

RLB

Rider
Levett
Bucknall

RIDERS
DIGEST
2019

NORTH AMERICA
EDITION



This document serves as a summary of cost information and related data on the construction industry.

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RIDERS DIGEST

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Cost information in this publication is indicative and for general guidance only and is based on rates ruling at January 2019.


ACKNOWLEDGEMENTS

WHERE INFORMATION IS REQUIRED ON A SPECIFIC PROJECT, IT IS ESSENTIAL THAT PROFESSIONAL ADVICE IS OBTAINED.

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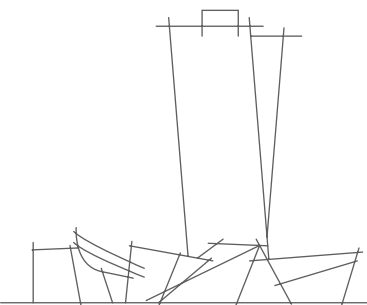
FOREWORD

Welcome to the 2019 edition of the Riders Digest

A compendium of USA cost data and related information as well as international cost data.

Rider Levett Bucknall is an international property and construction consultancy firm with over 120 offices worldwide. By integrating local knowledge and expertise with global understanding, we provide our clients with professional advice that is second to none.

Our corporate culture and vision are focused on integrity, innovation, teamwork and client satisfaction. Our combined experience enables us to provide intelligent and responsible business and project solutions that optimize resources, maximize performance and enhance value throughout a project's life. Our goal is to make sure our clients and their projects succeed.



Rider Levett Bucknall is well known for its cost research through a variety of publications, such as our Quarterly Cost Reports, International Cost Reports, White Papers and area-specific market studies. This commitment to research and innovation has given us an edge on the most up-to-date construction industry market knowledge.

I hope that you find our cost data and related information both informative and useful in your business.



JULIAN ANDERSON
PRESIDENT, NORTH AMERICA



AC HOTEL TUCSON BY MARRIOTT ▲

TUCSON, ARIZONA

The AC Hotel Tucson by Marriott is the first hotel built in Downtown Tucson, AZ in over 40 years. The project includes an 8-story building with hotel lobby and new commercial space on the 1st floor, a 200-space parking garage on floors 2-5, and a 136-room boutique hotel on floors 6-8.

RLB provided Project Management and Cost Management services. This urban site posed a number design and construction challenges in which RLB worked with the Owner and Design-Build Team to resolve proactively. With AC being a new Marriott brand, RLB has helped streamline the incorporation of the brand's design requirements, and has exercised expertise in project controls to hold Owner expectations regarding schedule and budget.

INTERNATIONAL CONSTRUCTION

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CONSTRUCTION COSTS

The costs stated in this section represent hard construction costs and reflect the standards and specifications normal to that country or region. Variation in costs may be experienced for factors such as site conditions, climatic conditions, standards of specification, market conditions, etc. Costs for associated site development work such as site formation, utilities, paving, parking and landscaping are excluded.

Figures also exclude furniture, fittings and equipment (FF&E) with the exception of figures for Hong Kong, China and Singapore, which do include FF&E in hotel costs.

All project soft costs such as land acquisition, design and engineering fees, entitlements, permitting and financing are excluded. No allowance has been included to cover possible changes in construction costs between the date of this publication and any future date.

Figures on the following pages are stated in construction costs per gross square foot in local currency. For your convenience, local currency exchange rates to USD(\$) at 1 December 2018 are provided in the table below.

CURRENCY	EXCHANGE RATE TO USD	
Australian Dollar	AUD	0.7227
British Pound	GBP	1.2974
Chinese Yuan	CNY	0.1438
Hong Kong Dollar	HKD	0.1277
Indonesian Rupiah	IDR	0.0001
South-Korean Won	KRW	0.0009
Malaysian Ringgit	MYR	0.2391
New Zealand Dollar	NZD	0.6738
Philippine Peso	PHP	0.0188
Qatari Rial	QAR	0.2747
Saudi Riyal	SAR	0.2667
Singapore Dollar	SGD	0.7257
United Arab Emirates Dirham	AED	0.2723
Vietnamese Dong	VND	0.0000



CONSTRUCTION COSTS

LOCATION /CITY	LOCAL CURRENCY	COST PER SF			
		OFFICE BUILDING			
		PREMIUM		GRADE A	
		LOW	HIGH	LOW	HIGH
NORTH AMERICA @ Q4 2018					
BOSTON	USD	325	500	225	325
CALGARY	CAD	235	295	190	285
CHICAGO	USD	280	450	175	280
DENVER	USD	170	260	120	185
HONOLULU	USD	285	525	240	395
LAS VEGAS	USD	140	295	105	190
LOS ANGELES	USD	230	350	170	255
NEW YORK	USD	375	575	300	400
PHOENIX	USD	170	275	120	175
PORTLAND	USD	200	270	150	200
SAN FRANCISCO	USD	220	350	200	340
SEATTLE	USD	215	260	140	200
TORONTO	CAD	195	260	175	250
WASHINGTON DC	USD	325	550	225	325
ASIA @ Q3 2018					
BEIJING	RMB	905	1480	840	1265
GUANGZHOU	RMB	830	1320	765	1155
HO CHI MINH CITY	VND ('000)	2575	3855	2295	2865
HONG KONG	\$HKD	2505	3715	2125	2880
JAKARTA	RP ('000)	1090	1420	740	1185
KUALA LUMPUR	RINGGIT	280	485	150	345
MACAU	MOP	1990	2850	1750	2450
SEOUL	KRW ('000)	270	355	205	255
SHANGHAI	RMB	885	1400	785	1210
SINGAPORE	SGD	320	445	220	355
EUROPE @ Q3 2018					
BELFAST	GBP	150	210	130	210
BERLIN	EUR	150	195	110	125
BIRMINGHAM	GBP	210	305	170	305
BRISTOL	GBP	215	310	175	310
CARDIFF	GBP	195	280	170	280
EDINBURGH	GBP	325	420	290	400
LONDON	GBP	230	295	195	295
MANCHESTER	EUR	310	405	240	310
MIDDLE EAST @ Q3 2018					
ABU DHABI	AED	615	730	495	690
DUBAI	AED	645	775	520	730
DOHA	QAR	700	915	655	885
OCEANIA @ Q4 2018					
ADELAIDE	AUD	285	410	235	340
AUCKLAND	NZD	400	525	335	500
BRISBANE	AUD	325	475	270	410
CANBERRA	AUD	375	590	300	465
CHRISTCHURCH	NZD	390	485	295	455
DARWIN	AUD	335	445	260	410
GOLD COAST	AUD	280	430	205	345
MELBOURNE	AUD	350	470	270	370
PERTH	AUD	325	505	260	405
SYDNEY	AUD	405	590	305	435
WELLINGTON	NZD	420	540	330	515

COST PER SF					
RETAIL				RESIDENTIAL MULTI STORY	
MALL		STRIP SHOPPING			
LOW	HIGH	LOW	HIGH	LOW	HIGH
200	300	150	240	185	315
220	310	110	160	140	215
185	290	135	220	165	400
95	150	80	175	90	200
210	490	175	430	195	440
115	480	75	145	90	405
155	340	125	185	200	315
275	425	175	300	200	375
120	200	80	150	90	210
160	260	150	210	160	250
230	400	230	350	350	480
135	305	110	155	160	270
200	250	105	160	140	215
175	300	140	200	200	350
990	1505	870	1370	475	970
935	1345	805	1240	430	860
2165	2880	-	-	1660	2510
2505	3175	2155	2770	2340	4655
700	915	-	-	740	1720
225	375	-	-	205	485
2180	2665	1830	2340	1480	2720
185	265	155	235	180	300
925	1480	820	1345	430	885
215	360	-	-	210	340
235	325	75	140	140	195
125	160	90	115	110	155
310	440	100	190	180	255
305	430	95	185	135	190
305	425	95	180	180	260
380	540	125	230	275	480
325	450	105	195	190	275
195	260	155	205	265	345
430	680	-	-	475	700
455	720	-	-	500	745
570	700	-	-	700	840
170	325	140	200	240	380
305	345	180	220	400	525
235	390	150	215	260	475
260	435	135	275	320	560
270	300	150	195	325	430
190	285	135	230	220	285
270	375	130	195	170	485
235	345	135	180	270	475
205	310	110	270	205	440
225	475	170	225	295	635
320	340	-	-	420	515

CONSTRUCTION COSTS

LOCATION /CITY	LOCAL CURRENCY	COST PER SF			
		HOTELS			
		3 STAR		5 STAR	
		LOW	HIGH	LOW	HIGH
NORTH AMERICA @ Q4 2018					
BOSTON	USD	275	390	400	580
CALGARY	CAD	190	245	300	450
CHICAGO	USD	290	410	400	660
DENVER	USD	175	250	285	370
HONOLULU	USD	320	540	510	735
LAS VEGAS	USD	150	300	350	500
LOS ANGELES	USD	275	355	365	530
NEW YORK	USD	300	400	400	600
PHOENIX	USD	170	250	350	520
PORTLAND	USD	165	200	205	295
SAN FRANCISCO	USD	350	515	400	610
SEATTLE	USD	225	240	245	360
TORONTO	USD	195	260	300	355
WASHINGTON DC	USD	250	390	400	600
ASIA @ Q3 2018					
BEIJING	RMB	1155	1480	1535	2020
GUANGZHOU	RMB	1105	1345	1480	1910
HO CHI MINH CITY	VND ('000)	2690	3475	3830	4595
HONG KONG	\$HKD	3120	3635	3795	4630
JAKARTA	RP ('000)	1240	1455	1615	2155
KUALA LUMPUR	RINGGIT	270	375	540	755
MACAU	MOP	2665	3070	3335	4090
SEOUL	KRW ('000)	200	280	370	550
SHANGHAI	RMB	1130	1455	1535	2020
SINGAPORE	SGD	350	395	455	590
EUROPE @ Q3 2018					
BELFAST	GBP	110	165	175	240
BERLIN	EUR	150	195	220	300
BIRMINGHAM	GBP	145	225	235	340
BRISTOL	GBP	150	200	260	345
CARDIFF	GBP	145	215	230	320
EDINBURGH	GBP	205	265	305	410
LONDON	GBP	165	205	250	340
MANCHESTER	EUR	325	420	430	560
MIDDLE EAST @ Q3 2018					
ABU DHABI	AED	635	895	945	1265
DUBAI	AED	665	1000	1000	1560
DOHA	QAR	805	915	1240	1560
OCEANIA @ Q4 2018					
ADELAIDE	AUD	290	380	400	490
AUCKLAND	NZD	450	510	615	720
BRISBANE	AUD	325	450	450	615
CANBERRA	AUD	335	570	455	690
CHRISTCHURCH	NZD	410	465	485	590
DARWIN	AUD	305	380	390	480
GOLD COAST	AUD	280	430	365	590
MELBOURNE	AUD	320	410	445	605
PERTH	AUD	280	390	390	515
SYDNEY	AUD	360	450	500	680
WELLINGTON	NZD	440	495	550	655

