A STUDY ON CONSTRUCTION CHALLENGES OF BRIDGES IN THE HILLY AREAS

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ABSTRACT

A Bridge is a shape built to span a valley, avenue, river, frame of water, or some other physical obstacle. Designs of Bridges will vary depending upon the feature of the bridge and nature of the place wherein the bridge is to be constructed. the first bridges had been made by means of nature itself as simple as a log fallen across a flow or stones inside the river. the primary bridges made by means of humans have been in all likelihood spans of reduce wooden logs or planks and in the end stones, the usage of a easy support and crossbeam arrangement. some early Indians used bushes or bamboo poles to cross small caverns or wells to get from one place to every other. A not unusual form of lashing sticks, logs, and deciduous branches together worried using lengthy reeds or other harvested fibres woven together to shape a connective rope able to binding and maintaining together the substances utilized in early bridges. Hilly vicinity pose particular problem for bridge production. In a constrained hilly location itself climatic conditions, geological features and hydrological parameters vary considerably. keeping in view the bridge website and diverse constraints, type of bridge and approach of construction are to be selected carefully for safe, least expensive and a hit crowning glory of bridge creation. India, a country with a total location of approx. 3.2 million sq. km. has round 23 % of its region included with densely forested, thinly populated hills. Human habitation and plants spreads to altitudes as high as 14000 to 16000 toes above mean Sea stage.

INTRODUCTION

Hilly location pose unique hassle for bridge construction. In a restrained hilly region itself climatic conditions, geological capabilities and hydrological parameters range substantially. keeping in view the bridge website and numerous constraints, form of bridge and approach of production are to be decided on carefully for safe, cost effective and a success finishing touch of bridge construction. various demanding situations that encounter at the same time as constructing bridges in hilly vicinity are

1. Construction of bridge across deep gorges
2. Construction of bridge on rivers with bouldary beds
3. Construction of bridges in extreme temperature zones
4. Construction of bridges on sharp turn on highway
5. Landslide or Debris flow

Deep gorges, rivers with bouldary beds, extraordinarily low temperature condition, excessive winds, landslide etc. in hilly areas require unique interest to complete the sports of bridge planning and construction in a systematic way and are discussed here in.

Management of Construction Activities

control of bridge creation needs that creation manager to reorient all of the resources in any such manner that the challenge is finished with none time/value over run. Output of the paintings depend upon how quality the sports are managed with a view to vary from website online to website based totally on many factors. primarily based at the revel in, various elements be diagnosed

for efficient construction management. schedule of creation based important route technique (CPM) be organized at the side of predominant milestone and Bar Charts. today's software program management tool may be used for this in case of a major bridge venture. layout of Bridge is a put up sanction in case of departmental construction and after tendering motion in case of bridges at some point of agreement. it is vital that design ought to be preceded via as a minimum six to 8 months or say 50% in advance of execution of worried occasion. It has to be ensured that this ought to be finished nicely in time. Reviseddesign if any should be up to date and clarified immediately. observation on the accepted layout drawing if any be passed to design office right away to make the exchange. In case of foundation wherein layout soil parameter needs to be adhered to. these can also vary on real execution and require review of layout. To hold information with layout office it's far important that progress of foundation work be nicely informed to the layout office.

Material Management

material control is a parallel pastime alongside begin of the undertaking. This cowl procurement of camp material, workplace system, major purchased gadgets, which includes aggregates, sand, cement, metal, structural metal, shuttering consumables, electric fittings. Forecasting of portions and fee of diverse gadgets on month-to-month basis must be accomplished at the least three to six months in advance which have to be often reviewed.

Finance Management

No task or undertaking management may be meaningful with out this. In case of government work the manager should get his budget fixed on month-to-month foundation, on the idea of work finished or minimal to be fed at web page, at the decision of higher government. Key to measure monetary planning lies in taking all above motion and taking appropriate measures at suitable times to make certain that character inputs are carried out to the most and capital funding kept at the bottom level.

Quality Management

High-quality of labor at site is most vital interest and supervisor have to always grapple to improve the same. schooling to staff must be furnished to replace the quality manipulate degree and it ought to emerge as part of the work lifestyle. At website online laboratory be hooked up to check the high-quality of concrete. Assessments be analysed at web site primarily based on the scale of job. mix layout have to be organized based on the modern day code and to supply the concrete of ideal electricity. Compaction of concrete takes delivery of more attention earlier than very last putting. Modern day tips issued with the aid of IRC and MORT&H be followed for systematic best assurance.

