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SCHEDULING OF AN RESIDENTIAL BUILDING USING PROJECT MANAGEMENT TECHNIQUES

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ABSTRACT

Resource management is one of the most important aspects of construction project management in today's economy because the construction industry is resource-intensive and the costs of construction resources have steadily risen over the last several decades. Thus general schedule control techniques are useful in optimizing resource scheduling and project duration. These techniques help to reduce project duration use of unlimited availability of resources for completion of a project. Through it is observed that resources are limited in real project scenario. It has been observed that the project delays occur due to insufficient supply of resources. In large scale projects, preparing an accurate and workable plan is very difficult. Computer packages like MS Project and Primavera project planner are used in construction industry. Primavera is an amazing project management software tool which is not just used by project managers. Designed to make managing large or complex projects a piece of cake, Primavera is the ideal tool for anyone who is involved in planning, monitoring and reporting on the progress of any big task, development or venture. Project management techniques can be used to resolve resource conflicts and also useful in minimizing the project duration within limited availability of resources to make the project profitable. The main aim of this study is to analyze the schedule control techniques by constraints and activity types is done using primavera P6 software for an apartment building. The project schedule control decreases the duration due to apply of constraints, level of effort, resource dependent it has an effect on the project duration.

Keywords; Schedule Control, Constraints, Activity Types, Level Of Effort, Resource Dependent, Primavera.

1. INTRODUCTION

A resource can be defined as an entity that is assigned to an activity and is required to accomplish the task. It is recommended to create and assign the minimum number of resources to activities. A resource is any

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quantifiable item in limited supply and of sufficient value to justify tracking and assigning of specific activities for a project. Every project schedule has its own precedence constraints, which means that each activity can be processed when all its predecessors are finished. In general the purpose of project scheduler is to minimize its completion time, subject to precedence constraints. A more general version assumes that to develop one or more activities, resources such as tools, equipment, machines, or human resources are needed.

Construction industry is an integral component of a nation's infrastructure and industrial growth. Construction industry is the second largest industry in India still it's growth has been differential across the nation. There is a vast difference of development in the rural and urban areas. To cope up with the status of development in urban areas the rural regions need tools for economic development, land use and environment planning.

Each resource has limited capacity; consequently at a certain moments one activity may not begin their processing due to resource constraints even if all their predecessors are finished. This type of problems is called Resource-constrained project scheduling problem (RCPSP) which involves assigning jobs or tasks to a resource or a set of resources with limited capacity in order to meet some predefined objective. Project Monitoring acts like a warning mechanism; it is the process of recording, collecting and reporting information regarding project performance that the project manager and others wish to know.

Monitoring includes watching the progress of the project against time, performance schedule and resources during actual execution of the project and it identified the lagging areas which require timely attention and actions.

II OBJECTIVE OF STUDY

The objectives of this study are:

1. To identify construction sequence for a residential building construction.
2. To work out the practical durations required to carry out the activities.
3. To identify scheduling technique used by the organization in developing plan and scheduling.
4. To develop scheduling using Primavera project planner's software.
5. To track the project and analyze the reasons for delays, and increase in estimated budget etc.
6. To investigate defects in the planning and scheduling procedure of the organization, and suggest suitable improvements in their methods.

III PROJECT MANAGEMENT

Primavera Systems, Inc was a private company providing Project Portfolio Management (PPM) software to help project-intensive organizations identify, prioritize, and select project investments and plan, manage, and control projects and project portfolios of all sizes. On January 1, 2009 Oracle Corporation took legal ownership of Primavera. Primavera Systems, Inc. was founded on May 1, 1983 by Joel Koppelman and Dick Faris. It traded as a private company based in Pennsylvania (USA), developing software for the Project Portfolio Management market. To help expand its product capabilities, Primavera acquired Eagle Ray Software Systems in 1999, Evolve Technologies (a professional services automation vendor) in 2003, Pro Sight (an IT

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portfolio management software vendor) in 2006, and, in the same year, Pert master (a project risk management software vendor).

3.1 Planning, Controlling, and Managing Projects

Before implementing Primavera to schedule projects, team members and other project participants should understand the processes involved in project management and the associated recommendations that help smooth the Primavera implementation that supports your corporate mission. If you were driving to a place you had never seen, would you get in the car without directions or a map probably not. More than likely you'd take the time to plan your trip, consider alternate routes, and estimate your time of arrival. Planning the drive before you even left would help your trip be more successful. And, along the way, should you encounter road blocks or traffic delays, you would have already identified alternate ways to reach your destination.

