

Scheduling & Monitoring of Phase-2 (Reach-4B) of BMRCL by Valuating Weight Age & Expenses of Work Undergoing

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Abstract- *Extend checking and control is the way toward gathering, recording, and announcing data concerning project execution. Extend controlling utilizations the information from screen movement to convey real execution to arranged execution. The present review manages the venture checking procedure of "Standard Design Factory", a four storied industrial facility whose development is in advance at Cochin, Kerala. An examination between the arranged advance of development work and genuine advance is performed in this review utilizing venture administration programming Primavera P6. In this way, it is an exertion by the Author to exhibit and ad lib on the timetable advancement by highlighting different fields that are regularly overlooked in the improvement of a decent development plan. Relatively few complete reviews have been done on the criticalness of Activity ID and Description in average sized venture plans, in India*

Keywords- Planning, Scheduling, Weight age, Cost expenditure, PRIMAVERA P6.

I. INTRODUCTION

A. GENERAL

Working in project Primavera is like working in a range of activities with regular work breakdown structure. You may need the latest knowledge and skill specializes in all activities that lead to a more systematic flow of work. This customary stream of work utilizing the systems of basic way technique (CPM) and assessment programs, and review Burt method are two State Department until citations project designed to accomplish project planning of putting up a schedule of work with all distribution activities according to the start date and end date plan Primavera is an advance computer integrated enterprise. Project management tool, As we know that India boom in the construction industry should be familiar with tools such as Primavera and end prior management tool with Oracle data base.

This tool is modifiable Web in case any such management activities work tool for multiple project simultaneously in time can be monitor and control all proper project's document management is required, this can be possible if we know fully and correctly Primavera tool.

B. PURPOSE OF STUDY

To learn, if you take consistent readings for evaluation this could happen very chrisoms assessment and cost allocation resource. So, expenses and weight age, monitoring programming is best method for the determination of the different expenses and benefits. So It is suggested to find various circumstances associated with Readings taken. Propose new coming from inside the paper is issued so that companies need to monitor and evaluate which is used by project managers. So our goal is to design a unique part of a tamp let so that the evaluation should be appropriate for profit and its organization.

C. OBJECTIVES OF THE STUDY

1. To propose the significance and motivation behind checking the development work of metro.
2. To propose rules refreshing the venture.
3. To show a perfect timetable for the metro development handle.
4. To propose a format for refreshing the calendar.
5. Comparison between arranged calendars. What's more, genuine timetable. Furthermore, there issue

II. LITRATURE REVIEW

[1] Says Callahan et al (2002-2007) bar diagram or Gantt outline created by Henry Gantt amid World War 1as development plan generally utilized in view of its straightforwardness, simplicity of set up and effectively reasonable organization. Bar graph is characterized as a gathering of exercises incorporated into the vertical section

and time addressed by a level scale. Highlights the significance of the venture calendar and venture benefit that no other option strategies. As indicated by them, the push to set up venture plans more advantageous speculation quality. The creator, and focused on the split development plan for various subnets. Each subnet covers a scope of business exercises.

[2] **MD. Imarn Khan, Maneeth P D, Brijbhushan S, (oct-2015)**- study is carried out for established, An effective system for monitoring & controlling for the cost of a project, so that project cost has the main factors for success of a project (EVM) earned value management is a best technique for evaluation which is useful for the project management. This technique helps in the budget cost and actual cost the present study deals with the scheduling and project monitoring process, so that helpful for the parameters which is involved in the calculations of EVM in civil construction projects

[3] **The twelfth five-year plan (2012-2017)**- plan to advance in venture execution is frequently missing and could prompt long deferrals and unreasonable working expenses. "We should enhance the administration limit extend," he says of the country which will harvest better comes back from open interests in foundation and social segments. Extend administration with to deliver see on time and inside cost, limit with regards to learning as demonstrated by advancement encounters in Japan, Korea, Singapore and China. An across the country battle to enhance extend administration ought to be an indispensable piece of the twelfth five-year arrange EPC 360 study inferred that the spread of best practices in Indian suppliers manufacture low all appraised Indian suppliers through venture arranging and usage rehearses. "Extend arranging"- barely utilizemodern devices, for instance, Primavera, to track up to L4 level venture

