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Question no 1

Risks during construction associated with the technical aspects of the project

The following are the Risks during construction associated with the technical aspects of the any construction project:

1. Extended duration of construction
2. Technical complexity and innovation in design requiring new methods of construction and/or erection.
3. Removal of support
4. Dangerous substances and items during construction and/or commissioning
5. Defective design
6. Defective material and workmanship
7. Mechanical and electrical breakdown
8. Inadequate site management
9. Ground movement
10. Subsidence
11. Explosion and fire
12. Vibration and oscillation
13. Defective temporary works
14. Corrosion
15. Collapse

The following are points which are more suitable with the BRT Peshawar Condition from the above technical aspects.

1) Extended duration of construction

BRT project is facing many problems which cause delayed in project. It is evident that the longer the period of construction, the greater is the probability of occurrence of the hazards to which a project is exposed. However, in certain circumstances, there are seasonal hazards which occur at specific times of the year and thus require special consideration if the period of construction is to be extended. These hazards include rainfall, temperature changes, flood, storm and wind. Now a days the epidemic has spread around the world. Pakistan has also been affected by this epidemic (Covid-19). Due to this human life has become difficult and all the construction works of BRT project has become stopped. After the epidemic it may need more time for its completion and they will get extension in duration due to special consideration of epidemic (Covid-19). As usual, there were other factors that contributed to the occurrence of this episode, which are discussed below.

2) Defective design

In BRT project the engineers has faces defects in construction design after construction of turning points, junction point and roundabout. Roundabout of Aman Chowk near Gora Qabristan was constructed and then they realized to change in design due to difficulty of passing of busses and by aesthetic look as well, which was redesign and reconstruct again.

Six months ago in Saddar Peshawar they build a curvature on flyover without consideration of busses characteristics. Width of Curvature on specific point of flyover was not sufficient for passing of busses, which was breakdown to increase width of curvature.

Recently 20 days ago they build a junction point on flyover. Which meet the Hayatabad and Karkhano. The width of the junction was not sufficient as required for busses. They break down the particular point and construct it again.

3) Mechanical and electrical breakdown

Site operations are becoming more dependent on plant and equipment, the breakdown of which forms a major risk element. In BRT Project from Hayatabad to Karkhano when Crane was uplifting the girders of the flyover the crane was break down which cause a several days delay in construction.

During construction of BRT route, the contractors has removed hundreds of electrical pole, electrical wire and thousands of wires hanging in air. Which increase the cost and time of the construction project.

4) Ground movement

Ground movement could take place from a number of causes, including landslides, frost heave, earth slips and ground pressure leading to collapse. In BRT Project during excavation for underground roads due to heavy rainfall the earth on the side of excavated area and slopes near JB Tower slips down. The soil pressed and compacted again to bring it to the required condition.

5) Dangerous substances and items during construction and /or commissioning

Dangerous substances and items during construction of Bus Rapid Transit Peshawar (BRT) is all occur due to improper planning and management of this project, as nowadays the project is near to completion stage and suddenly the blunder is noticed at different stations and flyovers that the buses can't cross smoothly near stations as well as at some points the bus not takes turn properly at curves mostly in flyovers. So the project completion is delayed due to this problem. Now once again the road sides near stations and the concrete safety walls at flyovers along the curves are trimmed to increase the width so that buses can easily drive moved.

6) Inadequate site management

The Inadequate site management is due to poor supervision and lack of knowledge for the construction work. In BRT Hayatabad building depot several time I have experienced that the work is under supervision of internee engineers, due to which they always found delay in work progress.

7) Defective temporary works

The defective temporary works are seen in BRT, when the formwork was removed from the flyover then there was seen some empty holes due to poor filling and due to poor formwork its results cracks. The remove cracks by broken down the upper layer and make cement plaster again which they repeat for several times. It can be seen on sides of flyover near Hayatabad Police Station.

8) Quality control

To control quality of material can lead the project to meet required design strength. In BRT Peshawar quality control is such that the use of reinforcement is more than concrete. This may specified in design phase but due to over reinforcement the concrete cannot insert properly.

How we could counter the risk associated with the technical aspects

The following are describe that how to counter or manage a risk associated with technical aspects.

Project risk management includes the processes concerned with the identifying, analyzing and responding to project risk.

It includes maximizing the results of positive events and minimizing the consequence of adverse events.

Hazard analysis: The identification of hazards and the consequences of the credible accident sequences of each hazard.

Risk quantification: The estimation of a given risk by a statistical and/or analytical modelling process.

Risk evaluation: The appraisal of the significance of a given quantitative (or, when acceptable, qualitative) measure of risk.

Risk assessment: The integrated analysis of the risks inherent in a product, system or plant and their significance in an appropriate context.

Risk criteria: A qualitative and quantitative statement of the acceptable standard of risk with which the assessed risk needs to be compared.

Question No#02

Given Data:

ID# 15341

Cost of loss= 45275000\$

Required:

Identify the risk level in risk matrix?

Solution:

Step#01 Annual probability of occurrence of a hazardous event= $15343/6585200 = 0.00233$

Step#02 Select likelihood category of risk from table 2.1;

$$0.01 < 0.00232$$

Which is < 0.01 ; so category is very unlikely.

Step#03 To select the category in table 2.2 for consequences categories for a risk matrix in Monetary Amount (US \$).

From table 2.2 ;

$$45275000 > 10,000,000$$

But

$$45275000 < 100,000,000$$

So, category is (Significant loss) is right.

Step#04 To find out the risk level in risk matrix, So figure# 2.1, Put the value in figure# 2.1, so from given value

This risk is low category

