

Management For Construction Of Railway Over Bridge : A Review

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Abstract - Construction Management is the art of directing and coordinating human and material resources throughout the life cycle of a construction management. The Construction projects, especially the railway over bridge and highway construction projects, uses huge amount of resources on and off the field in various forms of resources viz., materials, plants, equipments and human resources along with money, time and space. Construction management on any project, time and cost are the most important factors to be considered in the planning of every project. A properly implemented construction management programmed can achieve the timely flow of man, materials, machinery, money, to the project site. It improves the step of construction very fast with time management. The objective of construction management is to completing the work within estimated budget and Specified time. In this literature review will definitely help to improves different construction management system for successful completion project of railway over bridge.

Key Words: Construction management, Materials, Time, Cost, Quality, Resources.

1. INTRODUCTION

The construction project is managed by using traditional & modern construction management techniques. So as to achieve predetermined objectives of scope, cost, time, quality, and safety at construction sites. Project management in construction encompasses a set of objectives which may be accomplished by implementing a series of operations subject to resource constraints. There are potential conflicts between the stated objectives with regard to scope, cost, time and quality, and the constraints imposed on human material and financial resources. These conflicts should be resolved at the onset of a project by making the necessary tradeoffs or creating new alternatives. The construction management techniques are useful to professionals in the construction field in their day to day construction endeavors. This review study had necessitated the construction management of the various Parameters & Techniques at our sample construction site and the study of different researchers gave the various knowledge about the ROB construction.

To avoid junctions and subsequent congestion, flyover or road over bridge were designed which have partially solved the problem of congestion and accidents. Traffic is not only problem of big mega cities but also of small developing cities.

Big mega cities are well planned and its transport system is also well - equipped while developing cities are not so well planned. That's the reason that if planning of small city is taken in to consideration it will create big problem. The bridge can be constructed in different types of materials such as, brick, stone, RCC girder , steel girder, Prestress system, and also the composite masonry steel and concrete girder etc. In this type of big construction are to be well planning and management is very important part of the project with time, cost, materials, man power and machinery.

In effective construction project management it is important to have a three sixty degree approach to understand cons & pros of the construction site. Planning is key process of management which helps in effective project management i.e material management, safety parameters, environmental factors, Cost & budgeting, monitoring field & office activities in construction site.

The objective of construction project management workforce is to ensure that construction is taking place as per the scheduled plan, within the estimated cost, timely material procurement; labours, resource machinery, etc. are available at their point of use when needed.

2. CONSTRUCTION COMPONENTS OF RAILWAY OVER BRIDGE

Diversion : It is main key of construction site management to divert the traffic for construction work site moving safely.

Substructure : This comprises piers and abutments, wing walls or returns and their foundation.

Foundation : This is provided to transmit the load from the piers or abutments and wings or returns to and evenly distribute the load on to the strata. This is to be provided sufficiently deep so that it is not affected by the scour caused by the flow in the river and does not get undermined. While the above mentioned are structurally operational parts, for safety hand rails or parapets, guard rails or curbs are provided over the decking in order to prevent vehicle or user from falling into the stream or for the separation of traffic streams.

Piers and Abutments : These are vertical structures supporting deck/bearing provided for transmitting the load down to the bed/earth through foundation.

Superstructure or Decking: This includes slab, girder, truss, etc. This bears the load passing over it and transmits the forces caused by the same to the substructures.

Bearings: The bearings transmit the load received from the decking on to the substructure and are provided for distribution of the load evenly over the substructure material which may not have sufficient bearing strength to bear the superstructure load directly.

Wing walls and Returns, Ramp : These are provided as extension of the abutments to retain the earth of approach bank which otherwise has a natural angle of repose.

Bituminous Surface: This is the topping surface of road construction for going the vehicles.

Slab Drain :- It is the part of construction both side of bridge and service road for solve the problem of water drain.

Water spout :- It is the joining part of slab in bridge construction to drain out the water for maximum life of bitumen road top surface.

Staircase :- This is use for the pedestrian people using for passing the railway crossing when gate closure.

