

THE POWER OF BEING UNDERSTOOD

CONSTRUCTION RISK MANAGEMENT AND AUDITING

CMAE Capital Improvements Summit 2022

May 3, 2022

Agenda

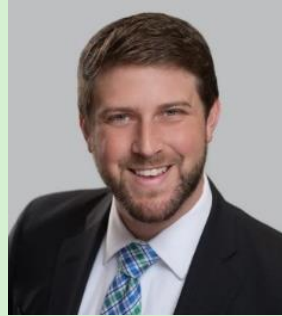
- Presenters
- About RSM
- Planning & Budgeting
- Contract Risk areas & Procurement
- Project Management
- Project Closeout

Presenters



David Luker, Director

- More than 17 years of experience
- Subject matter expert – facilities and construction
- Significant experience leading audits of construction manager-at-risk



Matt Blondell, Director

- More than 11 years of experience
- Subject matter expert – government and construction
- Engagement leader of government construction audit programs of more than \$1 billion.



Stephanie Tantillo, Manager

- More than 10 years of experience
- Leads health care construction audit program with contract volume over \$1 billion
- Certified Construction Auditor



Chris Gums, Senior

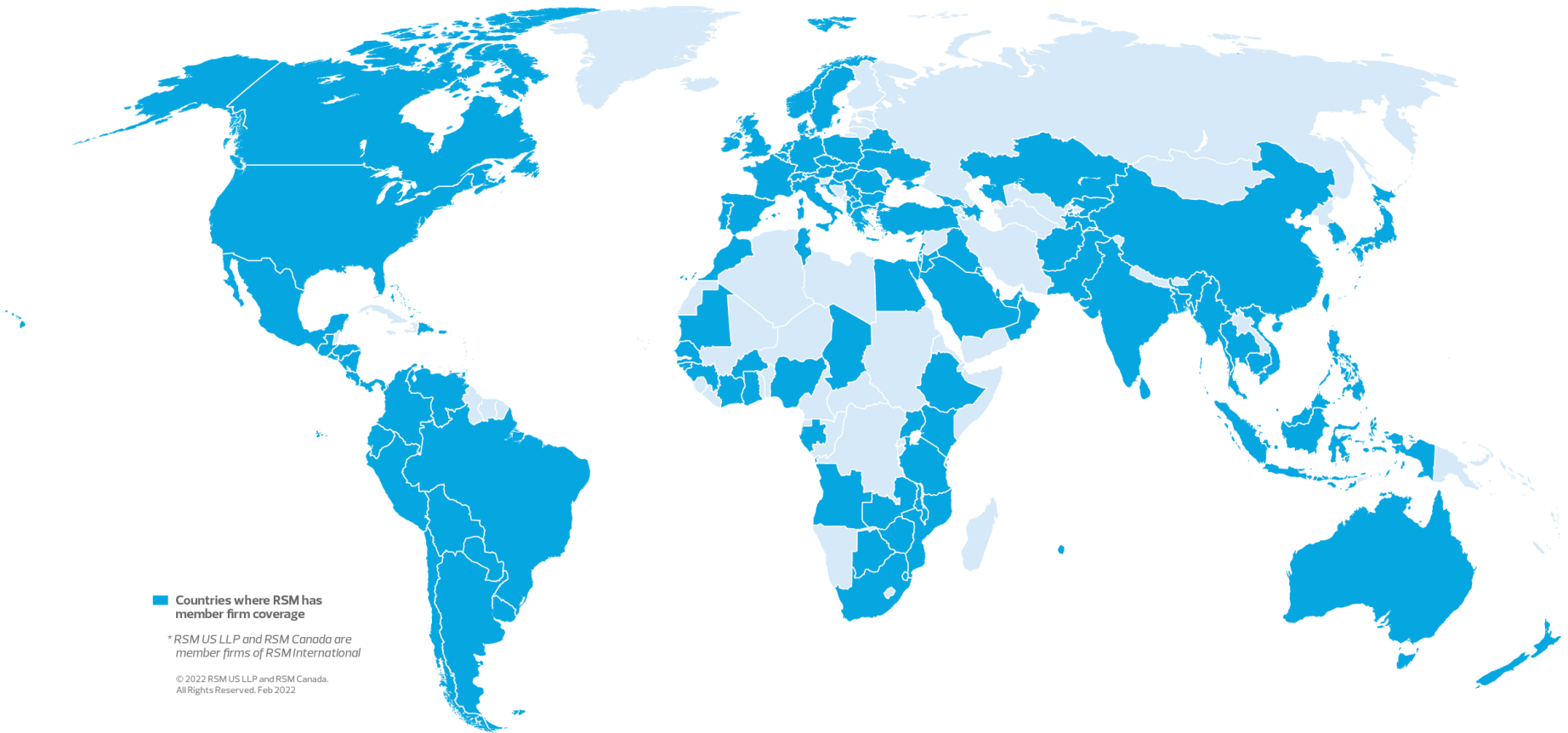
- Over 3 years of experience
- Service focus includes risk advisory services within the construction industry
- Leads testing of construction audit services



Devann Marchand, Senior

- 3 years of experience
- Specializes in construction cost analysis, labor and labor burden analysis, and project closeout
- Leads testing of construction audit services

About RSM



■ Countries where RSM has member firm coverage

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120+
countries



43,000
professionals



800+
offices



\$5.1B
in global fees



About RSM

Audit

Tax

Consulting

Financial consulting
Management consulting

Risk consulting

Technology consulting
Transaction advisory

- Internal audit and controls
- Cybersecurity and Data Privacy
- Technology Risks
- AML and Regulatory Compliance
- Risk Management Process Automation
- Enterprise and Strategy Risk
- Third-Party Risk
- Credit Risk
- Systems and Process Assurance

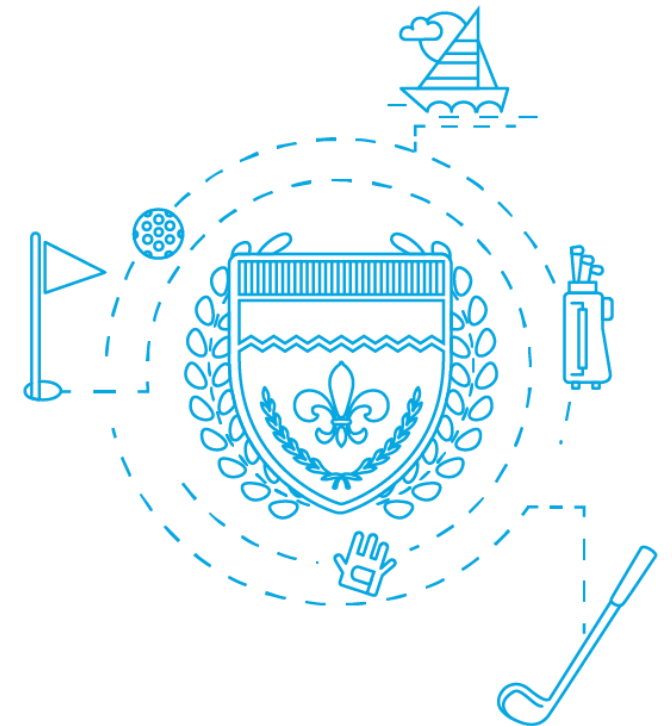
About RSM

Private clubs operate in a unique business environment. Whether a country club, golf club, city club or other, a private club is challenged with providing members optimum quality and service while managing costs. Clubs must react to changes in government regulations, tax laws, operational advancements and member expectations.

These challenges require the attention of professional service providers who know the industry and deliver services tailored to the private club environment. With an understanding of membership models, food and beverage operations, golf course maintenance and more, an audit conducted by industry-focused professionals provides the insight needed to strengthen the member experience. From sales tax, gratuities, rental units and other areas of the club operations, our tax professionals identify the issues impacting the tax position of private clubs and offer guidance and planning.

