

RESIDENCE INN

BY MARRIOTT

2345 MILL RD, ALEXANDRIA, VA

JULIA E. PHILLIPS

CONSTRUCTION MANAGEMENT



Appendix B: Project Cost Evaluation

The detailed D4Cost 2002 Estimate and R.S. Means sheets can be found on the following pages.

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Inesday, October 3, 2007

Estimate of Probable Cost

Residence Inn by Marriott - Mar 2007 - VA - Alexandria

Prepared By:	Julia Phillips Residence Inn by Marriott 2345 Mill Rd. Alexandria, VA Fax:	Prepared For:	Dr. Horman Construction Management Penn State University Fax:
Building Sq. Size:	189620	Site Sq. Size:	17936
Bid Date:	5/6/2006	Building use:	Hotel/Motel
No. of floors:	15	Foundation:	MAT
No. of buildings:	1	Exterior Walls:	CON
Project Height:	171.5	Interior Walls:	DRY
1st Floor Height:		Roof Type:	BUP
1st Floor Size:	9500	Floor Type:	CON
		Project Type:	NEW

Division		Percent	Sq. Cost	Amount
00	Bidding Requirements	5.37	9.36	1,774,918
	Bidding Requirements	5.37	9.36	1,774,918
01	General Requirements	6.55	11.42	2,166,291
	General Requirements	6.55	11.42	2,166,291
02	Site Work	1.55	2.70	511,104
	Site Work	1.55	2.70	511,104
03	Concrete	11.49	20.03	3,797,518
	Concrete	11.49	20.03	3,797,518
04	Masonry	1.87	3.27	619,272
	Masonry	1.87	3.27	619,272
05	Metals	2.76	4.81	912,652
	Metals	2.76	4.81	912,652
06	Wood & Plastics	2.36	4.11	778,903
	Wood & Plastics	2.36	4.11	778,903
07	Thermal & Moisture Protection	5.32	9.28	1,759,242
	Thermal & Moisture Protection	5.32	9.28	1,759,242
08	Doors & Windows	4.94	8.61	1,632,106
	Doors & Windows	4.94	8.61	1,632,106
09	Finishes	6.65	11.59	2,198,274
	Finishes	6.65	11.59	2,198,274
10	Specialties	0.43	0.75	142,659
	Specialties	0.43	0.75	142,659
11	Equipment	0.45	0.79	149,073
	Equipment	0.45	0.79	149,073
12	Furnishings	0.38	0.67	126,306
	Furnishings	0.38	0.67	126,306
13	Special Construction	0.33	0.58	110,743
	Special Construction	0.33	0.58	110,743
14	Conveying Systems	2.40	4.19	794,765
	Conveying Systems	2.40	4.19	794,765
15	Mechanical	11.10	19.35	3,668,401
	Mechanical	11.10	19.35	3,668,401
16	Electrical	6.09	10.62	2,014,298
	Electrical	6.09	10.62	2,014,298
21	Fire Suppression	1.65	2.87	544,188
	Fire Suppression	1.65	2.87	544,188

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22	Plumbing	8.53	14.87	2,819,289
	Plumbing	8.53	14.87	2,819,289
23	HVAC	9.12	15.91	3,015,984
	HVAC	9.12	15.91	3,015,984
26	Electrical	9.52	16.60	3,147,114
	Electrical	9.52	16.60	3,147,114
31	Earthwork	0.87	1.52	288,485
	Earthwork	0.87	1.52	288,485
32	Exterior Improvements	0.28	0.48	91,791
	Exterior Improvements	0.28	0.48	91,791
Total Building Costs		100.00	174.37	33,063,375
Total Non-Building Costs		100.00	0.00	0
Total Project Costs		--	--	33,063,375