[4] **Anil, Sawhney et al.**, concentrated different development extends in India, which endured broad deferrals. They focused on the requirement for an efficient examination of the purposes behind the postponement and a reasonable comprehension among industry experts as an exceptionally critical undertaking in the Indian development industry. Utilizing a choice of 45 qualities, their exploration initially recognize main considerations that influence the postponement in development industry of India and afterward make the connection between the essential components to create expectation models to survey the impacts of these variables on deferral. Two of the most basic components to defer development depicted as "lack of common sense and absence of clearness in the extent of undertakings that influence the general venture delay significantly.

III. PROJECT MANAGEMENT

A. Introduction

Project management is to facilitate the process of planning, scheduling and controlling all activities that must be done to achieve the objectives of the project. Project management deals with people and systems and tools. Tools is work breakdown structures and PERT scheduling and earned value analysis, risk analysis and scheduling programs. Tools are the primary focus for most organizations that want to apply project management. In order for a project to be successful, the project team must:

Select proper operations inside the venture administration prepare bunches required to meet venture goals

1. Use a characterized way to deal with adjust the item particulars and arrangements to meet the venture and item necessities
2. Compliance with the prerequisites to address partner issues and needs and desires. Adjust the contending requests of degree, time, cost, quality, hazard and assets to deliver quality item Stages in venture Management.

B. Stages in project Management

Project management involves the following stages

1. Initiation
2. Planning
3. Executing
4. Controlling
5. Closing

Initiation - Start the procedure appeared after the venture is approved. Is the principal period of the venture administration prepared, chiefly incorporates continuing to find the venture and the kind of venture to be manufactured, distinguish customers, draftsmen, specialists, basic, plumbing, and so forth. It additionally includes discharging designs kicks for the venture and venture length primes.

Planning - Extend objectives and techniques accomplish is dictated by characterizing errands, extend plan at the microeconomic level, affirming the customer for usage, and if the client does not meet certify endorsement.

Executing - The venture director works intimately with the venture group in this procedure to guarantee that the business

is finished, that the consequences of the work of good quality and meet the concurred contract commitments.

Controlling – Screen extend execution estimation to guarantee that the venture plan is being actualized by outline determinations and prerequisites. The procedure includes controlling the accompanying.

- a) Also, gets ready reports of field administration arranging – every day, week by week, and month to month timetable and presented on the site.
- b) Reports from the site – every day, week after week, and month to month advance and labor required to be sent from the field to the Ministry of arranging.
- c) Tracking and fluctuation examination in light of reports from the field.
- d) Cost control for venture in light of reports from the field, plan week after week and month to month income graphs.

Closing – Official end of the venture and displayed different stages. This includes the conveyance of records to the client – finish degree and utilize diverse instruments to oversee ventures, one anticipates administration apparatus which was utilized as a part of the potential venture chiefs Primavera. It was made to experience preparing on Primavera comprehend the ideas and work of Primavera. Subtle elements of the structure work Primavera in the following segment.

IV. DATA ANALYSIS OF METRO R-4B PROJECT

Project: Bangalore metro line 4B

Owner: Bangalore metro rail corporation.

SCOPE OF WORK

REACH-4B "the construction of the elevated structures" length 6.524 km (approximately) from the cross **Puttenahalli** Development of Lifted Structures of length 6.524 km (approx) from Puttenahalli Cross Station to Anjanapura Township Station and further viaduct including 5 Nos. of Hoisted Metro Stations Viz. Anjanapura Street Cross Station, KrishnaLeela Stop Station, Vajrahalli Station, Thalaghattapura Station and Anjanapura Township Station.