Our team offers additional insight into a number of areas of club operations including:

- Performance improvement
- Benchmarking
- Amenity pricing
- Turnover consulting
- Fraud and forensics
- IT security and controls
- Seminars for boards and management
- Construction contract audits





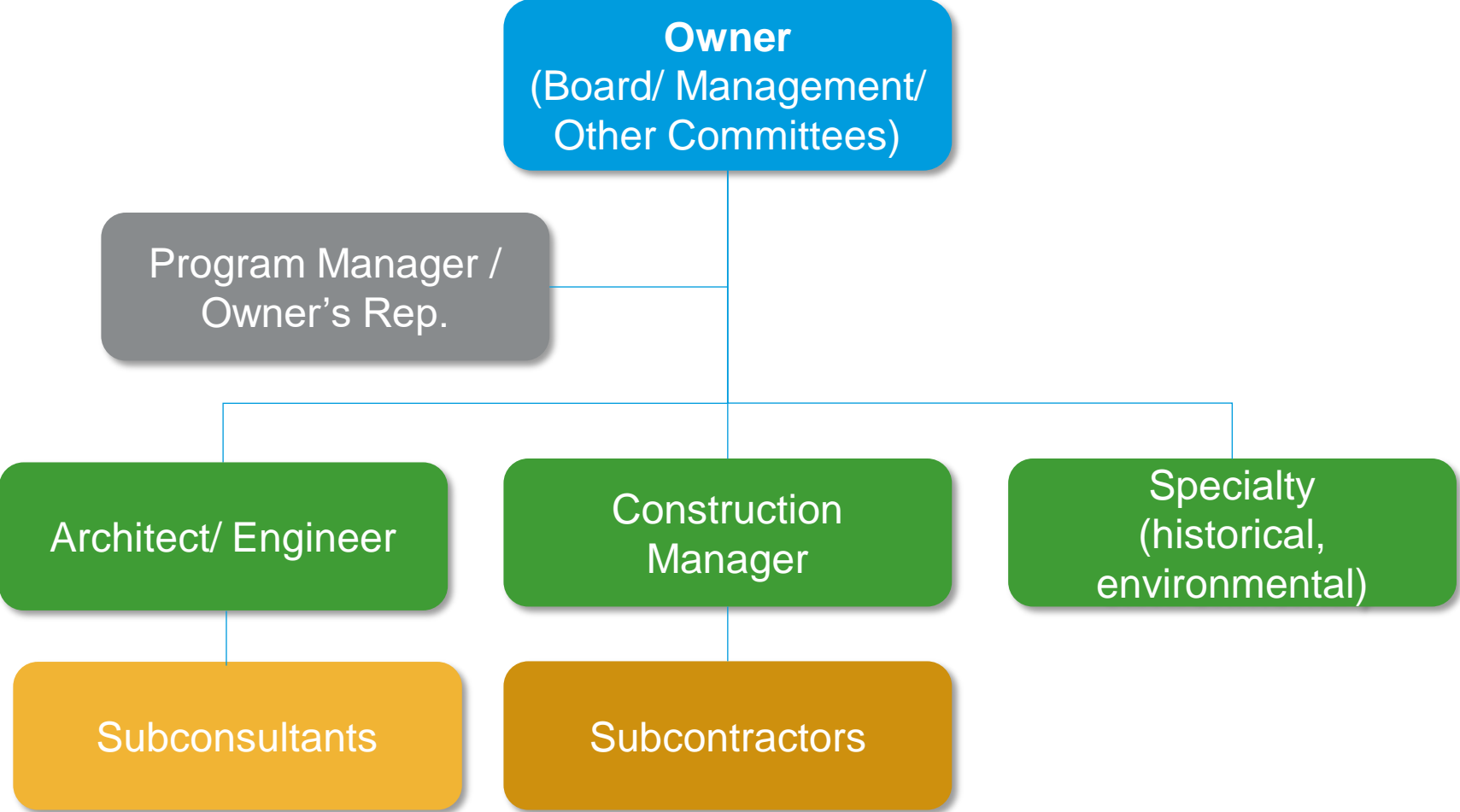
PLANNING & BUDGETING

Polling Question

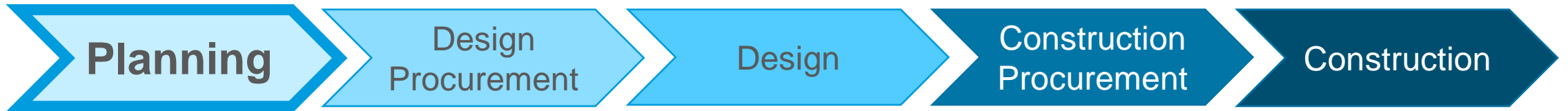
What type of project is your club currently pursuing or considering?

- Golf course improvements
- Non-golf amenities renovation
- Non-golf amenities new construction
- Other

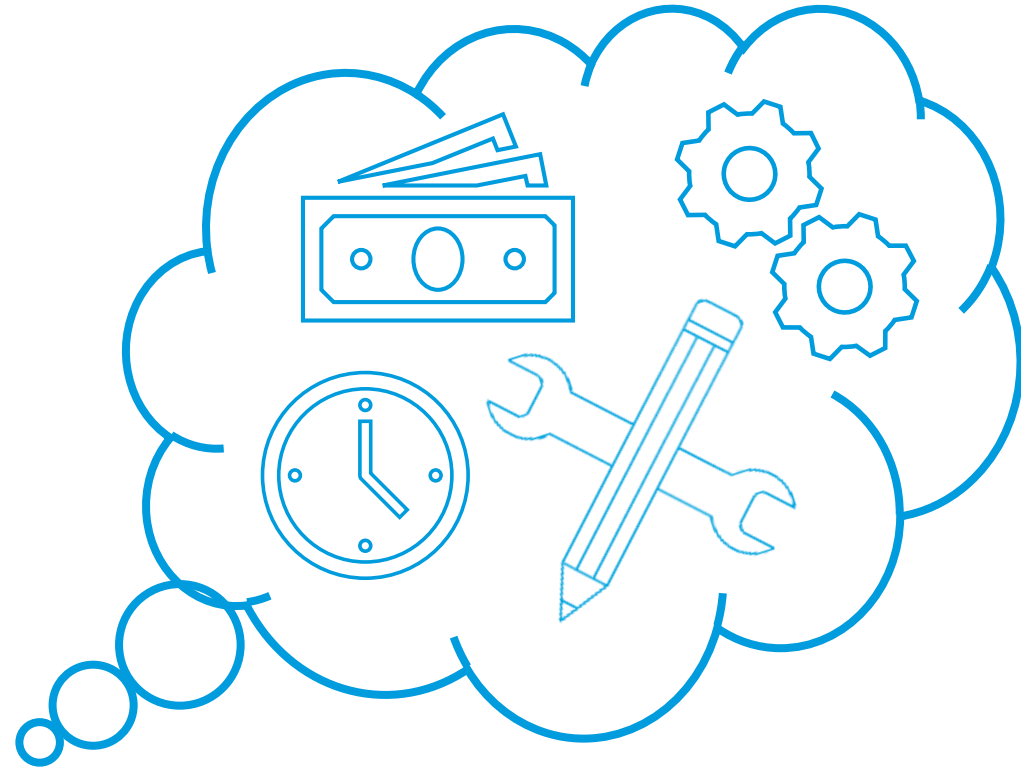
Typical Project Organization



Project Planning Phase - Factors to Consider



- Cost / Size
- Complexity / Scope
- Timing / Schedule
- Risk / Responsibility
- Owner Resources



Design Development Process

Proper planning reduces risk of cost overruns

- Involve contractor and consultants early
- Pre-construction planning
- Identify project risks during planning (renovation, existing conditions, constructability, equipment, etc.)