3.2 Construction, Planning and Scheduling Tracking

3.2.1 Construction Planning

Construction planning is a fundamental and challenging activity in management and execution of construction projects. It includes the selection of technology, the definition of work task, the estimation of required durations and resources of individual task, and identify the interactions between different work tasks.

A good construction plan is the base for developing the schedule and the budget for work. Developing the construction plan is a critical task in construction management, even if the plan is not written or else formally recorded. During planning a planner begins with a result (a design) and he must synthesize the steps required to yield this result. The necessary aspects of construction planning include the generation of required activities, analysis of the implications of these activities and the choice among various alternatives methods of performing these activities. A planner must imagine the final design and describe it in plans and specifications.

In developing a construction plan the importance is given either cost or schedule. Some projects a primarily divided into expense categories with associated cost in these cases planning is cost oriented. In this category, a distinction is made between cost incurred directly in the performance of the activity and indirectly for the accomplishment of the project. For other projects where time is a critical or the planner ensures that proper predeceasing among activities is maintained and that efficient scheduling of the available resource prevails. In such cases a critical path scheduling procedure is followed. Finally most of the complex projects require considerations of both cost and schedule over time, so that planning; monitoring and record keeping must be considered in both dimensions. In these cases integration of budget and scheduling information is a major concern.

3.2.2 Scheduling

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Scheduling is determination the timing of events in the project that is when and which task will be performed? Putting it in simple words it is a reflection of plan. In other words we can say, planning is How, What and Who whereas scheduling is when and why. Scheduling can be also defined as the detailed plan of the project work tasks with respect to time. A schedule is also a good communication tool between all the stakeholders of the project. Schedule gives an overall sense of expected progress of the project without schedule it is very difficult to explain someone unfamiliar with the project what is going on and what is expected to take place.

3.2.3 Tracking

Tracking is the process of collecting, entering and analyzing of actual project performance values, such as work on tasks and actual durations. Tracking is the second major phase of project management. The main thing to focus on project planning is developing and communicating the details of project plan before actual work starts. When work begins, the next phase of project management is tracking progress. Tracking means recording project details such as what work did by whom, when the work was done, and at what costs these details are called as actual. Properly tracking actual work and comparing it's against original plan is useful to identify the difference in actual and planned and it enables to adjust incomplete task of the plan.