Name of the Contractor: - M/s Nagarjuna Constructions Company Limited. **Total Cost of the Project:** - Rs. 508.86 Cores.

Contract start date: 27/1/2016

Contract finish date: 27/4/2018

Detailed design consults: BMRCL

Traffic consults: wibursmith associate

General consult; rail India technical & economic services ltd (RITES) INDIA

ELEMENTS IN VIADUCT

1. Pile
2. Pile cap
3. Pier & pier cap
4. Segmental casting
5. Segmental launching
6. Crash barrier
7. Parapet
8. Rails
9. Portal beam

➤ PILE (SCOPE OF WORK)

1. Layout of structure
2. Aligning of the piling rig
3. Boring
4. Installation of guide casing
5. Boring in hard strata
6. Termination of bore
7. Cleaning of bore
8. Placing and lowering of rebar cage
9. Lowering of tremie pipe
10. Concreting of borehole
11. Removal of guide casing

➤ PILE CAP (SCOPE OF WORK)

Excavation Marking the level PCC Pile head Fixing pile cap reinforcement Fixing column reinforcement Fixing form work Marking level of pile cap Concreting

➤ PIER & PIER CAP (SCOPE OF WORK)

1. Land acquisition
2. Barricading
3. Survey work
4. Piling
5. Excavation
6. Chipping pile head
7. PCC
8. Utility shifting shutter fabrication
9. Excavation
10. Chipping pile head
11. PCC
12. Utility shifting shutter fabrication
13. Scaffolding design
14. Methods statement approval

- 15. Bar bending scheduling
- 16. GFC drawings
- 17. Pier height calculation
- 18. Pier co- ordinate

