

Risk Analysis & Project Management of a Railway Bridge Project Using Primavera P6

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ABSTRACT

Usage of development venture needs an appropriate arranging and planning is of fundamental significance for the task to be executed and run easily. A best timetable must be set up so that meets the essential targets of the aggregate venture. Those essential destinations are to make a quality undertaking, finished on time, inside spending plan, and in a sheltered workplace. Consequently, in this examination a progressing development venture is taken and the execution of the undertaking is contrasted and the timetable with the assistance of Primavera P6. A progressing venture in Narmada crossing extension of third line between Budhni and Hoshangabad on Bhopal Itarsi Section is chosen and the exercises relating to the preconstruction, substructure and superstructure is considered for correlation. From the examination, it is discovered, how the task is arranged, the succession of work and connecting connections between exercises for the entire venture. In end it is comprehended that, it is vital to understand that there will be changes to the timetable rationale and contrasts between the arranged advancement and genuine advancement. In light of the distinctions the timetable should be changed to finish the undertaking easily.

Keywords : Primavera, Project Management, Scheduling, Resources, Bridge.

I. INTRODUCTION

The development business assumes noteworthy part in the economy of creating nations. For instance, in numerous creating nations, significant development exercises represent around 80% of the aggregate capital resources, 10 % of their GDP, and over half of the riches put resources into settled resources. Moreover, the industry gives high business opportunity, most likely next after agribusiness. In spite of the development business' huge commitment to the economy of creating nations and the basic part it plays in those nations advancement, the execution of the business still remains by and large low. As noted, numerous ventures in creating nations experience extensive time and cost invades, neglect to

understand their expected advantage or even completely ended and surrendered previously or after their finish. Also, the improvement of the development business in creating nations by and large falls a long ways behind from different ventures in those nations and their partners in created countries. The development business in creating nations neglected to meet desires for governments, customers and society overall.

The procedure of task administration is an integrative one—a move (or inability to make a move) in one territory will for the most part influence different zones. For instance, an extension change will quite often influence cost and timetable appraisals, yet it might likewise affect different factors as assorted as camaraderie and item quality. These cooperations

regularly require exchange offs among venture destinations—execution in one territory might be improved just by yielding execution in another. Fruitful undertaking administration requires currently dealing with these connections. In this investigation, I am gathering information of an undertaking which is executing under Indian railway organization.

Project Management Stages

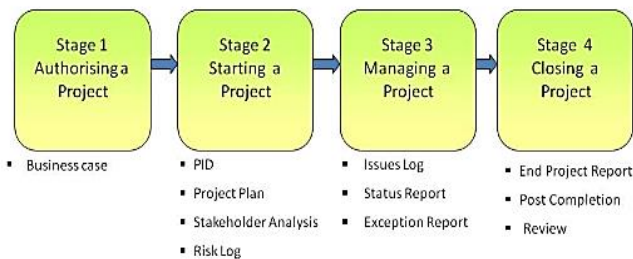


Fig 1: Project Management

Risk investigation

Risk Analysis and Management is a key endeavor organization practice to ensure that negligible number of shocks occur while your endeavor is in advance. While we can never predict the future with confirmation, we can apply a fundamental and streamlined peril organization method to foresee the vulnerabilities in the endeavors and point of confinement the occasion or impact of these vulnerabilities. This upgrades the likelihood of powerful endeavor realization and decreases the results of those risks.

Errand partners at various levels recognize and handle risks in different flavors. In any case, this will be unable without a sorted out risk organization framework, as this prompts:

- Incomplete influence evaluation, inciting loss of:
- Knowledge of the general impact on the endeavor objectives, like degree, time, cost, and quality

- Identification of assistant or new threats rising up out of the formally perceived risks
- Lack of straightforwardness and a correspondence opening inside and outside the gathering Along these lines, it is basic for any endeavor relationship to set up a reasonable danger organization structure. Arranging such a preparation as an assignment aggregate culture ensures:
- Conscious and focused risk ID and organization
- Project advance as needed, with negligible proportion of deviations or stun, and as per adventure and definitive targets
- Early and convincing correspondence of endeavor issues to affiliation and undertaking accomplices.
- An convincing gathering building gadget, as gathering buy in and affirmation is ensured