3. IMPORTANCE OF PLANNING DESIGN AND ANALYSIS IN ROB CONSTRUCTION

K. B. Patel, Anand D. Sapariya, Pradeep P. Lodha (January-2015) Suggested to start the construction first find the feasible problem on site like; site survey, problem identification, bore loge data soil structure and the planning of flyover bridge with preparing drawing and model of bridge is important. And also the use of IRC SP-13-2014 design code and material specification code, workmanship detailing for construction project management with schedule is done. Further they suggested by the use of data for proposed design will be cost effective and to cause minimum demolition and safe for movement of vehicle. Prof. Ancy Joseph , Elsa Babu, Karthika Babu, Lakshmi G, Meera R Krishna (March-2015) They are studies the direct analysis & design of railway over bridge , they are suggested that long span prestress girder should be use for construction and the analysis of slab & girder design should be done with manually use code of IRC 5-2000, IRC 6-2000, IRC 18-2000 and IRC 21-2000 etc. The material consideration was steel Fe- 415, concrete M-40 and M30 for slab handrail, footpath, kerb, girder etc. It is beneficially to known the different loads and forces act on the structure are considered and the analysis and design has done that structure is capable of handling the external load and forces safely for maximum life of structure. Kavitha N, Jaya Kumari R, Jeeva K, Bavithra K, Kokila K. (2015) The construction for fly over analysis and design should be done by using the working stress method actual data collection of traffic hourly passenger car unit (HPCU) survey and drawing drafted by Auto Cat-2013 and

analysis by STAAD pro vis8. And following part of structural member are design of Deck slab, Cantilever slab, cross beam, footing, retaining wall, girder, pier, foundation using the IRC 21-2000 clause 304.2.1.is done. And they planned four road intersection for future planning for 30 year consideration.

4. MANAGEMENT OF COST

Ankit M. Patel (Dec-2012) Transportation is a movement of men and goods materials from one place to another , and the area of study the traffic classification and volume, pedestrians volume, frequency and duration of gate closure of level crossing and traffic delay survey, they count the idle fuel consumption of vehicle and their comparison with the railway over bridge estimated cost benefits and saving of travel time after bridge construction & passing the distance in city way. After the result it helped in saving the natural resources of Petrol, diesel, LPG, CNG consumption by the small to heavy vehicles etc & their people are to be in profit by saving time and cost of petrol consumption. Tazyeen Ahmad (Jan-2013) Construction project the important apart is a cost management techniques and use of cost and their planning stage on project. They have given the knowledge of construction phase conceptual, definition, planning and designing execution operations or start up, widening etc. the basic objective is correct estimate in minimum possible cost. There are four factors of production 1) land 2) labour and 3) capital enterprise,4) a time factor etc. very important they are study of cost ceiling limit, key construction cost performance indicates, accuracy of estimate and variance calculation for economic aspect construction activity and shown the result of of activity wise project like, estimate, planning and designing in construction project to completion of project in minimum cost they are use computer application optimization and operational research techniques for the success of project work. Jianqiang Tang, Maoping Zhang, Hua Tang, Yuan Chen – (2015) Here they suggested the cost management on activity based costing in project they used the basic processes of dynamic cost management of construction project activity based costing accounting method and there sequences of construction activity stages and their cost are studied Simultaneously. The result is dynamic cost is a continuous cycle process. There is comparison between the budget cost and the actual cost in available financial goods. The use of resources by activity wise in project and there is a forecasting the cost of construction project and demand of materials based on activities based costing. Abhaysinha G. Shelke, Rohit R. Salgude (June-2015) Resource are the most important part of any construction project the main objective of study is to optimize the resource utilization on concreting activity by applying some operational research techniques such as transportation model, assignment model, EOQ etc. So under the three main head adopted 1) Materials 2) Manpower 3) Equipment. They are using the optimization of materials cost by the cheap manufacturing process should be selected without reducing quality of materials. The material

management on site less lead to less material wastage. The use of man power skill worker, maximum no of worker inflation, medical, accident, etc. The equipment cost minimization included with fuel cost, higher efficiency and transportation cost. This study research of optimization cost manager is to be managing the operational research techniques take the help of EOQ for order of quantity also use of assignment model for concreting activity work and use of the transportation model to save the transportation cost is shown.

5. MANAGEMENT OF MATERIALS

Rakesh nayak, Mukesh Pandey (Dec-2016) The objective of the construction project management also managing and minimizing wastage of construction materials at construction project site. The successful execution of construction project within given cost, time and quality good handling of construction materials etc. Here they used the EOQ analysis and the questionnaire survey was done. They got the result on time, cost, quality, and productivity. It is important to preplan and material control on total cost of project. EOQ analysis is better technique to avoid the extra cost of the materials by good management of the ordering construction materials. They used study of EOQ analysis and questionnaire and local market rate discussion. N.B.Kasim, C.J.Anumba and Dainty (2005) In every fast track construction the design and decision with every construction activity is important. In This paper the use of ICT tools and technique of materials management to improve the productivity in construction is started. For fast track construction the material handling stock & waste control is known and optimum forecasting for materials movement should be done on site here manage the overlap activity by manage the time and cost calculation. The result are clearly important to manage all materials from the design stage to the construction stage.