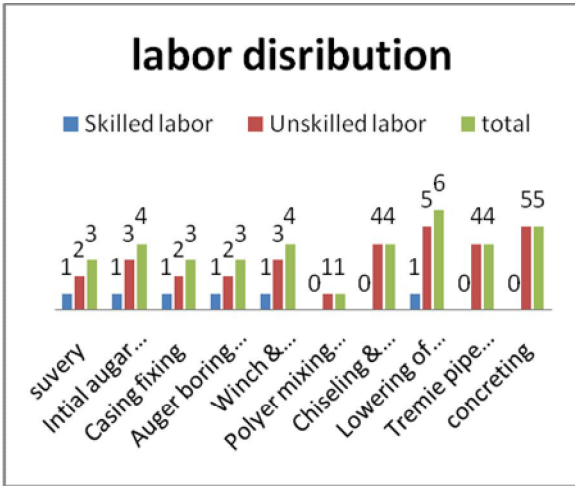


Fig.1: Time Cycle Analysis of Labour For Pile

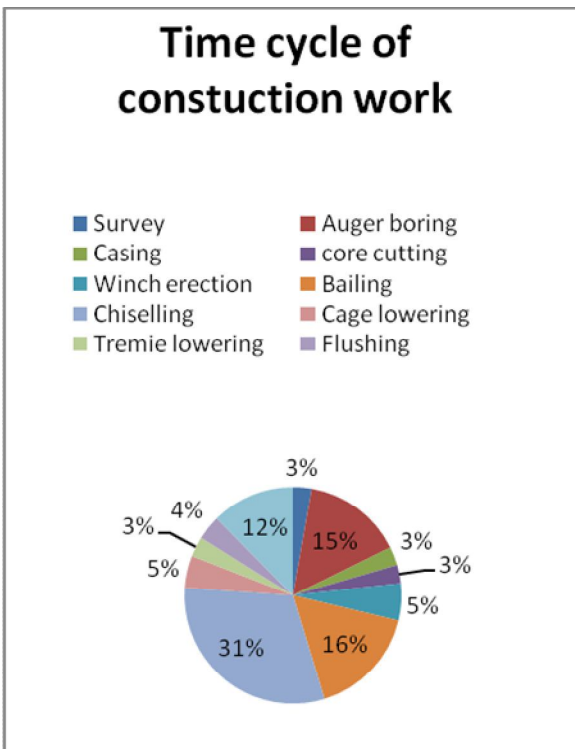


Fig-2 Time Cycle Analysis Of Activity For Pile

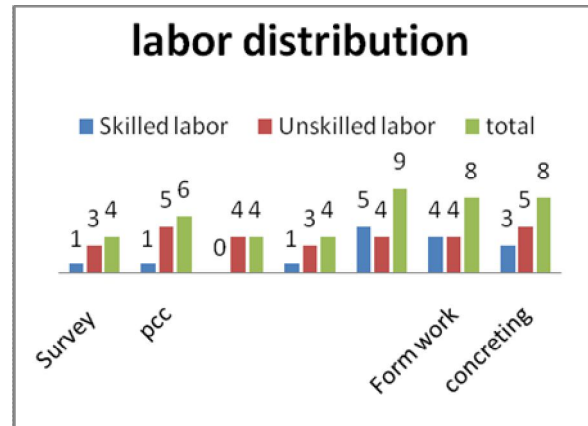


Fig -3 Time Cycle Analysis of Labour for Pile cap

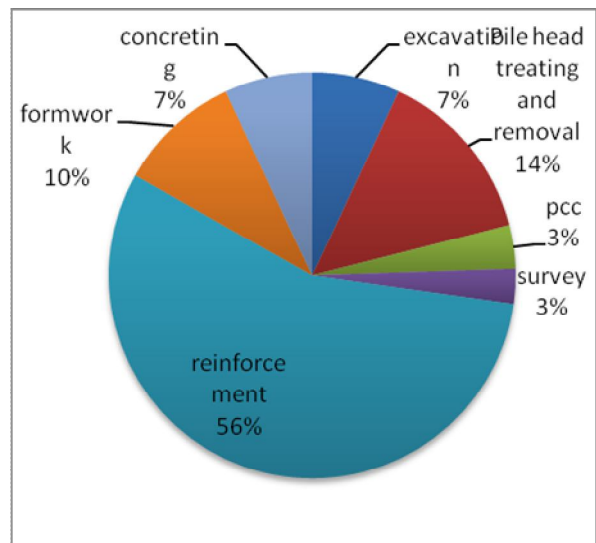


Fig-4 Time Cycle Analysis Of Activity For Pilecap

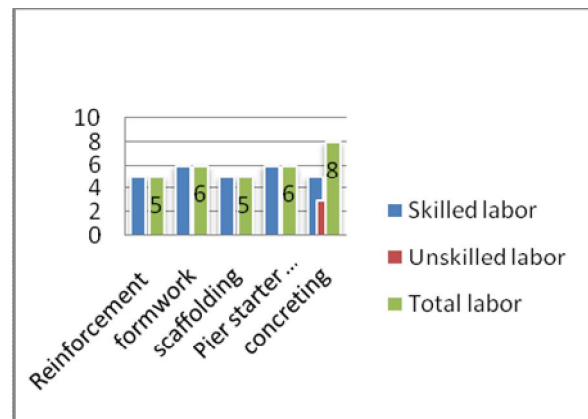


Fig -5 Time Cycle Analysis of Labour for pier

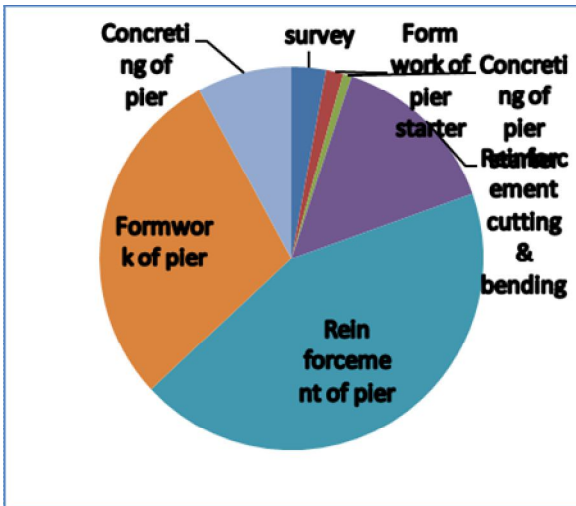


Fig -6 Time Cycle Analysis Of Activity For pier

Segment casting

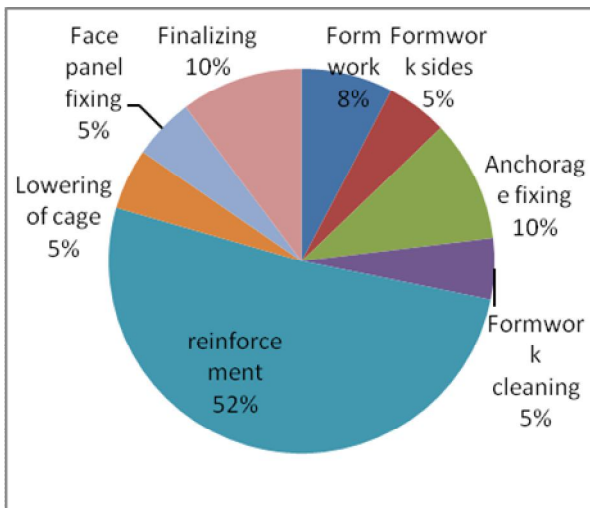