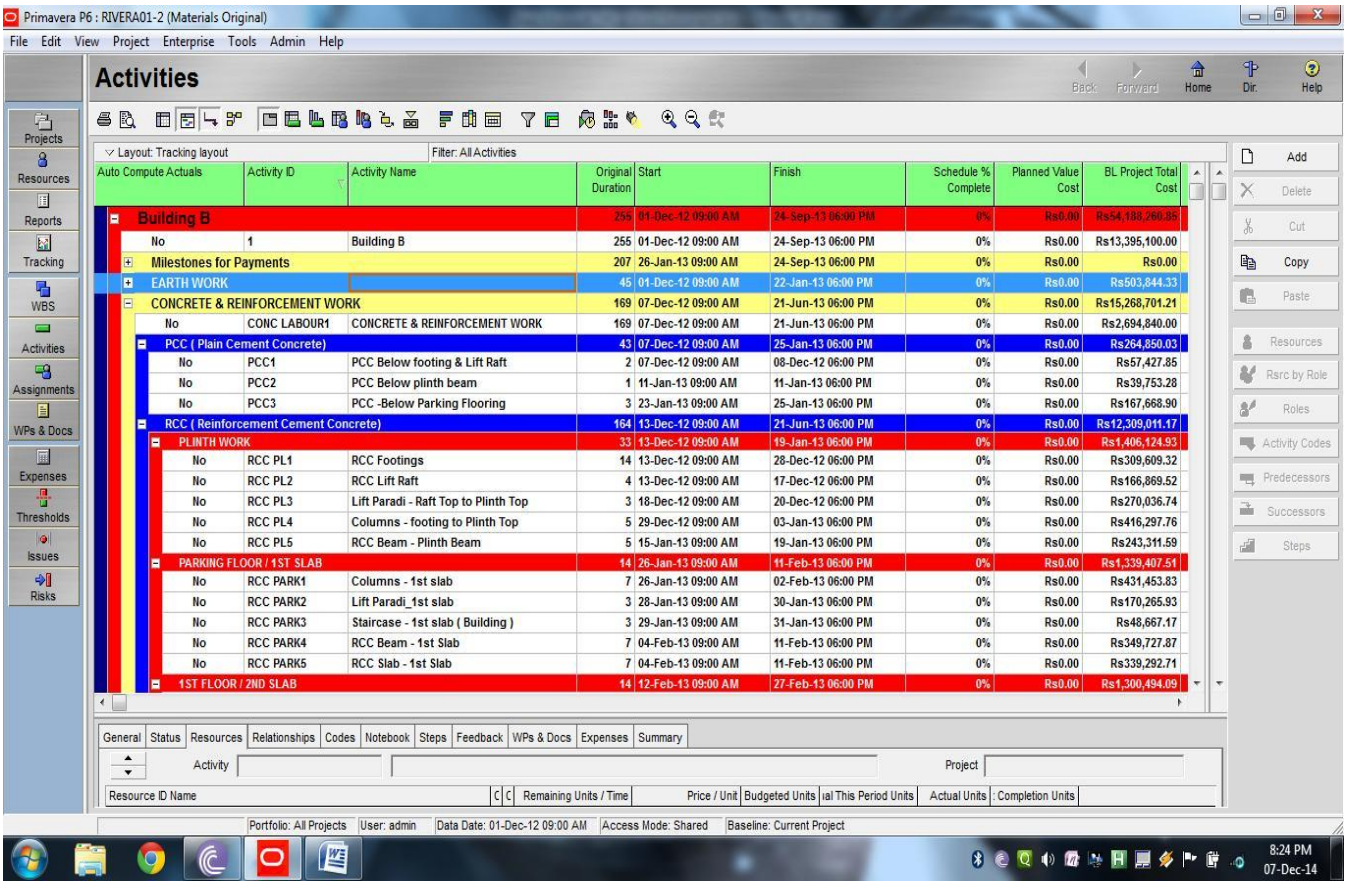

FIGURE I: Activities entered in Primavera software

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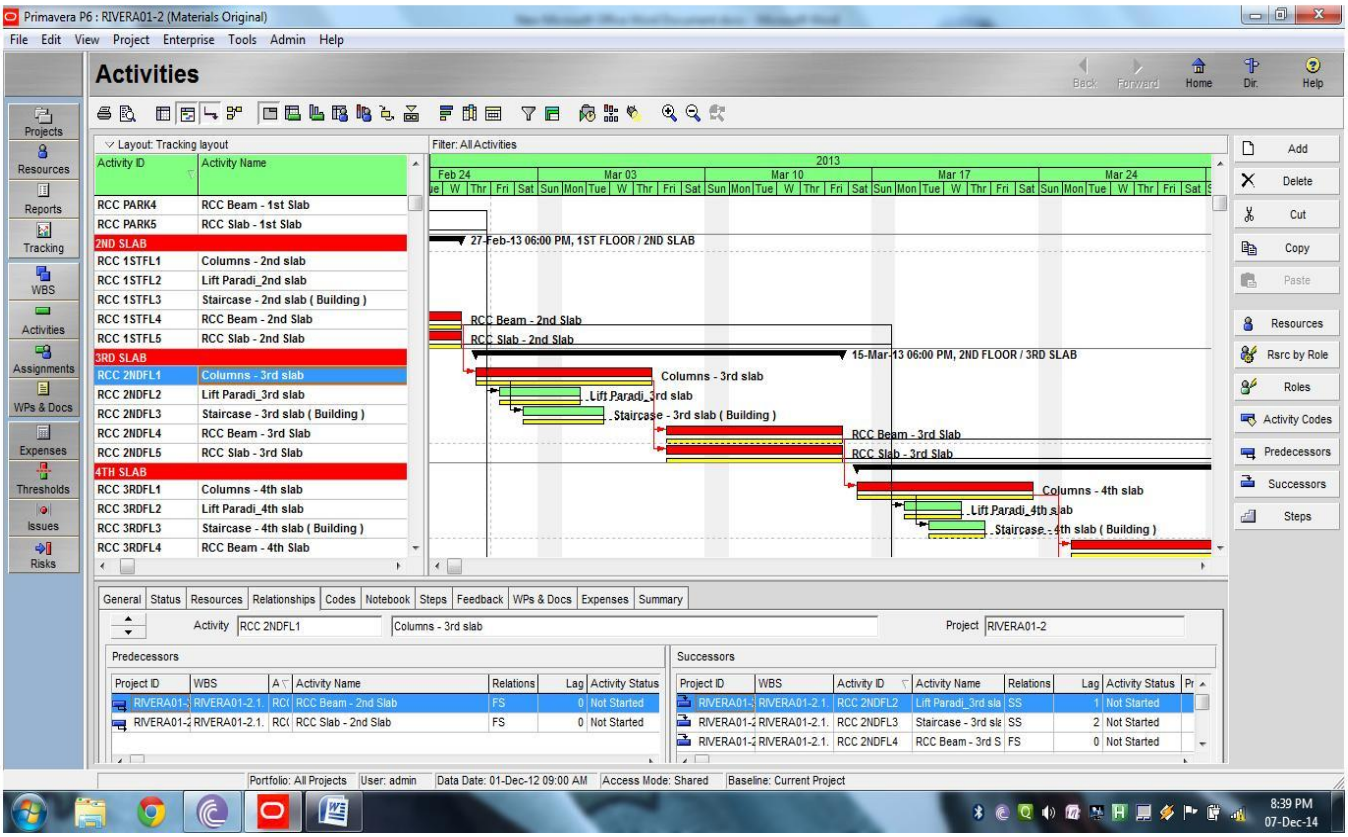

