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IMPROVE PRODUCTIVITY IN CONSTRUCTION MANAGEMENT USING MICROSOFT PROJECT

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Abstract - *This research work brings out certain common elements of risks and issues involved for any project. For a construction project it is very important to look out for the threshold and risks involved for it to be handled easily and comfortably. Management of these risks and issues are very important to achieve the objectives of the project. Construction industry has been following method for managing these risks and issues to be arising from a project. But this will be a question for a firm if they diversify or when they enter into any new venture of business domain. To understand this model of risk handling in the business the author have taken a case study for developing a risk mitigation plan by using analytical method and the same with the help of risk management computing tools using Primavera (P6) and finally comparing the results thus achieved. The analytical model is the one using the manual techniques for assessing risks involved from the experience, knowledge and competency gained in the business domain. Using Primavera (P6) the risk in been managed by creating several models generated which explains the process of additions of risks, identification of type of risk, calculation of exposure values, calculation of risk impact, assigning the person responsible to the risk, time frame of risk, preparation of control plans if the risk occur. Finally the results thus obtained from both the methods are been compared and the results are been calculated.*

Key Words: CPM, PRIMAVERA P6, MS PROJECT, basics of CPM scheduling, EPS, Gantt chart

1. INTRODUCTION

Planning and scheduling is important role in construction projects because of the increasing complexities in this field. Construction Planning is the necessary warning to Scheduling and determining general sequence, defining labor tasks, construction methods and assigning responsibilities. Inappropriate planning can lead to major delays in the project work. For the planning and scheduling work huge amount of paperwork, which makes the management very burdensome these problems can be solved using a project management software which helps to give a planned approach to planning. In this study, a case of a highways bridge has been taken to demonstrate how proper planning and scheduling is done using primavera and MS project.

2. MSP INTRODUCTION

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3. LITRATURE REVIEW

Arditi and Mochtar (2000): *Several researchers studied the factors affecting construction productivity in order to find the potentials for productivity improvement. Indonesian indicated that certain functions including procurement practices, cost control, scheduling and management integration need much improvement. The functions that were identified as needing more improvement were prefabrication, new materials, value engineering, specifications, labor availability, labor training, and quality control, whereas those that were identified as needing less improvement than in the previous surveys were field inspection and labor contract agreements.*

Thomas et al (2003): *stated that new management thinking, like lean production, has suggested that better labor performance can be achieved by improving the reliability of flows. Lean thinking portrays reliable flows as the timely availability of resources, materials, information, and equipment. Site management fully accepts their responsibility for setting out the key workplace conditions for improved productivity and for maintaining an uninterrupted flow of work. Hence, the quality and authority of site management, the quality of their construction planning and their ability to administer the plan were seen as important determinants of productivity and site management seen as a key profession within the industry.*

Rojas and Aramvareekul (2003): *Improving productivity is a management issue, and the introduction of new techniques or technologies may be a necessary but not a sufficient condition. In order to improve productivity in construction it should be necessary to improve methods, improve training programs, enhance worker motivation, improve strategic management and improve procurement management.*

In Haskell's view (2004): *The potential for further productivity enhancements falls into five categories: information technology, project delivery, automation and prefabrication, workforce development, and materials. Construction method is a significant factor which has an impact on construction productivity.*

Flanagan et al (2005): *Construction productivity improvement is a key issue for businesses and nations to increase profitability, reduce costs, create and sustain competitive advantage. To remain world-class players in a highly competitive global market, construction decision makers must promote individual productivity strategies that match business needs; Productivity Commission of the Australian Government, 2005).*

4. IMPROVING PRODUCTIVITY

1. Labour productivity
2. Material productivity
3. Equipment productivity

4.1 LABOUR PRODUCTIVITY

- Quality of Work - caliber of work produced or accomplished.
- Quantity of Work - volume of acceptable work
- Job Knowledge - demonstrated knowledge of requirements, methods, techniques and skills involved in doing the job and in applying these to increase productivity.
- Related Work Knowledge - knowledge of effects of work upon other areas and knowledge of related areas which have influence on assigned work.
- Judgment - soundness of conclusions, decisions and actions.
- Initiative - ability to take effective action without being told.
- Resource Utilization - ability to delineate project needs and locate, plan and effectively use all resources available.
- Dependability - reliability in assuming and carrying out commitments and obligations.
- Analytical Ability - effectiveness in thinking through a problem and reaching sound conclusions.