Fig -7 Time Cycle Analysis Of Activity For segment

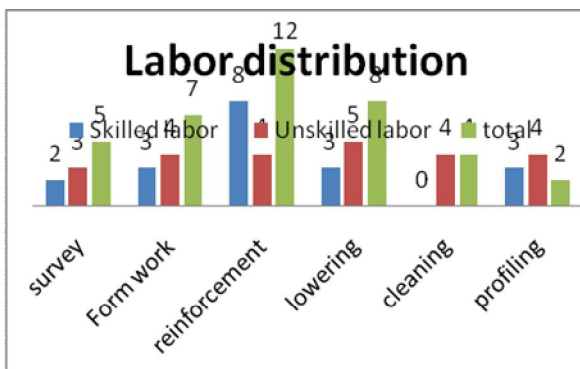


Fig -8 Time Cycle Analysis of Labour For segment

V. METHODOLOGY PLANING AND SCHEDULING EPS

Projects are arranged in a hierarchy called “enterprise project structure”. The EPS can be subdivided into as many levels.

For example - Divisions, Zones, Regions, Area Construction Supervisors, Construction Contracts, etc

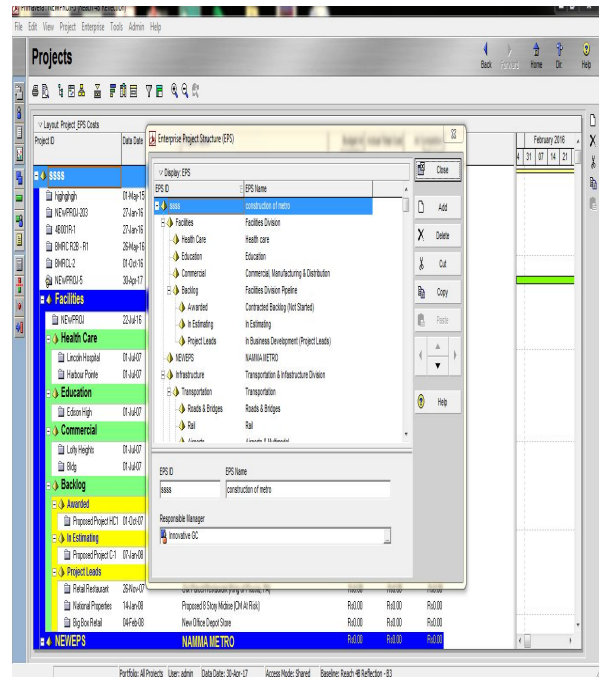


Fig-9 Showing Creation EPS In Software Primavera

OBS

The organizational breakdown structure (OBS) is a global hierarchy that represents the managers responsible for the projects in enterprise.