Budget and estimating approaches

- Preliminary estimate
 - Designer creates project plan based on Owner's needs and approximate budget
 - Estimate is based on historical or regional cost standards
 - "Ballpark" estimate as design is not complete (15-25% accuracy)
- Areas of common contingency spending:
 - Unforeseen conditions
 - Design change
 - Owner directed change
 - Environmental/ weather conditions
 - Error/ omission
- Intermediate estimates
 - Involve contractor for more precise estimates
 - Subcontractor bids and estimates
 - Square foot estimates (5-15% accuracy)
 - Assembly and systems estimate (10% accuracy)
 - Unit price estimates (most detailed process)
- Final estimates
 - Design is complete for formalized contractor bids

Components of the Project Budget

Hard Costs

- **70-75%** of total project budget
- “Brick and mortar costs”
- Construction

Soft Costs

- Contractor general conditions
- Construction costs
- Contractor contingency related
 - **25-30%** of total project budget
 - Any costs that are not directly construction-related
 - Architects, designers, consultants
 - Engineering and permit fees
 - Land real estate costs
 - Financing fees, insurance, bonds
 - Project management
 - Advertising and public relations
 - Legal services
 - Contingency



Project Budget Breakdown Examples

Project Element	Project A		Project B		Project C
Hard Costs					
Construction	\$ 10,880,432	74%	\$ 9,250,000	72%	
Total Hard Costs	10,880,432	74%	9,250,000	72%	
Soft Costs					
Planning, Architects, Permits	963,135	7%	931,000	7%	
FF&E and Interior Design	1,374,202	9%	460,000	4%	
Owner Costs (Construction Manager, Consultants, Real Estate, etc.)	1,143,290	8%	1,088,800	8%	
Contingency	300,215	2%	1,181,000	9%	
Total Soft Costs	3,780,842	26%	3,660,800	28%	
Total Project Costs	\$ 14,661,274		\$ 12,910,800		

Note: Gathering data for additional example(s)

A grayscale photograph of a person in a business suit signing a document with a pen. The document is titled 'CONTRACT' and contains various text and a bar chart. The person's hand is in the foreground, holding the pen over the document. Another hand is visible in the background, pointing at the document. A glass of water is on the right side of the desk.

CONTRACT RISKS

Polling Question

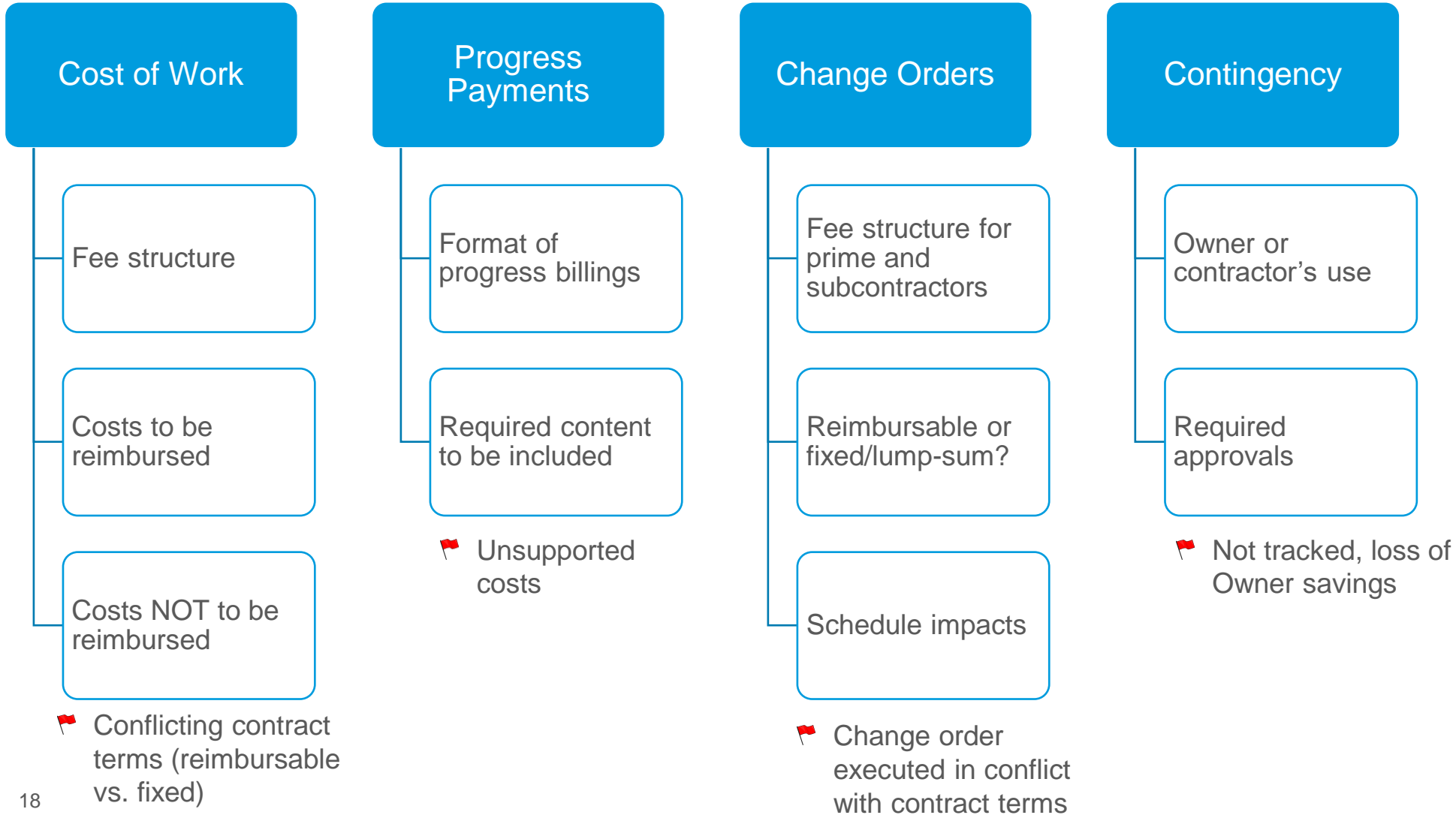
What type of contract does your organization traditionally use?

