Construction Management:

Safety

'Project Risk Management'

-Includes the process concerned with identifying, analyzing and responding to project risk.

- maximizing the results of positive events and minimizing the consequences of adverse events

Safety

'Project Risk Management'

- Major process

i) Risk Identification – which risk are like to affect the project and documenting characteristics of project

Risk Analysis or risk assessment

ii) Risk Quantification – evaluating risks and risk interactions to assess range of possible project outcomes

Risk Planning or risk mitigation

iii) Risk Response Development – defining enhancement steps for opportunities and response to threat

Risk Management

iv) Risk Response Control – responding to changes in risk over the course of the project

Safety

'Project Risk Management' – Risk Identification

Risk Identification

- Determining which risks are likely to affect project
- Documenting characteristics
- It should address both internal (staff assignment, cost estimate) and external risks (market shift, government action)

- It may be accomplished by identifying causes-and-effects (what could happen and what will ensue) or effects-and-causes (what outcomes are to be avoided or encouraged and how each might occur)

Safety

'Project Risk Management'- Risk Identification

Inputs to Risk Identification

1. Product description – nature of the products. Products that involve proven technology will, all other things being equal, involve less risk than products which require innovation or invention
2. Other Planning outputs – the outputs of the processes in other knowledge areas should be reviewed to indentify possible risk
3. Historical information – what actually happened in previous projects can be especially helpful in identifying risk (source – project files, commercial database, project team knowledge)

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'Project Risk Management' – Risk Identification

Tools and techniques for Risk Identification

1. Checklists
2. Flowcharting
3. Interviewing

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'Project Risk Management' – Risk Identification

Outputs from Risk Identification

1. Sources of risk – categories of possible risk events that may affect the project for better or worse

Common sources of risk

- Change on requirements
- Design errors, omissions and misunderstanding
- Poorly defined roles and responsibilities
- Poor estimates
- Insufficient skilled staff

Safety

'Project Risk Management' – Risk Identification

- Outputs from Risk Identification

2 Potential risk events – discrete occurrence such as a natural disaster or departure of a specific team member that may affect the project

-Losses due to a major storm

3. Risk Symptoms – indirect manifestations of actual risk events (poor morale of personnel, indication of schedule delay or cost overruns)

4. Inputs to other processes

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'Project Risk Management' – Risk Quantification

Risk Quantification – evaluating risks and risk interactions to assess the range of possible project outcomes

- Determining which risk events warrants response

Inputs to Risk Quantification

1. Stakeholder risk tolerance
2. Source of risk
3. Potential risk events
4. Cost estimates
5. Activity duration estimates

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'Project Risk Management' – Risk Quantification

Tools and techniques for Risk Quantification

1. Expected monetary value :
   risk event probability x risk event value
1. Statistical sums
2. Simulations
3. Expert judgment
4. Decision Tree

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'Project Risk Management' – Risk Quantification

Outputs from Risk Quantification

1. Opportunities to pursue, threats to respond to
2. Opportunities to ignore, threats to accept

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'Project Risk Management' – Risk Response Development

Risk Response Development

- Enhancement steps to opportunities, responses to threats
- Response to threats generally fall into one of three categories

1. Avoidance
2. Mitigation
3. Acceptance

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'Project Risk Management' - Risk Response Development

Inputs

1. Opportunities to pursue, threats to responds to
2. Opportunities to ignore, threats to accept

Tools and Techniques for Risk Response Development

1. Procurement
2. Contingency Planning
3. Alternative strategies
4. Insurance

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'Project Risk Management'-Risk Response Development

Outputs

1. Inputs to other process
2. Contingency plans
3. Reserves
4. Contractual agreement

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'Project Risk Management'- Risk Response Control

Risk Response Control – executing the risk management plan in order to respond to risk events over the course of the project

When changes occur the basic cycle of identify, quantify and respond is repeated.

Iteration is required

Safety

'Project Risk Management'

