Managing Risk to Reduce Construction Claims

(And Improve Project Success)

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Presentation Objectives

- What is the definition of project risk
- Why managing risk is important
- When to use risk assessments
- An overview of the risk assessment process
- How to identify and assess risk
- Treating the risk
- Managing the risk assessment process
- Integrating risk into your organization

What Is The Cause?

- Escalating construction costs due to:
  - Incomplete plans
  - Design issues not mitigated and pushed into construction
  - Constrained design schedules; issues not resolved
  - Very little discussion of risk and impacts
  - Price + Time contracts
  - Not understanding the true impacts related to the risk

What is a Risk

- **A**n uncertain event or condition that, if it occurs, has a positive or negative effect on at least one project objective. A risk may have one or more causes and, if it occurs, one or more impacts.

Threats vs Opportunities

- A negative risk is described as a **Threat** – causing an adverse impact on a project goal.
- A positive risk is described as an **Opportunity** – causing a positive impact on a project goal.

What is a Risk

- Risk can typically be divided into the following three categories;
  - ***Political*** – this can be defined as communities, permitting, management priorities, users, approvals, media, and internal stakeholders/ project team issues.
  - ***Technical*** – this is the most common for design and construction projects and is typically represented by requirements, regulatory, technology, data, design, construction, maintenance, operations, life cycle asset management, and cost. (i.e., health, safety, environmental, etc.)

What is a Risk

- ***Contractual*** – this is most commonly related to funding, negotiations, scope of work, qualification requirements, certification requirements, incentives, penalties and defaults.

Importance of Managing Project Risk

- Avoid and/or minimize adverse impacts
  - Planning
  - Design
  - Construction
  - Commissioning
- Maximize opportunities to improve project objectives
- Avoid and/or minimize management by crisis
- Better decision-making; understanding all impacts
- Help keep management apprised of project issues

Risk and Project Management

- All phases will benefit from the analysis
  - Planning
    - Programmatic decision-making
    - Formulates initial approaches to determine level of effort and potential cost implications
  - Project Initiation
    - Developing project scope/complexity
    - Budgetary impacts
  - Project Feasibility/Pre-Design
    - Reducing potential risks during concept development
    - Alternative selection

Risk and Project Management

- Design
  - Managing project risks
  - Minimizes construction impacts (cost & schedule)
- Construction and Commissioning
  - During the Partnering session – a Risk-based approach
  - Informs construction of risks identified through the design process
  - Provides new information from a contractors perspective – helps to reduce or eliminate risks impacting the schedule, budget and delivery
  - Identifies potential impacts to avoid commissioning problems and challenges

Risk and Project Management

- Alternative Delivery
  - CMAR/CMGC
    - Used by the CMAR team to develop an understanding and provide ideas for risk mitigation in their proposals
    - Formalized workshop with all parties
  - Design/Build
    - Used by the owner developing and finalizing the RFP documents
    - Used by the D/B team to develop an understanding and provide ideas for risk mitigation in their proposals
    - Joint session with Owner and D/B team

What is a Risk Assessment

- It is a focused effort to discover and act on risks and opportunities that can affect a project's scope, schedule, budget or quality early in the project and continuously throughout the project life cycle.
- It is a quantitative and qualitative approach to identifying risk, which includes both the negative sides of risk and opportunities, and evaluates the likelihood and potential impact.

Risk Approaches

- **Quantitative** – electronically modeling the project schedule and/or cost estimate. Uses a Monte Carlo-type simulation.

- **Qualitative** – using a simplified tool, such as a risk register to identify and then track, using an order of magnitude impact to cost and schedule.

Risk Assessment Process

- Planning for the Workshop
- Initial Risk Assessment Workshop
  - Stand-alone
  - Jointly with a value engineering effort
- Risk Register Updates
- Follow-up Workshops
- Risk Data-base Updates
- Transfer Risk Information to Construction
  - Combine with a Risk-based Partnering workshop
  - Part of the project start-up