COST PER SF					
CAR PARKING				INDUSTRIAL WAREHOUSE	
MULTI STORY		BASEMENT			
LOW	HIGH	LOW	HIGH	LOW	HIGH
85	140	100	160	110	190
75	90	75	120	85	145
80	125	125	170	110	185
60	80	95	125	90	150
100	145	140	260	145	230
50	85	60	150	50	100
105	125	130	175	115	180
95	175	125	200	115	200
45	70	70	110	60	100
105	135	120	195	100	160
120	150	200	275	150	200
90	105	135	160	95	125
70	90	115	150	115	150
90	130	110	140	120	190
260	360	440	765	510	645
240	345	420	730	475	590
980	1475	2025	2765	670	1010
980	1185	2045	2800	1670	2070
375	485	540	755	515	655
85	130	150	365	110	195
-	-	1155	1455	-	-
80	95	100	130	140	170
250	355	465	775	470	615
75	150	160	240	120	170
30	55	70	120	30	55
50	75	85	115	40	80
40	75	90	155	45	65
45	90	105	165	45	70
40	75	90	155	40	75
50	100	130	210	55	95
60	80	115	170	55	80
75	95	95	125	170	225
190	375	300	475	155	285
260	400	345	500	205	325
-	-	295	485	-	-
75	105	145	210	70	120
115	145	250	300	85	115
110	160	185	235	80	130
85	140	115	200	80	150
90	145	190	235	80	120
80	135	125	165	85	155
75	130	160	225	75	120
85	140	140	180	70	130
70	110	195	335	60	115
85	135	125	205	85	135
155	175	305	330	110	150

RLB CONSTRUCTION BID PRICE INDEX

(Annual % Change)

LOCATION	2016	2017	2018 (F)	2019 (F)	2020 (F)	2021 (F)
AFRICA @ Q3 2018						
CAPE TOWN	7.3	6.2	5.0	5.4	5.7	6.0
JOHANNESBURG	6.4	7.9	4.1	5.1	5.5	5.7
MAPUTO	4.0	0.3	0.5	1.0	1.1	NP
NORTH AMERICA @ Q3 2018						
BOSTON	4.0	3.2	4.7	4.4	4.1	3.0
CALGARY	NP	0.3	4.0	2.5	1.8	1.8
CHICAGO	4.3	5.3	6.8	4.3	3.8	3.5
DENVER	5.0	3.8	4.4	4.1	3.5	3.0
HONOLULU	0.7	-1.7	2.6	3.3	3.5	3.0
LAS VEGAS	3.3	3.5	5.3	4.3	3.5	3.0
LOS ANGELES	8.4	7.6	4.4	3.8	3.5	3.0
NEW YORK	3.9	3.3	4.1	4.1	3.3	3.0
PHOENIX	3.7	4.3	6.5	4.3	3.3	3.0
PORTLAND	4.6	6.0	5.6	4.1	4.1	3.0
SAN FRANCISCO	14.7	6.2	6.1	4.6	3.5	3.0
SEATTLE	4.7	5.1	5.3	4.1	3.5	3.0
TORONTO	NP	1.1	5.2	2.0	2.3	2.3
WASHINGTON DC	4.3	3.2	4.3	4.1	3.5	3.0
ASIA @ Q3 2018						
BEIJING	0.0	7.7	3.0	4.1	3.0	3.0
CHENGDU	-0.8	2.0	6.1	3.0	3.0	3.0
GUANGZHOU	1.0	2.5	2.0	3.0	3.0	3.0
HONG KONG	0.4	0.0	-2.0	0.0	2.0	2.0
MACAU	0.0	2.0	-2.0	0.0	2.0	2.0
SEOUL	3.9	2.5	4.4	4.9	4.5	4.1
SHANGHAI	6.0	7.0	3.5	3.5	3.0	3.0
SHENZHEN	1.0	2.0	4.1	4.1	4.1	4.1
SINGAPORE	-5.8	-1.5	0.0	NP	NP	NP
EUROPE @ Q3 2018						
BIRMINGHAM	3.0	2.8	2.5	2.3	3.3	4.0
BRISTOL	5.0	2.5	3.0	3.0	3.0	3.0
BUDAPEST	5.5	9.5	8.0	8.0	5.0	NP
LONDON	3.5	2.0	1.3	1.0	1.5	2.0
SHEFFIELD	2.5	2.0	-1.5	3.8	4.3	5.6
MADRID	0.1	0.8	0.1	0.1	NP	NP
MANCHESTER	4.0	2.0	1.0	1.0	2.5	3.5
MOSCOW	0.0	1.0	1.5	1.5	2.0	NP
MIDDLE EAST @ Q3 2018						
ABU DHABI	-5.0	-3.0	3.2	2.7	3.7	4.2
DOHA	5.5	6.0	7.0	NP	NP	NP
DUBAI	3.0	3.5	3.0	2.5	3.5	4.0
RIYADH	5.0	5.0	5.0	5.0	5.0	5.0

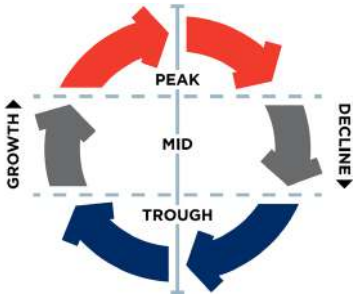
(F) Forecast
(NP) Not Published

LOCATION	2016	2017	2018 (F)	2019 (F)	2020 (F)	2021 (F)
OCEANIA @ Q4 2018						
ADELAIDE	1.8	3.1	3.5	4.0	4.0	4.5
AUCKLAND	5.5	8.0	6.0	3.5	3.0	3.0
BRISBANE	7.2	3.0	1.0	3.0	5.1	4.1
CANBERRA	2.5	2.8	3.5	3.2	3.0	3.0
CHRISTCHURCH	3.0	3.0	3.0	2.0	2.0	2.0
DARWIN	1.0	0.8	0.5	0.8	1.2	1.8
GOLD COAST	6.5	2.5	2.0	2.5	3.0	3.5
MELBOURNE	2.0	3.0	4.0	4.0	3.5	3.2
PERTH	0.0	0.0	1.0	2.5	3.0	3.0
SYDNEY	4.8	4.3	4.9	4.4	4.2	3.8
TOWNSVILLE	3.0	4.0	3.0	3.5	3.5	3.5
WELLINGTON	4.5	5.3	6.0	4.0	4.0	3.0

CONSTRUCTION MARKET ACTIVITY

The construction market activity model, located to the right, illustrates the different growth and decline zones in a theoretical construction industry business cycle. The tabulation in the preceding and following pages provides an overview of the relative growth/decline of each development sector in various cities. Each city has its own business cycle in the context of its own economy and as such the performance of each development sector is not strictly comparable between cities. Information is current as of December 2018.

UNITED STATES	HOUSES	APARTMENTS	OFFICES
Boston	▼	▼	▲
Chicago	▲	▲	▲
Denver	▲	▲	▲
Honolulu	▲	▲	▼
Las Vegas	▲	▲	▲
Los Angeles	▼	▼	▼
New York	▼	▼	▲
Phoenix	▲	▲	▲
Portland	▲	▲	▲
San Francisco	▲	▲	▼
Seattle	▲	▲	▲
Washington, D.C.	▲	▼	▲
CANADA			
Calgary	▲	▼	▼
Toronto	▼	▲	▲



INDUSTRIAL	RETAIL	HOTEL	CIVIL
▼	▲	▲	▲
▲	▼	▼	▲
▼	▲	▲	▲
▲	▼	▲	▲
▲	▲	▲	▲
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CONSTRUCTION MARKET ACTIVITY

AFRICA	HOUSES	APARTMENTS	OFFICES
Cape Town	▲	▲	▲
Durban	▲	▲	▼
Gaborone (Botswana)	▲	▲	▼
Johannesburg	▼	▲	▼
Maputo (Mozambique)	▲	▲	▲
Port Louis (Mauritius)	▲	▲	▲
NORTH ASIA			
Beijing	▼	▲	▼
Chengdu	▲	▲	▲
Guangzhou	▼	▲	▲
Hong Kong	▼	▼	▼
Macau	▼	▼	▼
Seoul	▼	▼	▼
Shanghai	▼	▼	▼
Shenzhen	▼	▲	▲
SOUTHEAST ASIA			
Cebu	▲	▲	▼
Clark	▼	▼	▲
Ho Chi Minh City	▲	▲	▲
Jakarta	▲	▲	▼
Kuala Lumpur	▲	▼	▼
Manila	▲	▼	▲
Singapore	▲	▲	▼
Subic	▲	▲	▼

INDUSTRIAL	RETAIL	HOTEL	CIVIL
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CONSTRUCTION MARKET ACTIVITY

UNITED KINGDOM	HOUSES	APARTMENTS	OFFICES
Birmingham	▲	▲	▲
Bristol	▲	▲	▲
Leeds	▲	▲	▲
London	▲	▲	▲
Manchester	▲	▲	▲
Sheffield	▲	▲	▲
EUROPE			
Amsterdam	▲	▲	▼
Berlin	▲	▲	▼
Dublin	▲	▲	▲
Madrid	▲	▲	▲
Milan	▼	▼	▼
Moscow	▲	▲	▼
Oslo	▲	▲	▲
Paris	▲	▲	▲
MIDDLE EAST			
Abu Dhabi	▲	▼	▼
Doha	▲	▲	▼
Dubai	▲	▲	▼
Riyadh	▲	▲	▲

INDUSTRIAL	RETAIL	HOTEL	CIVIL
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▲	▲	▲	▲
▲	▲	▲	▲
▲	▲	▲	▲

CONSTRUCTION MARKET ACTIVITY

AUSTRALIA	HOUSES	APARTMENTS	OFFICES
Adelaide	▲	▲	▲
Brisbane	▼	▼	▲
Canberra	▲	▲	▲
Darwin	▲	▼	▼
Gold Coast	▲	▲	▼
Melbourne	▲	▼	▲
Perth	▲	▼	▼
Sydney	▲	▼	▲
Townsville	▼	▼	▼
NEW ZEALAND			
Auckland	▼	▼	▼
Christchurch	▼	▼	▼
Wellington	▲	▲	▲

INDUSTRIAL	RETAIL	HOTEL	CIVIL
▲	▼	▲	▲
▲	▲	▲	▲
▲	▼	▲	▲
▲	▼	▲	▲
▼	▼	▲	▼
▲	▲	▲	▲
▲	▲	▼	▲
▲	▲	▲	▲
▼	▼	NP	▼
▲	▲	▲	▲
▲	▲	▲	▲
▲	▼	▼	▲



PHILLIPS ACADEMY SNYDER CENTER ▲

ANDOVER, MASSACHUSETTS

Built to reinforce the Academy's commitment to support each student's physical, mental, social, and emotional development, the Snyder Center is a multiuse facility, offering complete athletics, fitness, as well as health and wellness programs.

The 98,000 square foot building was designed by Perkins + Will featuring a 200-meter track and convertible infield, eight international squash courts, state-of-the-art trainer's room, and spaces for intramural sports and events. The center is home to sports competitions and offers indoor-training opportunities during inclement weather. Students and faculty from the Phillips Academy community drop by the facility often for a quick lap around the track or a quick game of squash.

