

Managing Uncertainty: A New Project Planning Guide for Owners and Architects

SA 108

Saturday, June 23, 2018 – 8-9 a.m.

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Presenters

- **Carole Wedge, FAIA, LEED AP**
CEO, Shepley Bulfinch
Chair, AIA Large Firm Roundtable
- **Stephen A. Jones**
Senior Director, Dodge Data & Analytics
- **Clark Davis, FAIA, LEED AP**
Principal Consultant, Cameron MacAllister Group

Learning Objectives

1. Learn to lead clients and project team members through an **analysis of specific project risks** – and adopt measures to manage them.
2. Identify ways to assist clients in anticipating major uncertainty factors and **establishing project budgets and contingencies**.
3. Gain insight, through real data, into the cost of uncertainty – and **use that information to educate clients** and prospects.
4. Understand key industry resources, including **a proposed online database** of actual project cost experience being developed in conjunction with the new Planning Guide.

Challenges for Architects and Clients

More complex projects and delivery options...

Increasing speed, client expectations, and standard of care...

Misunderstandings about uncertainty in the design and construction process...

...are creating risks and leadership opportunities for architects.



The *Managing Uncertainty* Study

AIA Large Firm Roundtable

AIA

Associated General Contractors

Design-Build Institute of America

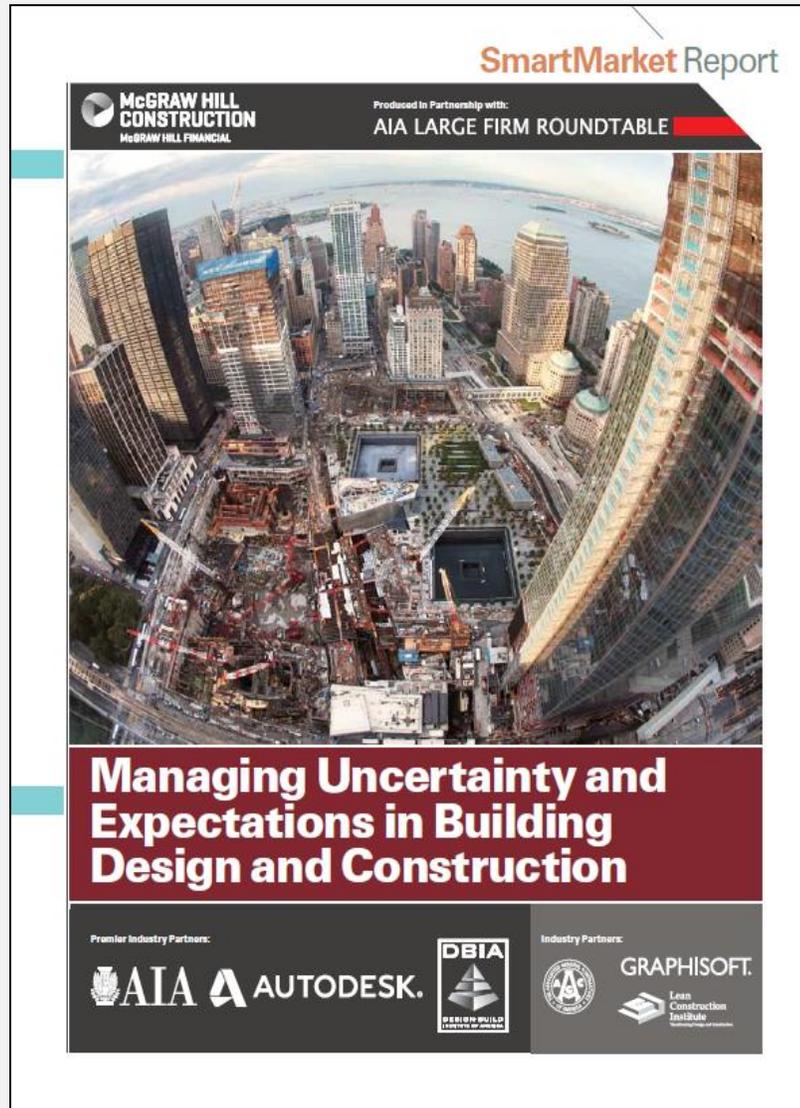
Lean Construction Institute

Autodesk

Graphisoft

Professional insurance and surety companies

Construction Owners Association of America (2018)



Download free:

www.analyticsstore.construction.com

Project Goals

Real data about typical costs of non-negligent errors, omissions, and coordination issues

Tools for educating project teams, setting realistic expectations, and structuring budget contingencies

References for use in resolving project issues

Information about best practices and tools that can improve industry performance

Owner Advisory Group

John Moebes, Crate & Barrel

Craig Russell, Disney

Chuck Hardy, GSA

Jerry Lea, Hines Interests

Eric Miller, Sutter Health

Boyd Black, Univ. of Chicago

Don Vitek, Whirlpool Corporation

1. Understanding Uncertainty

- Top causes of overall uncertainty and underlying drivers
- Specific impact on quality, cost, schedule