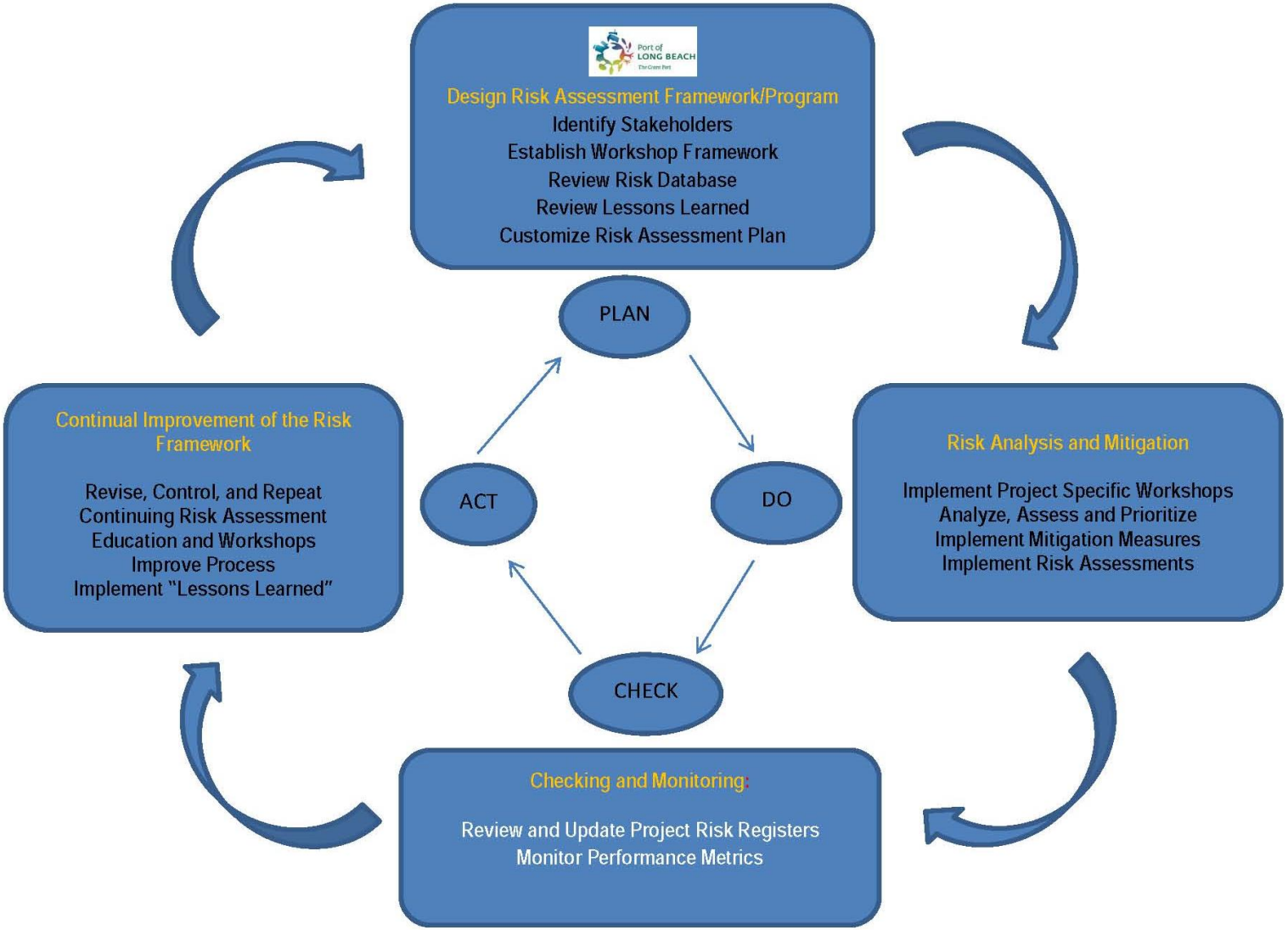
Risk Assessment Process

- With Value Engineering Study
  - Identify Risks
  - Evaluate Risks Using Risk Register
  - Creative Mitigation or Elimination Risk
  - Develop Ideas
  - Define Potential Impacts

Risk Assessment Process

- Project Close-out
  - Update the risk database (knowledge transfer)

Continuous Improvement Cycle



Risk Planning Phase (Planning, Design, CMGC/CMAR)

- Information and Data Gathering
- Stakeholder Identification and Involvement
- Risk Assessment Team
- Determine Level of Project Complexity
  - High complexity/consequences
  - High importance
- Review Existing Data
  - Including the Risk Database
- Workshop Logistics
- Workshops/Meetings

Risk in GCCM

- A tool to help the CMGC firms develop more risk-based approaches for their proposals
- After selection, a formal stand-alone workshop or in conjunction with a VE workshop
- Risk team members are the team
  - CMGC Team
  - Design Team
  - Owner’s Team

Risk in GCCM

- Initial workshop should occur at the beginning during pre-construction services
- Develop risk treatment plans to be addressed and tracked through the design process
- Update the risk register throughout the design process; retire risks, add new risks
- Helps to further eliminate or mitigate risks on a project helping to reduce overall costs for the GMP