6. MANAGEMENT OF MACHINERY

Prajeesh V.P., Mr. N. Sakthivel (May-2016) The good project management in construction the efficient utilization of labour , material and equipment. The machinery is maximum work to be done in minimum time, machinery that work on site like bulldozer, scrapers, earth work equipment, hoisting and plant equipment, heavy equipment etc. the use of equipment economic short & long range capital. To improve project delay analysis and replacement analysis is important and also time impact analysis (TIA). The result is on topics of separate department for equipment management. The project manager is managing the all equipment level operation and maintenance economic solution in the project. The techniques should be used for optimization of resources and maximization of profit.

Mr. Nilesh D. Chinchore, (Dec-2014) Success of construction the main roll of equipment planning is at right time required and also the decision making manager doing

work fast within time limit and cost management for get the profit. They have give the point of proper planning of equipment to selection of equipment to speedy work completion. The sourcing information of collection for equipment like name, model number, engine type, control, operating fuel consumption, type of transmission, weight, warranty periods and maintenance etc. The common factors affecting to selection of equipment is scope of work time required specification of work, full utilization and economic worked out. The result of equipment roll in construction completion of project is to provide best quality and timely completion with increasing profit, margin, it depends on the nature of work and execution of work site. Mali

Pritam A.M.R. Apte (June-2015) They studied Information given about how the planned and proper maintenance is important for construction equipment for better production. For that the knowledge of monthly required of equipment list and its work is done. The cost of equipment in civil engineering construction projects can range from 235 to 40% of the total project cost. The management of site and maximum utilization of equipment work the traffic should not jam in the site construction. The beneficiary result of use of proper planning, selection, installation , operation, maintenance, and equipment replacement policy plays important role in equipment management for successful completion of project. K Swarna Kumari, J Vikranth M.E.(Ph.D) (Aug-2012) So on resource planning in highway construction project is objectives work on planning the main resources like equipments, plants and manpower and the use of Microsoft project software. The planning of construction work manpower primarily stage in different work wise requirement, second is the planning of construction materials which are required programmed materials purchasing , inventory control, store-keeping , ware housing material transportation and handling at site and its disposal etc. Third is the planning of construction equipments that is depends on the site task work need excavating, handling, transportation, filling , compacting, grading , hoisting, concreting, precasting, finishing, trenching, and laying pipe and cable with supported instrument is on site generators, transmission lines pumping set etc. The concluded that highway project site management India is still adopt the resource management and planning scheduling with time mobilization etc.

7. MANAGEMENT OF QUALITY

Megha Deshmukh, Prajakta Shete (April-2016) The researchers purpose the analysis and implementation of quality management on bituminous road construction the basic objective of this work of the application of supervisory control and Implementation of SCADA as a quality management tool and their impact on the performance of bituminous road construction. They have given the components SCADA system remove terminal unit, communication network, central monitoring station, field instrumentation, human machine interface etc. For quality

control display screen of SCADA system there are use of automated system to improve the quality work and the result is speed of construction is high using SCADA and the controlling of various parameters on site management. Anupw S, Arun Kumar H, SNA Saqhi (May-2015) The quality management system in construction is the basic improvement of quality is reduced for getting the qualitative work. The research for the works is qualitative questionnaire approach and using content analysis method. The use for quality management system ISO 9001 standard are to be adopted. For quality management system is not only depends on ISO 9001 paper work but also on site work investigation and inspection and supervision is important at the time of actual work etc. The result should be on ISO-9001 is 70%. The preparation project quality plan (PQP) quality audits, progress report and schedule etc. important. There are taking a customer feedback is received and suggestions for future improvement by change of project etc.

8. CONSTRUCTION WASTE MATERIALS MANAGEMENT

U.E.I. Souza, A.C.Andrade Waste management has been important for the reduce environmental impacts. They are getting the data of experimental way by visiting on more than 100 site collection data and taking out meeting. The material waste on site of building 5.2% brick value waste, 7% for concrete blocks, 13% block waste etc. Materials are to be waste by embodied & debris. The analysis indicated the main factor causing the waste inadequate transportation of blocks, low quality materials bad storage and inappropriate equipment used to out the block etc. The result is to minimize the waste materials percentage by using the maximum meeting and training, planning and discussion all good way of MLP.

9. CONSTRUCTION RISK MANAGEMENT

K. Jayasudha Dr. B. Bidivelli and E.R. Gokul Surjith (Aug-2014) Risk assessment and management in bridge construction project have depends on the type of project a lack of predictability about structure outcome or consequences in a decision or planning situation. In this paper the several factors risk exposure like team size, history, staff expertise and experience, complexity, management stability, time completion and resources availability planning are discussed. The objectives of this paper is to analyze the risk factor polite study the questionnaire is prepared and risk solved using the software like SPSS. The study assist management in identifying activities where there is a risk of time and financial aspects and guided to take a decision to reduction of risk on that level.

