

## Bridge Construction Management

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RK Dhiman completed ME (STR) during 1988. He was associated with bridge construction in Bouldery Bed Strata where he faced difficulty in progressing bridges due to grey area in foundation scour calculation in such strata. He from 1990 collected data of various bridges made on Bouldery Beds in hilly area of our country and developed a new concept for Bouldery Bed scour.

### Summary

There is urgent need to manage long span bridge project efficiently to compete with technological challenges. Construction management basically a tool to complete the project effectively within fixed amount but in less time. Manager should have detailed knowledge of sequence of all the activities. Decision making for both side contractor and client needs to be fast and time bound otherwise the project will get delayed which will have time and cost over run. Control in form of reviewing monitoring has a catalytic effect to boost the progress. Various aspects for effective construction management of long span bridges has been discussed in this paper.

**Keywords** Management, Foundation strata, Planning Plant, Documents, Quality Finance Cost overrun

### 1. Introduction

Success of any project depends upon how best the activities are managed from conception till completion. There are various steps which add to in overall completion of the project viz. timely decision, timely approval of design, drawing and financial management. There is a saying that “stitch in time saves nine”. In case of long span bridges also final completion depends upon how best the critical issues/were managed/decided during the process of construction. To get the project completed in time most important point is selection of right contractor for work, pragmatic time schedule and efficient management of contract. The entire bottleneck is attended to as a joint effort of project. The management should be fully conversant with the growth of activities in long span bridge project in advance.

The necessity of efficient management is actually felt due to increase in size of projects involving large quantities of construction materials to be handled and innovative design for bridges are being finalized viz cable stay bridges or other long span bridges. Management of bridge construction demands that construction manager to reorient all the resources in such a way that the project is completed without any time/cost over run. Out put of work depend upon how best the activities are managed which will vary from each site based on many factors. Based on the experience, various aspects be identified for efficient construction management. Schedule of construction be prepared along with major milestone. Latest software management tool can be used for this in case of major bridge project. Design of Bridge Design is a post sanction in case of departmental construction and after tendering action in case of bridges through ump contract. It is necessary that design must be preceded by at least six to eight months or say 50% ahead of execution of concerned event Planning and monitoring is basically what is to be done in due course of time, and how it is to be executed in the planned/allotted period for the particular bridge. All the pros and cons of the likely problems in the anticipated period need to be assessed. Foundation construction for any long span bridge takes time. Problems encountered during construction of foundation depend upon type of foundation, soil strata encountered, equipment/plant deployed and logistic problems. Review of soil parameter if required be given more attention and wherever required the details may please be



referred to expert but within the time schedule. This may be helpful to recommend revision in foundation level, wherever possible based on soil data report. Tough strata in the foundation stage should be considered as engineering friendly. For particular site there are numerous structural arrangement possible. Final proposal be made based on the greater examination of site condition may be technical, aesthetic and construction methodology. Special care need to be taken in case of deep gorge where there is sizable difference between soffit level and bed level. This may pose difficulties for staging shuttering. Proposal recommended for site should be well read in advance. After the proposal has been finalized for particular bridge, the construction can be planned. The quantities of each items involved and execution method be listed. Basically method statement should be kept ready for over all execution including job estimate. This data will be kept to ensure smooth progress of project

Safety of employees at site should be observed very seriously. All the workers must be given briefing about the safety requirement based on the site hazards. Also in case of foundation if the deep excavation is involved, the quality of surrounded soil be kept in view. There are incidents where few workers got buried in deep excavation due to sudden slide, this should be taken care

Quality of work at site is most important activity and manager should always grapple to improve the same. Training to staff be provided to update the quality control measure and it should became part of work culture.

Manager should put the engineer, to activities they can perform better. Individual differences should be studied in detail to assign the suitable job to engineers, administration and account staff. Manager should be a good Psychologist to assign the work based on the inclination of the people at work. A considerable free hand be given to see what an individual can produce. He be guided and work be kept on progress. Decision making circulated, critical activities be cleared by manager after proper deliberations. Also care must be taken to select a new entrant suiting to the job for requirement.

Management of long span bridge construction demands that construction manager to reorient all the resources in such a way that the project is completed without any time/cost over run. Out put of work depend upon how best the activities are managed which will vary from each site based on many factors