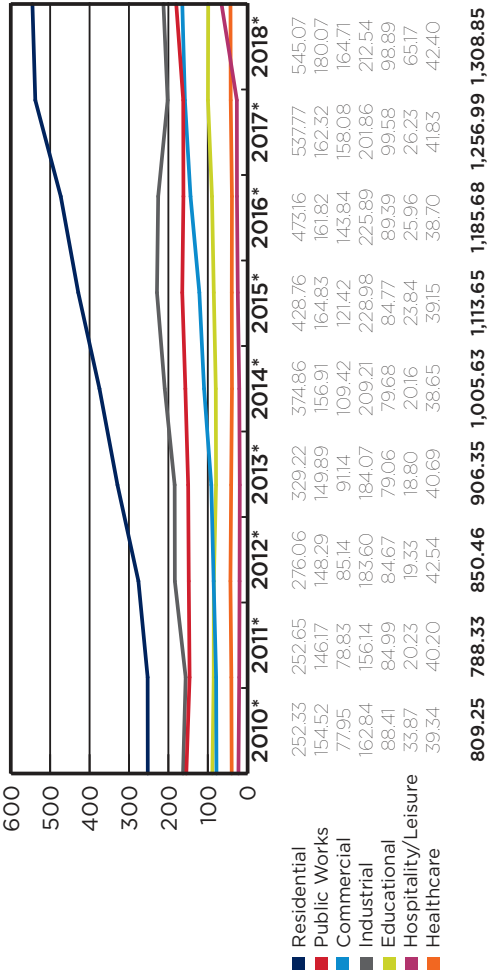
Rider Levett Bucknall provided construction cost estimating services on this project to Perkins + Will.

Photo courtesy of Chuck Choi Architectural Photography

USA CONSTRUCTION

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CONSTRUCTION OUTPUT BY SECTOR

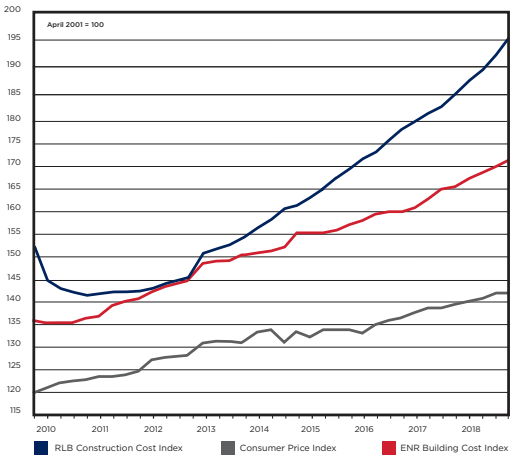


*Forecast based on seasonally adjusted annual figures as of December 2018.

Sources: U.S. Census Bureau

INFLATION INDEX COMPARISON

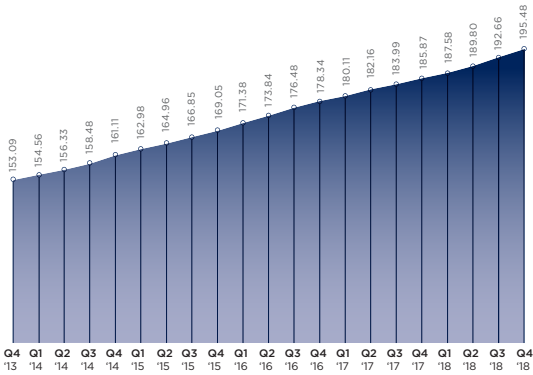
The chart below shows the relative differences in inflation between the cost of general goods and services (represented by the U.S. Bureau of Labor Statistics' Consumer Price Index), the cost of construction materials and labor (represented by Engineering News-Record's Building Cost Index) and the bid cost of construction (represented by Rider Levett Bucknall's National Construction Cost Index).



Sources: U.S. Bureau of Labor Statistics, Engineering News-Record.

NATIONAL CONSTRUCTION COST INDEX

The National Construction Cost Index shows how construction costs have changed each quarter since October 2014.

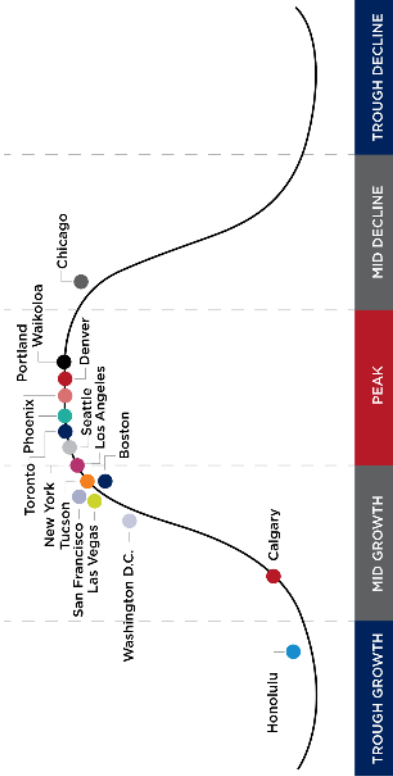


QUARTER	COST INDEX
October 2014	161.11
January 2015	162.98
April 2015	164.96
July 2015	166.85
October 2015	169.05
January 2016	171.38
April 2016	173.84
July 2016	176.48
October 2016	178.34
January 2017	180.11
April 2017	182.16
July 2017	183.99
October 2017	185.87
January 2018	187.58
April 2018	189.80
July 2018	192.66
October 2018	195.48

CONSTRUCTION ACTIVITY CYCLE

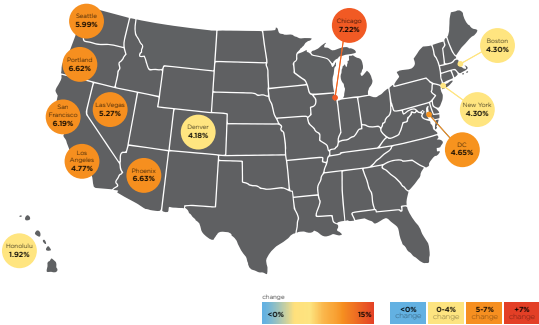
The chart below depicts the position of each city in a theoretical construction industry business cycle. The aim of the chart is to provide an overview of the relative performance of each city in the context of its own economy.

Each city has its own industry business cycle, and as such, the city cycles are not directly comparable with each other. As the amplitude and frequency of the cycle(s) are not expressed in this chart, there is no direct parameter of extent of the cycle or of its time period.



COMPARATIVE COST INDEX

The Comparative Cost Index tracks the bid cost of construction in each city, which includes, in addition to costs of labor and materials, general contractor and subcontractor overhead costs and fees (profit). The index also includes sales and use taxes that standard construction contracts attract.



City	October 2017	October 2018	Annual % Change
Boston	21,176	22,086	4.30%
Chicago	20,905	22,416	7.22%
Denver	14,337	14,937	4.18%
Honolulu	24,058	24,520	1.92%
Las Vegas	13,777	14,503	5.27%
Los Angeles	20,586	21,567	4.77%
New York	24,927	26,000	4.30%
Phoenix	14,080	15,013	6.63%
Portland	15,302	16,315	6.62%
San Francisco	24,760	26,294	6.19%
Seattle	16,804	17,810	5.99%
Washington, DC	20,054	20,987	4.65%

INPUTS TO CONSTRUCTION COSTS

LABOR

Labor used in direct construction activities.

MATERIALS

Materials which are incorporated into the completed project as well as temporary materials (such as plywood used in formwork).

EQUIPMENT

Equipment used in the construction process such as pumps, generators, material hoists, cranes and the like.

SUBCONTRACTORS

Construction work undertaken for the general contractor by sub-contractors (including tiered subcontractors).

BONDS

Guarantees extended by a third party to the owner of a building under construction that the building will be satisfactorily completed (performance bonds) and/or that payment to subcontractors and suppliers will be made (payment bonds).

INSURANCE

Insurances including builder's risk insurance, general liability insurance, automobile liability insurance, professional liability insurance (for any work performed on a design/build basis), subcontractor default insurance (sub-guard) and the like.

TAXES

Taxes levied on the whole of construction or on construction labor and/or materials.

GENERAL CONTRACTOR OVERHEAD & PROFIT

There are two types of overhead costs; on-site (often referred to as General Conditions or General Requirements) and off-site (often referred to as Home Office Overhead). Profit is the fee charged by the general contractor for undertaking the project and is sometimes referred to as 'profit and risk'.

SUPPLY & DEMAND

(WHAT THE MARKET WILL BEAR)

The sum of the above costs are not always what the project will cost the owner (or the entity for whom the project is being constructed). In a weak market the contact sum may be significantly less than the figured costs (such as zero figuring for home office overhead and profit) but in a booming market may be well above the figured costs (when prices are increased to take advantage of the buoyant market).

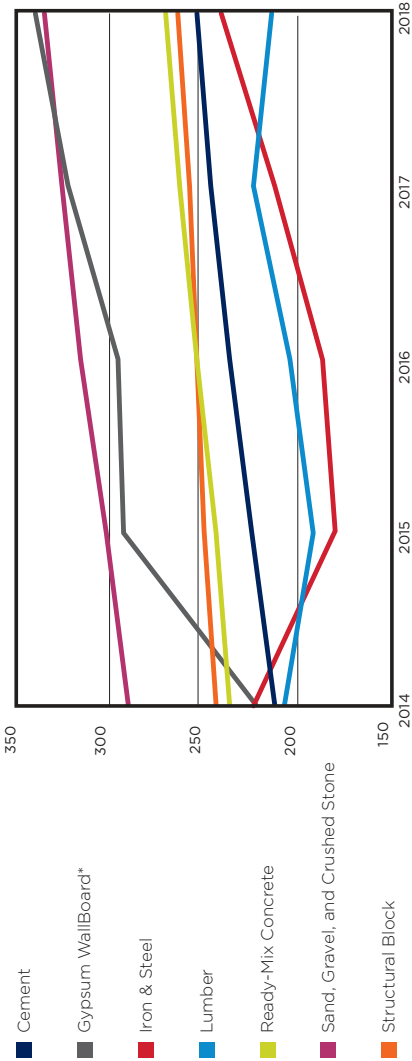
MECHANICAL COMPARATIVE LABOR INDEX

The Comparative Labor Index shows the relative cost of construction labor among the markets listed as of December 2018, using labor wage costs in Phoenix, Arizona as a baseline.

COMPARATIVE LABOR INDEX	
Boston	152
Chicago	150
Denver	100
Honolulu	134
Las Vegas	128
Los Angeles	135
New York	194
Phoenix	100
Portland	121
San Francisco	198
Seattle	151
Washington, D.C.	114

Source: Davis-Bacon Wage Determinations at December 2018

MATERIALS PRICE INDEX



*For Gypsum Wall Board only, Base = 100 at 1994
 Average year-to-date as of December 2018
 Source: Bureau of Labor Statistics

DESIGN & CONSTRUCTION REGULATIONS

This section contains information of use and interest to those practicing in the architecture, engineering, and construction disciplines in the United States.

INTERNATIONAL BUILDING CODE®

Adopted by most of the United States, the International Building Code® (IBC) is a model building code to address the design and installation of building systems through minimum requirements that safeguard public health and safety and emphasize building performance. When originally released in 2000, the IBC consolidated regional codes for energy conservation, fuel gas, mechanical, plumbing, private sewage disposal, property maintenance, zoning, and fire protection.