4.2 MATERIAL PRODUCTIVITY

OBJECTIVES OF MATERIAL MANAGEMENT:

Primary objectives,
Secondary objectives.

1. PRIMARY OBJECTIVES:

Making available supply of materials in specified quantity and quality at economic cost and maintaining the continuity of supply. Minimization of investments in materials and inventory costs, and assuring high inventory turnover.

2. SECONDARY OBJECTIVES:

Purchasing the items from a reliable source at economic price. Reduction of costs by using various cost reduction techniques such as variety reduction, standardization and simplification, value analysis, inventory control, purchase research etc. Co-ordination of the functions such as planning, scheduling, storage and maintenance of materials.

ELEMENTS OF INTEGRATED MATERIAL PRODUCTIVITY:

Materials planning,
Inventory control.
Purchasing.
Stores management.

MATERIALS PLANNING:

Forecasting materials and parts requirements.
Preparation of material budgets.
Forecasting materials, inventory levels.
Scheduling orders and monitoring of performance.

INVENTORY CONTROL:

Selective control of materials.
Determining economic order quantity (EOQ).
Fixing level of safety stock or recorder level.
Lead time analysis.

PURCHASING:

Selection of source and supplier evaluation.
Finalization of terms and conditions of supply.
Planning orders and fallow up.

STORES MANAGEMENT:

Receipts, issue and storage of materials.
reservation of store
Efficient handling and disposal.
Maintenance of stores records.

5. MICROSOFT PROJECT

The building is defined as any structure what so ever purpose and of what so ever materials constructed and ever part thereof whether used as human habitation or not.

For this practical training, I reported at construction of commercial building, at Tambaram East, Selaiyur BSNL Office. I have reported to Mr. Prabakaran (Project Manager) at Three key builders, furthers ordered me to join project site. The site in charge Mr.Avinash meets me at the site and gives me brief introduction of this project as under.

5.1 PROJECT DETAILS:

Name of the project: Construction of Commercial building at nearby Camp road, selaiyur, tambaram east, Chennai.

Clint: NEW BSNL Telephone Office, Chennai.

Consultant: Thirumalai Engineering College, Chennai.

Contractor: Three key Builders Pvt. Ltd., *Tuticorin*

Construction period: Jan. 2018 – Feb. 2019

No. of floors: 3

Type of contract: Lump sum or cost plus fixed fee contract

Estimated cost: 4 crores

Build up area: 1200 sq.ft.

