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[ijirset@gmail.com](mailto:ijirset@gmail.com)

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# Developing and Evaluating Claims for A Road Project by Using PCM

Mr. Aniket S. Gawande<sup>1</sup>, Prof. Apeksha G. Choudhary<sup>2</sup>

PG Student (Construction Management) Dept. of Civil Engineering, G.H.Raisoni University, Amravati, India<sup>1</sup>

Assistant Professor, Dept. of Civil Engineering, G.H.Raisoni University, Amravati, India<sup>2</sup>

**ABSTRACT:** Construction claims have such high impacts on the project's cost and time that the contractors should establish the effective claim management in their organizations. Nowadays, the substantially increasing volume of claims are the result of the rising complexity of the projects, the price structure of the construction industry and the legal approach taken by a lot of owners and contractors. Claims are becoming an inevitable and unavoidable burden in modern projects involving new technologies, specifications and high expectations from the owner. It is, therefore, imperative for all the parties to be fully acquainted with the procedures and systems, including recourse to certain preventive actions as found necessary and required. Changes in the construction field can be consolidated directly or converted to a full process project. This study aims to identify the method of using the PCM program and Primavera P6 to prepare the claims in a short time with less effort to produce fully documented claims.

## I. INTRODUCTION

There are numerous different types of construction projects and the contractual arrangement can be done in several ways. Previous research seems to focus on traditional construction projects when addressing claim management. Compared to traditional design-bid-build, are engineering, procurement, to constructions based on basic specifications provided (Pal et al., 2017). Not much attention in previous research is given to claim management in EPC-projects where the main contractor is responsible for several outsourced activities, hence also responsible for the conflicts that arise from the outsourced activities. Whereas the main-contractor has to manage and solve conflicts that arise "internally" without creating conflicts between main-contractor and client.

Many articles on conflicts and disagreements in the construction industry exclusively deal with the circumstances characterizing a conflict and tend to ignore the causes therefore erroneously present relevant circumstances as causes (Mitkus and Mitkus, 2014). Acharya et al. (2006) used a questionnaire survey to collect professionals experience on conflicting activities, and face to face interviews to ratify the findings from the field survey. Related to EPC projects, did Shen et al. (2017) conceptualize causes of construction claims based on existing literature and empirically tested the causes with industry survey, structural equation modeling and case studies from the perspective of Chinese contractors?

## II. RESEARCH METHODOLOGY

For the purposes of this research, a qualitative approach was selected as an interpretative technique of data collection in order to increase the understanding of the topic. In this study four case studies are reviewed of delivering infrastructural projects under the EPC scheme in Pune, Maharashtra.

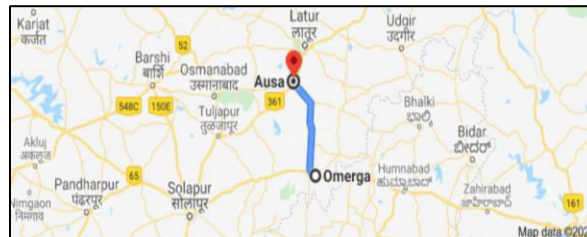


### III. PROBLEM IDENTIFICATION

- What are the root causes of claims in construction projects?(Root cause analysis study)
- What are the root causes for sub-contractor change claims in EPC construction projects?
- What are the problems associated with claim management process EPC-projects?
- What is the role of site engineer and sub-contractors in arise of claims in EPC projects? (Qualitative data)
- What improvement to be undertaken in current claim management process which was adopted commonly in various organizations?
- What are the best strategies adopted for negotiations in claim management process EPC- projects?
- What kind of claims to be come under variation due to site conditions, client change, design errors, inaccurate design information, unrealistic time targets, poor communication?