INTERNATIONAL RESIDENTIAL CODE®

The International Residential Code® (IRC) is a comprehensive, stand-alone residential code that creates minimum regulations for one- and two-family dwellings of three stories or less. It brings together all building, plumbing, mechanical, fuel gas, energy and electrical provisions for one- and two-family residences. The IRC also provides a prescriptive approach (i.e. a set of measures) and a performance approach (i.e. energy modeling) for determining compliance.

NATIONAL ELECTRIC CODE®

The National Electrical Code® (NEC), or NFPA 70, is a United States standard for the safe installation of electrical wiring and equipment. It is part of the National Fire Codes series published by the National

Fire Protection Association, Inc. (NFPA). While the NEC is not itself a U.S. law, NEC use is commonly mandated by state or local law.

DAVIS-BACON ACT OF 1931

Requires all contractors and subcontractors performing work on federal or District of Columbia construction contracts or federally assisted contracts in excess of \$2,000 to pay their laborers and mechanics not less than the prevailing wage rates and fringe benefits for corresponding classes of laborers and mechanics employed on similar projects in the area.

COPELAND ACT (COPELAND ANTI-KICKBACK ACT)

Prohibits contractors from coercing or otherwise requiring their employees to return any part of the compensation they earned under Federal contracts.

FAIR LABOR STANDARDS ACT OF 1938 (FLSA)

Establishes minimum wage, overtime pay, record-keeping, and child labor standards affecting full-time and part-time workers in the private sector and in Federal, State, and local governments.

OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970

Protects workers from safety and health hazards in the workplace. Also prohibits employers from retaliating against employees for exercising their rights under the Act. Enforcement and administration of the Act in states under federal jurisdiction is handled primarily by U.S. Occupational Safety and Health Administration.

CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

Requires all contractors and subcontractors on federal service contracts and federal and federally assisted construction contracts over \$100,000 to pay laborers and mechanics employed in the performance of the contracts 1.5 times their basic rate of pay for all hours worked over 40 in a work week. This Act also prohibits unsanitary, hazardous, or dangerous working conditions on Federal construction projects.

MILLER ACT

Requires all contractors and subcontractors on federal service contracts and federally assisted construction contracts over \$100,000 to furnish a payment bond as security for the protection of those supplying labor and/or materials. Failure by a contractor to pay suppliers and subcontractors gives such suppliers and subcontractors the right to sue the contractor in U.S. District Court in the name of the United States. Other payment protections may be provided for contracts between \$30,000 and \$100,000.

AMERICANS WITH DISABILITIES ACT OF 1990 (ADA)

A wide-ranging civil rights law that prohibits, under certain circumstances, discrimination based on disability with provisions for employment, public entities and public transportation, public accommodations and commercial facilities, and telecommunications. Under Titles II and III of the Act, all construction, modification or alterations must be fully compliant with the Americans With Disabilities Act Accessibility Guidelines (ADAAG), a document

detailing scoping and technical requirements for accessibility to buildings and facilities by individuals with disabilities.

IMMIGRATION REFORM AND CONTROL ACT OF 1986

Amends and repeals sections of the Immigration and Nationality Act (INA) requires legalization of undocumented aliens who had been continuously unlawfully present since 1982, legalization of certain agricultural workers, penalizes employers who knowingly hire undocumented workers, and increased enforcement at U.S. borders in order to control and deter illegal immigration to the United States.

BROOKS ACT OF 1972

Requires the Federal government to select architecture and engineering firms based upon their competency, qualifications and experience rather than by price.

EXECUTIVE ORDER 13502

In 2009, President Obama issued an Executive Order entitled "Use of Project Labor Agreements for Federal Construction Projects" to encourage agencies to use Project Labor Agreements (PLAs) on federal construction projects with a total cost to the government of \$25 million or more.

As defined by the Order, PLAs are pre-hire collective bargaining agreements that govern wages, benefits, work rules, and other terms and conditions of employment for specific projects.

The Executive Order allows federal agencies to consider the use of PLAs where the agreements will “advance the federal government’s interest in achieving economy and efficiency in federal procurement” and “be consistent with law.”

The Order encourages the use of PLAs in large scale projects, but does not mandate them. Under the Order, the federal government cannot currently compel a contractor to enter into an agreement with any particular labor organization or owner. The Order does not explicitly exclude non-union contractors from competition.

Sources: International Code Council®, National Fire Protection Association, Inc., Ed.gov/open/plan/recovery-gov, U.S. General Services Administration, U.S. Government Printing Office, U.S. Department of Homeland Security, U.S. Department of Justice and U.S. Department of Labor.

LIST OF U.S. GOVERNMENT ENTITIES

ORGANIZATION	WEBSITE ADDRESS
Bureau of Economic Analysis	www.bea.gov
Bureau of Labor Statistics	www.bls.gov
Bureau of Land Management	www.blm.gov
Bureau of Overseas Building Operations	www.state.gov/obo
Congressional Budget Office	www.cbo.gov
Environmental Protection Agency	www.epa.gov
FedBizOpps	www.fbo.gov
FedConnect	www.fedconnect.net
Federal Acquisition Regulation (FAR)	www.acquisition.gov
Federal Highway Administration	www.fhwa.dot.gov
Federal Trade Commission	www.ftc.gov
FedWorld.gov	www.supcourt.ntis.gov
Indian Health Service	www.ihs.gov
National Park Service	www.nps.gov
National Resources Conservation Service	www.nrcs.usda.gov
Naval Facilities Engineering Command	www.navy.mil/local/navfachq
Occupational Safety & Health Administration	www.osha.gov
Recovery.gov	www.ed.gov/open/plan/recovery-gov
System for Award Management	www.sam.gov

ORGANIZATION	WEBSITE ADDRESS
The White House	www.whitehouse.gov
USA.gov	www.usa.gov
U.S. Army Corps of Engineers	www.usace.army.mil
U.S. Bureau of Reclamation	www.usbr.gov
U.S. Census Bureau	www.census.gov
U.S. Department of Commerce	www.commerce.gov
U.S. Department of Defense	www.defense.gov
U.S. Department of Energy	www.energy.gov
U.S. Department of Housing & Urban Development	www.hud.gov
U.S. Department of Labor	www.dol.gov
U.S. Department of the Interior	www.doi.gov
U.S. Department of the Treasury	www.treasury.gov
U.S. Department of Transportation	www.dot.gov
U.S. Department of Veterans Affairs	www.va.gov
U.S. Fish & Wildlife Service	www.fws.gov
U.S. General Services Administration	www.gsa.gov
U.S. Geological Survey	www.usgs.gov
U.S. Securities & Exchange Commission	www.sec.gov
U.S. Small Business Administration	www.sba.gov

LIST OF INDUSTRY ASSOCIATIONS

ORGANIZATION	WEBSITE ADDRESS
Airport Consultants Council	www.acconline.org
American Bar Association Forum on the Construction Industry	www.americanbar.org
American Institute of Architects	www.aia.org
American Road & Transportation Builders Association	www.artba.org
American Society for Healthcare Engineering	www.ashe.org
American Society of Landscape Architects	www.asla.org
American Society of Professional Estimators	www.aspenational.org
American Subcontractors Association	www.asaonline.com
Associated Builders & Contractors	www.abc.org
Associated General Contractors of America	www.agc.org
Association for the Advancement of Cost Engineering International	www.aacei.org
Building Owners & Managers Association	www.boma.org
Construction Management Association of America	www.cmaanet.org
Construction Owners Association of America	www.coaa.org
Construction Specifications Institute	www.csinet.org
Design-Build Institute of America	www.dbia.org

ORGANIZATION	WEBSITE ADDRESS
International Association of Venue Managers	www.iavm.org
International Code Council	www.iccsafe.org
International Construction Information Society	www.icis.org
International Council of Shopping Centers	www.icsc.org
International Facility Management Association	www.ifma.org
NAIOP Commercial Real Estate Development Association	www.naiop.org
National Association of Home Builders	www.nahb.org
National Association of Women in Construction	www.nawic.org
National Indian Gaming Association	www.indiangaming.org
National Mining Association	www.nma.org
Royal Institution of Chartered Surveyors	www.rics.org
SAVE International	www.value-eng.org
Society for College & University Planning	www.scup.org
Society for Marketing Professional Services	www.smps.org
Society for Mining, Metallurgy & Exploration	www.smenet.org
Society of American Military Engineers	www.same.org
U.S. Green Building Council	www.usgbc.org
Urban Land Institute	www.uli.org

LEADERSHIP IN ENERGY & ENVIRONMENTAL DESIGN

Leadership in Energy and Environmental Design (LEED) is a voluntary green building certification system which recognizes that a building or community was designed and built using strategies aimed at improving performance across the following sustainability metrics: energy savings, water efficiency, CO2 emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts.

Developed by the U.S. Green Building Council (USGBC), LEED provides building owners and operators with a concise framework for identifying and implementing practical and measurable green building design, construction, operations, and maintenance solutions.

HOW LEED WORKS

LEED can be applied to any building type and any building life cycle phase. It promotes a whole-building approach to sustainability by recognizing performance in key areas:

- Sustainable Sites
- Water Efficiency
- Energy & Atmosphere
- Materials & Resources
- Indoor Environmental Quality

LEED points are awarded on a 100-point scale, and credits are weighted to reflect their potential environmental impacts. Additionally, 10 bonus credits are available, six of which are awarded for innovation in design and four of which address regionally specific environmental issues.

LEED Certification is achievable in one of five current rating systems: Building Design and Construction; Interior Design and Construction; Building Operations and Maintenance; Neighborhood Development and Homes, each with a distinct weighting system.

	New Const.*	Core & Shell	Schools	Retail	Data Centers	Warehouse & Dist. Centers	Hospitality	Healthcare
Location & Transportation	16	20	15	16	16	16	16	9
Sustainable Sites	10	11	12	10	10	10	10	9
Water Efficiency	11	11	12	12	11	11	11	11
Energy & Atmosphere	33	33	31	33	33	33	33	35
Materials & Resources	13	14	13	13	13	13	13	19
Indoor Environmental Quality	16	10	16	15	16	16	16	16
Innovation in Design	6	6	6	6	6	6	6	6
Regional Priority	4	4	4	4	4	4	4	4
Total Possible	110	110	110	110	110	110	110	110

*For Retail New Construction and Retail Commercial Interiors, points requirements match New Construction / Commercial Interiors, respectively.

A project must satisfy all prerequisites and earn a minimum number of points to be certified at one of four levels.

LEED CERTIFICATION SCORING (out of a possible 100 points + 10 bonus points)	
Certified	40+ points
Silver	50+ points
Gold	60+ points
Platinum	80+ points

LEADERSHIP IN ENERGY & ENVIRONMENTAL DESIGN

ELIGIBILITY

Building types that are eligible for certification include – but are not limited to – offices, retail and service establishments, institutional buildings (e.g., libraries, schools, museums and religious institutions), hotels and residential buildings of four or more habitable stories.

WHO USES LEED?

Architects, real estate professionals, facility managers, engineers, interior designers, landscape architects, construction managers, lenders, and government officials all use LEED to help transform the built environment to sustainability.