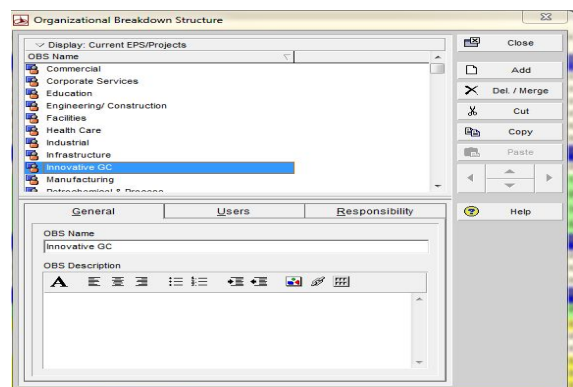


Fig-10 Showing Creation OBS In Software Primavera

USER PREFERENCE

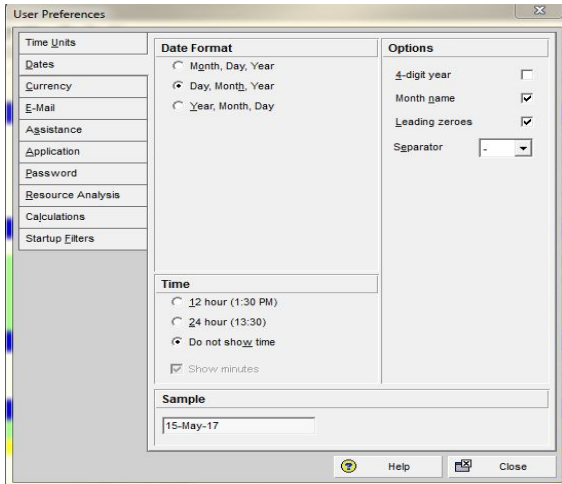


Fig-11 Showing Creation User Preference In Software Primavera

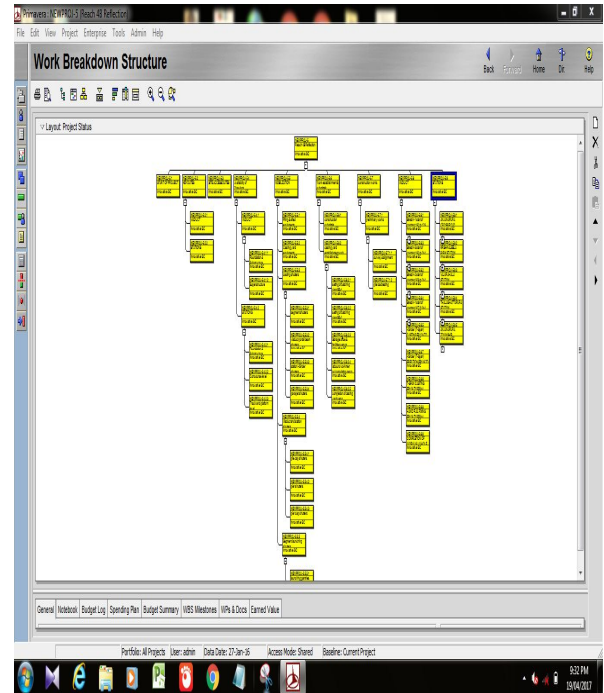


Fig-13 Showing Creation WBS In Software Primavera

DEFINING CALENDAR

Before entering activities into schedule, it is advisable to set up the calendars. These are used to model the working time for each activity in the project. For example, a 6-day calendar is created for those activities that will be worked for 6 days a week. The calendar should include any public holidays and any other exceptions to available working days, such as planned days off shows the snapshot of a calendar from Primavera P6.