- Lump Sum
- Construction Manager at Risk
- Design Build
- Other

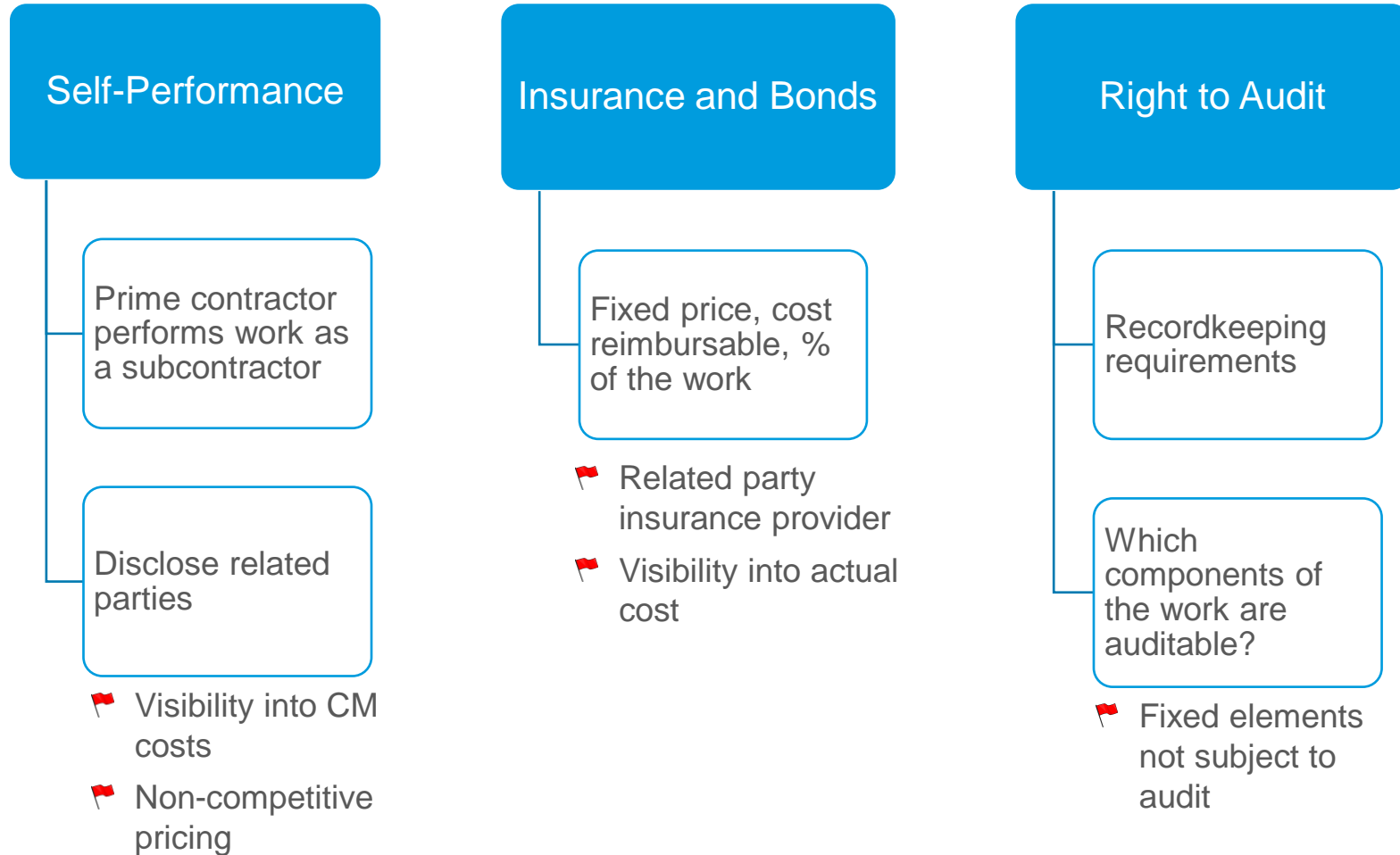
Procurement Methods Snapshot

Project Delivery Method	Most Common Type of Solicitation	Vendor Selection Criteria	Key Factors
Design-Bid-Build Lump Sum/ Fixed Price or Unit Price	IFB (Invitation for Bid)	<ul style="list-style-type: none"> Based solely on price Contract awarded to lowest bidder 	<ul style="list-style-type: none"> Known scope, quantities, design Separate designer and builder Longer schedule time
Construction Manager at Risk (CMAR)	RFP (Request for Proposal)	<ul style="list-style-type: none"> Based on price & qualifications Contract awarded based on best value 	<ul style="list-style-type: none"> Large, complex, multi-phase projects Separate designer and builder Moderate schedule time
Design-Build	RFP (Request for Proposal) or RFQ (Request for Qualifications)	<ul style="list-style-type: none"> Based heavily or solely on qualifications Contract awarded to most qualified firm 	<ul style="list-style-type: none"> Large, complex, specialized projects Same company for design and build Schedule efficiency

Vendor Agreements – Key Contract Provisions



Vendor Agreements – Key Contract Provisions



Review of the Solicitation

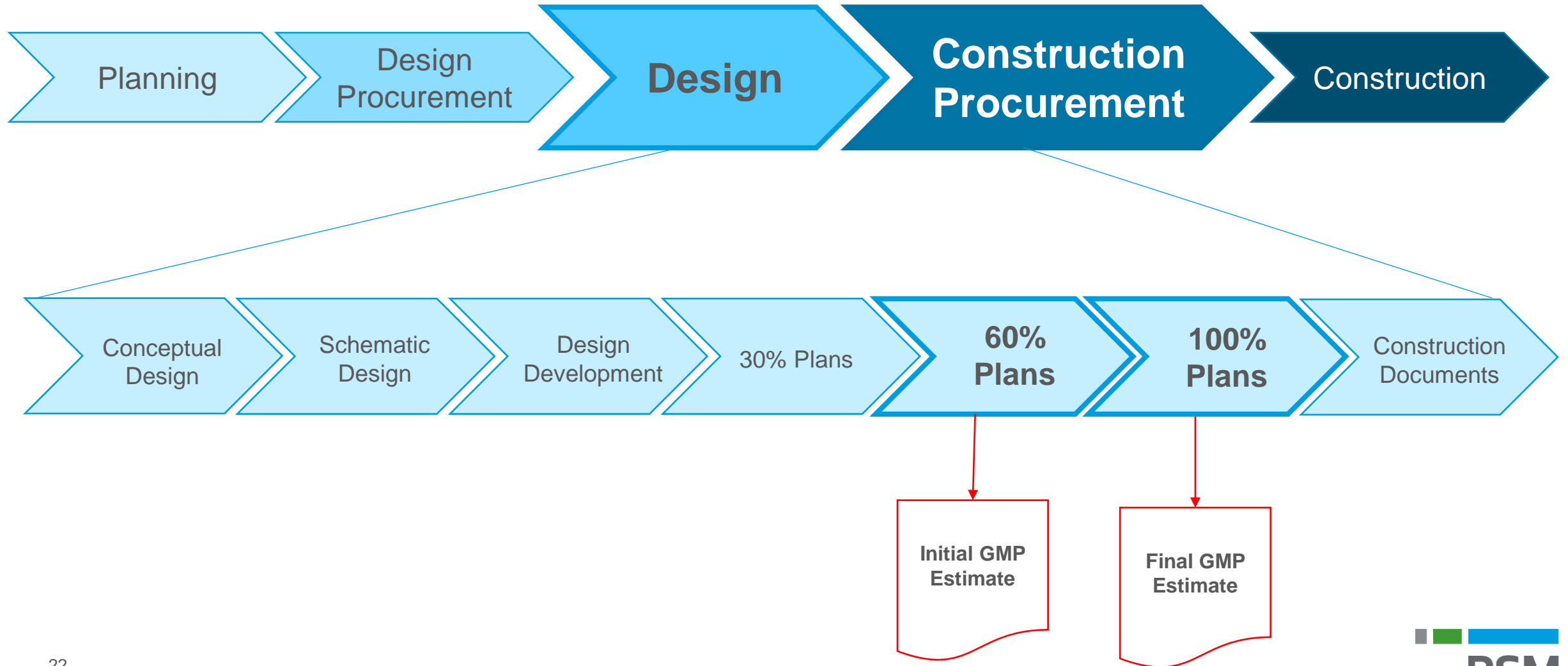
- Qualification based solicitation requirements include:
- Vendor experience incorporated into scoring criteria
- Transparency into terms and conditions of planned vendor agreement
- Objective scoring / ranking system (preferred method: numeric, multi-criteria scoring)
- Disclosure of no personal relationships between Owner and bidder (conflict of interest disclosure form)

Evaluation Committee & Scoring

- Selection committee comprised of experienced personnel and members outside of direct project management team
- Recommended committee composition:
 - Individuals from Procurement department
 - Individuals from Facilities/ Construction department (managing the contract)
 - Finance/Accounting
 - 3rd party Engineer/Independent
- Initial evaluation to determine shortlist
- Evaluation of oral/secondary presentations to determine awardee
- Documents to evidence process (audit trail)

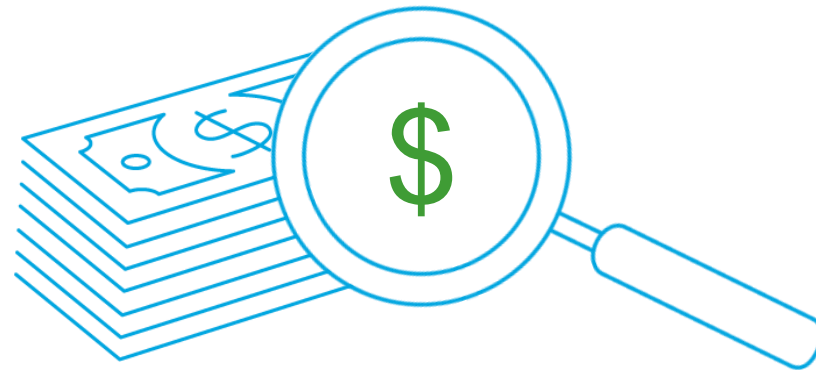


Design Phases and Construction Documents



Auditing a Guaranteed Maximum Price (GMP) Estimate

- Estimate is detailed by scope and individual line items
- Units (months, square feet, lump sum, etc.) are identified
- Subcontractor/ vendor costs are appropriately captured in the estimate
- Contractor soft costs agree to contract
 - General conditions, including equipment and labor rates and labor burden
 - Insurance, bond
 - Contingency
 - Fee