Many U.S. state and local governments are adopting LEED for public-owned and public-funded buildings; there are LEED initiatives in federal agencies, including the Departments of Defense, Agriculture, Energy, and State; and LEED projects are in countries worldwide, including Canada, Brazil, Mexico, and India.

BENEFITS

There are both environmental and financial benefits to earning LEED certification.

LEED-certified buildings are designed to:

- Lower operating costs and increase asset value
- Reduce waste sent to landfills
- Conserve energy and water
- Be healthier and safer for occupants
- Reduce harmful greenhouse gas emissions
- Qualify for tax rebates, zoning allowances and other incentives in hundreds of cities
- Demonstrate an owner's commitment to environmental stewardship and social responsibility

PROCUREMENT OPTIONS

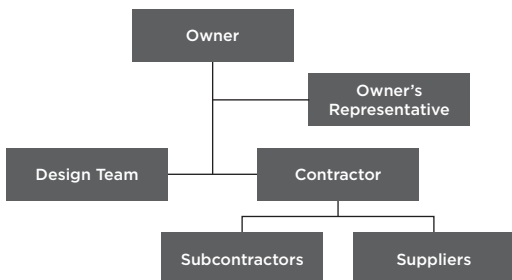
Selecting the best procurement method for a project is fundamental to its success, and will affect its cost, schedule, quality and team relationships throughout the project's development. Procurement strategies should be considered at the earliest opportunity and should be weighed with regards to owner and project requirements. Rider Levett Bucknall can advise on an appropriate route to best meet these requirements.

Descriptions of some of the more common procurement routes - along with advantages and concerns to consider before utilizing - are on the following pages.

Rider Levett Bucknall is also well versed in implementing projects using Integrated Project Delivery and other collaborative practices. Through these proactive strategies, owners can align the interests of the project team to operate in a more efficient and effective manner, delivering a superior project and ultimately increasing value for the owner.

PROCUREMENT OPTIONS

DESIGN-BID-BUILD



KEY FEATURES

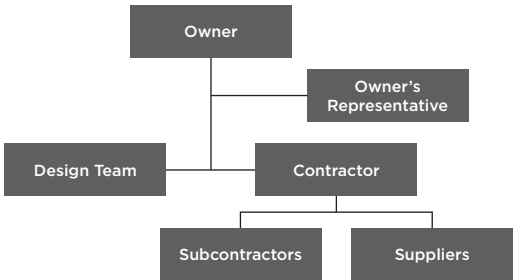
- Owner contracts with design team first, then with construction team after design is complete
- Design fully complete prior to contractor bidding
- Construction starts after design and bidding processes are complete

ADVANTAGES	CONCERNS / RISKS
<ul style="list-style-type: none">• Best potential for competitive construction bidding (lowest price)• Contractor familiarity with process• Accommodates owner input throughout design process• Facilitates check and balance process between design and construction	<ul style="list-style-type: none">• Construction starts only after design and bidding is complete• Design and construction related decisions must be made early• No contractor input to design process• Competitive bidding creates higher risk for change orders and litigation• No team-oriented approach

SEQUENCE



CONSTRUCTION MANAGER AT-RISK



KEY FEATURES

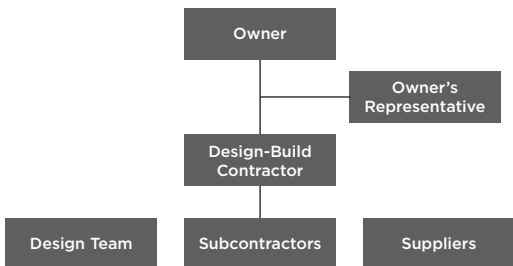
- Owner contracts with design team and construction team concurrently at beginning of design process
- Contractor provides cost and constructability input throughout design process
- Contractor provides guaranteed maximum price (GMP) based on partial design
- Construction can start prior to design completion

ADVANTAGES	CONCERNS / RISKS
<ul style="list-style-type: none"> ▪ Early construction start facilitates expedited schedule (fast track) ▪ Contractor advice informs design, typically generates more efficient design ▪ Accommodates owner input through design ▪ Facilitates check and balance process between design and construction ▪ Pricing and cost control performed during preconstruction 	<ul style="list-style-type: none"> ▪ Limited competitive bidding ▪ Added cost of contractor participation in design process ▪ Timing and assumptions of GMP contract must be closely managed ▪ Contingencies must be closely monitored and managed



PROCUREMENT OPTIONS

DESIGN-BUILD

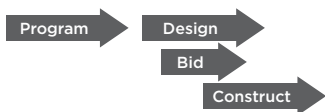


KEY FEATURES

- Owner executes one contract with integrated design/construction team based on program requirements
- Design/construction team executes full design, bidding and construction process based on requirements
- Construction typically starts before design completion

ADVANTAGES	CONCERNS / RISKS
<ul style="list-style-type: none"> • Single point of responsibility and risk for design and construction • Early construction start facilitates expedited schedule • Contractor can integrate design with construction for more efficient schedule • Cost certainty at outset (for work included in requirements document) 	<ul style="list-style-type: none"> • Owner input in design process is limited; owner requirements must be clearly outlined and communicated before start of process • Limited competitive bidding • Integrated contract eliminates check and balances between design and construction • Quality of end product must be closely monitored

SEQUENCE





BEAVERTON MIDDLE SCHOOL ▲

BEAVERTON, OREGON

This new \$52M middle school in Beaverton, Oregon opened its doors in September 2016. Designed as a learning tool, the building features exposed steel x-braces (allowing students to learn how the building is engineered to withstand an earthquake), an interactive weather monitoring system on the roof that provides the students with wind speed/direction education, and an interactive solar kiosk provided by Bonneville Environmental Foundation which provides solar data via a secure iPad.

Currently the building serves as a swing school for the Springville K-8 students to serve as overflow space for the currently crowded campus. Next year it will house Vose Elementary School students, followed by Hazeldale, William Walker and finally, the Arts & Communication Magnet Academy while those schools are demolished and rebuilt.

Rider Levett Bucknall provided cost management and reconciliation services from design through construction of this 165,000 SF new Middle School in Beaverton, Oregon. Upon completion, this new facility will house up to 1,100 new students and provide for a complete academic curriculum supporting grade levels 6-8.

ESTIMATING DATA

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MECHANICAL & ELECTRICAL COSTS

The costs stated in this section reflect the standards and specifications normal to that region. Variation in costs may be experienced for factors such as site conditions, climatic conditions, standards of specification, market conditions, etc.

All costs are stated in USD(\$) per square foot, based on rates at December 2018.

LOCATION	M/E INDEX	SCHOOLS						HOSPITAL	
		ELEMENTARY		HIGH SCHOOL		UNIVERSITY		GENERAL	
		LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
NORTH AMERICA									
Boston	1.47	60	82	80	121	93	146	166	249
Calgary	1.41	57	78	77	116	89	140	159	239
Chicago	1.49	60	83	81	123	94	148	169	253
Denver	0.99	40	55	54	82	63	99	112	169
Honolulu	1.63	66	191	89	134	103	162	185	277
Las Vegas	0.97	39	54	53	79	61	96	109	164
Los Angeles	1.44	58	80	78	118	90	142	162	244
New York	1.73	70	96	94	142	109	172	196	294
Phoenix	1.00	41	55	54	82	63	99	113	170
Portland	1.09	44	60	59	89	68	108	123	184
San Francisco	1.75	71	97	95	144	110	174	198	297
Seattle	1.19	48	66	65	97	75	118	134	201
Toronto	1.48	60	82	81	122	93	147	168	251
Washington, D.C.	1.40	57	78	76	115	88	139	158	237

LOCATION	OFFICES - CLASS A						SHOPPING				HOTELS			
	M/E INDEX		PRIME		SECONDARY		CENTER		STRIP		5 STAR		3 STAR	
	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
NORTH AMERICA														
Boston	1.47	82	135	71	96	49	71	38	56	100	141	69	99	
Calgary	1.41	78	129	68	92	47	68	36	54	96	135	66	95	
Chicago	1.49	83	137	72	97	49	72	38	57	102	143	70	100	
Denver	0.99	55	91	48	65	33	48	25	38	68	95	47	67	
Honolulu	1.63	91	150	78	106	54	78	42	63	111	157	77	110	
Las Vegas	0.97	54	89	46	63	32	46	25	37	66	93	45	65	
Los Angeles	1.44	80	132	69	93	47	69	37	55	98	138	67	97	
New York	1.73	96	159	83	113	57	83	44	66	118	166	81	116	
Phoenix	1.00	55	92	48	65	33	48	26	38	68	96	47	67	
Portland	1.09	60	100	52	71	36	52	28	42	74	104	51	73	
San Francisco	1.75	97	161	84	114	58	84	45	67	120	168	82	118	
Seattle	1.19	66	109	57	77	39	57	30	46	81	114	56	80	
Toronto	1.48	82	136	71	96	49	71	38	57	101	142	70	100	
Washington, D.C.	1.40	78	128	67	91	46	67	36	54	95	134	66	94	

MECHANICAL & ELECTRICAL COSTS

LOCATION	M/E INDEX	PARKING				INDUSTRIAL				RESIDENTIAL MULTISTORY			
		MULTI-STORY		BASEMENT		WAREHOUSE		ATTACHED OFFICE		INVESTMENT		OCCUPIED	
		LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
NORTH AMERICA													
Boston	1.47	13	17	16	25	14	30	38	71	45	69	58	93
Calgary	1.41	12	17	15	24	14	29	36	68	44	68	56	89
Chicago	1.49	13	18	16	25	14	30	38	72	46	70	59	94
Denver	0.99	8	12	11	17	10	20	25	48	31	47	39	63
Honolulu	1.63	14	19	17	28	16	33	42	78	51	77	64	103
Las Vegas	0.97	8	11	10	16	9	20	25	46	30	45	38	61
Los Angeles	1.44	12	17	15	25	14	29	37	69	44	67	57	90
New York	1.73	15	20	18	30	17	35	44	83	54	81	68	109
Phoenix	1.00	9	12	11	17	10	20	26	48	31	47	39	63
Portland	1.09	9	13	12	19	10	22	28	52	34	51	43	68
San Francisco	1.75	15	21	19	30	17	35	45	84	54	82	69	110
Seattle	1.19	10	14	13	20	11	24	30	57	37	56	47	75
Toronto	1.48	13	17	16	25	14	30	38	71	46	70	59	93
Washington DC.	1.40	12	16	15	24	13	28	36	67	43	66	55	88

OFFICE BUILDING EFFICIENCIES

The efficiency of an office building is expressed as a percentage of the Net Rentable Area to the Gross Floor Area. The table below indicates that relationship to the Gross Floor Area of the whole building both with parking garages and basements included and excluded, that could be expected for an average project in the nominated category. Also shown is the efficiency of a typical floor in each category.