Risk Identification and Analysis

DATE: 3/1/2012

Project Name

Probability of Occurrence	Highly Likely	Likely	Possible	Unlikely	Very unlikely	MATRIX KEY
	> 70%	51 - 70%	21 - 50%	5 - 20%	< 5%	
Severity of Impact	Catastrophic	Substantial	Moderate	Marginal	Negligible	
	100	50	20	5	1	
Risk Rating	Extremely High		High	Moderate	Low	
	Red (50- 100)		Orange (15 - 49)	Yellow (3 - 14)	Green (0 - 2.9)	

Identify the Risk		Assign the Risk	Classify the Risk			Quantify		Risk Response	
Risk ID	Description of Risk	Who does the risk affect?	Probability of Occurance %	Severity of Impact (numeric)	Risk Rating	$$ Impact	Schedule Impact	Avoid? Mitigate? Accept? Transfer?	Comments
1 Risk Category									
1.1	Slpoping	Construction	60%	50	100.0				
1.2					0.0				
1.3					0.0				
1.4					0.0				
1.5					0.0				
1.6					0.0				
1.7					0.0				
1.8					0.0				
1.9					0.0				

Status of Risk

- **Threats**
  - Avoid/Eliminate
    - Clarifying requirements, obtain information, improve communication, acquire expertise.
  - Transfer/Share
    - Gives the risk to a third party, does not eliminate the potential costs or exposure. Where is the best place for the risk to borne.
  - Mitigate/Reduce the Likelihood
  - Accept
    - There are many risks that will occur regardless of mitigation measures, these are accepted and then accounted for in the scope, schedule and budget.

Status of Risk

- **Opportunities**
  - Accept – Ensure that the opportunity is realized. Might include escalating a schedule for early completion.
  - Share – Apportioning ownership between two or more. Might include using performance specifications.
  - Enhance – Increasing the probability that it will occur. Might include facilitating the cause to increase the probability.

Treating the Risk

DATE: 3/1/2012

Project Name

Risk ID	1.1

CLASSIFY RISK		
Likelihood	Consequence	Risk Ranking
0%	-	0.0

CAUSE (TRIGGERS)		
ID	Description	Cause Date
T1		
T2		
T3		
T4		

RISK DESCRIPTION
0

CONSEQUENCES	
ID	Description
C1	
C2	
C3	
C4	

EXISTING PREVENTIVE CONTROLS			
ID	Description	Cause ID	Responsibility
PC1			
PC2			
PC3			
PC4			

IMPROVEMENT TASKS					
ID	Description	Due Date	Cause ID	Cost to Action	Responsibility
1					
2					
3					
4					

COMMENTS

Managing the Plan

- Manage and update the risk register and treatment plan
- Track assignments for completion
- Monitor the “watch list”
- Decision-making and keeping management informed

Risk Assessments & Construction "Risk-Based Partnering"

- Use the existing Risk Register as a start – if available
  - Helps to educate the contractor of potential risks the design team dealt with
- Uses a slightly modified Risk Register
- Focus on risks only associated with construction (remember, this is after the bid)
- Helps to be proactive in problem identification and solutions (important with price + time)

Risk Assessments & Construction "Risk-Based Partnering"

- Helps the construction team to understand potential cost impacts earlier
- Much stronger focus on construction elements of the project and not the "touchy feely" stuff
- Overall improvement in communication and understanding, before we ever start

Risk-Based Partnering
Risk Register

Probability of Occurrence	Very High	High	Medium	Low	Very Low	MATRIX KEY
	95%	75%	50%	25%	5%	
Severity of Impact	Not Able to Meet Key Milestone	Major Slip	Minor Slip	Added Resources	Minimal	
	100	50	20	5	1	
Risk Rating	Extremely High		High	Moderate		Low
	Red		Orange	Yellow		Green

Identify the Risk		Assign the Risk	Classify the Risk			Risk Response
Risk ID	Description of Risk	Who does the risk affect?	Probability of Impact %	Severity of Impact (numeric)	Risk Rating	Plan of action and risk champion/owner.
Identify the Risk - Political/Social						
1					0.0	
2					0.0	
3					0.0	
Identify the Risk - Technical						
5					0.0	
6					0.0	
7					0.0	
Identify the Risk - Contractual						
9					0.0	
10					0.0	
11					0.0	

Integrating Risk Assessments

- Establish a formal process and integrate into your project management plan
- Contractors and designers use the tool to develop improved proposals
- Contractors and design teams integrate risk assessments in the services you offer
- Establish a risk data-base
- Identify a risk coordinator for each project (May be the Project Manager)

Integrating Risk Assessments

- Establish management support and “buy in”
- Track statistics and share the data to support the process and the successes

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