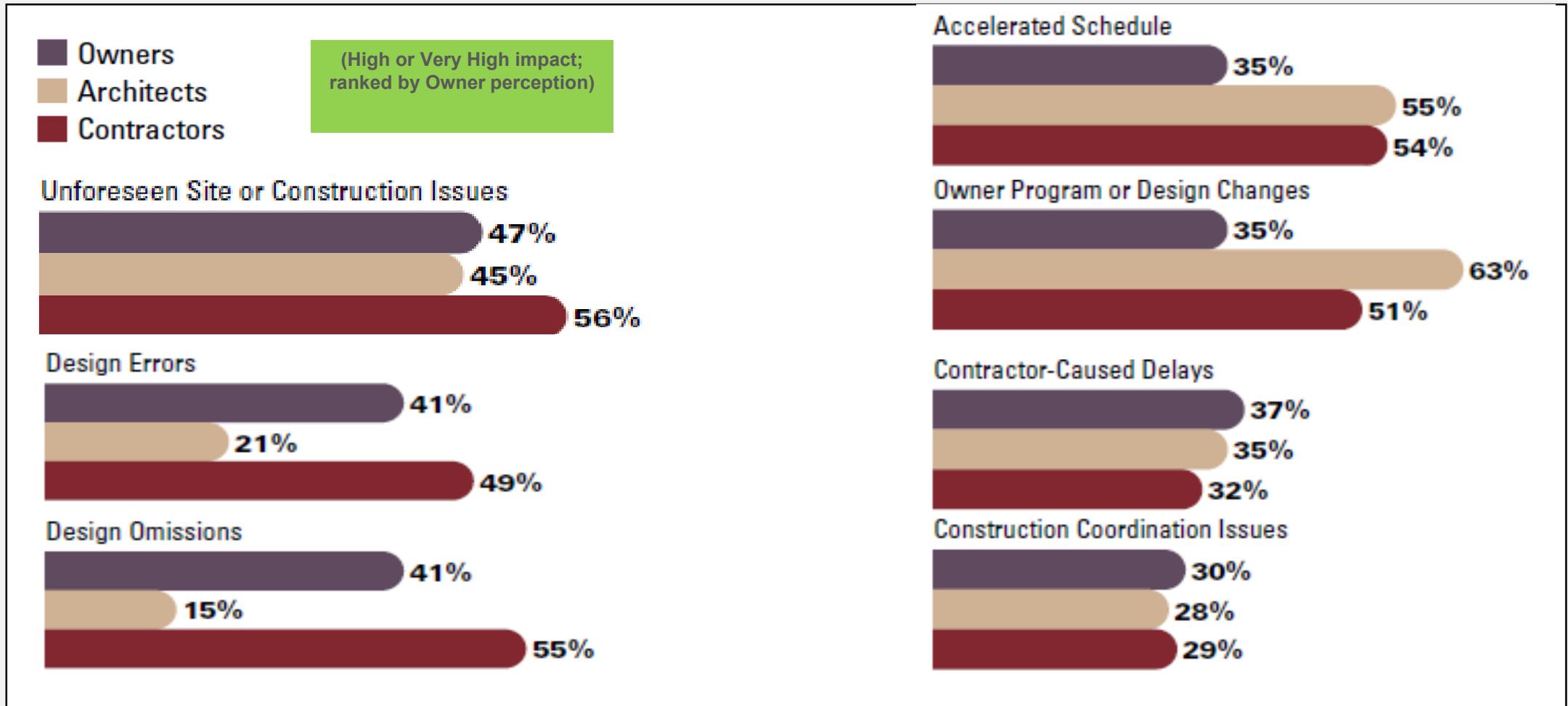
2. Performance Expectations and Metrics

- Owners' perceived satisfaction
- Performance metrics for design and construction teams

3. Opportunities for Performance Improvement

- Mitigating elements
- Contingencies

Top Factors Causing Project Uncertainty



Frequency and Cost Impact of Top Causes of Uncertainty

Source: McGraw Hill Construction, 2014

Top Factors

Owner-Driven Changes

Design Omissions

Construction Coordination

Unforeseen Conditions

Design Errors

Accelerated Schedule

Contractor-Caused Delays

Frequency and Cost Impact of Top Causes of Uncertainty

Source: McGraw Hill Construction, 2014

Top Factors	Index (1–100)
Owner-Driven Changes	84
Design Omissions	59
Construction Coordination	53
Unforeseen Conditions	51
Design Errors	50
Accelerated Schedule	38
Contractor-Caused Delays	37

Frequency and Cost Impact of Top Causes of Uncertainty

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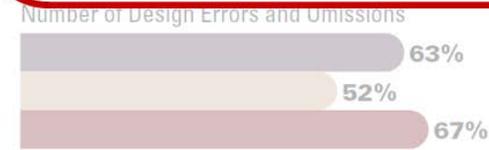
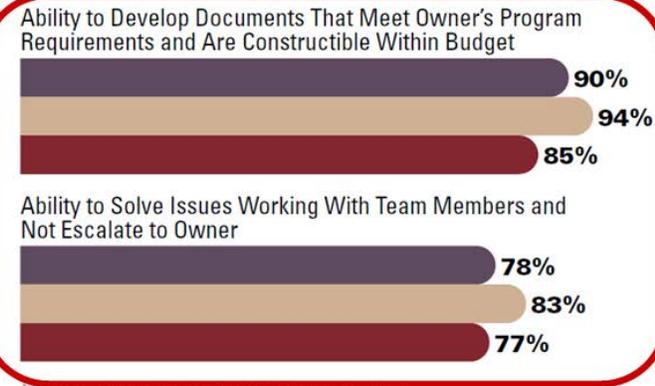
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Effective Criteria in Measuring Design Team

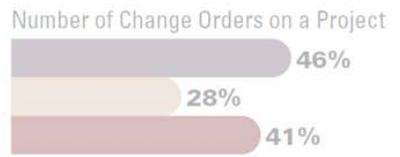
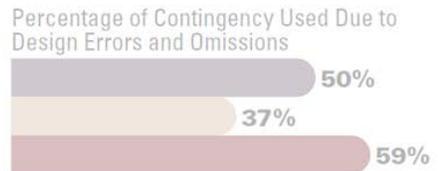
Source: McGraw Hill Construction, 2014



(High or Very High impact; ranked by Owner perception)

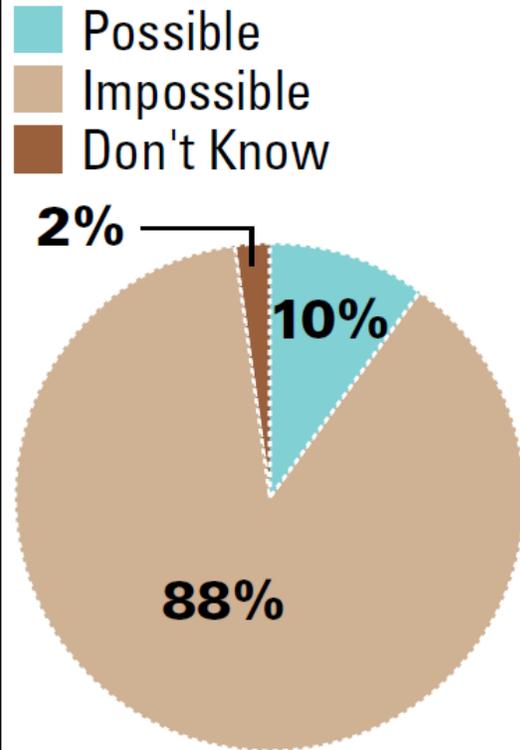


■ Owners
■ Architects
■ Contractors



Possibility of Perfect Construction Documents (According to Owners, Architects and Contractors)

Source: McGraw Hill Construction, 2014

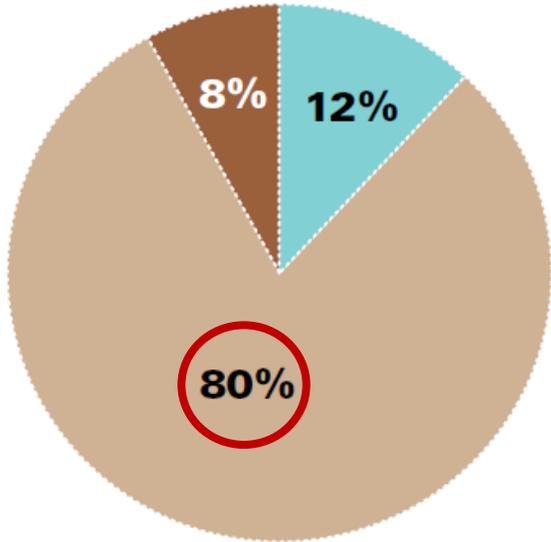


Expected Cost Impacts of Design Mistakes on Future Projects

(According to Owners)