Inputs to Risk Response Control

1. Risk Management Plan
2. Actual Risk events
3. Additional risk identification

Tools and Techniques for Risk Response Control

1. Workarounds
2. Additional risk response development

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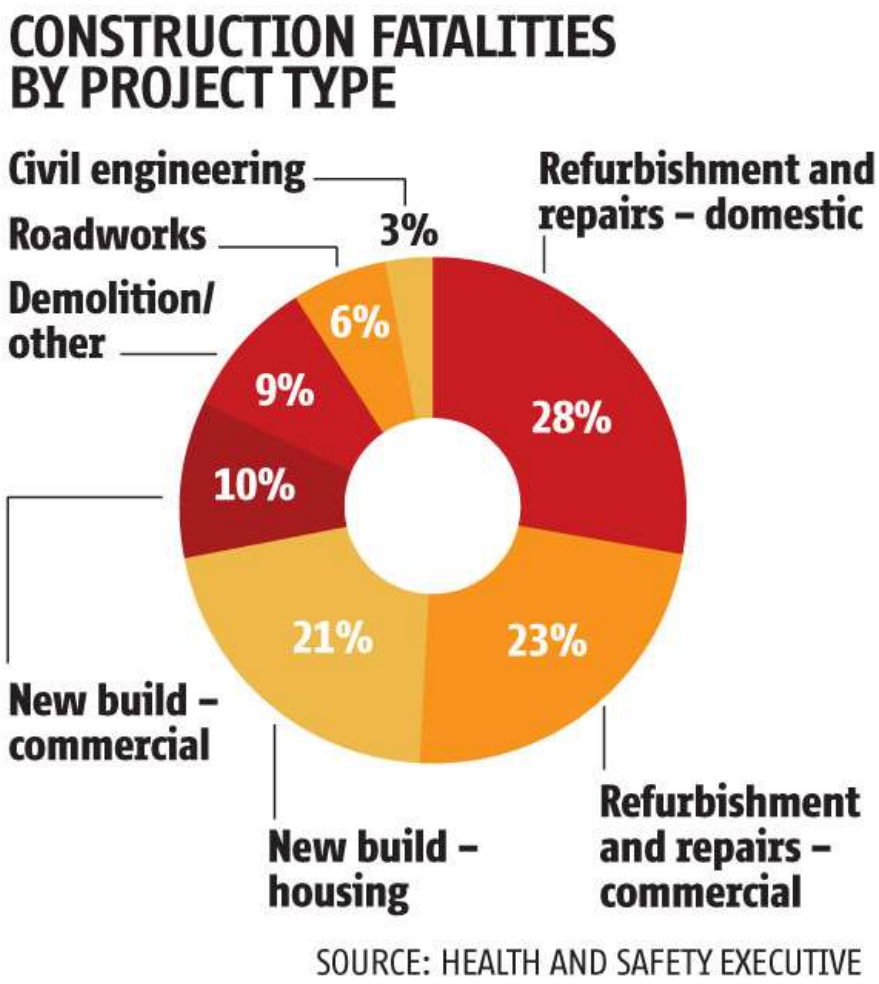
'Project Risk Management'

Outputs from Risk Response Control

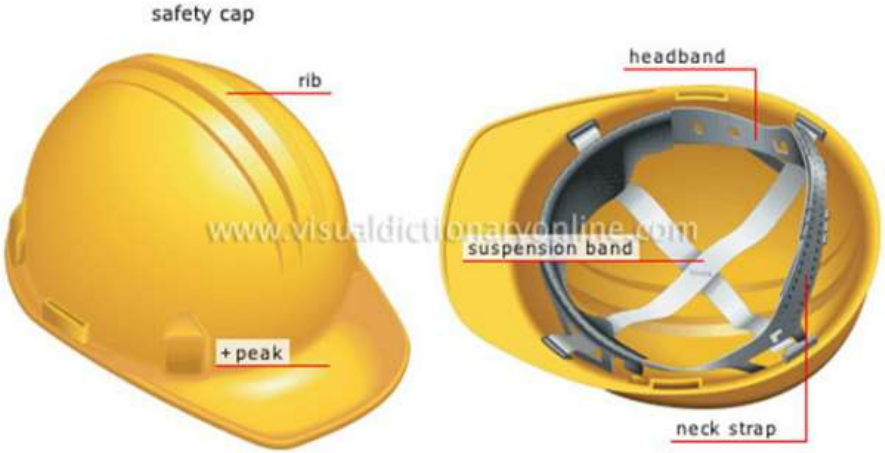
1. Corrective Action
2. Updates to risk management plan


CONSTRUCTION FATALITIES BY PROJECT TYPE
Civil engineering
3%
Roadworks
6%
Demolition/ other
9%
10%
New build – commercial
21%
New build – housing
23%
Refurbishment and repairs – commercial
28%
Refurbishment and repairs – domestic
SOURCE: HEALTH AND SAFETY EXECUTIVE

Examples of Personal Protective Equipment

Body Part	Protection
Eye	safety glasses, goggles
Face	face shields
Head	hard hats
Feet	safety shoes
Hands and arms	gloves
Bodies	vests
Hearing	earplugs, earmuffs

SAFETY EOUIPMENT:



Hard Hat

Vest

Harnesses

SAFETY EQUIPMENT:

Gloves

Safety Shoes

Glasses, Earplugs

Accident during Excavation

Accident during Pile Construction

Examples of ACCIDENTS IN CONSTRUCTION SITE

Accident during Column construction

Accident during Over bridge Construction

Crane Accident

Fire during Construction Works

Accident during Building Construction

Buckling

Project Delay, cost overrun

Bracing (Permanent and Temporary), Insurance

Documents updated, contingency plan