

Washington Christian Academy

Detailed Structural System Estimate

A structural system estimate prepared by Casey Mowery

Substructure													
Concrete Footings & Piers													
Item	Designation	Qty.	Width (ft.)	Thickness (ft.)	Length (ft.)	Volume (ft ³)	Volume (CY)	Material	Labor	Equipment	Total (per CY)	Cost	
Wall Footing 1	WF1	n/a	4.0	1.33	737	3920.8	145.2	123.00	51.50	0.31	174.80	\$ 25,383.81	
Wall Footing 2	WF2	n/a	2.0	1.0	288	576.0	21.3	133.00	85.50	0.51	219.01	\$ 4,672.21	
Wall Footing 3	WF3	n/a	3.0	1.0	530	1590.0	58.9	128.00	68.50	0.41	196.91	\$ 11,595.81	
Wall Footing 4	WF4	n/a	2.5	1.0	316	790.0	29.3	130.50	77.00	0.46	207.95	\$ 6,084.46	
Column 1	Footing	2	8.5	1.33	8.5	192.2	7.1	192.00	95.50	0.57	288.07	\$ 2,050.47	
	Pier	2	1.66	3.0	1.66	16.5	0.6	128.00	68.50	0.41	196.91	\$ 120.58	
Column 2	Footing	2	8.5	1.33	8.5	192.2	7.1	192.00	95.50	0.57	288.07	\$ 2,050.47	
	Pier	2	1.66	3.0	1.66	16.5	0.6	128.00	68.50	0.41	196.91	\$ 120.58	
Column 3	Footing	2	7.66	1.16	7.66	136.1	5.0	192.00	95.50	0.57	288.07	\$ 1,452.38	
	Pier	2	1.66	3.0	1.66	16.5	0.6	128.00	68.50	0.41	196.91	\$ 120.58	
Column 4	Footing	2	8.50	1.16	8.5	167.6	6.2	192.00	95.50	0.57	288.07	\$ 1,788.38	
	Pier	2	1.66	3.0	1.66	16.5	0.6	128.00	68.50	0.41	196.91	\$ 120.58	
Column 5	Footing	3	5.0	1.0	5.0	75.0	2.8	192.00	95.50	0.57	288.07	\$ 800.19	
	Pier	3	1.66	2.0	1.66	16.5	0.6	128.00	68.50	0.41	196.91	\$ 120.58	
Column 6	Footing	2	5.0	1.0	5.0	50.0	1.9	173.00	146.00	0.88	319.88	\$ 592.37	
	Pier	2	1.66	2.0	1.66	11.0	0.4	128.00	68.50	0.41	196.91	\$ 80.39	
							288.3				\$ 57,153.84		
							10% WF	28.83			10% WF	\$ 5,715.38	
Total cubic yards							317			Total cost	\$ 62,869		

Superstructure													
Concrete Slabs													
Item	Designation	Qty.	Size (sf)	Thickness (in.)	Thickness (ft.)	Volume (ft ³)	Volume (CY)	Material	Labor	Equipment	Cost (per CY/sf)	Cost	
Slab on Grade	n/a	1	27,220	5	0.4167	11342.6	420.1	119.50	45.50	0.34	165.34	\$ 69,458.56	
2nd Floor Slab	n/a	1	20,200	3	0.25	5050.0	187.0	1.03	0.73	0.28	2.04	\$ 41,208.00	
3rd Floor Slab	n/a	1	20,200	3	0.25	5050.0	187.0	1.03	0.73	0.28	2.04	\$ 41,208.00	
							794.2				\$ 151,874.56		
							10% WF	79.42			10% WF	\$ 15,187.46	
Total cubic yards							874			Total cost	\$ 167,062		

Welded Wire Fabric												
Item	Designation	Qty.	Size (sf)	Size (csf)	Thickness (ft.)	Volume (ft ³)	Volume (CY)	Material	Labor	Equipment	Cost (per csf)	Cost
2nd Floor Slab	n/a	1	20,200	202	n/a	n/a	n/a	13.25	19.65	n/a	32.90	\$ 6,645.80
3rd Floor Slab	n/a	1	20,200	202	n/a	n/a	n/a	13.25	19.65	n/a	32.90	\$ 6,645.80
				Size (csf)	404						\$ 13,291.60	
				10% WF	40.4					10% WF	\$ 1,329.16	
Total hundreds sf				444.4							Total cost	\$ 14,621

Steel Beams												
Item	Designation	Qty.	Avg. L (lf)	Total Length (lf)	Weight (plf)	Weight (lbs)	Weight (tons)	Material	Labor	Equipment	Cost (per lf)	Cost
W 8x10	n/a	12	8	96	10	960	0.48	12.10	3.91	2.61	18.62	\$ 1,787.52
W 8x18	n/a	24	8	192	18	3456	1.73	21.83	3.91	2.61	28.34	\$ 5,441.28
W 8x21	n/a	12	10	120	21	2520	1.26	25.50	3.91	2.61	32.02	\$ 3,842.40
W 10x15	n/a	30	6	180	15	2700	1.35	18.15	3.91	2.61	24.67	\$ 4,440.60