GMP Example

Item	Description	Takeoff Qty	Labor Amount	Material Amount	Subcontract Amount	Equipment Amount	Other Amount	Unit Cost	Total Amount
01 GC's									
1000.000	GENERAL CONDITIONS								
1230.000	Safety								
10	Safety Manager	69.00 wk	21,649	-	-	3,450	2,760	403.76 /wk	27,859
	Safety		21,649			3,450	2,760		27,859
	552.00 Labor hours								
	552.00 Equipment hours								
1300.000	Personnel: Supervision								
10	Superintendent	69.00 wk	239,623	-	-	-	-	3,472.80 /wk	239,623
20	Asst. Superintendent	60.00 wk	123,192	-	-	-	-	2,053.20 /wk	123,192
20	Asst. Superintendent	35.00 wk	59,962	-	-	-	-	1,713.20 /wk	59,962
	Personnel: Supervision		422,777						422,777
	6,560.00 Labor hours								
1400.000	Personnel: Vehicles								
10	Superintendent Truck	69.00 wk	-	-	-	13,800	1,380	220.00 /wk	15,180
15	Assistant Superintendent Truck	60.00 wk	-	-	-	12,000	1,200	220.00 /wk	13,200
15	Assistant Superintendent Truck	35.00 wk	-	-	-	7,000	700	220.00 /wk	7,700
20	Project Manager Vehicle	69.00 wk	-	-	-	13,800	1,380	220.00 /wk	15,180
25	Assistant Project Manager Vehicle	60.00 wk	-	-	-	12,000	1,200	220.00 /wk	13,200
30	Senior Project Manager Vehicle	69.00 wk	-	-	-	8,280	828	132.00 /wk	9,108
	Personnel: Vehicles					66,880	6,688		73,568
	13,376.00 Equipment hours								

General Conditions detail breakdown

Project personnel rates:
 Superintendent \$3,472.80/week

Project vehicle rates:
 Truck 69 weeks x \$220/week

GMP Example

Item	Description	Takeoff Qty		Labor	Material	Subcontract	Name	Equipment	Other	Unit Cost	Total	Amount
				Amount	Amount	Amount		Amount	Amount		Amount	
1150.000	<i>Temp. Phone & Communications</i>											
10	Cell Phone - Field Staff	80.00	umo	-	-	-		-	8,000	100.00 /umo		8,000
20	Hook-up Phone - Contractor's Temp. Office	1.00	ea	-	-	-		-	250	250.00 /ea		250
25	Temp Phone Usage - Contractor's Temp. Office	16.00	mo	-	-	-		-	6,400	400.00 /mo		6,400
40	Hook-up DSL - Contractor's Temp. Office	1.00	ea	-	-	-		-	500	500.00 /ea		500
42	Network Hardware/Firewall - Contractor's Temp. Office	1.00	ea	-	-	-		-	500	500.00 /ea		500
44	IT Department Setup - Temp. Office	1.00	ea	-	-	-		-	2,500	2,500.00 /ea		2,500
52	Temp. Office Printer	16.00	umo	-	-	-		8,800	-	550.00 /umo		8,800
52	Vela Software	16.00	umo	-	-	-		-	4,380	273.78 /umo		4,380
52	iPad w/ Protective Cover	3.00	ea	-	-	-		-	2,400	800.00 /ea		2,400
52	Wireless Data Connections iPads	48.00	umo	-	-	-		-	2,400	50.00 /umo		2,400
	<i>Temp. Phone & Communications</i>							<u>8,800</u>	<u>27,330</u>			<u>36,130</u>
1190.000	<i>Temp. Project Signage</i>											
10	Project Sign	1.00	ea	-	-	850		-	-	850.00 /ea		850
18	Directional Signage	1.00	ea	-	-	850		-	-	850.00 /ea		850
20	Safety Signage	1.00	ls	-	-	1,500		-	-	1,500.00 /ls		1,500
	<i>Temp. Project Signage</i>					<u>3,200</u>						<u>3,200</u>
	7.00 Labor hours											
1200.000	<i>Temp. Field Office</i>											
10	Delivery & Setup Charges	2.00	ea	-	-	-		-	3,000	1,500.00 /ea		3,000
14	Field Office - 12 x 50 Double Wide	16.00	mo	-	-	-		-	24,000	1,500.00 /mo		24,000
18	Stairs/HC Ramp & Rails	550.00	sf	4,233	4,686	-		-	-	16.22 /sf		8,919
20	Removal & Demobilize	2.00	ea	-	-	-		-	3,000	1,500.00 /ea		3,000
30	Office Furniture - Desk, Chairs, Filing Cabinets, Tables, etc...	1.00	ls	-	799	-		-	-	798.75 /ls		799
32	Jobsite Fax Machine	16.00	mo	-	-	-		400	-	25.00 /mo		400
34	Jobsite Copy Machine	16.00	mo	-	-	-		10,400	-	650.00 /mo		10,400
36	Trailer Phone System & Equipment	2.00	ea	-	3,195	-		-	-	1,597.50 /ea		3,195
38	Water Cooler & Water	16.00	mo	-	1,278	-		-	-	79.88 /mo		1,278
40	Field Office Supplies	16.00	mo	-	4,260	-		-	-	266.25 /mo		4,260
	<i>Temp. Field Office</i>			<u>4,233</u>	<u>14,218</u>			<u>10,800</u>	<u>30,000</u>			<u>59,251</u>
	165.00 Labor hours											

Detailed breakdown – technology (cell phones, IT costs, etc.)

General Requirements detailed breakdown – office trailers, etc.

Auditing a GMP Estimate - Subcontractors

- Compare to designer/engineer's estimate
- Unbalanced bids
 - Mathematically unbalanced – bid does not reflect actual costs (inflated for profit) or not is reasonable compared to engineer's estimate
 - Materially unbalanced – reasonable doubt that awarding to the low bidder would result in lowest ultimate cost to the Owner
- Evaluation considerations
 - Bid quantities and units are correct
 - Does not include frontloading or inflated costs (to increase cash flow at beginning of the project)
 - Does not include omission of key project elements or scope
 - Investigate variances to identify risks above

Subcontractor Estimate Example

Subcontractor Bid Evaluation Example

Items with significant differences between Low Bid and Engineer's Estimate
items with significant differences among the Contractor Bids

Project Name: **Project ABC**

Estimate \$: \$144,254,000

Estimate Date: Date XX, 20XX

Contingency: 7.50%

Subtotal	\$	107,284,060	\$	113,400,402	\$	115,264,944
Contingency 7.5%	\$	8,046,305	\$	8,505,030	\$	8,644,871
Total Bid	\$	115,330,365	\$	121,905,433	\$	123,909,815

Item #	Description	Engineer's Estimate	Contractor 1	Contractor 2	Contractor 3
1	MOBILIZATION	\$ 4,685,005	\$ 5,300,000	\$ 5,700,000	\$ 6,300,000
2	CLEARING AND GRUBBING	\$ 442,300	\$ 1,180,000	\$ 2,437,900	\$ 970,000
3	UNDERCUT EXCAVATION	\$ 1,681,868	\$ 1,603,000	\$ 2,244,200	\$ 1,493,996
4	UNCLASSIFIED EXCAVATION	\$ 452,352	\$ 1,391,256	\$ 684,000	\$ 572,280
5	BORROW EXCAVATION	\$ 9,054,691	\$ 4,099	\$ 4,099	\$ 2,049,500
6	DRAINAGE DITCH EXCAVATION	\$ 66,478		\$ 12,201	\$ 22,659
7	REMOVAL OF EXISTING ASPHALT PAVEMENT	\$ 1,215,622	\$ 769,567	\$ 980,340	\$ 1,053,866
8	PROOF ROLLING	\$ 11,086	\$ 8,517	\$ 11,000	\$ 9,075
9	GEOTEXTILE FOR SOIL STABILIZATION	\$ 18,023	\$ 8,454	\$ 6,968	\$ 6,503
10	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES	\$ 398,126	\$ 281,486	\$ 393,040	\$ 323,680