Expects Future Projects to Be Completed With No Added Costs Due to Design Mistakes (According to Owners)

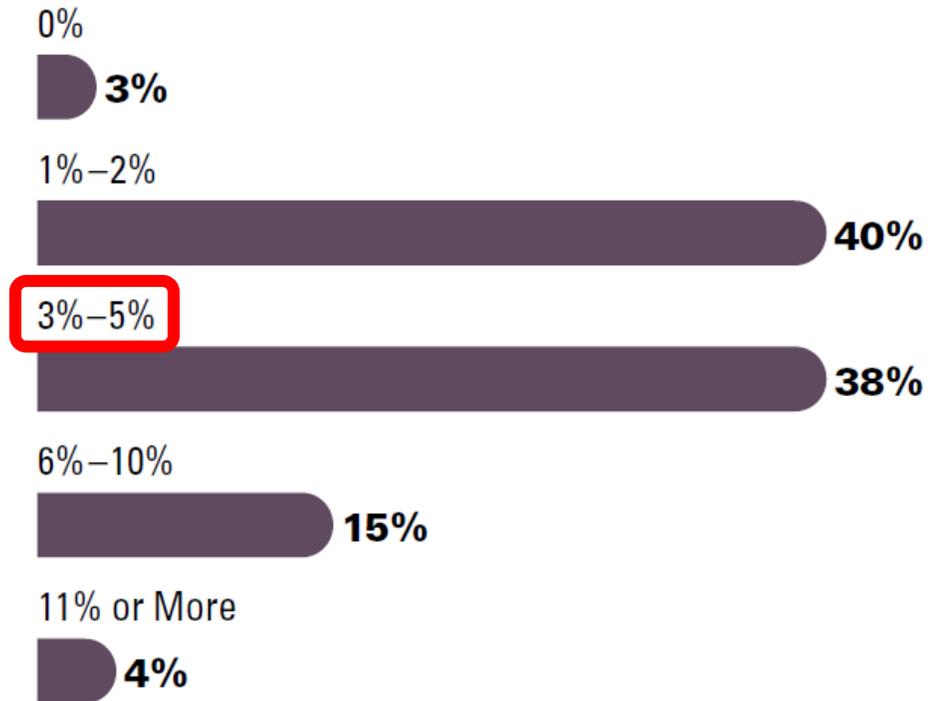
- Yes
- No
- Not Sure



Expected Cost Impacts of Design Mistakes on Future Projects

(According to Owners)

**Level of Additional Costs Accepted as Normal
(According to Owners Who Anticipate
Additional Costs)**



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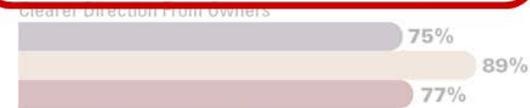
Top Factors That Reduce Project Uncertainty

Source: McGraw-Hill Construction, 2014

More Integration Between Design and Build Parties During Design and Coordination



(High or Very High impact; ranked by Owner perception)



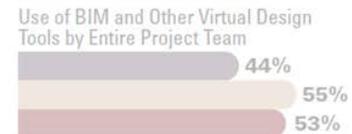
Clearer Definition of Deliverables Between Parties During Design



■ Owners
■ Architects
■ Contractors



More Time for Design Firms to Participate in Coordination



Impact of Strategies on Mitigating the Seven Top Causes of Project Uncertainty (According to Owners, Architects and Contractors)

Source: McGraw Hill Construction, 2014

■ Scores Above 80
 ■ Scores 70 to 79
 ■ Scores 60 to 69
 ■ Scores 50 to 59
 ■ Scores 40 to 49
 ■ Scores Below 40

	Owner-Driven Changes	Accelerated Schedule	Design Errors	Design Omissions	Construction Coordination Issues	Contractor-Caused Delays	Unforeseen Conditions	AVERAGE
Better Communication Among All Project Team Members in Early Stages of the Project	88	90	84	88	83	78	79	88
Greater Leadership or Involvement by Owner in All Stages of Design and Construction	81	83	78	71	69	53	73	71
Use of Team-Based Alternative to Design-Bid-Build	84	70	78	72	72	49	65	67
Appropriate Contingency Dedicated to This Issue by Owner	78	70	72	68	68	63	76	68
Use of BIM	53	64	76	68	76	47	55	63
Shared Liability Across the Project Team for Problems Created by This Factor	48	59	71	62	63	63	68	60
Use of Lean Design and Construction Practices	28	48	32	31	39	32	28	34

Top 7 Causes of Uncertainty

Impact of Strategies on Mitigating the Seven Top Causes of Project Uncertainty (According to Owners, Architects and Contractors)

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	Owner-Driven Changes	Accelerated Schedule	Design Errors	Design Omissions	Construction Coordination Issues	Contractor-Caused Delays	Unforeseen Conditions	AVERAGE
Better Communication Among All Project Team Members in Early Stages of the Project	88	90	94	89	93	78	79	88
Greater Leadership or Involvement by Owner in All Stages of Design and Construction	81	83	78	71	69	63	73	71
Use of Team-Based Alternative to Design-Bid-Build	84	70	78	71	72	49	65	67
Appropriate Contingency Dedicated to This Issue by Owner	79	70	78	71	72	49	76	69
Use of BIM	53	64	76	69	76	47	55	63
Shared Liability Across the Project Team for Problems Created by This Factor	48	59	71	62	63	53	58	59
Use of Lean Design and Construction Practices	29	48	32	31	39	32	28	34

Top 7 Mitigation Strategies

Impact of Strategies on Mitigating the Seven Top Causes of Project Uncertainty (According to Owners, Architects and Contractors)

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Greater Leadership or Involvement by Owner in All Stages of Design and Construction	81	83	78	71	68	63	73	71
Use of Team-Based Alternative to Design-Bid-Build	64	70	75	71	72	49	65	67
Appropriate Contingency Dedicated to This Issue by Owner	70	70	70	70	70	70	70	66
Use of BIM	53	64	76	68	76	47	55	63
Shared Liability Across the Project Team for Problems Created by This Factor	4	59	71	62	68	63	58	59
Use of Lean Design and Construction Practices	28	48	32	31	39	32	28	34

**Average Impact
(scale of 1-100)**

Impact of Strategies on Mitigating the Seven Top Causes of Project Uncertainty (According to Owners, Architects and Contractors)

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**Top Two
(scale of 1-100)**

Impact of Strategies on Mitigating the Seven Top Causes of Project Uncertainty (According to Owners, Architects and Contractors)