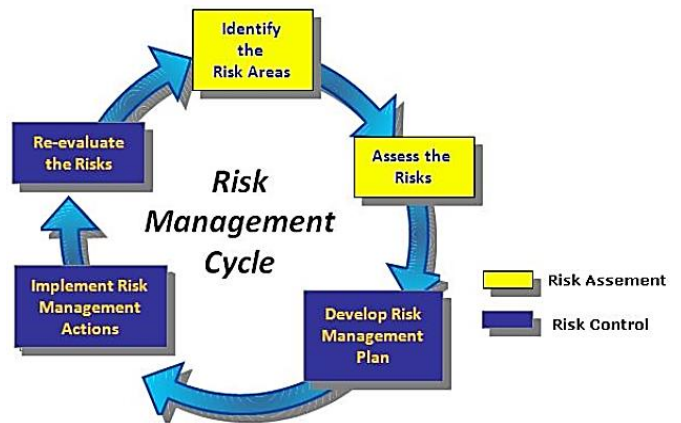


Fig 2: Risk Analysis

II. LITERATURE SURVEY

T.SIVA NAGARAJU et. al. (2016) implement project management technique in a metro rail project using management software primavera p6, provide proper scheduling resource allocation to justified a proper link between cost and growth of a project. Also reduces paper work need in a construction project.

P.M. WALE et. al. (2015) stated that the project may have a simple goals that does not require many people or a great deal of money or it may be quite complex, calling for diverse skills and plethora of resources and also provided comparative study between traditional way and Microsoft project planning. They concluded that Traditional way proves to be uneconomical and consumes more time with many complexity and enormous error whereas Microsoft Project is the modern tool of Project Management that aid to overcome the obstacles faced owing to traditional way of Planning and Management.

A.R. NIKUMBH and S.S PIMPLIKAR (2014) proposed that the use of Project Management Consultancy (PMC) offers one of the effective management solution to increase and improve the efficiency and outcome of a project in construction and concluded that the Project Management Consultants manage the Project by application of their Knowledge, Skills, and Experience at various stages and is effective and efficient only when it is involved in Total Project Life Cycle from Conception to Closeout.

SHAIK MOHAMMAD MASOOD et al. (2014) H.N illustrated that many construction project suffer from time and cost overruns due to a number of factors. EVM is a erformance of project evaluation which is used for the application in project management. This technique helps in comparison of budgeted cost of work to actual cost of work performed.

HAMED et al.(2013) illustrated that every organization, at least, has four types of resources to be allocated in order to achieve organizational aims. These resources are: human resources, physical resources, financial resources, and technology resources. Resources should be allocated in an efficient and appropriate manner since success is achieved when plans, employees,

performance, controls and commitments made act to maintain and survive allocated resources.

Objectives:

To conduct the study successfully, clear objectives of the study should be placed. Therefore, the following objectives those has been chosen for the production of these thesis topic, project management using primavera software. A case study of project “planning & scheduling of construction project using primavera software.” Following objectives are:

1. To Develop scheduling and planning using Primavera p6 8.3.
2. To prepare construction sequence for bridge construction
3. To prepare machinery working and diesel consumption in resources graph in primavera.
4. To Identify Risk analysis at different activities.
5. To prepare resource allocation for individual activities as per I.S. 7272-part-I.
6. To assign proper sequence and links between different activities for early finish.

SCOPE OF WORK

The primavera software is being the first source in conducting this study. Basically this study is an exploratory study on implementation of Microsoft Project in every aspect of a project which comprise of Planning and Scheduling stage followed by the Monitoring and Controlling stage.

III. METHODS AND MATERIAL

The proposed project is a construction of Railway R.C. bridge section at budhni ghat, Hoshangabad, west central railways. This project comprises of construction of footing, abutment, piers and deck of a railway RC bridge over narmada river, hoshangabad.

This construction work is headed by Railway

construction department, the construction work is awarded to Rahee Infratech under supervision of Aegis consultancy.

A total of four numbers of different sub heads are placed in the railway project “ construction of Railway bridge, budhni division, hoshangabad M.P.

The following sub W.B.S. are:

1. Preconstruction work
2. Substructure
3. Superstructure
4. Finishing work

The proposed work is started on the bank of narmada river crossing at budhni section.