COMMERCIAL/INDUSTRIAL/INSTITUTIONAL

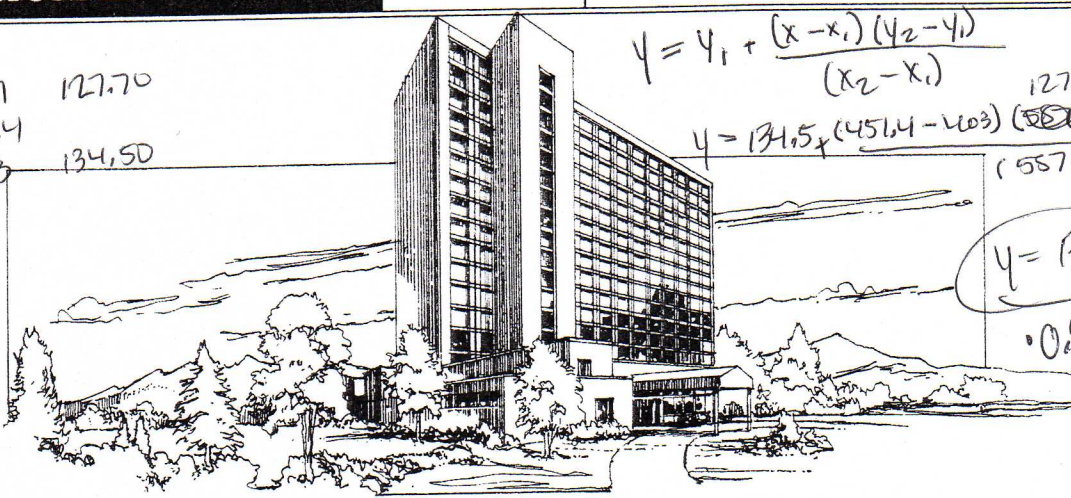
M.360

Hotel, 8-24 Story

243000 587 127.70
 169200 451.4
 141000 403 134.50

$$y = y_1 + \frac{(x - x_1)(y_2 - y_1)}{(x_2 - x_1)}$$

$$y = 134.5 + \frac{(451.4 - 403)(127.70 - 134.50)}{(587 - 403)}$$



$y = 132.71$
 $0.94 = 124.75$
 FINAL

439 + 12 + 8
 451.4

Costs per square foot of floor area

Exterior Wall	S.F. Area	140000	243000	346000	450000	552000	655000	760000	860000	965000
	L.F. Perimeter	403	587	672	800	936	1073	1213	1195	1312
Face Brick with Concrete Block Backup	Steel Frame	134.25	127.45	122.80	120.90	119.80	119.15	118.55	116.90	116.60
	R/Conc. Frame	134.50	127.70	123.05	121.10	120.05	119.35	118.75	117.10	116.80
Face Brick Veneer On Steel Studs	Steel Frame	132.00	125.60	121.30	119.50	118.55	117.85	117.30	115.85	115.55
	R/Conc. Frame	132.65	126.25	121.95	120.15	119.20	118.45	117.95	116.45	116.15
Glass and Metal Curtain Walls	Steel Frame	157.90	144.90	138.20	135.00	133.15	131.80	130.95	129.30	128.70
	R/Conc. Frame	158.55	145.50	138.90	135.65	133.80	132.50	131.55	129.95	129.35
Perimeter Adj., Add or Deduct	Per 100 L.F.	4.85	2.80	1.95	1.50	1.30	1.00	.90	.85	.70
Story Hgt. Adj., Add or Deduct	Per 1 Ft.	1.85	1.60	1.25	1.10	1.20	1.00	1.10	.90	.85

For Basement, add \$29.40 per square foot of basement area

The above costs were calculated using the basic specifications shown on the facing page. These costs should be adjusted where necessary for design alternatives and owner's requirements. Reported completed project costs, for this type of structure, range from \$105.85 to \$185.10 per S.F.