Safety Management

protection of employees at site have to be discovered very seriously. all of the employees accept briefing about the protection requirements based on the website online hazards. mainly when the really supported shape is attempted on deep gorge, appropriate arrangement ought to be

made to avoid any twist of fate at web site during insitu casting of superstructure. additionally in case of foundation if the deep excavation is involved, the first-rate of surrounded soil be stored in view.

MAJOR ECOLOGICALPROBLEMS

Deforestation:

The association between deforestation and slope instability has been a subject of tremendous studies. Deforestation brings about erosion and soil movement is commonly universal, however evaluations range on its effect. so far as "Creeping" slopes are worried, extra creep velocities are located in slopes included by means of trees inside the place of Tamilnadu(Nilgiri) nov,2007 than in slopes simply covered through grass in region of rain forests (among 1849 to 1992).

Nilgiri(1973 to 1995) reported that deforestation ends in loss of mechanical power imparted through rock machine. Reinforcing power of roots is also proven with the aid of the effects of in situ block shear exams, which display that shear energy increases with boom in root density.

DESIGN OF BRIDGE ON LANDSLIDES AREAS

Landslide remedial measures are organized in 4 sensible organizations, namely: change of slope geometry, drainage, preserving systems and internal slope reinforcement. This bankruptcy discusses the planning and designing aspects of the landslide remedial measures in every organization and provides a few illustrative examples. further, debris go with the flow mitigation measures are discussed in some element. again evaluation of failed slopes is an powerful tool for reliable design of the remedial measures whilst superior numerical strategies are nowadays frequently used to design secure and price effective landslide remedial measures.

♦ *Accept the risk* - this would usually require the risk to be considered to be within the acceptable or tolerable range.

♦ *Avoid the risk* - this would require abandonment of the project, seeking an alternative site or form of development such that the revised risk would be acceptable or tolerable.

♦ *Reduce the likelihood* - this would require stabilization measures to control the initiating circumstances, such as repro filing the surface geometry, groundwater drainage, anchors, stabilizing structures or protective structures etc.

Reduce the consequences - this would require provision of defensive stabilization measures, amelioration of the behavior of the hazard or relocation of the development to a more favorable location to achieve an acceptable or tolerable risk.

CONCLUSION

Construction control essentially is a device to complete the venture efficiently inside constant quantity but in less time. manager need to have information collection of all the sports. selection making for each aspects the contractor and the purchaser desires to be rapid and time bound otherwise the mission gets behind schedule so that it will

have price over run. manage in shape of reviewing monitoring has a catalyst impact to boost the progress.

• All bridges held normally the identical amount of weight. The arch bridges held a touch greater than the other bridges. They have been in the 1400-1500gram variety. the alternative bridges have been within the a thousand-1200 gram range.

• The bridges might no longer get up on their own, so a assist at each cease had to be built. Balancing the weights on the bridges required patience .Clamps have been used to hold the bridges at some point of gluning

• The bridges supported one-of-a-kind quantities of weight due to the fact every type has different construction. The arch bridges supported the maximum weight beause of the exquisite herbal electricity of the arch. The pier bridges supported the least weight because the assisting piers broke at some stage in creation.

Bridge engineering is primarily based on principles that are brought. whilst designing a bridge it wishes to be hooked up what functions it needs to fulfill. The 4 essential features – structural safety, serviceability, financial system and ecology, and aesthetics – are introduced and their interrelationships are defined. moreover it's miles critical to realize that the concept of 'failure' additionally relates to the 4 foremost features, i.e. a bridge challenge may be taken into consideration an unsuccessful challenge if e.g. the bridge is structurally sound but shows immoderate deflections that decrease the using consolation. Bridge designers want to keep this idea in mind whilst starting paintings on a brand new venture. The design technique is typically subdivided into several steps, starting with conceptual layout. Compiling the requirements for the new bridge and any vital characteristics of its planned website bureaucracy the base for any layout The in addition layout procedure will contain many drafts and revisions till a viable layout has been produced. Constructability problems need to be protected from a very early degree directly to make sure that the bridge may be built in a safe and most economical way. inside the beginning the size of structural members may be selected often primarily based on the clothier's experience, in later levels engineering software program is then hired to examine alternatives and optimize member dimensions. eventually, complete analytical calculations for all crucial production degrees and precise shop drawings could be produced.

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