W 14x22	n/a	33	18	594	22	13068	6.53	29.00	2.26	1.50	32.76	\$	19,459.44	
W 14x30	n/a	6	18	108	30	3240	1.62	36.50	2.60	1.74	40.84	\$	4,410.72	
W 16x31	n/a	18	25	450	31	13950	6.98	37.50	2.60	1.74	41.84	\$	18,828.00	
W 16x50	n/a	6	20	120	50	6000	3.00	60.50	2.93	1.96	65.39	\$	7,846.80	
W 16x57	n/a	3	26	78	57	4446	2.22	70.75	3.01	2.01	75.77	\$	5,910.06	
W 16x67	n/a	6	26	156	67	10452	5.23	81.00	3.08	2.06	86.14	\$	13,437.84	
W 18x35	n/a	24	30	720	35	25200	12.60	42.50	3.53	1.77	47.80	\$	34,416.00	
W 18x97	n/a	9	29.33	264	97	25608	12.80	116.00	3.77	1.89	121.66	\$	32,118.24	
Total tonnage							55.80					Total cost	\$	151,939
Steel Columns														
Item	Designation	Qty.	Avg. L (lf)	Total Length (lf)	Weight (plf)	Weight (lbs)	Weight (tons)	Material	Labor	Equipment	Cost (ea/lf)		Cost	
HSS 8x8x5/8	C1	2	42	84	59.11	4965.24	2.48	645.00	47.00	31.50	723.5	\$	4,341.00	
HSS 8x8x1/2	C2	2	42	84	48.72	4092.48	2.05	645.00	47.00	31.50	723.5	\$	4,341.00	
HSS 8x8x3/8	C3	2	42	84	37.61	3159.24	1.58	645.00	47.00	31.50	723.5	\$	4,341.00	
HSS 8x8x3/8	C4	2	42	84	37.61	3159.24	1.58	645.00	47.00	31.50	723.5	\$	4,341.00	
HSS 8x8x3/8	C5	3	14	42	37.61	1579.62	0.79	645.00	47.00	31.50	723.5	\$	2,170.50	
W 10x45	C6	2	14	28	45	1260	0.63	59.50	4.26	2.85	66.61	\$	1,865.08	
Total tonnage							9.11					Total cost	\$	21,400
K Series Joists														
Item	Designation	Qty.	Avg. Span (lf)	Total Length (lf)	Weight (plf)	Weight (lbs)	Weight (tons)	Material	Labor	Equipment	Cost (per lf)		Cost	
2.5K1	n/a	36	6.0	216	5	1080	0.54	3.85	2.83	1.53	8.21	\$	1,773.36	
10K1	n/a	354	37.3	13212	5	66060	33.03	3.78	2.83	1.53	8.14	\$	107,545.68	
14K1	n/a	105	23.9	2514	5.2	13072.8	6.54	4.53	2.26	1.22	8.01	\$	20,137.14	
16K2	n/a	60	6.8	408	5.5	2244	1.12	4.65	2.07	1.12	7.85	\$	3,202.80	
16K3	n/a	141	22.9	3234	6.3	20374.2	10.19	4.76	1.88	1.02	7.66	\$	24,772.44	
18K3	n/a	63	52.0	3276	6.8	22276.8	11.14	5.50	1.76	0.96	8.30	\$	27,190.80	
18K4	n/a	39	26.0	1014	7.2	7300.8	3.65	5.80	1.70	0.92	8.42	\$	8,537.88	
18K6	n/a	294	21.8	6408	8.5	54468	27.23	6.10	1.88	1.02	9.00	\$	57,672.00	
20K7	n/a	156	26.0	4056	9.3	37720.8	18.86	6.10	1.70	0.92	8.72	\$	35,368.32	
22K7	n/a	24	20.0	480	9.7	4656	2.33	7.45	1.70	0.92	10.10	\$	4,848.00	
Total tonnage							114.63					Total cost	\$	291,048
CMU Block Walls														
Item	Designation	Qty.	Length (lf)	5% Reduction	Height (ft.)	Size (sf)	Weight (tons)	Material	Labor	Equipment	Cost (per sf)		Cost	
8" CMU Block	n/a	n/a	1570	1413	42	59346	n/a	2.27	3.62	n/a	5.89	\$	349,547.94	
											10 % WF	\$	34,954.79	
											Total cost	\$	384,503	
Steel Decking														
Item	Designation	Qty.	Size (sf)	Thickness (in.)	Thickness (ft.)	Volume (ft ³)	Volume (CY)	Material	Labor	Equipment	Cost (per sf)		Cost	
Floor 2 Decking	n/a	n/a	20,200	9/16	n/a	n/a	n/a	1.07	0.35	0.03	1.45	\$	29,290.00	
Floor 3 Decking	n/a	n/a	20,200	9/16	n/a	n/a	n/a	1.07	0.35	0.03	1.45	\$	29,290.00	
Roof Decking	n/a	n/a	27,220	1.5	n/a	n/a	n/a	1.51	0.33	0.03	1.87	\$	50,901.40	
											Total	\$	109,481	
											Initial Total	\$	1,202,923	
											Location Factor		0.92	
											Grand Total	\$	1,106,689	