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**Team/Approach/BIM
(scale of 1-100)**

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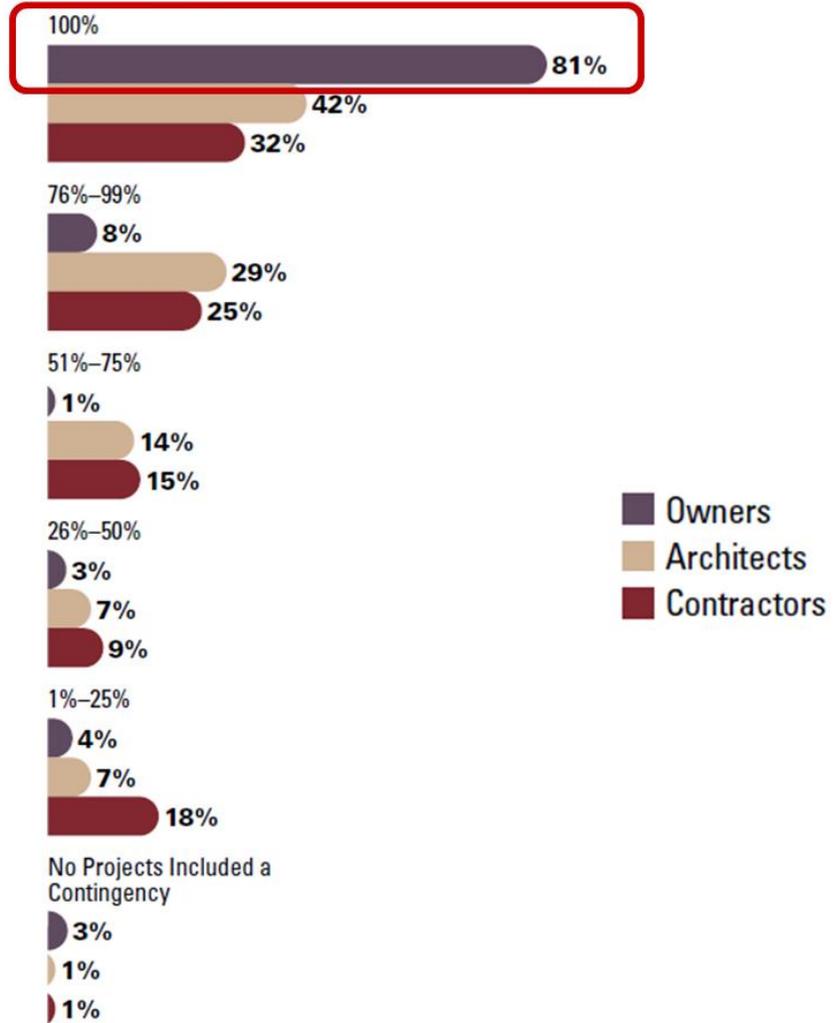
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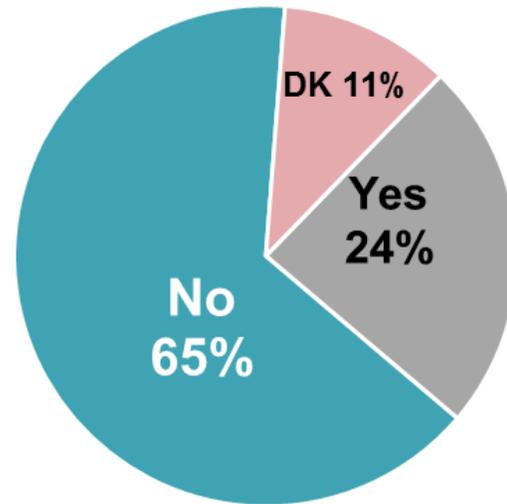
**Owner Contingency
(scale of 1-100)**

Percentage of Projects That Included a Contingency Conducted in the Last Five Years (By Player)

Source: McGraw Hill Construction, 2014



Do you have a standard risk assessment process to help determine the level of contingency necessary on a project by project basis?



Typical factors for Owners who have a process:

- Project type
- Complexity of work
- Problem/risk analysis
- Potential risk items
- Age of building (for renovation)

What's next: 'Cost of Uncertainty' database

New database of actual project cost impacts that resulted from key uncertainty factors, searchable by project-type

Built with confidential information provided by owners or authorized team members, hosted in neutral platform

Accessible with user fees, or as benefit to members of sponsor organizations / data contributors

Useful to add “reality factor” to new project planning and budgeting based on other’s experience with similar projects

Database content

Profile: building type(s), size, location, design complexity, schedule, and delivery method

Initial construction budget, including contingencies

Unanticipated developments and changes, with time and cost impacts, by category

Final outcomes, resolutions and lessons learned

The New Project Planning Guide: Lessons from *Managing Uncertainty*



**Project Planning
Guide for Owners
and Project Teams**

Managing Uncertainty and Expectations
in Building Design and Construction

PDF and E-book versions

Download free:

www.analyticsstore.construction.com

Contents

Sources of uncertainty

Summary of common project delivery methods

Recommendations: leadership lessons from owners, designers, and builders

‘Contingency calculator’ for budget planning...

...a tool for “adult conversations” about managing project risk.



1.

Provide **strong and consistent leadership** within the owner's organization.

Identify a single project leader

Keep senior executives engaged in the process

Be clear about team responsibilities and decision-making

Avoid changes in the owner's key leadership roles – and consider additional time and compensation if they occur.

2.

Assemble the whole project team in the right way.