Common additives

Description	Unit	\$ Cost	Description	Unit	\$ Cost
Bar, Front bar	L.F.	345	Laundry Equipment		
Back bar	L.F.	277	Folders, blankets & sheets, king size	Each	64,000
Booth, Upholstered, custom, straight	L.F.	182 - 335	Ironers, 110" single roll	Each	34,600
"U" or "J" shaped	L.F.	188 - 320	Combination washer & extractor 50#	Each	11,900
Closed Circuit Surveillance, One station			125#	Each	31,800
Camera and monitor	Each	1675	Sauna, Prefabricated, complete		
For additional camera stations, add	Each	910	6' x 4'	Each	4950
Directory Boards, Plastic, glass covered			6' x 6'	Each	5925
30" x 20"	Each	570	6' x 9'	Each	7300
36" x 48"	Each	1375	8' x 8'	Each	8600
Aluminum, 24" x 18"	Each	555	10' x 12'	Each	11,900
48" x 32"	Each	885	Smoke Detectors		
48" x 60"	Each	1850	Ceiling type	Each	171
Elevators, Electric passenger, 10 stops			Duct type	Each	440
3500# capacity	Each	270,500	Sound System		
5000# capacity	Each	278,000	Amplifier, 250 watts	Each	2125
Additional stop, add	Each	7675	Speaker, ceiling or wall	Each	174
Emergency Lighting, 25 watt, battery operated			Trumpet	Each	335
Lead battery	Each	265	Antenna, Master system, 12 outlet	Outlet	288
Nickel cadmium	Each	770	30 outlet	Outlet	185
			100 outlet	Outlet	173

Model costs calculated for a 15 story building with 10' story height and 450,000 square feet of floor area

Hotel, 8-24 Story

				Unit	Unit Cost	Cost Per S.F.	% Of Sub-Total
A. SUBSTRUCTURE							
1010	Standard Foundations	Poured concrete; strip and spread footings		S.F. Ground	16.05	1.07	1.5%
1030	Slab on Grade	4" reinforced concrete with vapor barrier and granular base		S.F. Slab	4.45	.30	
2010	Basement Excavation	Site preparation for slab and trench for foundation wall and footing		S.F. Ground	.14	.01	
2020	Basement Walls	4" foundation wall		L.F. Wall	69	.15	
B. SHELL							
B10 Superstructure							
1010	Floor Construction	Open web steel joists, slab form, concrete, columns		S.F. Floor	17.63	16.45	16.6%
1020	Roof Construction	Metal deck, open web steel joists, beams, columns		S.F. Roof	7.50	.50	
B20 Exterior Enclosure							
2010	Exterior Walls	N/A		—	—	—	5.6%
2020	Exterior Windows	Glass and metal curtain walls	100% of wall	Each	20	5.55	
2030	Exterior Doors	Glass and metal doors and entrances		Each	2582	.19	
B30 Roofing							
3010	Roof Coverings	Built-up tar and gravel with flashing; perlite/EPS composite insulation		S.F. Roof	5.10	.34	0.3%
3020	Roof Openings	N/A		—	—	—	
C. INTERIORS							
1010	Partitions	Gypsum board and sound deadening board, steel studs	9 S.F. Floor/L.F. Partition 90 S.F. Floor/Door	S.F. Partition	6.38	5.67	27.8%
1020	Interior Doors	Single leaf hollow metal		Each	815	9.06	
1030	Fittings	N/A		—	—		
2010	Stair Construction	Concrete filled metal pan		Flight	11,550	2.34	
3010	Wall Finishes	20% paint, 75% vinyl cover, 5% ceramic tile		S.F. Surface	1.67	2.96	
3020	Floor Finishes	80% carpet tile, 10% vinyl composition tile, 10% ceramic tile		S.F. Floor	4.75	4.75	
3030	Ceiling Finishes	Gypsum board on resilient channel		S.F. Ceiling	3.54	3.54	
D. SERVICES							
D10 Conveying							
1010	Elevators & Lifts	One geared freight, six geared passenger elevators		Each	303,750	4.05	4.0%
1020	Escalators & Moving Walks	N/A		—	—	—	
D20 Plumbing							
2010	Plumbing Fixtures	Kitchen, toilet and service fixtures, supply and drainage	1 Fixture/165 S.F. Floor	Each	2301	13.95	17.8%
2020	Domestic Water Distribution	Electric water heater		S.F. Floor	4.07	4.07	
2040	Rain Water Drainage	Roof drains		S.F. Roof	1.50	.10	
D30 HVAC							
3010	Energy Supply	Oil fired hot water, wall fin radiation		S.F. Floor	2.00	2.00	11.8%
3020	Heat Generating Systems	N/A		—	—		
3030	Cooling Generating Systems	Chilled water, fan coil units		S.F. Floor	10.01	10.01	
3050	Terminal & Package Units	N/A		—	—		
3090	Other HVAC Sys. & Equipment	N/A		—	—		
D40 Fire Protection							
4010	Sprinklers	Sprinkler system, light hazard		S.F. Floor	2.89	2.89	3.1%
4020	Standpipes	Standpipes and hose systems		S.F. Floor	.31	.31	
D50 Electrical							
5010	Electrical Service/Distribution	6000 ampere service, panel board and feeders		S.F. Floor	1.37	1.37	11.4%
5020	Lighting & Branch Wiring	Fluorescent fixtures, receptacles, switches, A.C. and misc. power		S.F. Floor	7.40	7.40	
5030	Communications & Security	Alarm systems, internet wiring, communications systems and emergency lighting		S.F. Floor	2.53	2.53	
5090	Other Electrical Systems	Emergency generator, 500 kW		S.F. Floor	.32	.32	
E. EQUIPMENT & FURNISHINGS							
1010	Commercial Equipment	N/A		—	—	—	0.0%
1020	Institutional Equipment	N/A		—	—	—	
1030	Vehicular Equipment	N/A		—	—	—	
1090	Other Equipment	N/A		—	—	—	
F. SPECIAL CONSTRUCTION							
1020	Integrated Construction	N/A		—	—	—	0.0%
1040	Special Facilities	N/A		—	—	—	
G. BUILDING SITEWORK N/A							
				Sub-Total	101.89	100%	
CONTRACTOR FEES (General Requirements: 10%, Overhead: 5%, Profit: 10%)					25%	25.47	
ARCHITECT FEES					6%	7.64	
				Total Building Cost	135.00		