TYPE OF OFFICE BUILDING	EFFICIENCY (PER CENT)		
	BASEMENTS & PARKING		TYPICAL FLOOR
	INCLUDED	EXCLUDED	
PRESTIGE CENTRAL BUSINESS DISTRICT (CBD)			
10 to 25 Stories	63 - 68	75 - 80	85 - 90
25 to 40 Stories	58 - 63	70 - 75	80 - 85
40 to 55 Stories	53 - 58	68 - 73	75 - 80
INVESTMENT CBD			
Up to 10 Stories	69 - 74	81 - 85	86 - 91
10 to 25 Stories	64 - 69	76 - 81	81 - 86
25 to 40 Stories	59 - 64	71 - 76	76 - 81
INVESTMENT, Other than CBD			
Up to 10 Stories	70 - 75	82 - 86	87 - 92
10 to 25 Stories	65 - 70	77 - 82	82 - 87

MECHANICAL & ELECTRICAL SERVICES

Generally mechanical and electrical space represents 5 - 7% of the Gross Floor Area of a multi-story office building.

LABOR & MATERIAL TRADE RATIOS

The following represents the ratio of on-site labor to material for various trades and sub-trades based upon our own survey.

The figures are relevant to all works constructed by traditional practices; variations to these practices will change the ratios, i.e., on-site fabrication of items traditionally factory fabricated such as casework, metalwork items, etc.

	Labor	Material	Fixed Factor
General Conditions	40	10	50
Demolition		85	15
Excavation	32	15	53
Piling	20	50	30
Concrete	25		75
Formwork	70		30
Reinforcement	20		80
Precast concrete	20		80
Brick & Block	50		50
Stone Masonry	10		90
Asphalt Roofing	40		60
Structural Steelwork	6		94
Metalwork	20		80
Suspended Ceilings	40		60
Carpentry	45		55
Millwork	15		85
Miscellaneous Metals	25		75
Steel Deck Roofing	40		60
Built Up Roofing	30		70
Pipework Plumbing	44		56
Plumbing Fitting	25		75
Drainage	60		40
Plastering	80		20
Gypsum Board	40		60
Ceramic Tiles	55		45
Vinyl Tiles	45		55
Painting	75		25
Vinyl Wall Fabric	60		40
Paper Hanging	35		65
Carpet	10		90
Roadwork & Paving	15		85
HVAC	35		65
Elevators	25		75
Electrical	40		60
Fire Sprinklers	44		56

ESTIMATING REINFORCEMENT RATIOS

The following ratios give an indication of the average weight of bar reinforcement in typical concrete applications. Differing structural systems, ground conditions, height of buildings, load calculations and sizes of individual elements and grid sizes may cause considerable variation to the stated ratios. For project specific ratios a structural engineer should be consulted.

ELEMENT	WEIGHT RATIO	
Caissons (belled or straight shaft)		
12" diameter	40	lbs/Lft
36" diameter	350	lbs/Lft
72" diameter	1500	lbs/Lft
Paving	3	lbs/sq ft
Cantilevered retaining walls (1 face of rebar, 1 layer)		
8" thick, 10' - 12' high	96	lbs/yd
12" thick, 10' - 12' high	62	lbs/yd
Continuous, stepped and sloped footings	5 - 25 25 - 110	lbs/Lft lbs/yd
Grade beams	7.5 - 35 40 - 132	lbs/Lft lbs/yd
Slab on-grade	1.5 - 4.75 90 - 165	lbs/sq ft lbs/yd
Beams		
10' - 16'	210 - 240	lbs/yd
20' - 26'	200 - 230	lbs/yd
Columns	210 - 530	lbs/yd
Supported slabs	2.25 - 6.75 85 - 155	lbs/sq ft lbs/yd
Slab over metal deck	2.08 - 4.15 98 - 140	lbs/sq ft lbs/yd
Pits and trenches	50 - 70	lbs/yd
Tiltup panels	1.5	lbs/sq ft

PROGRESS PAYMENTS

The tabulations on the following pages are derived from the statistical average of a series of case histories which, when used for a specific project, will give an indication of the anticipated rate of expenditure.

Construction times incorporate various extensions including wet weather, industrial disputes, etc.

All data is related to the date of submission of contractor's application for payment to the owner and not actual payment which is generally one month later.

No adjustment has been made for the retained money on the assumption that most projects will substitute bonds for retainage.

Construction projects under \$5,000,000 and/or less than one year construction period to substantial completion.

CONTRACT DURATION	BUILDER'S WORK	MECHANICAL SERVICES	ELEVATORS, ETC.	ELECTRICAL SERVICES	OVERALL PROJECT
%	%	%	%	%	%
5	3.9	—		—	3.3
10	8.6	—		—	7.2
15	13.6	1.2		—	11.5
20	18.7	3.5		0.2	16.0
25	25.0	7.6		2.0	21.7
30	31.4	13.9		4.6	27.8
35	37.9	21.0		9.9	34.2
40	44.4	29.6	N	16.0	40.8
45	51.0	38.4		22.1	47.5
50	57.7	47.7	I	29.6	54.5
55	64.2	56.5		37.9	61.3
60	70.5	65.2	L	48.5	68.1
65	76.4	73.3		63.2	74.7
70	81.6	80.0		71.7	80.2
75	86.1	85.7		78.0	85.1
80	90.2	90.3		83.2	89.4
85	93.5	94.0		88.0	92.9
90	95.7	95.7		92.6	95.2
95	97.2	97.0		95.8	96.8
100	98.4	98.2		97.4	98.0

PROGRESS PAYMENTS

Construction projects from \$5,000,000 to \$40,000,000 and/or greater than one year but less than two years construction period to substantial completion.

CONTRACT DURATION	BUILDER'S WORK	MECHANICAL SERVICES	ELEVATORS, ETC.	ELECTRICAL SERVICES	OVERALL PROJECT
%	%	%	%	%	%
5	2.8	—	—	—	1.9
10	6.1	—	—	—	4.2
15	9.9	—	—	0.5	6.9
20	14.2	1.5	—	1.4	10.2
25	19.1	4.8	—	3.3	14.1
30	24.3	10.5	0.9	6.4	18.8
35	31.1	16.9	6.0	9.8	24.6
40	37.8	25.9	11.2	14.1	31.2
45	44.7	36.7	17.7	19.4	38.2
50	50.5	49.9	25.4	25.1	46.6
55	57.3	61.3	34.9	33.1	55.3
60	63.7	70.1	46.2	43.0	62.7
65	69.7	76.9	61.2	54.9	69.6
70	75.3	82.8	73.5	68.6	76.4
75	81.0	88.4	80.8	78.1	82.1
80	86.2	92.4	85.7	85.0	86.9
85	91.1	94.9	89.9	90.8	91.1
90	94.5	96.8	93.1	94.3	93.9
95	97.1	97.9	94.5	96.7	96.3
100	98.5	98.3	95.1	97.5	97.5

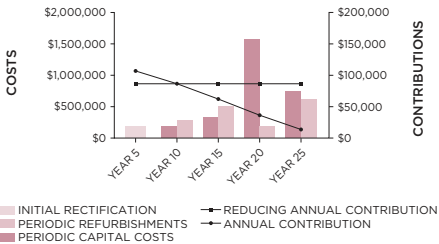
Construction projects from \$40,000,000 and/or greater than two years construction period to substantial completion.

CONTRACT DURATION	BUILDER'S WORK	MECHANICAL SERVICES	ELEVATORS, ETC.	ELECTRICAL SERVICES	OVERALL PROJECT
%	%	%	%	%	%
5	1.4	—	—	—	0.9
10	3.3	—	—	—	2.1
15	5.6	—	—	—	3.6
20	8.7	0.3	—	0.5	5.7
25	12.2	1.2	—	2.0	8.3
30	16.6	3.6	0.3	4.3	11.8
35	21.3	7.8	4.9	7.4	16.2
40	27.9	13.3	10.1	11.4	22.3
45	35.3	19.9	16.1	17.3	29.3
50	43.1	26.6	22.2	23.5	36.6
55	50.5	33.9	34.8	30.1	44.4
60	57.3	42.1	49.0	37.6	52.1
65	63.6	50.6	67.0	45.9	59.8
70	69.8	59.1	76.8	55.0	67.0
75	76.0	67.3	82.6	65.4	73.9
80	82.2	75.4	87.2	76.4	80.7
85	87.5	83.4	90.6	85.2	86.7
90	92.7	90.3	94.0	92.2	92.2
95	96.8	96.1	96.4	96.8	96.6
100	98.8	98.9	97.6	98.6	98.8

SINKING FUNDS

A sinking fund provides a responsible and equitable method of managing future capital expenditure. Sinking funds for property address capital expenditure for repainting, recarpeting, replacement of machinery and equipment, refurbishment of common property and similar items which inevitably wear out.

BASED ON A \$15 MILLION OFFICE BUILDING



Drawdowns can be equal annual contributions or reducing annual contributions for the specified period, as commitments are met, as graphically illustrated.

Property owners have a degree of control over when capital expenditure is committed, i.e. certain items can be deferred or brought forward.

The following sinking fund table with total capital expenditure over 25 years of \$4,350,000 reflects the benefit and sensitivity of expenditure deferral.

	YR 5	YR 10	YR 15	YR 20	YR 25
SCHEDULED					
x	78,779	78,779	78,779	78,779	78,779
ø	101,942	82,416	62,565	39,822	12,561
TWO YEAR EXPENDITURE					
x	63,978	63,978	63,978	63,978	63,978
ø	77,251	64,868	49,891	32,068	10,201

x - Annual Contribution ø - Reducing Annual Contribution

METHOD OF MEASUREMENT OF BUILDING AREAS

The following rules for measurement of building areas are extracted from the BOMA Method of Measurement (1996 Revision) which is published by the Building Owners and Managers Association International.

GROSS BUILDING AREA

The GROSS BUILDING AREA shall mean the total constructed area of a building. The area is computed by measuring to the outside finished surface of permanent outer building walls, without any deductions. All enclosed floors of the building, including basements, garages, mechanical equipment floors, penthouses, and the like are calculated.

FLOOR RENTABLE AREA

FLOOR RENTABLE AREA shall mean the result of subtracting from the GROSS BUILDING AREA of a floor the area of MAJOR VERTICAL PENETRATIONS on that same floor. No deductions shall be made for columns and projections necessary to the building. Spaces outside the exterior walls, such as balconies, terraces, or corridors are excluded.

FLOOR USABLE AREA

FLOOR USABLE AREA shall be computed by measuring the area enclosed between the finished surface of the office area side of corridors and the dominant portion and/or the major vertical penetrations. No deductions shall be made for columns and projections necessary to the building. Where alcoves, recessed entrances or similar deviations from the corridor line are present, floor usable area shall be computed as if the deviation were not present.

DEFINITIONS

BUILDING WORKS

Building works include substructure, structure, finishes, fittings, general conditions, supervision of sub-trades and general contractor's work in connection with services.

BUILDING SERVICES

Building services include special equipment, plumbing, fire protection, mechanical, vertical transportation, building management and electrical services.

OFFICE BUILDINGS

Prestige offices are based on very high quality buildings for the upper range of the rental market and leading owner-occupiers including headquarters buildings for banks, insurance, mining and other major companies.

Investment offices are based on good quality buildings which are built for the middle range of the rental market.