Choose a collaborative project delivery method

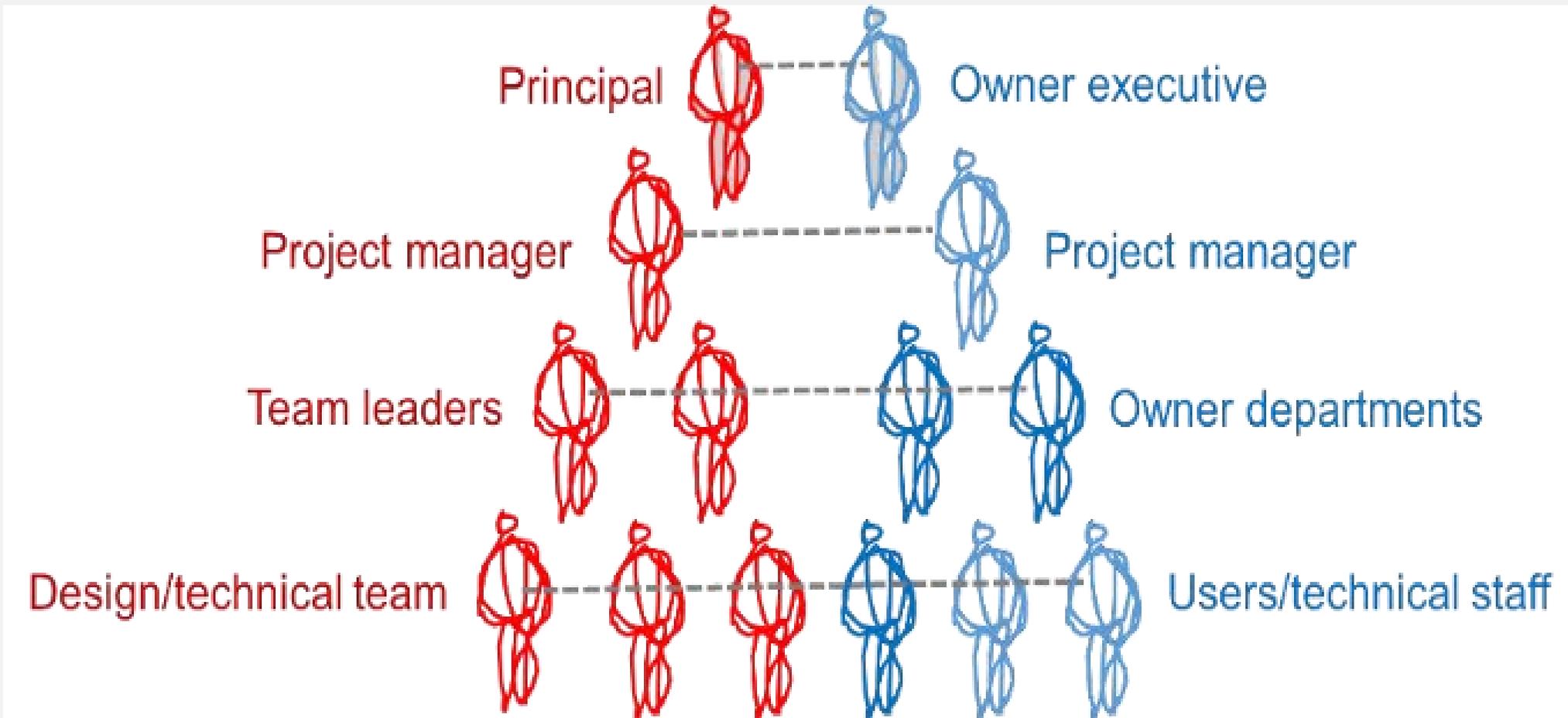
Engage construction partners early in the process

Be clear about team responsibilities

Select team members based on qualifications and experience

3.

Establish and maintain **strong communication within the project team.**



Designate one senior owner executive as project sponsor

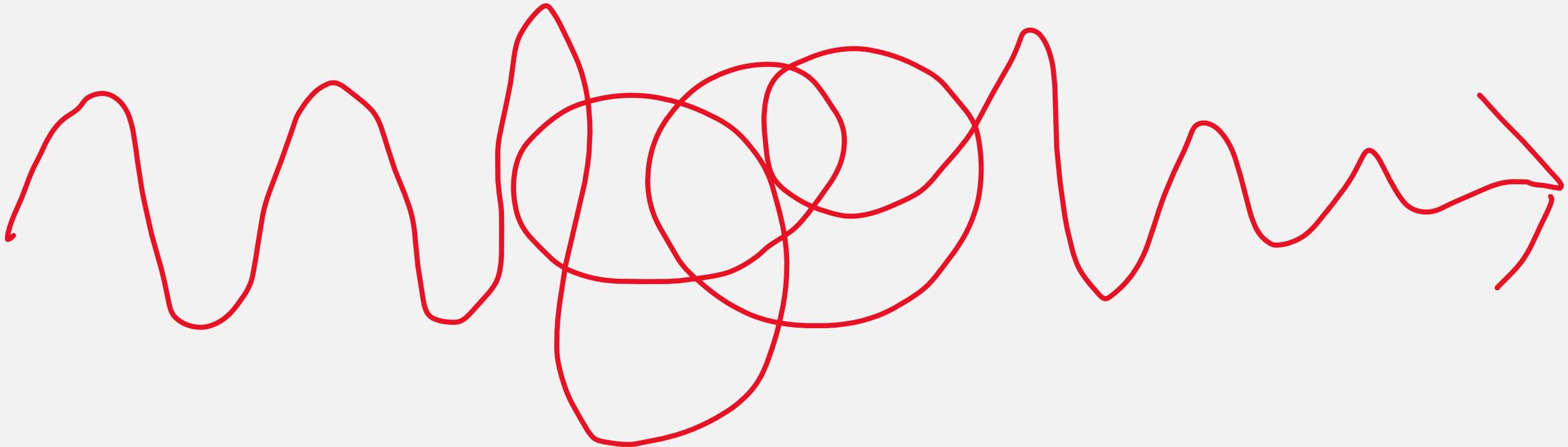
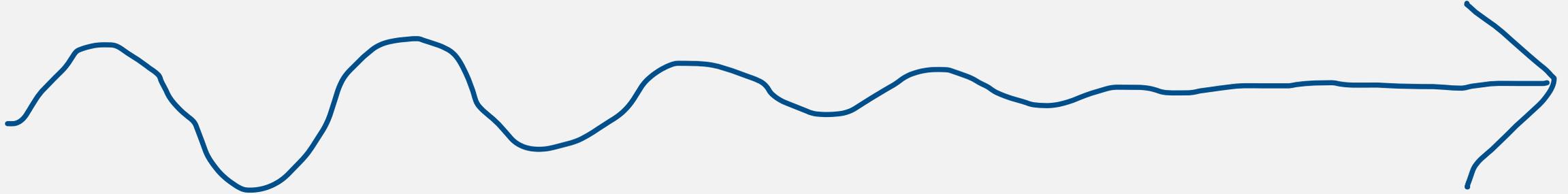
Create a council of principals including owner, design, and construction firm leaders

Select regular feedback from owner stakeholders

Invest time in aligning the team

4.

Completely define project goals and requirements.



Define the owner's goals, needs, priorities, and success criteria

Develop a detailed project program of functional requirements and relationships

Identify areas of program uncertainty and possible change.

- ✓ Overall project goals and expected outcomes for the owner and facility users
- ✓ Project site and desired relationships to other buildings and infrastructure
- ✓ Capacities of public and service access, roads, parking, and utilities
- ✓ Numbers, sizes, capacities, and proximity relationships of functional spaces
- ✓ Key flows of people, materials, and equipment within the site and building(s)
- ✓ Area allowances for building circulation and support spaces
- ✓ Environmental requirements of functional and support spaces
- ✓ Technical data about equipment, furnishings, and special utility services
- ✓ Desired capacities for future expansion or change
- ✓ Budgets for sitework, construction, furnishings, equipment, and soft costs
- ✓ Project schedule goals and any critical milestone dates
- ✓ Applicable zoning ordinances, building codes, and other regulations
- ✓ Certification targets related to sustainable design and building performance

5.