5.2 GANNT CHART

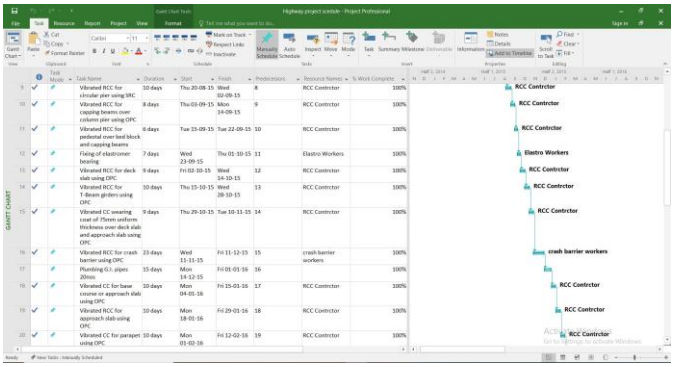


Fig 4.2 Gannt chart

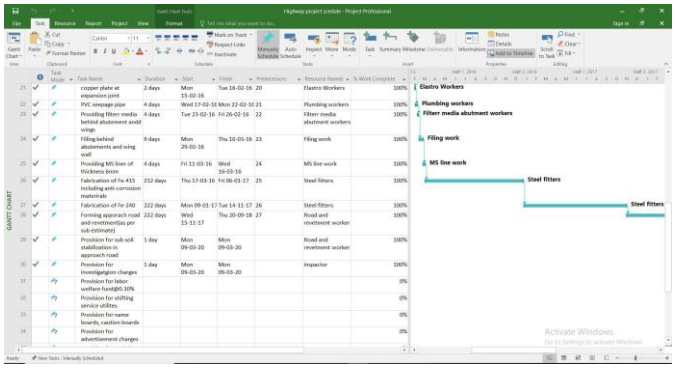


Fig 1.3.2 Gannt chart

5.3 NETWORK DIAGRAM

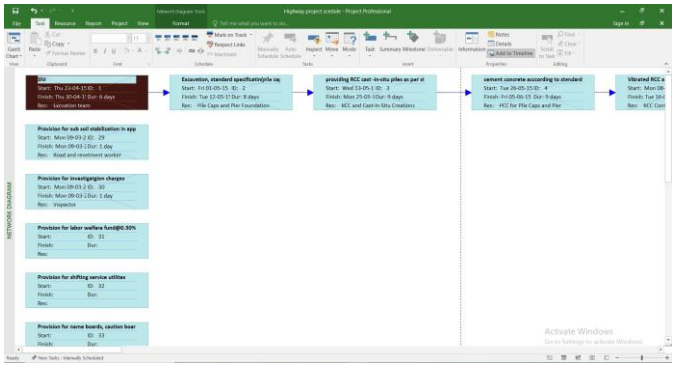


Fig 4.3 Network diagram

5.4 RESOURCE SHEET

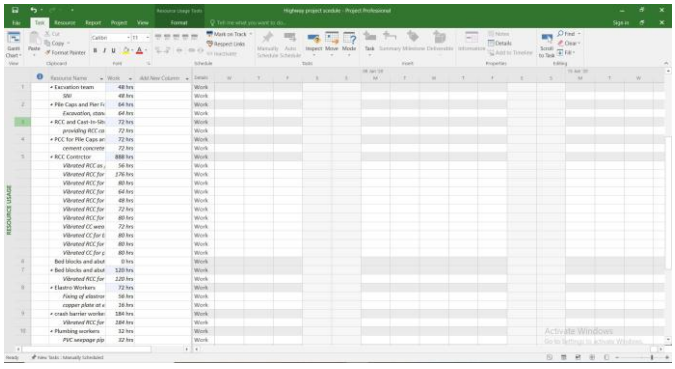


Fig 4.4 Resource sheet diagram

5.5 RESOURCE USUAGE

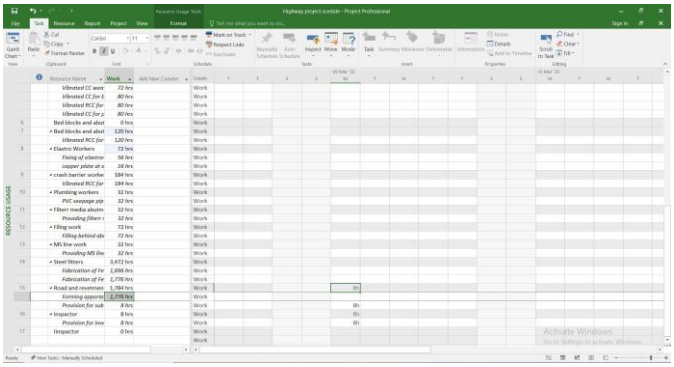


Fig 4.5 Resource usage

5.6 TASK SHEET

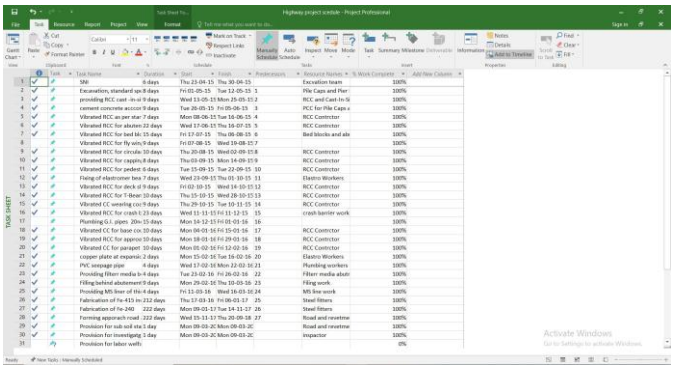


Fig -4.6 Task sheet

5.7 TASK USAGE

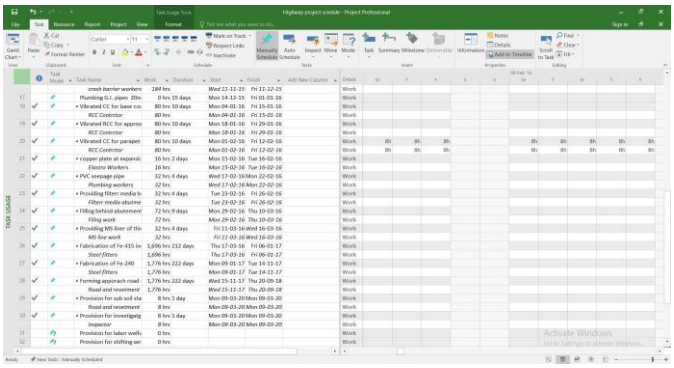


Fig 4.8 Task usage

5.8 TASK SHEET

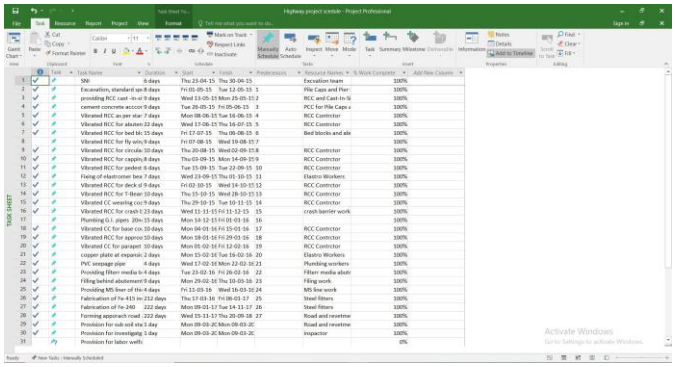
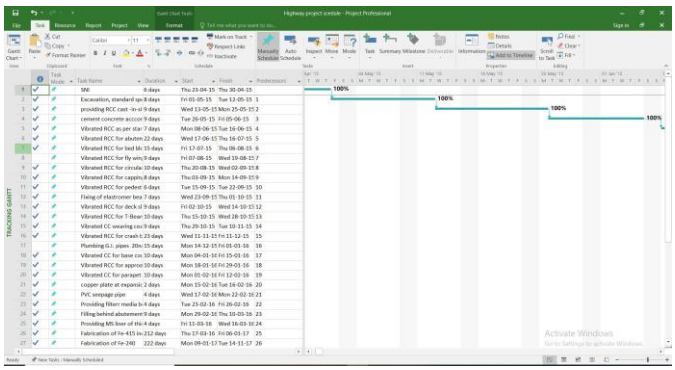


Fig 1.3.7 Task sheet

5.9 TRACKING SHEET



Racking sheet

6. CONCLUSIONS

Planning and scheduling helps in future situation and implementation of the project. The Primavera Software provides user friendly options while performing any task. The cost of individual work break down can be known along with the duration. Thus decisions can be made sensibly for proper management. In multiple projects resource leveling is very important to maintain proper resource allocation. For multiple projects under a single company such analysis should be done to check out for over allocation. Scheduling real-time projects is also an important standard for managing multiple projects. A Resource constrained project schedule as per the site situation. For resource constrained analysis resource leveling is arranged. Scheduling using Microsoft project Software gives good controlling and clear schedule to a project. This project deals with scheduling using Microsoft project.

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BIOGRAPHIES

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