FIGURE 2: Activities linked in Primavera software

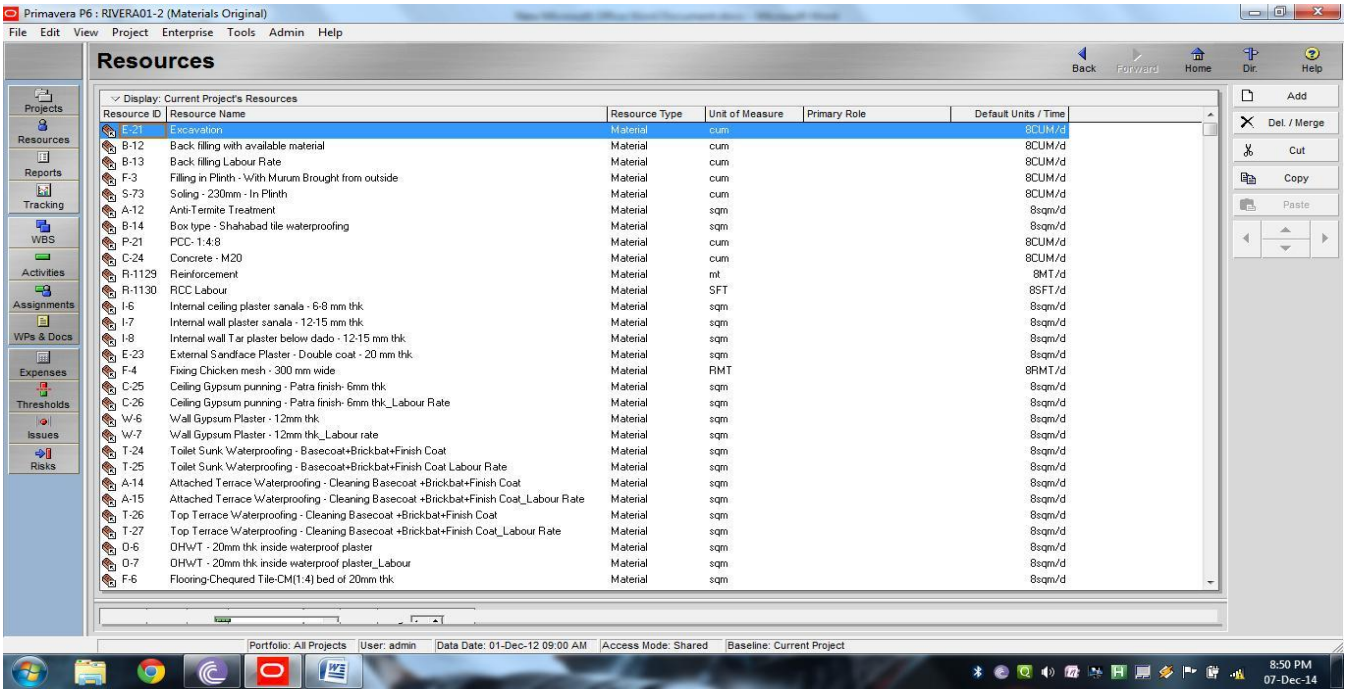

FIGURE 3: Resources entered in primavera