PROJECT MANAGEMENT

High Risk Areas



- **Invoices / Pay Applications**
 - General Conditions/General Requirements
 - Labor
 - Subcontract Work
- **Change Orders and Contingency**
 - Entitlement
 - Fee and Insurance Allocations
 - Subcontractor Quotes and Supplier Invoices

Auditing a Pay Application

- Mathematical accuracy
- Agrees to values from prior PA
- Sequentially numbered
- Proper date range
- Cover sheet agrees to SOV
- Recalculation of fee
- Line item transfers
- Agree to supporting detail documents
- Appropriate approvals



Pay Application Example

AIA G702 - standard format for construction pay application

Invoice sequentially numbered Page 1 of 5

TO (OWNER):	Project:	APPLICATION NO: 16 (Pymt ref: 90775536)
		APPLICATION DATE: 02/07/2020
FROM (CONTRACTOR):	VIA (CM/Owner's Rep.):	PERIOD TO:
	VIA (ARCHITECT):	PROJECT NO:
CONTRACT FOR:		CONTRACT DATE:
INV DESCRIPTION:		OWNERS REFERENCE NO:

Contract summary always on the cover

CONTRACTOR'S APPLICATION FOR PAYMENT	The undersigned Contractor certifies that to the best of the Contractor's knowledge, information, and belief the Work covered by this Application for Payment has been performed or completed in accordance with the Contract Documents, that the Contractor has paid or will pay subcontractors amounts due in accordance with the subcontract terms and conditions for Work for which previous Applications for Payment were issued and payments received from the Owner and that the current payment shown herein is now due.
Application is made for Payment, as shown below, in connection with the Contract. Continuation Sheet is attached.	<p style="color: red; font-weight: bold;">Contractor certification and signature Notary</p> <p>ARCHITECT'S CERTIFICATE FOR PAYMENT In accordance with the Contract Documents, based on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.</p> <p>AMOUNT CERTIFIED (Attached explanation if amount certified differs from the amount applied for. Initial all figures on this Application and on the Continuation Sheet that changed to conform to the amount certified.)</p> <p>By: _____ Date: _____</p> <p>This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor Named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.</p>
1. ORIGINAL CONTRACT SUM TO DATE \$ 73,188,608.00	
2. Net change by Change Orders \$ 0.00	
3. CONTRACT SUM TO DATE (Line 1 +/- 2) \$ 73,188,608.00	
4. TOTAL COMPLETED & STORED TO DATE \$ 27,802,251.46 (Column I on Continuation Sheet)	
5. RETAINAGE:	
a. 6.971 % of Completed Work \$ 1,774,524.46 (Column G+H on Continuation Sheet)	
b. 10.000 % of Stored Material \$ 234,544.00 (Column I on Continuation Sheet)	
Total Retainage \$ 2,009,068.46	
6. TOTAL EARNED LESS RETAINAGE \$ 25,793,183.00 (Line 4 less Line 5 Total)	
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT (Line 6 from prior Certificate) \$ 20,720,715.22	
8. APPLICABLE TAXES OUTSIDE OF CONTRACT CURRENT APPLICATION \$ 0.00	
9. CURRENT PAYMENT DUE \$ 5,072,467.78	
10. BALANCE TO FINISH, PLUS RETAINAGE \$ 47,395,425.00 (Line 3 less Line 6)	

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total charges approved in		
Previous months by Owner	0.00	(1.00)
Total approved this Month	1.00	0.00
Totals	1.00	(1.00)
NET CHANGES by Change Order		0.00

- For U.S. construction projects, typically follow the American Institute of Architects (AIA) pay application format, including:
- G702 Form – summary
 - G703 Form – schedule of values

Pay Application Example

AIA G703 - standard schedule of values format

CONTINUATION SHEET											Page 5 of 5	
APPLICATION AND CERTIFICATE FOR PAYMENT, containing Contractor's signed Certification is attached.						APPLICATION NO: 16 (Pymt ref: 90775536)						
Use Column K on Contracts where variable retainage for line items may apply.						APPLICATION DATE: 02/07/2020						
						PERIOD TO:						
						ARCHITECT'S PROJECT NO:						
ITEM NO	DESCRIPTION	SCHEDULED VALUE	ADDS/ DEDUCTS	BUDGET TRANSFERS	REVISED SCHEDULED VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED (NOT IN 'G' OR 'H')	TOTAL %		BALANCE TO FINISH (F-J)	RETAINAGE
						PREVIOUS APPLICATION	THIS PERIOD		COMPLETED AND STORED TO DATE (G+H+I)	(J/F)		
84	Mechanical	48,500.00	0.00	0.00	48,500.00	0.00	0.00	0.00	0.00	0.00	48,500.00	0.00
85	Electrical	155,000.00	0.00	122,656.00	277,656.00	250,373.00	0.00	0.00	250,373.00	90.17	27,283.00	25,037.30
86	Earthwork	52,771.00	0.00	12,731.00	65,502.00	31,408.00	0.00	0.00	31,408.00	47.95	34,094.00	3,140.80
87	Fences and Gates	2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	2,500.00	0.00
88	Site Concrete/Asphalt	0.00	0.00	40,599.00	40,599.00	40,599.00	0.00	0.00	40,599.00	100.00	0.00	4,059.90
89	Water Utilities	35,000.00	0.00	(35,000.00)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Summer Swing Direct Work	469,756.00	0.00	331,457.00	801,213.00	681,560.00	0.00	0.00	681,560.00	85.07	119,653.00	60,049.00
91	Summer Swing - General Conditions	146,153.00	0.00	0.00	146,153.00	56,436.35	9,244.12	0.00	65,680.51	44.94	80,472.49	0.00
	General Conditions	146,153.00	0.00	0.00	146,153.00	56,436.35	9,244.12	0.00	65,680.51	44.94	80,472.49	0.00
92	CCIP/Corporate Budget	47,025.00	0.00	0.00	47,025.00	14,107.50	3,564.50	0.00	17,672.00	37.58	29,353.00	0.00
96	Subguard	26,313.00	0.00	0.00	26,313.00	26,313.00	0.00	0.00	26,313.00	100.00	0.00	0.00
97	Surety Bond	19,855.00	0.00	0.00	19,855.00	19,855.00	0.00	0.00	19,855.00	100.00	0.00	0.00
98	Builder's Risk	6,270.00	0.00	0.00	6,270.00	6,270.00	(6,270.00)	0.00	0.00	0.00	6,270.00	0.00
	Insurance	99,463.00	0.00	0.00	99,463.00	66,545.50	(2,705.50)	0.00	63,840.00	64.18	35,623.00	0.00
101	Fee	90,166.00	0.00	0.00	90,166.00	27,049.80	6,834.58	0.00	33,884.38	37.58	56,281.62	3,388.44
	Fee	90,166.00	0.00	0.00	90,166.00	27,049.80	6,834.58	0.00	33,884.38	37.58	56,281.62	3,388.44
	TOTAL CONTRACT	73,188,608.00	0.00	0.00	73,188,608.00	22,184,307.56	3,272,503.90	2,345,440.00	27,802,251.46	37.99	45,386,356.54	2,009,068.46
	APPLICABLE TAXES OUTSIDE OF CONTRACT					0.00	0.00		0.00			

Detailed budget

Cost lines by scope

These values should match the cover page

Every cost reported in "This Period" should be supported by a subcontractor pay application, vendor invoice, or other evidence of cost incurred.

Auditing a change order or contingency use request

- Entitlement
- Approvals
- Allowability
- Proper support
- Labor rates and hours
- Labor burden
- Materials cost and units
- Schedule impact identified
- Independent estimate
- Recalculate!