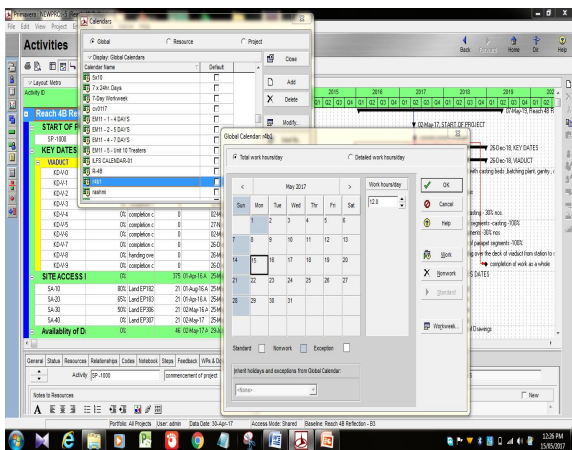


Fig-12 showing creation Calendar in software primavera

ACTIVITIES

1. Also known as tasks, events, or work packages, activities are the lowest level manageable work elements in a project or WBS.
2. Activities typically have expected durations, costs, and resource or role requirements. Milestone activities, however, have no duration or cost.

List Of Common Inputs / Information To Be Given To An Activity

1. Activity ID, Name & Type of activity.
2. Start, Finish Dates (Early, Late).
3. Relationship between activities (Predecessor, Successor).
4. Activity Calendar.
5. Constraints.
6. Status of activity (Actual start & finish dates, % of progress).

WBS

Work breakdown structure (WBS) is a hierarchy of work that must be accomplished to complete a project. Each project has its own WBS hierarchy with top level WBS element being equal to that of each EPS node or project. Each WBS element may contain more detailed WBS levels, activities, or both

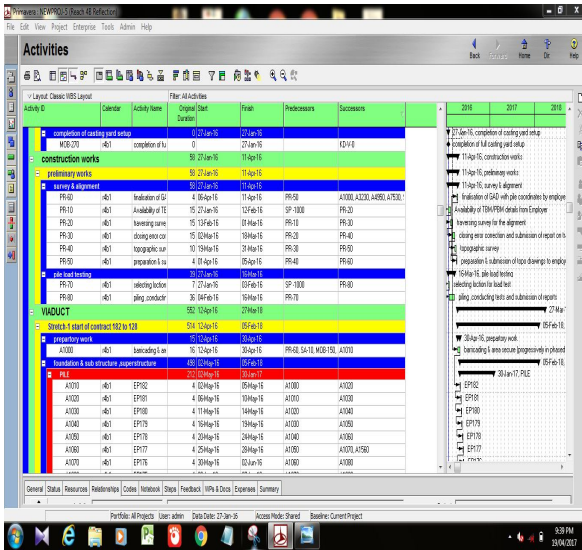


Fig-13 showing creation activity in soft ware primavera

DURATION

It's given by depending upon working methodology

WEIGHTAGE

In use of weightage command we can get the activity profile S-curve.its shows the actual workgoing on activity curve in a profile sheet

EXPENSES

In use of expenses command we can get the activity budgeted S-curve, here in this my project I use implicate the without cost & resources .depending working progress t I use assumed completion of budget.

SCHEDULING

Connecting activities through table relationships and calculates the total time needed to complete the project.

CRITICAL PATH METHOD (CPM) SCHEDULING

CPM used periods of activity and relationships between activities to calculate scheduling dates. This calculation is done in two passes through the activities contained in the draft.

SCHEDULING CONCEPTS

FORWARD PASS

Scroll forward account begins activities without predecessors.
 An early start + length-1 = early finish back.

BACKWARD PASS

pass account starts with activities without successors
 "late finish"-+ 1 = "late start"

TOTAL FLOAT

Total buoy is the measure of time an action can slip from her encouraging start immediately the venture until this late date – early history = add up to coast (TF).

