ASSIGNMENT

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SUBMITED TO:

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SUBJECT:

Risk and Disaster Management
in Construction.

Question 1

Introduction:

Construction is a risky business. Each construction project is unique and comes with its own set of challenges and opportunities. Identifying and managing risks can be tricky, but not impossible with careful planning and execution. When a risk turns into reality it can disrupt and derail a project. In order to avoid disaster, you need to be able to properly assess, control, and monitor risks once they have been identified.

Managing Risks

Once you have identified the potential risks to your project, you now need to sit down and assess each risk based on the probability of becoming reality and the impact they will have on the project if they occur. Rank the impact and probability of each risk as high, medium, or low.

High impact, high probability risks should be handled first, while risks with a low probability and low impact can be tackled last. Factor in the amount of time, money, and work each risk will require to effectively manage.

Now that you have ranked each risk, carefully review each one and determine if you can avoid, eliminate, reduce, transfer, or accept each risk.

- Avoid the risks.
- Transfer the risks.
- Mitigate the risks.
- Accept the risks**.**

Categories of Construction Risks:

- Technical Risks
- Logistical Risks
- Environmental risk.
- Management related risks
- Financial risks.
- Socio-political risks.

Technical Risks:

Technical risks include anything that restricts you from creating the product that your customer wants. This can include uncertainty of resources and availability of materials, inadequate site investigation, or incomplete design. These risks can commonly occur when there are changes in project scope and requirements, and if there are design errors or omissions.

Types of Technical Risks:

Design process

1. Owner involvement in design
2. Inadequate and incomplete design
3. Change in seismic criteria
4. Errors in completion of structural / geotechnical / foundation
5. Wrong selection of materials
6. Take off data (traffic demand, water consumption demand, etc.)
7. Need for design exceptions

Construction risks

1. Inaccurate contract time estimates
2. Construction procedures
3. Construction occupational safety
4. Work permissions
5. Utilities
6. Late surveys, incomplete or wrong
7. Delayed deliveries and disruptions
8. Worker and site safety
9. Innovative projects
10. Unsuitable equipment and materials
11. Environmental risks (such as projects close to a river, floodplain, coastal zone, high habitat sensitivity, and so on)

Environmental factors

1. Environmental analysis incomplete or wrong
2. Offsite and onsite wetlands
3. Hazardous waste, preliminary site investigation wrong
4. Lack of specialized staff (biology, anthropology archaeology, etc).

Technical Risks Associated During Construction of BRT Peshawar.

- Incomplete Design
- Inadequate site investigation
- Improper project planning.

- Inadequate specification
- Excessive approval procedures in administrative government departments
- Tight Project Schedule
- Inappropriate time allocation
- Unsuitable construction program planning
- Plans of design are incompatible with execution.
- Many modifications on designs are made during execution.
- Some materials do not arrive at the assigned site.
- Selection of material and equipment.
- Changes in material types and specifications during construction.
- Undocumented change orders.
- Designs are changed by the engineers.
- Defective design (incorrect)
- Not coordinated design (structural, mechanical, electrical, etc.)
- Rush design.
- Improper project feasibility study.

Counter Measures:

Incomplete Design:
Design phase is an important part of project life, Design should have been completed before the execution of Construction at BRT project.

Inadequate site investigation:
Construction of BRT project Started without proper Site Investigation, at Several points Underground conditions were unknown which affected the services of the city and caused delay. Detailed and Comprehensive site investigation should have been conducted before the execution of project.

Improper project planning:
BRT project started without construction detailed planning, for project like BRT planning phase was required to be of 2 or more years prior to the field execution.

Inadequate specification:
Clarity regarding specifications and approvals affected the BRT project. Specifications should have considered the considering the completion time of the project.

Tight Project Schedule:
Project schedule was unrealistic, Realistic schedule should have been prepared**.**

Plans of design are incompatible with execution:
Design and drawings prepared were not in compliance with the site conditions, experts should have consulted for the issue.

Many modifications on designs are made during execution:

During execution stage revised drawings were issued asking for the modification/Changes impacted the progress cost and quality of BRT. This was highlighted and witnessed by media and general public which ultimately brought bad reputation to the execution body and the government. This could have been avoided by detail working on initial designing stage.

Design were provided during the execution stage:

On BRT project design was provided during the execution of work, which affected the cost quality and time of the project.

Changes in material types and specifications during construction.

Undocumented change orders:

As per the information provided by employees of BRT project many changes were instructed by the political and NO technical authorities during the execution which were not recorded as per the SOP.

Not coordinated design (structural, mechanical, electrical, etc.):

At many locations of BRT project contradiction of structural and electrical design were witnessed, which came in notice during execution stages. Extra rework was carried for the correction.

Improper project feasibility study:

BRT project was started prior to the feasibility study, no emphasis was made on detail study of the project. It is rumored that project was selected for execution by the concerned authorities by viewing the graphic video of the project. No technical expertise was considered for the approval of the project. This entire project would have been different today had higher authorities emphasized on detail feasibility report.

Source & References:

- Nael G Bunni. Risk and Insurance in Construction second edition.
- Dr. R. K. Kansal, Manoj Sharma. 2012. Risk Assessment Methods and Application in the Construction Projects
- Project Management Institute (2008): A Guide to the Project Management Body of Knowledge (PMBOK® Guide) — Fourth Edition.
- RE Arshad Babar Mott Mcdonald Pakistan.
- Assistant Director Rafi Ullah Peshawar Development Authority.

Question 2:

Given Data:

Annual probability of Hazardous event: ID/6585200.

=14670/6585200.

=0.0022.

The cost of Loss Will be=45,275,000.

Required:

Risk Level in Risk Matrix.

Solution:

Annual probability=0.0022 (Given).

From Table 2.1.

Category	Description	Annual Probability Range
C	Very Unlikely	≥ 0.001 (1 in 1000) But ≤ 0.01

From Table 2.2.

Category	Description	Annual Probability Range
IV	Significant Loss	≥ 10000000But ≤ 100000000

From Figure Table 2.1 & Table 2.2

Probability Category							
	A						
	B						
	C			L			
	D						
	E						
		6	5	4	3	2	1
	Consequence Category						

The Risk Level in The Risk Matrix is **L.**