Change Order Example

AIA® Document G701™ – 2001

Change Order

PROJECT (Name and address):	CHANGE ORDER NUMBER: PCCO 004 DATE: 1/4/2018	OWNER: <input checked="" type="checkbox"/> ARCHITECT: <input checked="" type="checkbox"/>
TO CONTRACTOR (Name and address):	ARCHITECT'S PROJECT NUMBER: CONTRACT DATE: 4/25/2018 CONTRACT FOR:	CONTRACTOR <input checked="" type="checkbox"/> FIELD: <input type="checkbox"/> OTHER: <input type="checkbox"/>

THE CONTRACT IS CHANGED AS FOLLOWS:

(Include, where applicable, any undisputed amount attributable to previously executed Construction Change Directives)

The acceptance of attached PCCO#4 which includes PCO's #025, #028, #030, #043, #058, #059, #061, #065, #067, #068, #072, #075, #076, #078, #082, #083, #082, #086, #087, #088, #092

The original Contract Sum was	\$ 20,850,000.00
The net change by previously authorized Change Orders	\$ -66,771.82
The Contract Sum prior to this Change Order was	\$ 20,783,228.18
The Contract Sum will be <u>increased</u> (decreased) (unchanged) by this Change Order in the amount of	\$ 162,072.00
The new Contract Sum including this Change Order will be	\$ 20,945,300.18

Change Order total amount

The Contract Time will be (increased) (decreased) (unchanged) by { * } days

~~The date of Substantial Completion as of the date of this Change Order therefore is~~
reserves the right for any time extension associated with the following change order

NOTE: This Change Order does not include changes in the Contract Sum, Contract Time or Guaranteed Maximum Price which have been authorized by Construction Change Directive until the cost and time have been agreed upon by both the Owner and Contractor, in which case a Change Order is executed to supersede the Construction Change Directive.

NOT VALID UNTIL SIGNED BY THE ARCHITECT, CONTRACTOR AND OWNER.

Architect Approval

Owner Approval

CM Approval

Change orders should summarize the original contract, changes to date, current change amount, and new contract amount.

Contingency requests should summarize the starting contingency balance, uses to date, current use request, and total remaining balance.

Change Order Example

POTENTIAL CHANGE ORDERS IN THIS CHANGE ORDER: Change Order Breakdown by Individual Component

PCO #	Title	Schedule Impact	Amount
025	CE #037 - CCD 010		43,410.00
028	CE #042 - CCD 014		4,373.00
030	CE #044 - Welded Hinges on Door Frames		98,164.00
043	CE #075 - RFI #115: Roof Terrace Topping Slab		3,372.00
058	CE #079 - Inject Epoxy Grout at Ex Elevator pit walls		3,164.00
059	CE #080 - replace elev pit channel & buffer supports		5,922.00
061	CE #082 - RFI#123-Pad out apartment side of corridor walls		12,627.00
065	CE #116 - Plywood Window Sill Blocking		6,388.00
067	CE #120 - Fire Pump Test Header Credit		(3,406.00)
068	CE #121 - Signage Credit		(35,197.00)
072	CE #087 - Unforeseen addtl utilities at water main		23,098.00
075	CE #134 - Laminating Corridor Walls		21,365.00
076	CE #146 - Drop Coffered Ceiling for Light Fixtures		5,313.00
078	CE #099 - Shower Waterproofing		27,171.00
082	CE #103 - RFI#149: Alternate Unit 802 RCP Issue		695.00
083	CE #153 - Apartment Unit Wall above ceiling GWB		(11,313.00)
085	CE #108 - RFI #138: Unit 05 Kitchen Switching needs wall furr out		561.00
086	CE #149 - Laminating Unit Ceilings		16,605.00
087	CE #117 - RFI#159: 06 Tier Wall Furr Out for MEP Rough-In		1,422.00
088	CE #161 - Remove sludge material from existing pit		7,632.00
092	CE #165 - Steel Plate Fees Allowance		(69,294.00)
TOTAL:			\$162,072.00

Review detailed breakdown and support

Change Order total amount
Agree to cover page

Change Order Example

Detailed Component Breakdown with supporting invoice/ quotes from subcontractors

#	Cost Code	Description	Type	Amount
1	22-100-0100 - PLUMBING- Sub 1		Subcontract	\$ 17,685.00
2	21-100-0100 - SPRINKLER- PROT Sub 2		Subcontract	\$ 19,903.00
3	01-995-0001 - General Conditions		Labor	\$ 2,894.00
4	01-996-0001 - General Requirements		Labor	\$ 376.00
5	88-810-0001 - INSURANCE		Material	\$ 109.00
6	88-200-0001 - SUBGUARD		Material	\$ 376.00
Subtotal:				\$41,343.00
Overhead & Profit: 5.00% Applies to all line item types.				\$ 2,067.00
Grand Total:				\$43,410.00

Review detailed invoice support

Component total
Agree to summary page

Change Order Example

From: Owner's Representative
To: Contractor
Subject: Change Order

Based on a review of the documentation previously provided to us the City Landscape folks found the following:

Change Order: Bump out tree irrigation system. It was determined that the requested additional material costs of \$7,475 and associated sales tax of \$523 would be acceptable. Additional compensation for labor costs for the installation of the ABS system verse GEO Mat was determined not to be warranted. Further it was determined that additional compensation for the installation of 2 additional bubblers per tree would be appropriate at the rate of \$100 per tree for the 19 trees. Including \$197 for bonding at 2% and a 10% profit of \$1,009 the City would be will to issue a CO in the amount of \$11,105 as settlement for this work.

*Example of **poor** support*

- Email provided as only support
- No breakdown for “materials” or vendor invoices to validate costs
- Fee was overcharged (7% per contract)
- Owner's Rep prepared CO calculation for contractor

Managing Owner expectations

- Changes requested by the Owner can result in added project costs
- Designate who is approved to make changes and note if there are cost thresholds to decision making
- **Example:** Individual Club construction committee members verbally instructed the contractor to make changes to the construction or design without any other approvals. These changes were not formally documented but increased the construction budget by 10% and surprised the Owner when presented with the bill for the work.



PROJECT CLOSEOUT

Final Accounting from the CM

- Does the contract have a right to audit clause?
- Determine what we're auditing against
- What is the target? Final compensation amount?
- Do we have the final PA? Final CO?
- Owner and CM in dispute over final amount?



Final Accounting from the CM

- Initial audit notification
- Meeting with Contractor
- 1st document request
 - Final job cost detail report
 - Subcontractor files
 - Cancelled checks and lien releases
 - Timesheets, Payroll Register, and Personnel files
 - System memo
 - Additional records
- Set up file share site online
- 2nd document request (sample selections and follow up)