Location Factors

STATE/ZIP	CITY	Residential	Commercial
VIRGINIA			
220-221	Fairfax	1.02	.93
222	Arlington	1.04	.93
223	Alexandria	1.06	.94
224-225	Fredericksburg	.95	.89
226	Winchester	.93	.87
227	Cuipeper	1.00	.89
228	Harrisonburg	.90	.86
229	Charlottesville	.92	.87
230-232	Richmond	1.01	.89
233-235	Norfolk	1.02	.88
236	Newport News	1.01	.88
237	Portsmouth	.92	.86
238	Petersburg	.99	.89
239	Farmville	.91	.82
240-241	Roanoke	.99	.87
242	Bristol	.86	.82
243	Pulaski	.84	.81
244	Staunton	.93	.85
245	Lynchburg	.97	.87
246	Grundy	.85	.81
WASHINGTON			
980-981,987	Seattle	1.02	1.04
982	Everett	1.05	1.02
983-984	Tacoma	1.01	1.03
985	Olympia	1.01	1.01
986	Vancouver	.98	1.02
988	Wenatchee	.93	.96
989	Yakima	.97	.98
990-992	Spokane	.99	.95
993	Richland	.97	.97
994	Clarkston	.97	.95
WEST VIRGINIA			
247-248	Bluefield	.88	.89
249	Lewisburg	.89	.92
250-253	Charleston	.97	.95
254	Martinsburg	.86	.90
255-257	Huntington	1.01	.99
258-259	Beckley	.90	.93
260	Wheeling	.93	.97
261	Parkersburg	.92	.96
262	Buckhannon	.92	.96
263-264	Clarksburg	.92	.96
265	Morgantown	.93	.96
266	Gassaway	.92	.95
267	Romney	.88	.93
268	Petersburg	.90	.94
WISCONSIN			
530,532	Milwaukee	1.07	1.02
531	Kenosha	1.04	1.00
534	Racine	1.02	1.00
535	Beloit	1.00	.98
537	Madison	.99	.97
538	Lancaster	.97	.94
539	Portage	.96	.95
540	New Richmond	1.00	.96
541-543	Green Bay	1.01	.97
544	Wausau	.95	.94
545	Rhineland	.95	.96
546	La Crosse	.94	.95
547	Eau Claire	.98	.97
548	Superior	.99	.98
549	Oshkosh	.95	.94
WYOMING			
820	Cheyenne	.84	.86
821	Yellowstone Nat. Pk.	.75	.82
822	Wheatland	.75	.82
823	Rawlins	.76	.83
824	Worland	.75	.81
825	Riverton	.74	.81
826	Casper	.78	.83
827	Newcastle	.74	.81
828	Sheridan	.80	.84
829-831	Rock Springs	.79	.83