HOTEL

RATING	GFA/ROOM TOTAL	GFA/ROOM ACCOM.	GFA/ROOM PUBLIC
5 STAR	915-1200 SF	485-600 SF	430-600 SF
4 STAR	700-915 SF	430-485 SF	275-430 SF
3 STAR	430-700 SF	325-430 SF	115-270 SF

	GFA/UNIT TOTAL	GFA/UNIT ACCOM.	GFA/UNIT PUBLIC SPACE
ALL SUITES	700-860 SF	645-750 SF	50-110 SF

Exclusions: Furniture, Fixtures and Equipment.

Note: Public space includes back-of-house areas.

CAR PARKS

Multi-story - Minimal external walls.

Basement - Central business district locations incur higher penalties for restricted sites and perimeter conditions.

INDUSTRIAL BUILDINGS

Quality reflects a simplified type of construction suitable for light industry. Exclusions: special equipment.

REGIONAL SHOPPING CENTERS

Department Store: partially finished suspended ceilings and painted walls. Exclusions: Floor finishes, store fixtures, etc.

Supermarket: fully finished space with utilities. Exclusions: cool rooms, store fixtures, etc.

Malls: fully finished space with utilities.

Specialty shops: partially finished with ceilings, unpainted walls, power to perimeter point. Exclusions: floor finishes, store fixtures, etc.

SMALL SHOPS AND SHOWROOMS

Exclusions: floor finishes, plumbing (other than stub outs for cold water and drainage in each store), store fittings, etc.

RESIDENTIAL

Multi-story condominiums reflect medium to luxury quality, air-conditioned, accommodation up to 20 stories in height.

Single-story or walk-up units reflect medium quality non air conditioned accommodation.

Note: the ratio of kitchen, laundry and bathroom areas to living areas and finishes required considerably affects the cost range.

Range given is significantly affected by the height and configuration of the building.

Exclusions: furnishings, carpet, special fixtures, washing machines, dryers, refrigerators and tenant's special requirement.



UNIVERSITY OF COLORADO LONGS PEAK ▲

LONGMONT, COLORADO

The UHealth Longs Peak Hospital is a new, 210,000 SF facility offering state-of-the-art medical treatment in Longmont, Colorado. The 51 inpatient bed facility features a Level III trauma center and emergency department, ICU, operating rooms, birthing center, pharmacy, lab space, and other general services. An attached 12,000 SF utility plant supports hospital operations. The design encompasses UHealth's long-term vision of expansion and flexibility of facilities that is consistent with other UHealth hospitals being built throughout Colorado.

As reported by UHealth, in the first month of operation, Longs Peak treated 708 people in the emergency department, 65 surgeries were performed, and 47 babies were born. The facility continued to make a tremendous impact on the community in its first year of operation.

Rider Levett Bucknall had an extensive role through the design and construction of the project. UHealth required RLB's services including early project budgeting, cost planning, design milestone cost estimating, CM/GC GMP proposal reviews, CM/GC change order reviews, and monthly schedule analysis. The construction of the project was completed ahead of schedule in just 14 months.

The project received a Best Project Award in Health Care by ENR and continues to be a prime representation of innovation in healthcare facilities.

RLB OFFICES

Americas	64
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BEAVERTON SCHOOL DISTRICT MOUNTAINSIDE HIGH SCHOOL ▲

BEAVERTON, OREGON

Completed in September 2017, Mountainside High School is a 334,700 SF new comprehensive high school located in Beaverton, Oregon. The school was built on 47 acres and it contains 342,000 SF of space, including 53 general classrooms, five special education classrooms, and 11 science classrooms. It has a capacity of 2,200 students.

The project faced many challenges due to market conditions and rising costs of materials – Rider Levett Bucknall was able to help mitigate the impact of these costs through Value Engineering exercises with the district, design team and contractor, collectively achieving significant project savings.

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PROFESSIONAL SERVICES

Rider Levett Bucknall offers the following professional services on building and civil engineering projects including the specialist components of plumbing, mechanical, electrical, vertical transportation, fire and security systems.

COST CONSULTANCY SERVICES

The service encompasses cost estimating, cost management, the production of bid and contract documents, the financial administration of building contracts, and dispute resolution.

PLANNING STAGE COST CONTROL

- Budget report
- Elemental analysis
- Estimates
- Cost benefit studies
- Cost planning
- Cost negotiation

CONTRACTUAL ADVICE

- Project delivery systems
- Forms of contract
- Special contract clauses
- Bidding procedures
- Contractor suitability reports
- Design/Build & package deal contractual assessments

COST CONTROL DOCUMENTATION

- Bills of quantities
- Trade bills of quantities
- Provisional bills of quantities
- Simplified bills of quantities

BID ADVICE

- Assessment of bids
- Negotiation

CONSTRUCTION STAGE COST CONTROL

- Valuation of monthly progress claims
- Progressive budgetary reporting
- Change order review and negotiation
- Cost escalation calculations

PROJECT MANAGEMENT SERVICES

FEASIBILITY

- Definition of client's requirements
- Review of concept design
- Budget development
- Evaluation of environmental studies
- Preliminary project scheduling
- Cash flow and market analysis
- Risk analysis and identification
- Value engineering studies
- Feasibility studies and recommendations

DESIGN & DEVELOPMENT

- Consultant selection advice and contract negotiation
- Contract execution
- Prepare project scope
- Value engineering
- Confirm preliminary cost estimate and prepare cost plan
- Submit regular design status reports
- Advise on project delivery systems
- Prepare and monitor design documentation
- Manage and coordinate consultant team
- Chair regular project management meetings
- Maintain compliance with client objectives
- Negotiate with authorities as required
- Constructability review
- Provide design and feasibility reports
- Obtain client approval and sign off
- Prepare and monitor project schedule

PROJECT MANAGEMENT SERVICES

DOCUMENTATION & PRE-CONTRACT

- Formulate contract strategies
- Prepare conditions of contract
- Secure authority and client approvals
- Manage documentation
- Cost control of design against budget
- Check design against client's requirements
- Set up management reporting system
- Set up cost control procedures
- Prepare contract administration procedures
- Prepare project manual
- Chair project management meetings
- Prepare monthly project progress reports
- Coordinate the bid documents
- Prepare bid report with recommendations
- Formalize and execute contract
- Prepare and monitor project website

CONSTRUCTION

- Monitor and report schedule performance
- Coordinate documentation for fast-tracking
- Monitor contract compliance
- Manage documentation
- Identify potential delays and take action
- Process progress payments
- Monitor, analyze and forecast cash flows
- Enforce cost control procedures
- Chair cost management meetings
- Evaluate claims and manage disputes
- Prepare monthly project progress reports
- Identify potential cost overruns
- Evaluate extension of time claims
- Monitor contractor's performance
- Coordinate FF&E and fit-out procedures
- Maintain management reporting system
- Streamline and manage time and cost
- Monitor quality control

ADVISORY SERVICES

ALTERNATE DISPUTE RESOLUTION

- Arbitration of construction disputes
 - Private and AAA
 - Sole and panel
- Mediator of construction disputes
- Neutral third party evaluation
- Dispute review board members

CONDITION ASSESSMENTS

- Due diligence pre-acquisition surveys
- Dilapidation/condition surveys

CONSTRUCTION CLAIMS

- Performance and payment bond investigations
- Analysis of outstanding change order claims
- Cost auditing
- Loss of efficiency/lost productivity analysis
- Disruption impact analysis
- Critical path analysis
- Changed conditions analysis
- Estimating reasonable value of work installed
- Construction management oversight and contract close out
- Expert Witness testimony
- Preparation or defense of
 - Requests for equitable adjustments
 - Delay claims
 - Excusable and compensable time extensions

CONSTRUCTION DEFECTS

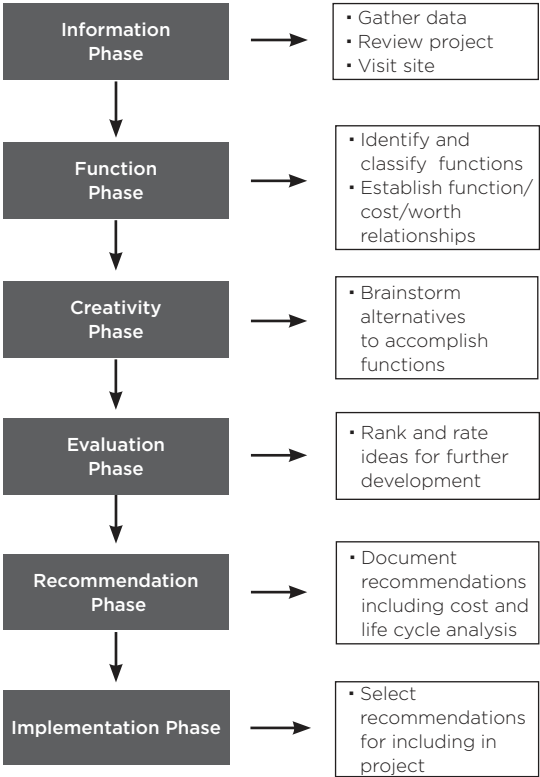
- Analysis of residential and commercial construction defects
- Standard of workmanship
- Scope and cost of repair
- Registrar of Contractors testimony
- Expert witness testimony
- Defense of plaintiff

CONSTRUCTION ECONOMIC ADVICE

- Market analysis
- Cost research

VALUE MANAGEMENT

STEPS TO FOLLOW IN THE VALUE MANAGEMENT PROCESS



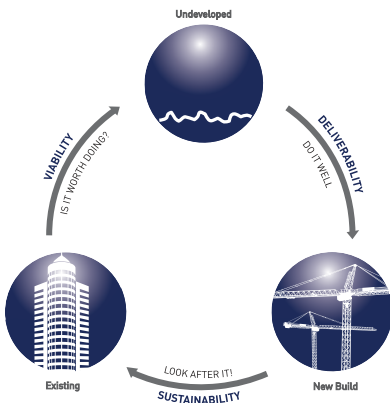


INNOVATIVE TOOLS TO HELP YOU ACHIEVE MORE EFFICIENT, COST CONSCIOUS AND ENVIRONMENTALLY SUSTAINABLE RESULTS-NOW AND INTO THE FUTURE.

Forward-thinking organizations are taking proactive measures to use their resources wisely. Along with technological advances to improve efficiency, there has been a significant and lasting shift toward preventing waste by making better use of existing assets.

More and more organizations have a heightened interest in project solutions which maximize performance, enhance value, and minimize environmental impact. Facing limited capital resources, building owners and managers must find the right balance between initial capital cost and long-term operation and maintenance costs.

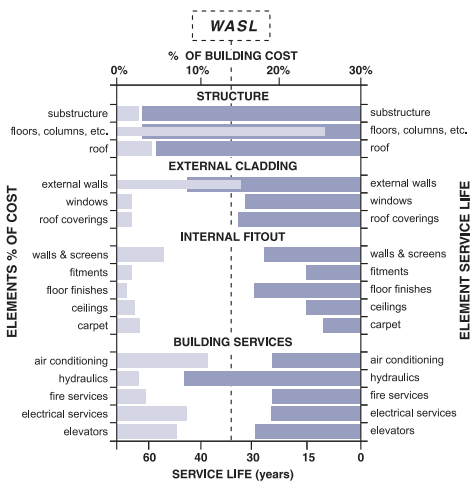
Rider Levett Bucknall|Life addresses this need by providing building owners and managers with new tools, methods, and information, allowing them to make well-informed decisions that represent their best long-term financial and sustainable interests.