Take advantage of the **best proven technologies and design methods.**

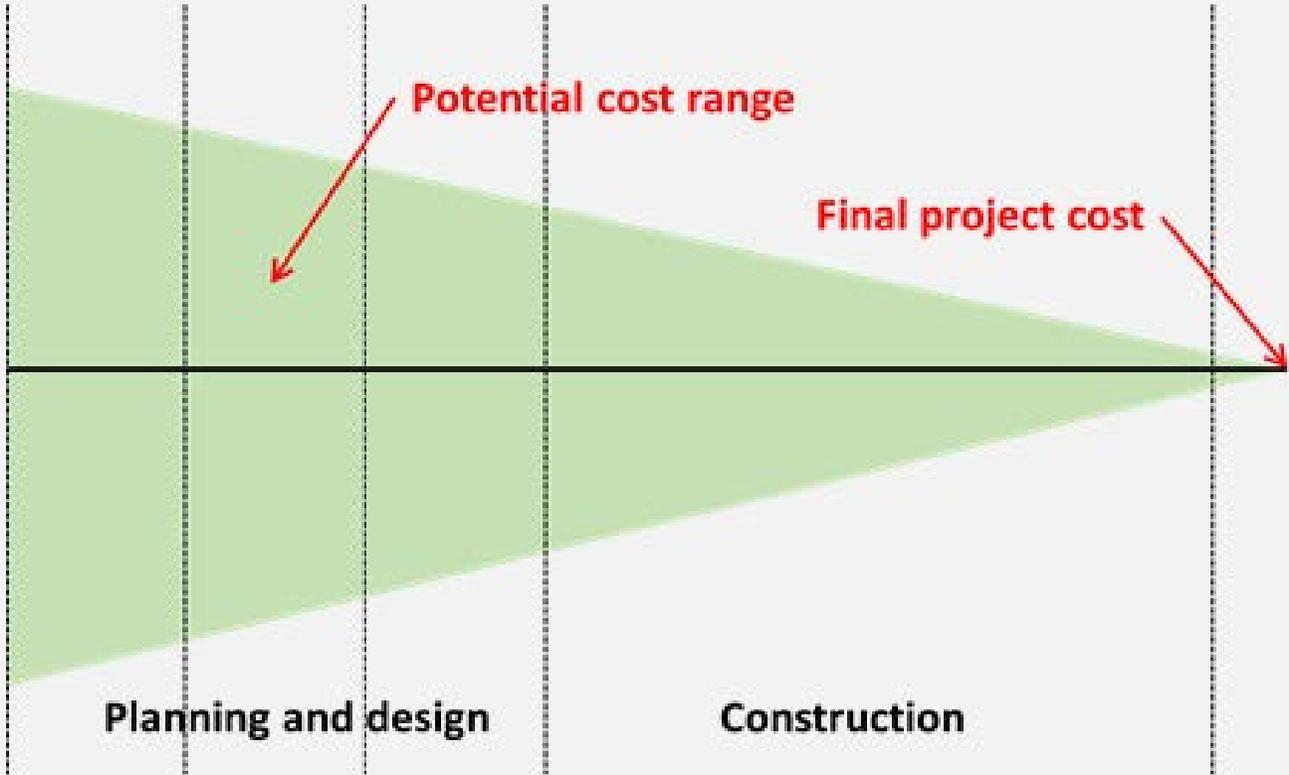


Adopt the most appropriate design and delivery technology platform

Share BIM models to the greatest possible extent among designers, constructors, and fabricators

Develop BIM execution plans and protocols among all team members

The contingency calculator: planning for the known unknowns



Program complexity

Owner/user changes

Existing site and building conditions

Design imperfection

Construction coordination issues

Permitting or regulatory changes

Construction price variation

PROJECT CONTINGENCY CALCULATOR

© 2015 | CLARK DAVIS, FAIA, LEED AP/CAMERON MACALLISTER GROUP

PROJECT: **RESEARCH LAB EXPANSION** BASE CONSTRUCTION COST: **\$100,000,000** WORKSHEET DATE: **06/01/16**

Uncertainty Factor	Potential Change	Probability	Total Contingency Contribution	% Contingency Reserved by Phase									
				Schem Des	Des Devel	Const Doc	Bid/Negot	25% Const	50% Const	75% Const	100% Const	1-Yr Occup	
Program scope and complexity	+	15%	25%	\$ 3,750,000	100%	75%	50%	25%	20%	10%	10%	10%	10%
	--	10%	10%	\$ (1,000,000)									
Owner/user changes	+	10%	30%	\$ 3,000,000	100%	100%	75%	25%	20%	10%	10%	10%	10%
	--	5%	10%	\$ (500,000)									
Existing site/building conditions	+	15%	25%	\$ 3,750,000	100%	100%	100%	100%	100%	50%	50%	10%	0%
	--	5%	10%	\$ (500,000)									
Design imperfection	+	3%	75%	\$ 2,250,000	100%	100%	100%	100%	100%	100%	75%	50%	25%
	--	0%	0%	\$ -									
Construction coordination issues	+	2%	50%	\$ 1,000,000	100%	100%	100%	100%	100%	75%	50%	10%	0%
	--	0%	0%	\$ -									
Permitting/regulatory changes	+	5%	25%	\$ 1,250,000	100%	100%	100%	100%	100%	50%	50%	50%	0%
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Construction price variation	+	10%	20%	\$ 2,000,000	100%	100%	100%	100%	75%	25%	10%	0%	0%
	--	5%	10%	\$ (500,000)									
Other	+	0%	0%	\$ -	0%	0%	0%	0%	0%	0%	0%	0%	0%
	--	0%	0%	\$ -									
TOTALS				\$ 14,000,000	\$ 14,000,000	\$ 13,312,500	\$ 12,000,000	\$ 10,062,500	\$ 9,425,000	\$ 5,900,000	\$ 4,862,500	\$ 2,450,000	\$ 1,087,500
Totals as % of base construction cost				14.0%	14.0%	13.3%	12.0%	10.1%	9.4%	5.9%	4.9%	2.5%	1.1%
Potential contingency released by phase						\$ 687,500	\$ 1,312,500	\$ 1,937,500	\$ 637,500	\$ 3,525,000	\$ 1,037,500	\$ 2,412,500	\$ 1,362,500
User input			TOTAL CONSTRUCTION BUDGET WITH CONTINGENCY:					\$114,000,000					