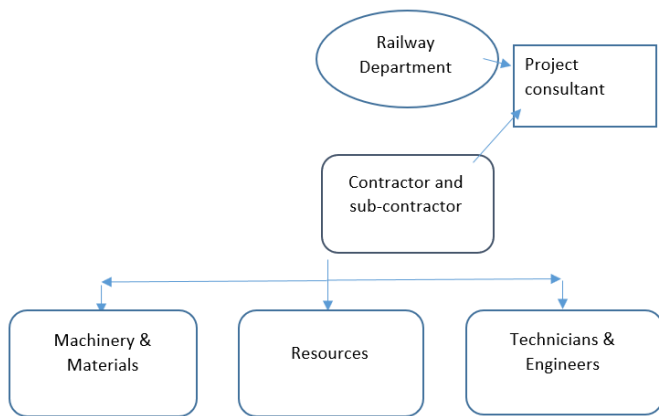


Fig 2 : Hierarchal structure of construction project team

Table 1 : Project Information

Name of work	NARMADA RAILWAY CROSSING BRIDGE BETWEEN BUDHNI AND HOSHANGABAD STATION ON BHOPAL ITARSI SECTION
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Salient Features	RC Bridge(open web Precast girder bridge) span length (45.7 X 14) + (30.5 X 1), bridge span length (48.77 X 13) + (47.245 x 1)
Name of Agency	Rahee Infratech Pvt. Ltd
Land in metre	881.255 metre
Amount of contract	62.87 Crores
Date of start	09/09/2017
Date of completion	22/09/2019

Table 2. General abstract sheet

S.No.	Description	Rate
1	Construction of footing	9,78,54,800
2	Construction of abutment bed	13,84,42,865
3	Construction of Piers	21,76,30,685
4	Construction of Deck slab	14,88,00,000
5	Setting up of railway track	Nil

Add 1 % for quality assurance = 62,14,000.
 Add 1% Extra for construction workers welfare cess act, 1996.
 Total = 62,14,000.
 Add 3 % contingencies = 1,86,42,000

Table 3 : Sequence of project scheduling

PRECONSTRUCTION WORK
Start Milestone
Work Order
Working drawings & details
Site clearance
Site office
Labor Room
Laboratory setup at site
Marking of alignment
STRUCTURE
Excavation
Footing work
Abutment Bed
Piers
Layout of vertical walls
Deck Slab
FINISHING
Repairing
Marking
Street light
Parking
White wash, Sign & speed boards
Finish Milestone

Steps for scheduling the project:

- Step-1: To create a enterprise project structure of a company to execute company profile
- Step-2 Assigning roles and organization structure consist of company management and responsible managers profile.

Step-3 creating company calendar as per working hours and shifts to be assigned in project:

Step-4 Preparing project breakdown structure

Step-5 Assigning activities to each W.B.S. as per scheduling data with links in between activities to them using Gantt chart.

Step-6 Creating resources (Manpower, machinery and materials)

Step-7 Assigning resources in each activity as per I.S. 7272.

Step-8 Comparison of scheduling proposed with as per site scheduling using primavera P6 visualiser.

IV. RESULTS AND DISCUSSION

Tracking of the project

Project management tracking is the way successful project managers update executives and stakeholders on the status and what’s happening on the project. This is also where they report on how the actual results compare to the original plan. Project management tracking is not a mechanical data dump where you just recite data. The project management tracking process often determines your credibility as a project manager. You must prepare well formulated corrective action plans to fix the variances to the project’s plan and schedule. Presenting those options will reassure the executives and stakeholders that you are in control of the project.