Job Cost Analysis Example

Contractor accounting data, formatted for analytics

RSM Ref. No.	Cost Category	Cost Code	Code Description	Inv. No.	Inv. Date	Amount	Vendor Name	Description
2104	GC/ GR	51-741-0001	CLEAN UP (DAILY)	551892	07/12/19	\$ 486.59	IKOR COMPANY	SUPPLIES
2105	GC/ GR	51-741-0001	CLEAN UP (DAILY)	1007-05001320	08/05/19	\$ 2,865.77	ACE TEMPORARIES, INC.	TEMP LABOR
2106	GC/ GR	51-741-0001	CLEAN UP (DAILY)	1007-05001315	07/15/19	\$ 9,087.72	ACE TEMPORARIES, INC.	TEMP LABOR
2107	GC/ GR	51-741-0001	CLEAN UP (DAILY)	1007-05001316	07/22/19	\$ 4,481.07	ACE TEMPORARIES, INC.	TEMP LABOR
2108	GC/ GR	51-741-0001	CLEAN UP (DAILY)	1007-05001318	07/29/19	\$ 2,578.57	ACE TEMPORARIES, INC.	TEMP LABOR
2109	GC/ GR	51-741-0001	CLEAN UP (DAILY)	1007-05001328	09/02/19	\$ 670.04	ACE TEMPORARIES, INC.	TEMP LABOR
2110	GC/ GR	51-741-0001	CLEAN UP (DAILY)	1007-05001332	09/16/19	\$ 119.65	ACE TEMPORARIES, INC.	TEMP LABOR
2111	GC/ GR	51-741-0001	CLEAN UP (DAILY)	1007-05001324	08/19/19	\$ 909.34	ACE TEMPORARIES, INC.	TEMP LABOR
2112	GC/ GR	51-741-0001	CLEAN UP (DAILY)	1007-05001326	08/26/19	\$ 885.41	ACE TEMPORARIES, INC.	TEMP LABOR
2113	GC/ GR	51-741-0001	CLEAN UP (DAILY)	06119126-9/19	09/30/19	\$ 20.65	HOME DEPOT CREDIT SERVICES	6534412
2114	GC/ GR	51-741-0001	CLEAN UP (DAILY)	1007-05001322	08/12/19	\$ 2,082.02	ACE TEMPORARIES, INC.	TEMP LABOR
2115	GC/ GR	51-741-0001	CLEAN UP (DAILY)	REFUNCHECK	10/03/19	\$ (1,579.60)	ACE TEMPORARIES, INC.	REFUND CHECK
2116	GC/ GR	51-741-0001	CLEAN UP (DAILY)	804	07/08/19	\$ 1,862.40	CW CONSTRUCTION GROUP	SUPPLIES
2117	GC/ GR	51-741-0001	CLEAN UP (DAILY)	126787	10/29/19	\$ 1,828.00	UNIVERSAL BUILDING SERVICES	SERVICES
2118	GC/ GR	51-741-0001	CLEAN UP (DAILY)	061019-1	06/10/19	\$ 700.00	S.R. Welding Services, Inc.	ALUMINUM CLIPS/HW
2119	Work	51-742-0001	CLEAN UP (FINAL)	10064	06/13/19	\$ 10,400.00	PRO CLEANING JANITORIAL	FINAL CLEANING
2120	Work	51-742-0001	CLEAN UP (FINAL)	10065	06/13/19	\$ 4,000.00	PRO CLEANING JANITORIAL	FINAL CLEANING
2121	Work	51-742-0001	CLEAN UP (FINAL)	10066	06/19/19	\$ 5,600.00	PRO CLEANING JANITORIAL	FINAL CLEANING
2122	Insurance	88-200-0001	SUBGUARD	2667206	07/20/18	\$ 9,921.99	ARTHUR GALLAGHER RISK	END'T 13
2123	Insurance	88-200-0001	SUBGUARD	09302018-6A	09/30/18	\$ 35,615.32	ARTHUR GALLAGHER RISK	SUBGUARD 6A
2124	Insurance	88-200-0001	SUBGUARD	12312018-6A	12/31/18	\$ 5,375.36	ARTHUR GALLAGHER RISK	SUBGUARD 6A
2125	Insurance	88-200-0001	SUBGUARD	03312019-6A	03/31/19	\$ 179,070.10	ARTHUR GALLAGHER RISK	SUBGUARD - 6A
2126	Insurance	88-200-0001	SUBGUARD	063019-6A	07/31/19	\$ 1,762.77	ARTHUR GALLAGHER RISK	SUBGUARD - 6A
2127	Insurance	88-200-0001	SUBGUARD	0930196A	11/01/19	\$ 4,506.50	ARTHUR GALLAGHER RISK	SUBGUARD - 6A
2128	Insurance	88-200-0001	SUBGUARD	12312019-6A	12/31/19	\$ 9,414.62	ARTHUR GALLAGHER RISK	SUBGUARD-6A
2129	Work	88-553-0001	TRAFFIC CONTROL		08/01/18	\$ 469.08		MOVE TO CORRECT COST CODE

Job cost sampling techniques

- General conditions/ general requirements
- Labor
- Subcontractor costs
- Equipment
- Other (i.e. insurance)



Job Cost Analysis Example

Analysis summary by cost type and vendor, sample selections for detailed testing

Total Job Cost Summary	
Cost Type	Total Amount
General Conditions	\$ 518,597.10 <i>a</i>
Insurance	\$ 307,079.66 <i>b</i>
Labor	\$ 1,501,847.09 <i>c</i>
Materials	\$ 118,748.54 <i>d</i>
Subcontractors	\$ 17,695,411.93 <i>e</i>
Total costs	\$ 20,141,684.32

General Conditions/ General Requirements			Labor (GC/GR)		
Vendor	Amount		Category	Amount	
ACE TEMPORARIES, INC.	\$ 101,927.93	20%	PROJECT MANAGEMENT	\$ 672,562.84	45%
SUN SERVICES, LLC	\$ 73,058.10	14%	SUPERVISION	\$ 432,152.55	29%
Eastern Branch Demoltn, LLC	\$ 59,893.00	12%	PROTECTION BUILDING ELEMEN	\$ 83,079.71	6%
MANAGEMENT RECRUITERS OF	\$ 40,625.00	8%	PROJECT EXECUTIVE	\$ 69,932.78	5%
DIAMOND ENGINEERING CORP.	\$ 40,080.00	8%	PURCHASING/ESTIMATING	\$ 48,822.58	3%
SERVPRO OF WASHINGTON DC	\$ 26,049.21	5%	ACCOUNTING SERVICES	\$ 36,687.14	2%
ARK GROUP LLC	\$ 22,400.00	4%	SAFETY SUPERVISION	\$ 31,579.52	2%
Design Builders, Inc.	\$ 20,354.00	4%	OWNER BR CLAIM-WATER DAMAG	\$ 25,309.01	2%
IKOR COMPANY	\$ 16,481.38	3%	CPM SCHEDULING	\$ 24,758.27	2%
MET PAINTERS, INC.	\$ 10,643.00	2%	SAFETY & PERSONNEL PROTECT	\$ 22,909.04	2%

Materials			Subcontractors			
Vendor	Amount		Vendor	Amount	%	Cumulative %
REALPAGE, INC.	\$ 29,466.00	25%	ELECTRICAL GENERAL CORPORAT	\$ 2,996,929.00	17%	17%
PRO CLEANING JANITORIAL	\$ 20,000.00	17%	C. J. COAKLEY COMPANY INC	\$ 2,121,589.56	12%	29%
IKOR COMPANY	\$ 18,860.59	16%	Charles A. Kln & Sns, Inc.	\$ 1,623,425.79	9%	38%
RANKIN, INC.	\$ 15,859.80	13%	Anderson Mechanical Servcs,	\$ 1,558,000.00	9%	47%
JDA CONSTRUCTION SERVICE LL	\$ 6,720.00	6%	CAPITAL DEMOLITION, LLC	\$ 1,094,833.10	6%	53%
AMERICAN CONCRETE SCANNING	\$ 5,250.00	4%	ONESOURCE WINDOW SYSTEMS LL	\$ 1,051,971.34	6%	59%
SUNBELT RENTALS, INC.	\$ 4,808.31	4%	UNITED BUILDING ENVELOPE	\$ 744,156.00	4%	63%
ARC FIRESTOP SOLUTIONS, LLC	\$ 4,076.00	3%	IRON FABRICATION SERVICES I	\$ 734,250.60	4%	67%
W. W. GRAINGER, INC.	\$ 3,241.84	3%	COMMERCIAL HARDWARE OF MD I	\$ 556,984.50	3%	71%
HOME DEPOT CREDIT SERVICES	\$ 2,527.57	2%	Reliance Roofing and	\$ 493,962.00	3%	73%
GUARDIAN FIRE TESTING	\$ 2,150.00	2%	CENTURY ELEVATOR, INC.	\$ 483,090.77	3%	76%
ROSE RESTORATION INTERNATIO	\$ 2,000.00	2%	GE Appliances	\$ 425,412.00	2%	78%
(blank)	\$ 1,764.78	1%	NLP ENTERPRISES, INC	\$ 405,611.00	2%	81%
ACCUPERMIT LLC	\$ 1,250.00	1%	Polaris Fire Protectn, Inc.	\$ 371,152.50	2%	83%

Key takeaways

- **Planning & Budgeting** – *know your hard costs and soft costs*
- **Contract Risk Areas & Procurement** – *understand the contract provisions and evaluate the cost proposal*
- **Project Management** – *know what you are being billed for and require support for costs and changes*
- **Project Closeout** – *enforce the contract language, analyze the contractor's actual costs*

THANK YOU FOR
YOUR TIME AND
ATTENTION

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