BENEFITS OF SCHEDULING TO MY PROJECT

Use CPM to schedule is very useful to the overall project objectives. Benefits of scheduling techniques using CPM is promotes logical thinking helps in assessing options, improves communication, monitor progress, and identifies the risks of delay, and facilitate recovery, meets the requirement of legal proof.

RESULTS AND DISCUSSIONS

MANAGEMENT PROCESS IN FACTORY PROJECT

The management team including project manager, planning manager, construction manager, quality and safety incharges work as a whole for all the activities.

IDEAL BASELINE FOR STANDARD DESIGN FACTORY

An ideal baseline B1 was created in Primavera for the SDF case study. The work breakdown structure, activities and steps for activities are being discussed here. The structure for the baseline is presented from the WBS levels. In WBS a level may be again sub divided. Activities come under the WBS.

GANTT CHART

1. The time scale of the Gantt chart should be weekly basis.
2. All relationships should be clearly given in the Gantt chart.

CALENDAR

The work is carried out in 6 days per week. So the standard 6 day workweek calendar is made with necessary holidays in it. A break of one hour is given in the afternoon.

MASTER SCHEDULE WITH KEY DATES

A schedule is being created using the key dates of the activities. The baseline project start date is on 27/1/ 2016 and baseline project finish date is on 27/4/2018 the actual start of project was on 1/4/2016. It shows that the actual start of project was as per baseline schedule. After knowing the dates of all key activities, all the constituent activities are arranged sequentially and logically to form a schedule. This schedule shows a slow and ever increasing gap between baseline schedule and actual work progress. The actual progress started shifting from planned schedule, from the second activity mobilization of resources itself.

ACTIVITY USAGE PROFILE

These show graphical representation of cumulative values activity usage.

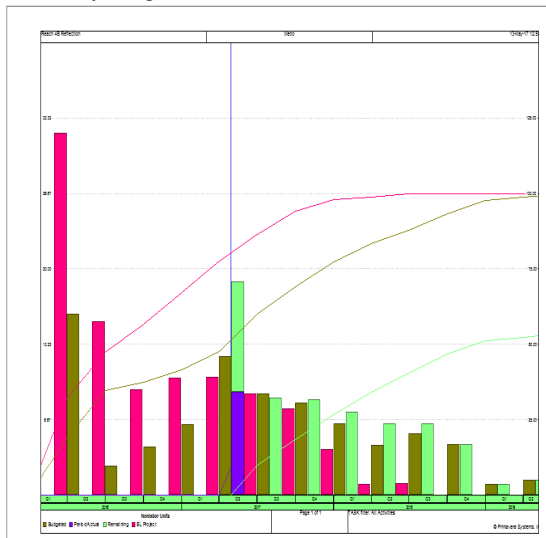


Fig -14 These Show Graphical Representation of Cumulative Values Activity Usage

DELAY ANALYSIS

The following reasons were observed during this thesis work, which can be held responsible for delays;

- Lack of knowledge about advanced tracking methods and software. Insufficiently skilled staff.
- Lack of proper fund flow throughout the project progress A major portion of labour force was from West Bengal and Orissa. Regional festivals in these areas cause sudden delays in work progress.
- Even though delay due to monsoon rain was already accounted in the baseline schedule, unexpected extension of monsoon caused further delay in project progress.
- Sand unavailability due to legal restrictions.

- Late delivery of resources

VI. CONCLUSION

The main objective of this study was to understand the role of monitoring and control in the progress and timely completion of a construction project. This objective was achieved through revision of literatures and methodologies involved in monitoring and control. The case study proved to be a guideline in understanding the progress of Standard design factory construction work and also to identify the specific problems arising during the process. Results of this study show the drawbacks of the present project management system in SDF project and the importance efficient planning, monitoring and controlling, as well as the need and effectiveness of a project management software like Primavera P6 in a construction project.

- To suggest the importance and purpose of monitoring the construction work of metro.
- To suggest guidelines updating the project.
- To present an ideal schedule for the metro construction process.
- To suggest a layout for updating the schedule

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