

# Viaduct Cost Estimate

## Deck

### Concrete

Type:	4ksi 6in thick concrete deck	
Unit	1	Cubic Yard
Cost/unit	\$200	Cubic yard
	\$33.33	1 ft x 1 ft x .71 ft
	\$488.89	Linear foot of deck
Total per 100ft		\$ 16,296.30

### Rebar

Type	60ksi #5 bars 13" both direction	
Unit	6	feet
Cost/unit	\$10.93	\$ 182.21
Spacing	18	18
Width of deck	44	feet
# of rebar (long)	29	(100ft)
Rows	1	\$ 80.17
# of rebar (width)	67	(44 ft)
Cost 1	(44 ft)	\$ 5,344.83
Cost 2	(100 ft)	\$ 5,344.83
Total per 100ft		\$ 10,689.65

### Floor Beams

Type:	W24x176	
Unit:	1	foot
Cost/unit	\$ 0.60	cents/lb
Weight	176	lb
Spacing	2.5	feet
Length	44	feet
1 foot cost	\$ 105.60	
1 beam cost	\$ 4,646.40	
# beams per 100ft	40	
Total per 100ft		\$ 185,856.00

### Cost per mile for Decks

Type		
Passenger	\$	212,841.95
Freight	\$	212,841.95
Motorway	\$	26,985.95
Total per section:	\$	452,669.85
Total per mile:		\$5,975,242.01

## Columns

### Column

Column:	Square concrete	
Width:	36	inches
Height:	50	feet
Unit	\$ 4.25	per cubic foot
Volume:	448.2	Cubic feet
Total:		\$ 1,904.85

### Footing

Column:	Spread footing	
Width:	108	inches
Height:	2	feet
Unit	\$ 4.25	per cubic foot
Volume:	162	Cubic feet
Total:		\$ 688.50

### Columns (top 30 feet)

Type:	16x #9 bars	
Unit:	3.4	lb/ft
Cost/unit:	\$ 0.60	per lb
Length:	30	ft
Weight/bar:	102	lb
All bars:	1632	lb
Total:		\$ 979.20

### Ties (Top 20 feet)

Type:	#3 bars, 1.5" spacing	
Unit:	0.376	lb/ft
Cost/unit:	\$ 0.60	per lb
Length:	30	ft
Weight/ba	11.28	lb
All bars:	225.6	lb
Total:		\$ 135.36

### Foundation

Type:	32x #10 bars	
Unit:	4.303	lb/ft
Cost/unit	\$ 0.60	per lb
Length:	103	inches
Weight/bar:	36.93408	lb
All bars:	1181.891	lb
Total:		\$ 709.13

### Columns (Bottom 20 feet)

Type:	16x #10 bars	
Unit:	4.303	lb/ft
Cost/unit:	\$ 0.60	per lb
Length:	20	ft
Weight/bar:	86.06	lb
All bars:	1376.96	lb
Total:		\$ 826.18

### Ties (Bottom 20 feet)

Type:	#4 bars, 1.5" spacing	
Unit:	0.668	lb/ft
Cost/unit:	\$ 0.60	per lb
Length:	20	ft
Weight/ba	13.36	lb
All bars:	200.4	lb
Total:		\$ 120.24

### Cost per mile for Columns

Columns per section		4
Column	Concrete	\$ 1,904.85
	Footing	\$ 688.50
	Reinforcement	\$ 1,805.38
	Ties	\$ 255.60
	Foundation	\$ 709.13
Total per section		\$ 42,907.68
Total per mile:		\$ 566,381

## Beams

### Beams

Cost per unit	50-60c per pound	
Cost per s.f.	\$12.5 per square foot	
Cost per foot	\$ 87.00 W14X145	\$ 8,700.00 100ft span
	\$ 126.60 W14X211	\$ 12,660.00 100ft span
	\$ 175.20 W14X292	\$ 17,520.00 100ft span
Production Cost breakdown	Hot rolling mill	Between \$250,000 and \$10,000,000
	Alternate: Extrusion press Dies	\$400,000 starting \$2,000 each
Notes	width (flange to flange)X(Lb/ft)	Cost of rolling mill depends on what kind of output we need. More output = less portable

### Cost per mile for Beams

Beam type	Length	# beams	Section cost
W14X145	100	22	\$ 191,400.00
W14X211	100	18	\$ 227,880.00
W14X292	100	6	\$ 105,120.00
Total per section:			\$ 524,400.00
Total per mile:			\$4,614,720.00

**Total Cost \$ 17,500,000.00**