10. TECHNOLOGY CONSTRUCTION MANAGEMENT

Today in construction management the use for drawing drafted by Auto Cad 2016 and structural analysis by STAAD pro vis8. They have done design of Structural elements of

construction with the help of IRC-21-2000 code. For Bituminous work using SCADA implementation for quality control work. In the using of Microsoft project software for resources planning on site work every day calculation and getting the result very good way for construction and using the resources time by time utilization impact on site management system they have done the qualitative and quantitative work with work management system.

11. CONCLUSIONS

This study has led to the following conclusions: From the literature reviewed it is clear that different type of management in different stage of construction site to minimize the cost of construction, time duration for construction use of equipment machinery at work site in maximum utilization, workmanship management, and also the material waste management during construction site and the stock of materials management as per requirement at work site. The safety management also considered for construction site to solve the problem of accident. The various method adopted solve the problem of design, drawing, planning, management of resources and safely managing and handling the structural elements to completion of project.

REFERENCES

- [1] International Journal of Advance Engineering and Research Development Kuldip.B.Patel , Anand D. Sapariya, Pradeep P. Lodha *Civil Engineering Department, Government Engineering College, Valsad.* (January-2015)
- [2] International Journal of Civil and Structural Engineering Research Prof. Ancy Joseph , Elsa Babu, Karthika Babu, Lakshmi G, Meera R Krishna (March-2015) undergraduate students Mar Athanasius college of Engineering, Kothamangalam, India.
- [3] National Conference on Research Advance in Communication Computation, Electrical Science and Structure (NCRACCES-2015) Kavitha N., Jaya Kumari R, Jeeva K, Bavithra K, Kokila K. Bharathiyar Institute of Engineering for Woman, Deviyakurichi, Salem.
- [4] International Journal of Civil and Structural Engineering Research K. Jayasudha Dr. B. Vidiveli and E.R.Gokul Surjith.
- [5] GRA- Global Research Analysis Ankit M Patel M.E. (Civil) Transportation Engineering, L.D. College of Engineering,
- [6] International Journal of Civil and Structural Engineering Research Megha Deshmukh, Prajakta Shete (April-2016) Ass. Prof. civil Engg. Dept. RMD Singad college of Engg. Pune, Indida.
- [7] Journal of Management in Engineering @ ASCE R. Edward Minchin, Jr. M.ASCE, Tarek Zayed, M.ASCE, Andrew J. Boyd, M.ASCE and Micheal Mendoza (October 2006).
- [8] GRA- Global Research Analysis Tazyeen Ahmad (Jan-2013).
- [9] Publish by Atlantis Press Jianqiang Tang, Maoping Zhang, Hua Tang, Yuan Chen Department of

management science and Engg. Sichuan Agricultural University, Chengdu, China.

- [10] International Journal of Engineering Research and Application K Swarna Kumari, J Vikranth M.E.(Ph.D) (Aug-2012) Department of civil Engg. PYDAH college of Enggg. & Tech.JNTUK, Andhrapradesh.
- [11] IRJET: International Research Journal of Engineering and Technology, Rakesh nayak, Mukesh Pandey (Dec-2016) M.Tech. Student Civil Engg. Department ITM University, Gwalior.
- [12] N.B.Kasim , C.J.Anumba and Dainty (2005) Improving material management practices on fast-track construction project. Association of Researchers in Construction Mang., Vol.2,793-802.
- [13] IJESRT: International Journal of Engineering Science and Research Technology, Abhaysinha G. Shelke, Rohit R. Salgude (June-2015) ME Civil (C&M) student, Assistant Professor MIT College, Pune, India.
- [14] U.E.I. Souza , A.C. Andrade Dept. of Civil Construction Eng. Escola Politecnica, Universidade de Sao Paulo, Brazil.
- [15] IRJET: International Research Journal of Engineering and Technology, Anup W S, Arun Kumar H, SNA Saqhi (May-2015) *Assistant Professor, Civil Department,Manipal Institute of Technology, Karnataka, India.*
- [16] IJISSET: International Journal of Innovative Science Engineering and Technology, Prajeesh V.P., Mr. N. Sakthivel (May-2016) *Assistant Professor, Civil Department, Shree venkateshwara Hi-Tech Eng. College Erode, India..*
- [17] International Journal of Engineering Research and Application, Mr. Nilesh D. Chinchore, Prof. Pranay R. Khare (Dec-2014) Dept. of Civil Eng. Savitribai Phule Pune, Maharashtra, India.
- [18] IJESRT: International Journal of Engineering Science and Research Technology, Mali Pritam A. M.R.Apte (June-2015) Prof. Department of Civil Engineering Maharashtra Institute of Technology, Pune