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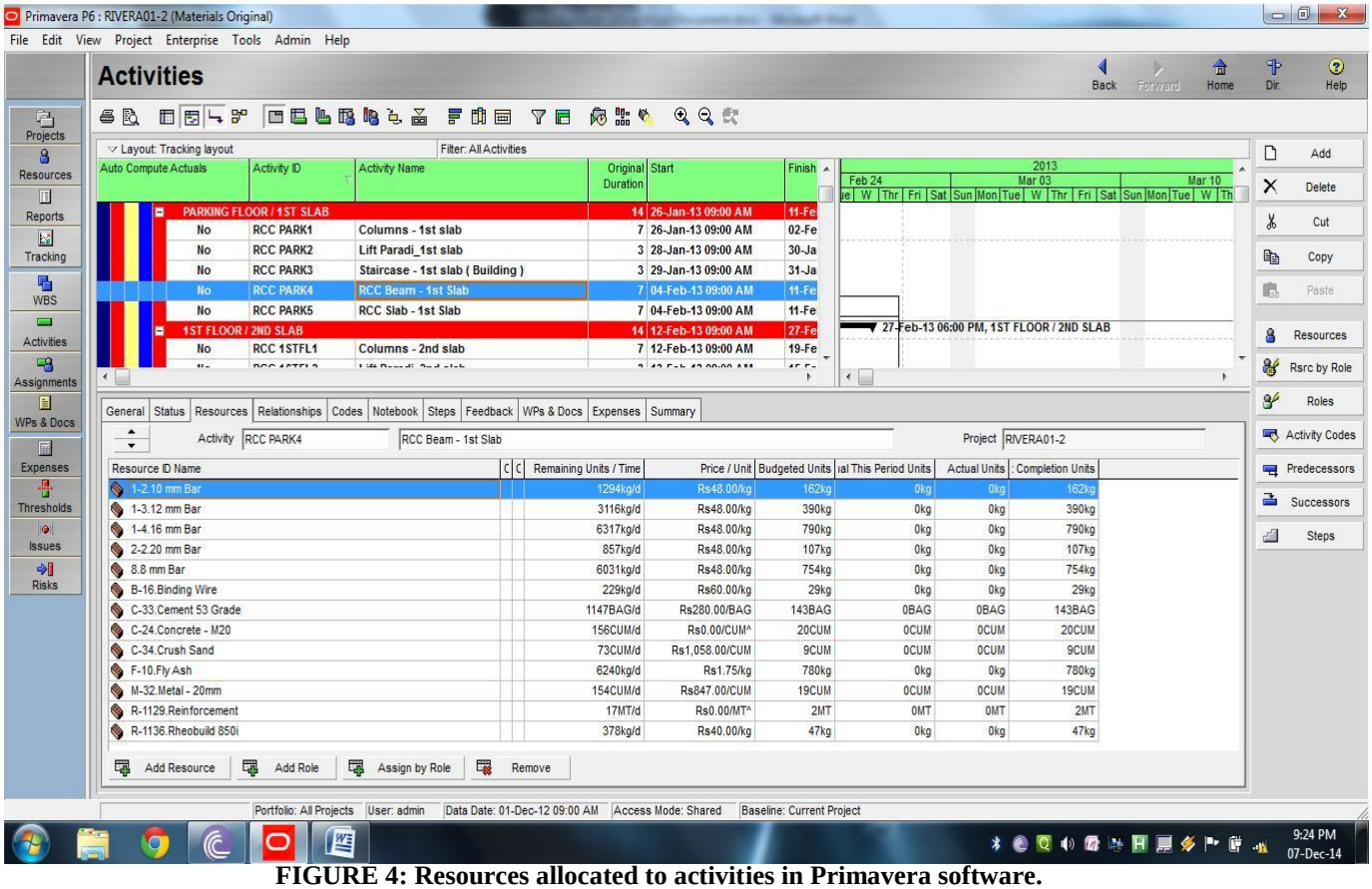
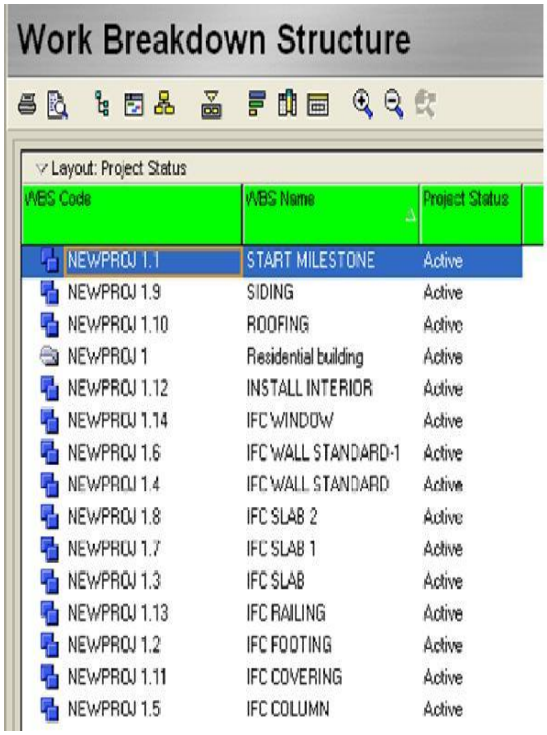


