\$ 192,500,000
Tunnels - TBM	\$ 22,000	lf			7,500	\$ 165,000,000			7,500	\$ 165,000,000
Tunnels - TBM	\$ 22,000	lf								
Stations - At Grade (allowance)	\$ 5,000,000	ea			3	\$ 15,000,000			3	\$ 15,000,000
Stations - Elevated (allowance)	\$ 8,000,000	ea			1	\$ 8,000,000			1	\$ 8,000,000
Maintenance Facility (allowance)	\$ 10,000,000	ls			1	\$ 10,000,000			1	\$ 10,000,000
Track Infrastructure	\$ 1,090	lf			76,000	\$ 82,840,000			76,000	\$ 82,840,000
Direct Fixation	\$ 1,333	lf								
Ballasted	\$ 847	lf								
Signal Systems	\$ 500	lf			76,000	\$ 38,000,000			76,000	\$ 38,000,000
Substations	\$ 2,000,000	ea			11	\$ 22,000,000			11	\$ 22,000,000
Vent Buildings	\$ 2,000,000	ea			3	\$ 6,000,000			3	\$ 6,000,000
Access Shafts	\$ 2,000,000	ea			2	\$ 4,000,000			2	\$ 4,000,000
Subtotal Construction Cost				\$ 495,670,231		\$ 2,414,664,488		\$ 1,493,630,129		\$ 1,594,268,862