PROJECT CONTINGENCY CALCULATOR

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Program scope and complexity	+	15%	25%	\$ 3,750,000	100%	75%	50%	25%	20%	10%	10%	10%	10%
	--	10%	10%	\$ 1,000,000									
Owner/user changes	+	10%	30%	\$ 3,000,000	100%	100%	75%	25%	20%	10%	10%	10%	10%
	--	5%	10%	\$ (500,000)									
Existing site/building conditions	+	15%	25%	\$ 3,750,000	100%	100%	100%	100%	100%	50%	50%	10%	0%
	--	5%	10%	\$ (500,000)									
Design imperfection	+	3%	75%	\$ 2,250,000	100%	100%	100%	100%	100%	100%	75%	50%	25%
	--	0%	0%	\$ -									
Construction coordination issues	+	2%	50%	\$ 1,000,000	100%	100%	100%	100%	100%	75%	50%	10%	0%
	--	0%	0%	\$ -									
Permitting/regulatory changes	+	5%	25%	\$ 1,250,000	100%	100%	100%	100%	100%	50%	50%	50%	0%
	--	5%	10%	\$ (500,000)									
Construction price variation	+	10%	20%	\$ 2,000,000	100%	100%	100%	100%	75%	25%	10%	0%	0%
	--	5%	10%	\$ (500,000)									
Other	+	0%	0%	\$ -	0%	0%	0%	0%	0%	0%	0%	0%	0%
	--	0%	0%	\$ -									
TOTALS				\$ 14,000,000	\$ 14,000,000	\$ 13,312,500	\$ 12,000,000	\$ 10,062,500	\$ 9,425,000	\$ 5,900,000	\$ 4,862,500	\$ 2,450,000	\$ 1,087,500
Totals as % of base construction cost				14.0%	14.0%	13.3%	12.0%	10.1%	9.4%	5.9%	4.9%	2.5%	1.1%
Potential contingency released by phase						\$ 687,500	\$ 1,312,500	\$ 1,937,500	\$ 637,500	\$ 3,525,000	\$ 1,037,500	\$ 2,412,500	\$ 1,362,500
User input				TOTAL CONSTRUCTION BUDGET WITH CONTINGENCY:				\$114,000,000					

PROJECT CONTINGENCY CALCULATOR

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PROJECT: RESEARCH LAB EXPANSION

BASE CONSTRUCTION COST: \$100,000,000

WORKSHEET DATE: 06/01/16

Uncertainty Factor	Potential Change	Probability	Total Contingency Contribution	% Contingency Released by Phase									
				Schem Des	Des Devel	Const Doc	Bid/Negot	25% Const	50% Const	75% Const	100% Const	1-Yr Occup	
Program scope and complexity	+	15%	25%	\$ 3,750,000	100%	75%	50%	25%	20%	10%	10%	10%	10%
	--	10%	10%	\$ (1,000,000)									
Owner/user changes	+	10%	30%	\$ 3,000,000	100%	100%	75%	25%	20%	10%	10%	10%	10%
	--	5%	10%	\$ (500,000)									
Existing site/building conditions	+	15%	25%	\$ 3,750,000	100%	100%	100%	100%	100%	50%	50%	10%	0%
	--	5%	10%	\$ (500,000)									
Design imperfection	+	3%	75%	\$ 2,250,000	100%	100%	100%	100%	100%	100%	75%	50%	25%
	--	0%	0%	\$ -									
Construction coordination issues	+	2%	50%	\$ 1,000,000	100%	100%	100%	100%	100%	75%	50%	10%	0%
	--	0%	0%	\$ -									
Permitting/regulatory changes	+	5%	25%	\$ 1,250,000	100%	100%	100%	100%	100%	50%	50%	50%	0%
	--	5%	10%	\$ (500,000)									
Construction price variation	+	10%	20%	\$ 2,000,000	100%	100%	100%	100%	75%	25%	10%	0%	0%
	--	5%	10%	\$ (500,000)									
Other	+	0%	0%	\$ -	0%	0%	0%	0%	0%	0%	0%	0%	0%
	--	0%	0%	\$ -									
TOTALS				\$ 14,000,000	\$ 14,000,000	\$ 13,312,500	\$ 12,000,000	\$ 10,062,500	\$ 9,425,000	\$ 5,900,000	\$ 4,862,500	\$ 2,450,000	\$ 1,087,500
Totals as % of base construction cost				14.0%	14.0%	13.3%	12.0%	10.1%	9.4%	5.9%	4.9%	2.5%	1.1%
Potential contingency released by phase						\$ 687,500	\$ 1,312,500	\$ 1,937,500	\$ 637,500	\$ 3,525,000	\$ 1,037,500	\$ 2,412,500	\$ 1,362,500
User input			TOTAL CONSTRUCTION BUDGET WITH CONTINGENCY:					\$114,000,000					

PROJECT CONTINGENCY CALCULATOR

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PROJECT: **RESEARCH LAB EXPANSION** BASE CONSTRUCTION COST: **\$100,000,000** WORKSHEET DATE: **06/01/16**

Uncertainty Factor	Potential Change	Probability	Total Contingency Contribution	% Contingency Reserved by Phase									
				Schem Des	Des Devel	Const Doc	Bid/Negot	25% Const	50% Const	75% Const	100% Const	1-Yr Occup	
Program scope and complexity	+	15%	25%	\$ 3,750,000	100%	75%	50%	25%	20%	10%	10%	10%	10%
	--	10%	10%	\$ (1,000,000)									
Owner/user changes	+	10%	30%	\$ 3,000,000	100%	100%	75%	25%	20%	10%	10%	10%	10%
	--	5%	10%	\$ (500,000)									
Existing site/building conditions	+	15%	25%	\$ 3,750,000	100%	100%	100%	100%	100%	50%	50%	10%	0%
	--	5%	10%	\$ (500,000)									
Design imperfection	+	3%	75%	\$ 2,250,000	100%	100%	100%	100%	100%	100%	75%	50%	25%
	--	0%	0%	\$ -									
Construction coordination issues	+	2%	50%	\$ 1,000,000	100%	100%	100%	100%	100%	75%	50%	10%	0%
	--	0%	0%	\$ -									
Permitting/regulatory changes	+	5%	25%	\$ 1,250,000	100%	100%	100%	100%	100%	50%	50%	50%	0%
	--	5%	10%	\$ (500,000)									
Construction price variation	+	10%	20%	\$ 2,000,000	100%	100%	100%	100%	75%	25%	10%	0%	0%
	--	5%	10%	\$ (500,000)									
Other	+	0%	0%	\$ -	0%	0%	0%	0%	0%	0%	0%	0%	0%
	--	0%	0%	\$ -									
TOTALS				\$ 14,000,000	\$ 14,000,000	\$ 13,312,500	\$ 12,000,000	\$ 10,062,500	\$ 9,425,000	\$ 5,900,000	\$ 4,862,500	\$ 2,450,000	\$ 1,087,500
Totals as % of base construction cost				14.0%	14.0%	13.3%	12.0%	10.1%	9.4%	5.9%	4.9%	2.5%	1.1%
Potential contingency released by phase						\$ 687,500	\$ 1,312,500	\$ 1,937,500	\$ 637,500	\$ 3,525,000	\$ 1,037,500	\$ 2,412,500	\$ 1,362,500
User input				TOTAL CONSTRUCTION BUDGET WITH CONTINGENCY:				\$114,000,000					