FIGURE 4: Resources allocated to activities in Primavera software.



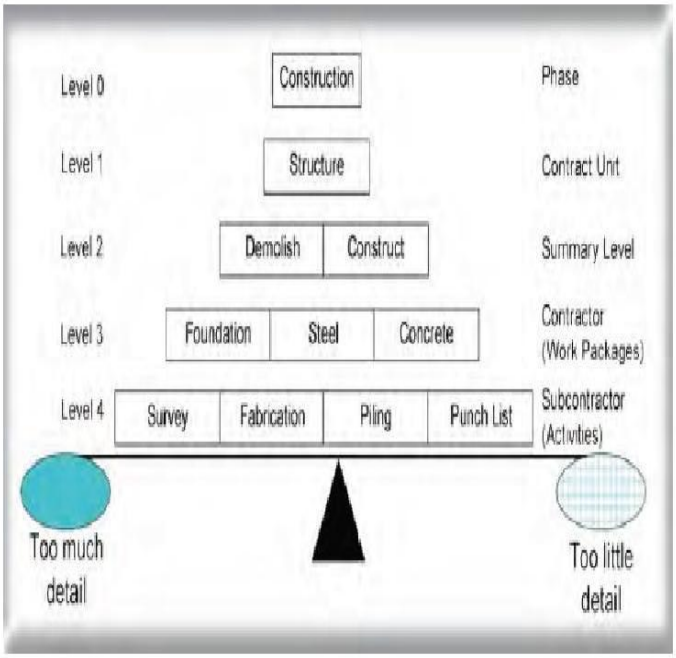


Figure. 5 WBS Window

Figure.6 WBS Level of Detail

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IV CONCLUSION

This study compared time performance of the conventional method of construction for high- rise residential and Industrial Building System (IBS) method by formulate benchmark measures of industry norms for overall construction period using scheduling simulation modeling. The positive changes include creating a healthy working environment among those involved directly in the construction industry**.** Better Efficiency in Delivering Services**:** Project management provides a "roadmap" that is easily followed and leads to project completion. Once you know where to avoid the bumps and potholes, it stands to reason that you're going to be working smarter and not harder and longer. Improved Customer Satisfaction Whenever you get a project done on time and under budget, the client walks away happy. And a happy client is one you'll see again. Smart project management provides the tools that enable this client/manager relationship to continue. Enhanced Effectiveness in Delivering Services The same strategies that allowed you to successfully complete one project will serve you many times over and also reduced risk and cost of schedule overrun. It helps easily plan and manage project activities, It optimizes management of all resources, It gives clear visibility of what's going on in the project, It allows quick and easy forecasting of WBS's, activities or projects.

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