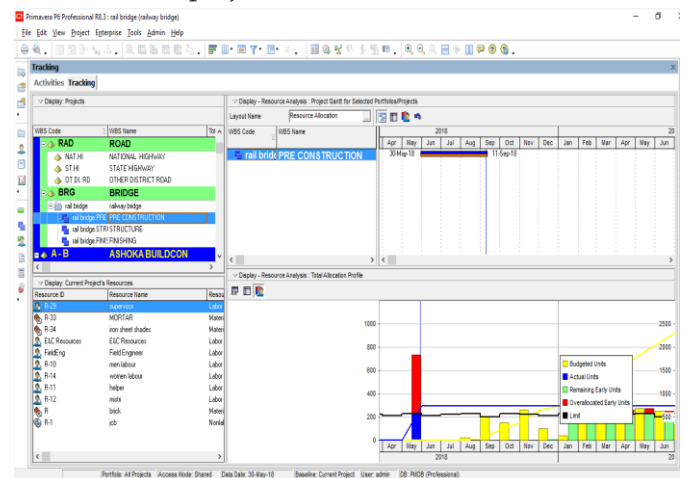


Fig 2 : tracking of project

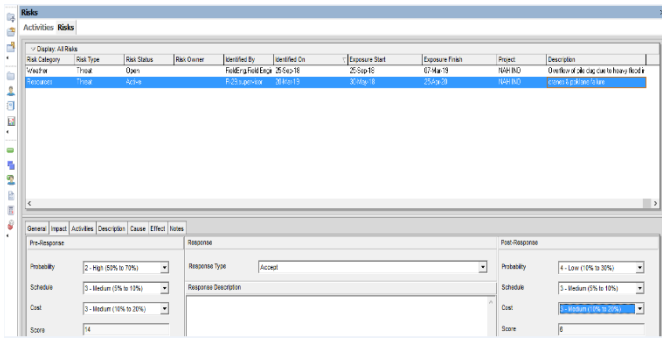


Fig 3 : Risk Analysis

Project Scheduling:

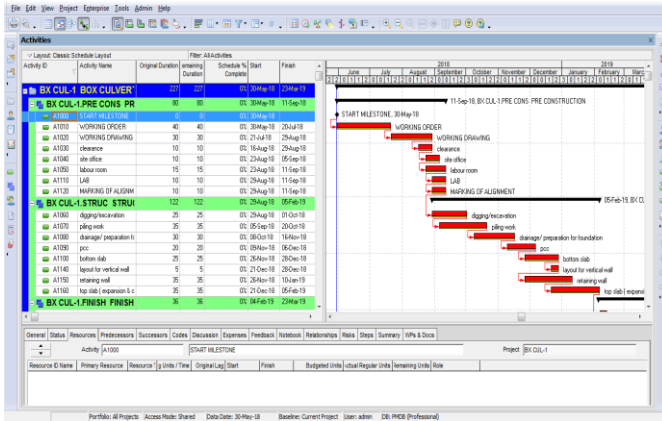


Fig 4 : Scheduling of project

V. CONCLUSION

In this comparative study scheduling is obtained using software Primavera P6 and then required scheduling as per site is also prepared in same software and then comparisons is made to obtain differences.

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scheduling as per site is also prepared in same software and then comparisons are made to obtain differences.

- In this study we minimize the risk of indirect cost by reducing duration.
- In this study we minimizes the risk of extra labor and resource assignment.
- Here we can conclude that using management tool with good management skills can be beneficial to implement site projects more speedy and proper resource distribution/
- In this study a minor bridge (railway) is studied and resources are allocated with manual calculation as per labour working.
- In this we implemented a project within time without any extra losses.

1. Here the most important benefit is that we completed the project within given time limit which will minimize the risk of natural calamities.
2. We minimize our indirect cost which includes salary of employees, machine repairing costs and other site expenses.

VI. REFERENCES

[1]. Prof. A. Ray Chaudhuri, B. Sivakonda Reddy, Prof. A. Ray Chaudhuri, "Resource Management in Construction Projects – a case study" Engineering Science and Technology: An International Journal (ESTIJ), ISSN: 2250-3498, Vol.2, No. 4, August 2012 PN (660 – 665)

[2]. Indrasen Singh, P. Venkateswaralu, "Planning and controlling of a National Highway Project- A case study", Journal of the Indian Road Congress Paper No.613, April – June 2014 PN (91 – 102)

[3]. Antony Prasanath MA, Thirumalai Raja K, "Analysis of cost & schedule Performance of Residential Building Projects by EVM

- technique”, Journal of Construction Engineering, Technology and Management ISSN: 2347- 7253, Vol. 4, (2014) PN (1-7)
- [4]. Tarek Hegazy, Wail Menesi, “Critical Path Segments Scheduling Technique” Journal of Construction Engineering and Management ASCE/ (Oct 2010) PN (1078-1085)
- [5]. Awad Hanna, Aviad Shapira, Mounir Asmar and Craig Taylor, “Impact of crew scheduling on project performance”, Practice Periodical on Structural Design and Construction ASCE (2013) PN (35 – 44)
- [6]. Robert B. Harris, “Packing method for Resource Levelling”, Journal of Construction Engineering and Management © ASCE, vol no 116, June 1990 PN (331 – 350)
- [7]. Khaled El-Rayes and Dho Heon – “Optimizing Resource Leveling in Construction Projects”, Journal of Construction Engineering and Management © ASCE, Vol. 135, No. 11, November 1, 2009. PN (1172 - 1180)

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