RELIFING®

Rider Levett Bucknall's proprietary RELifing® service is a mathematically-based methodology to help building owners capture the remaining value and extend the life of their buildings after years of service.

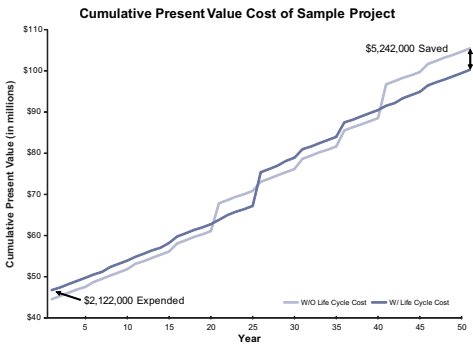
RELifing® determines the 'useful life' of a building by analyzing the cost and service life of its various components—structure, external claddings, internal fit-out, and building systems—and then calculating the total life expectancy or Weighted Average Service Life (WASL). RELifing® then analyzes and prices the recommendations for maintenance, upgrades, renovation, and replacement of various building components necessary to extend the building's life expectancy to certain milestones. When this analysis is compared with the cost to build new, owners are presented with a quantitative tool to determine which investment option will make the best use of functional and financial resources.



LIFE CYCLE COST + CARBON MODELING

This service is our response to the challenges property owners face in reconciling commercial viability with efficiency, sustainability, and environmental sensitivity throughout a structure's life cycle. Using our model, owners can develop facilities which are not only cost effective to build but operationally efficient over their life span.

Sophisticated owners recognize that the capital cost of a facility may be less significant when compared with the total cost of ownership over time. An integrated Life Cycle Cost model enables capital and life cycle characteristics of individual components, elements, and whole buildings to be modeled and forecasted over the life of a proposed facility.



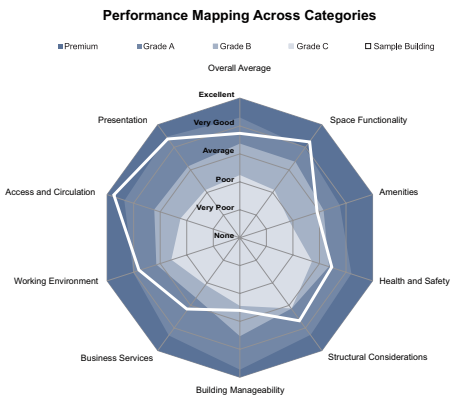
Interdependencies between variables are established and comparison of multiple options provides a frame of reference for making important long-term investment decisions. The model can also be used to calculate carbon footprint, LEED™, energy and CO₂ consumption, water consumption, and capital allowances.

The Rider Levett Bucknall model can be used at all stages of the asset life cycle from inception, through design development and into operation.

BUILDING QUALITY ASSESSMENT

There is a critical link between the quality of an office building and its ultimate performance as an asset. Yet, there is no prevailing rating system in place to measure a facility's relative strengths and weaknesses in relation to industry standards and tenant expectations.

Our Building Quality Assessment service addresses this need with a standardized method for quantifying and evaluating building quality based on standard criteria across a number of general categories (space functionality, amenities, building operations, etc.). The service provides a quality grade for a specific facility based on its physical characteristics and an 'apples to apples' comparative analysis against other similar structures.



The analysis highlights categories where the facility did not perform to the expected standards of quality and identifies areas where upgraded capacity or utility could be considered to enhance the grading performance of the building. This evaluation enables the optimization of the right mix of quality factors to match investor, owner, and user objectives.



PARK LANE ALA MOANA ▲

HONOLULU, HAWAII

Located steps away from world-class beaches and the cosmopolitan city center of Honolulu, Park Lane Ala Moana offers its residents luxurious, private estate homes with resort-like living.

Built over an expanse of more than seven acres with eight separate buildings, Park Lane consists of 217 ultra-luxury condominium units, ranging from 800 to 6,000 square feet of indoor/outdoor living. The one-of-a-kind project includes private barbeques on its lanais and private pools and spas on the ground floor units. The project is adorned with amenities that include a stunning pool deck, playground structure, a dog park, spa level equipped with treatment rooms, sauna, steam and cold plunge pools, fitness center, club lounge, private dining room, a movie theatre and generous open spaces, furnishing a resort-like setting for this private residential community.

Rider Levett Bucknall provided project management and cost consultancy services for construction of the new landmark project, which was delivered on time and within budget.

MISCELLANEOUS ITEMS

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CALCULATION FORMULAE

TO FIND	CALCULATE
Area of triangle	Base \times $\frac{1}{2}$ \times height
Area of circle	(radius) ² \times 3.1416
Area of sector of circle	Lengths of arc \times $\frac{1}{2}$ \times radius
Area of square, rhombus	Base \times height
Area of equilateral triangle	(Side) ² \times 0.433
Area of trapezium	Height \times $\frac{1}{2}$ \times (sum of parallel sides)
Area of ellipse	Major axis \times minor axis \times 0.7854
Area of parabola	$\frac{2}{3}$ \times base \times height
Circumference of a circle	Diameter \times 3.1416
Surface area of sphere	4 \times (radius) ² \times 3.1416
Surface area of cone	(radius \times slant side \times 3.1416) + area of base
Volume of cylinder	Area of base \times height
Volume of cube or prism	Length \times breadth \times depth
Volume of cone	Height \times $\frac{1}{3}$ \times area of base
Volume of hexagonal prism	(Side) ² \times height \times 2.598
Volume of sphere	$\frac{4}{3}$ \times (radius) ³ \times 3.1416

CONVERSION FACTORS

TO CONVERT	MULTIPLY BY
LENGTH	
Inches into centimeters	2.54
Centimeters into inches	0.394
Feet into meters	0.305
Yards into meters	0.914
Meters into feet	3.281
Feet into meters	0.305
Yards into meters	0.914
Meters into yards	1.094
Kilometers into miles	0.621
Miles into kilometers	1.609
AREA	
Square meters into square feet	10.764
Square feet into square meters	0.093
Square yards into square feet	9.0
Square yards into square meters	0.836
Square kilometers into square miles	0.386
Square kilometers into hectares	100.0
Square miles into square kilometers	2.59
Square miles into acres	640.0
Acres into square feet	43,560
Acres into square meters	4,046.86
Acres into hectares	0.405
Hectares into acres	2.471
TEMPERATURE	
Degree Celsius to Degree Fahrenheit	$(^{\circ}\text{C} \times 9/5) + 32$
Degree Fahrenheit to Degree Celsius	$(^{\circ}\text{F} - 32) \times 5/9$

CONVERSION FACTORS

TO CONVERT	MULTIPLY BY
VOLUME AND CAPACITY	
Cubic feet into cubic meters	0.028
Cubic meters into cubic feet	35.315
Cubic yards into cubic meters	0.765
Cubic feet into liters	28.3168
U.S. pints into liters	0.473
U.S. quarts into liters	0.946
U.S. gallons into liters	3.785
Liters into U.S. gallons	0.264
Liters into U.S. pints	2.113
POWER	
Foot pounds-force/second into watts	1.356
Horsepower into watts	745.7
Kilowatts into horsepower	1.341
MASS	
Grams into ounces	0.035
Ounces into grams	28.350
Ounces into pounds	0.063
Ounces into kilograms	0.028
Pounds into kilograms	0.454
Kilograms into pounds	2.205
U.S. tons into metric tons	0.907
U.S. tons into pounds	2,000
Metric tons into pounds	2,204.623
Metric tons into U.S. tons	1.102
FORCE	
Newtons into pounds force	0.225

CALENDAR

JANUARY 2019

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

FEBRUARY 2019

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28		

MARCH 2019

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

APRIL 2019

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

MAY 2019

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

JUNE 2019

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

JULY 2019

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

AUGUST 2019

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

CALENDAR

SEPTEMBER 2019

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

OCTOBER 2019

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

NOVEMBER 2019

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

DECEMBER 2019

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

JANUARY 2020

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

FEBRUARY 2020

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

MARCH 2020

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

APRIL 2020

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

IMPORTANT DATES

EVENT	DATE
New Year's Day	Tuesday, January 1
Martin Luther King Day	Monday, January 21
Chinese New Year	Tuesday, February 5
Ash Wednesday	Wednesday, March 6
Valentine's Day	Thursday, February 14
Presidents' Day	Monday, February 18
Daylight Savings Starts	Sunday, March 10
Saint Patrick's Day	Sunday, March 17
Passover Begins	Saturday, April 20
Good Friday	Friday, April 19
Easter	Sunday, April 21
Passover Ends	Saturday, April 27
Mother's Day	Sunday, May 12
Memorial Day	Monday, May 27
Flag Day	Friday, June 14
Father's Day	Sunday, June 16
Canada Day	Monday, July 1
Independence Day	Thursday, July 4
Labor Day	Monday, September 2
Rosh Hashanah	Monday, September 30
Yom Kippur	Wednesday, October 9
Columbus Day	Monday, October 14
Thanksgiving Day - CAN	Monday, October 14
Daylight Savings Ends	Sunday, November 3
Veteran's Day	Monday, November 11
Thanksgiving Day - USA	Thursday, November 28
Hanukkah Begins	Sunday, December 22
Hanukkah Ends	Monday, December 30
Christmas	Wednesday, December 25
Boxing Day - CAN	Thursday, December 26

* Beginning at sundown.

IDD COUNTRY CODES & TIME DIFFERENCES

DESTINATION	IDD COUNTRY CODE	TIME DIFFERENCE FROM U.S. EST
Australia (Adelaide)	+61 (8)	+15:30
Australia (Brisbane)	+61 (7)	+15
Australia (Canberra)	+61 (2)	+16
Australia (Darwin)	+61 (8)	+14:30
Australia (Melbourne)	+61 (3)	+16
Australia (Perth)	+61 (8)	+13
Australia (Sydney)	+61 (2)	+16
Barbados	+1 (246)	+1
Cayman Islands	+1 (345)	+0
China (Coastal Cities)	+86	+13
France	+33	+6
Germany	+49	+6
Guam	+1 (671)	+15
Hong Kong	+852	+13
India	+91	+10:30
Indonesia (Jakarta)	+62	+12
Italy	+39	+6
Japan	+81	+14
Macau	+853	+13
Malaysia	+60	+13
Mexico (Mexico City)	+52	-1
Netherlands	+31	+6
New Zealand	+64	+18
Oman	+968	+9
Pakistan	+92	+10
Philippines	+63	+13
Qatar	+974	+8
Russia (Moscow)	+7 (495)	+8
Russia (Saint Petersburg)	+7 (812)	+8
Saudi Arabia	+966	+8
Singapore	+65	+13
South Korea	+82	+14
Spain	+34	+6
Sweden	+46	+6
Switzerland	+41	+6
Taiwan	+886	+13
Thailand	+66	+12
United Arab Emirates	+971	+9
United Kingdom	+44	+5
United States - Central	+1	-1
United States - Mountain	+1	-2
United States - Pacific	+1	-3
United States - Alaska	+1	-4
United States - Hawaii	+1	-5
Vietnam	+84	+12