STATE/ZIP	CITY	Residential	Commercial
CANADIAN FACTORS (reflect Canadian currency)			
ALBERTA			
	Calgary	1.14	1.11
	Edmonton	1.13	1.12
	Fort McMurray	1.09	1.06
	Lethbridge	1.10	1.07
	Lloydminster	1.09	1.07
	Medicine Hat	1.10	1.06
	Red Deer	1.10	1.06
BRITISH COLUMBIA			
	Kamloops	1.08	1.09
	Prince George	1.08	1.09
	Vancouver	1.09	1.10
	Victoria	1.03	1.04
MANITOBA			
	Brandon	1.06	1.01
	Portage la Prairie	1.06	1.01
	Winnipeg	1.05	1.03
NEW BRUNSWICK			
	Bathurst	.97	.96
	Dalhousie	.97	.96
	Fredericton	1.05	.99
	Moncton	.98	.97
	Newcastle	.97	.96
	Saint John	1.05	1.00
NEWFOUNDLAND			
	Corner Brook	.99	.99
	St. John's	1.01	1.00
NORTHWEST TERRITORIES			
	Yellowknife	1.10	1.08
NOVA SCOTIA			
	Dartmouth	1.00	1.01
	Halifax	1.02	1.03
	New Glasgow	1.00	1.00
	Sydney	.99	.99
	Yarmouth	1.00	1.00
ONTARIO			
	Barrie	1.17	1.11
	Brantford	1.19	1.12
	Cornwall	1.19	1.11
	Hamilton	1.19	1.14
	Kingston	1.19	1.11
	Kitchener	1.11	1.06
	London	1.17	1.11
	North Bay	1.15	1.10
	Oshawa	1.17	1.11
	Ottawa	1.19	1.11
	Owen Sound	1.15	1.10
	Peterborough	1.16	1.10
	Sarnia	1.19	1.13
	Sudbury	1.09	1.05
	Thunder Bay	1.15	1.06
	Toronto	1.20	1.14
	Windsor	1.14	1.06
PRINCE EDWARD ISLAND			
	Charlottetown	.95	.96
	Summerside	.94	.96
QUEBEC			
	Cap-de-la-Madeleine	1.18	1.06
	Charlesbourg	1.18	1.06
	Chicoutimi	1.20	1.08
	Gatineau	1.16	1.06
	Laval	1.17	1.06
	Montreal	1.21	1.11
	Quebec	1.22	1.11
	Sherbrooke	1.17	1.06
	Trois Rivieres	1.18	1.06
SASKATCHEWAN			
	Moose Jaw	.97	.97
	Prince Albert	.96	.95
	Regina	.99	.98
	Saskatoon	.97	.97
YUKON			
	Whitehorse	.96	.96