PROJECT CONTINGENCY CALCULATOR

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PROJECT: **RESEARCH LAB EXPANSION** BASE CONSTRUCTION COST: **\$100,000,000** WORKSHEET DATE: **06/01/16**

Uncertainty Factor	Potential Change	Probability	Total Contingency Contribution	% Contingency Reserved by Phase								
				Schem Des	Des Devel	Const Doc	Bid/Negot	25% Const	50% Const	75% Const	100% Const	1-Yr Occup
Program scope and complexity	+	15%	\$ 3,750,000	100%	75%	50%	25%	20%	10%	10%	10%	10%
	--	10%	\$ (1,000,000)									
Owner/user changes	+	10%	\$ 3,000,000	100%	100%	75%	25%	20%	10%	10%	10%	10%
	--	5%	\$ (500,000)									
Existing site/building conditions	+	15%	\$ 3,750,000	100%	100%	100%	100%	100%	50%	50%	10%	0%
	--	5%	\$ (500,000)									
Design imperfection	+	3%	\$ 2,250,000	100%	100%	100%	100%	100%	100%	75%	50%	25%
	--	0%	\$ -									
Construction coordination issues	+	2%	\$ 1,000,000	100%	100%	100%	100%	100%	75%	50%	10%	0%
	--	0%	\$ -									
Permitting/regulatory changes	+	5%	\$ 1,250,000	100%	100%	100%	100%	100%	50%	50%	50%	0%
	--	5%	\$ (500,000)									
Construction price variation	+	10%	\$ 2,000,000	100%	100%	100%	100%	75%	25%	10%	0%	0%
	--	5%	\$ (500,000)									
Other	+	0%	\$ -	0%	0%	0%	0%	0%	0%	0%	0%	0%
	--	0%	\$ -									
TOTALS			\$ 14,000,000	\$ 14,000,000	\$ 13,312,500	\$ 12,000,000	\$ 10,062,500	\$ 9,425,000	\$ 5,900,000	\$ 4,862,500	\$ 2,450,000	\$ 1,087,500
Totals as % of base construction cost												
Potential contingency released by phase					\$ 687,500	\$ 1,312,500	\$ 1,937,500	\$ 637,500	\$ 3,525,000	\$ 1,037,500	\$ 2,412,500	\$ 1,362,500
User input			TOTAL CONSTRUCTION BUDGET WITH CONTINGENCY:				\$114,000,000					

PROJECT CONTINGENCY CALCULATOR

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PROJECT: RESEARCH LAB EXPANSION **BASE CONSTRUCTION BUDGET:** \$100,000,000 **WORKSHEET DATE:** 06/01/17

Uncertainty Factor	Potential Change	Probability	Total Contingency Contribution	% Contingency Reserved by Phase									
				Schem Des	Des Devel	Const Doc	Bid/Negot	25% Const	50% Const	75% Const	100% Const	1-Yr Occup	
Program complexity	+	20%	25%	\$ 5,000,000	100%	75%	50%	25%	20%	10%	10%	10%	10%
	--	10%	10%	\$ (1,000,000)									
Owner/user changes	+	10%	30%	\$ 3,000,000	100%	100%	75%	25%	20%	10%	10%	10%	10%
	--	5%	10%	\$ (500,000)									
Existing site/building conditions	+	15%	25%	\$ 3,750,000	100%	100%	100%	100%	100%	50%	50%	10%	0%
	--	5%	10%	\$ (500,000)									
Design imperfection	+	3%	75%	\$ 2,250,000	100%	100%	100%	100%	100%	100%	75%	50%	25%
	--	0%	0%	\$ -									
Construction coordination issues	+	2%	50%	\$ 1,000,000	100%	100%	100%	100%	100%	75%	50%	10%	0%
	--	0%	0%	\$ -									
Permitting/regulatory changes	+	5%	25%	\$ 1,250,000	100%	100%	100%	100%	100%	50%	50%	50%	0%
	--	5%	10%	\$ (500,000)									
Construction price variation	+	15%	25%	\$ 3,750,000	100%	100%	100%	100%	75%	25%	25%	10%	0%
	--	5%	10%	\$ (500,000)									
Other	+	0%	0%	\$ -	0%	0%	0%	0%	0%	0%	0%	0%	0%
	--	0%	0%	\$ -									
TOTALS				\$ 17,000,000	\$ 17,000,000	\$ 16,000,000	\$ 14,375,000	\$ 12,125,000	\$ 10,987,500	\$ 6,462,500	\$ 5,650,000	\$ 2,900,000	\$ 1,212,500
Totals as % of base construction cost				17.0%	17.0%	16.0%	14.4%	12.1%	11.0%	6.5%	5.7%	2.9%	1.2%
Potential contingency released by phase						\$ 1,000,000	\$ 1,625,000	\$ 2,250,000	\$ 1,137,500	\$ 4,525,000	\$ 812,500	\$ 2,750,000	\$ 1,687,500
		User input	TOTAL CONSTRUCTION BUDGET WITH CONTINGENCY:					\$117,000,000					

Summary Checklist

Key project planning recommendations

This checklist summarizes the top activities owners need to do to manage uncertainty on their projects.

Owner's Project Leadership

- Identify a single project leader
- Keep senior executives engaged
- Be clear about responsibilities of the owner's team members

Assembling the Project Team

- Choose a collaborative project delivery method
- Engage construction partners early in the process
- Be clear about responsibilities of the design and construction team
- Select team members based on qualifications and experience

Strong Team Communications

- Designate a senior owner executive as project "sponsor"
- Create a council of principals from owner, design and construction firms
- Solicit regular feedback from owner stakeholders
- Invest time in aligning the project team

Defining Project Requirements

- Define the owner's goals, needs, priorities and success criteria
- Develop a detailed program of functional requirements and relationships
- Identify areas of uncertainty and potential change

Best Technologies and Design Methods

- Adopt the most appropriate design and delivery technology platforms
- Share BIM models among designers, constructors and fabricators
- Develop BIM execution plans and protocols

Budget and Contingency Planning

- Discuss scope, quality, cost and schedule expectations as a team
- Identify uncertainty factors related to project conditions
- Estimate potential cost impacts using the contingency calculator
- Evaluate uncertainty and reduce contingencies during construction



**Project Planning
Guide for Owners
and Project Teams**

Managing Uncertainty and Expectations
in Building Design and Construction

PDF and E-book versions

Download free:

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Thank you!