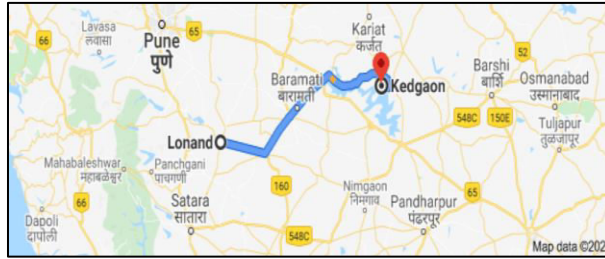
#### A. Study Area 1- Omerga Ausa

Up gradation of Omerga Ausa , Package-I from Km. 0+000 to Km. 47+800 to 2 lane with paved shoulder configuration in the state of Maharashtra



#### B. Study Area 2- Lonand to Kedgaon

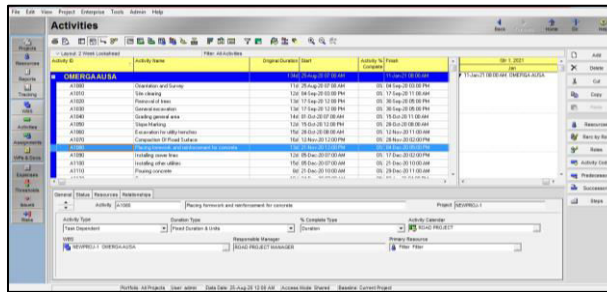
Up gradation of Lonand to Kedgaon, Package-II from Km. 0+000 to Km. 48.00 to 2 lane with paved shoulder configuration in the state of Maharashtra.



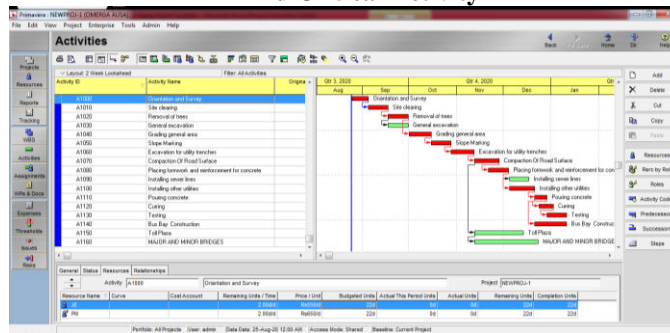
IV. RESULTS AND DISCUSSION

A. Prepare Scheduling In Primavera for Study Area 1- Omgera AUSA

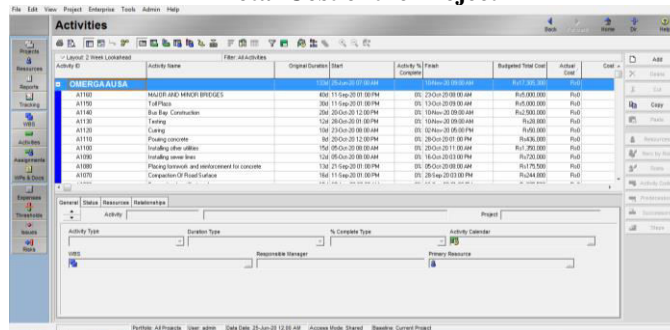
- Create Activities



- Find Critical Activity



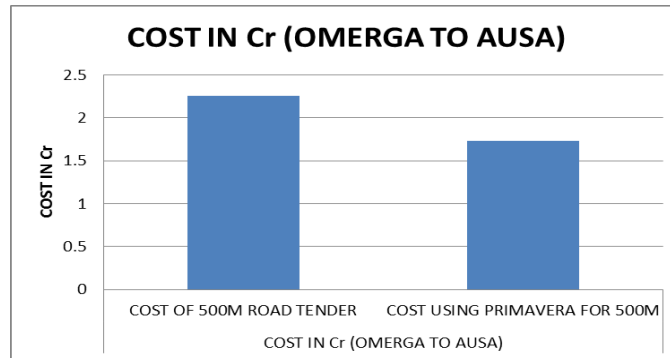
- Total Cost of the Project







COST IN Cr (OMERGA TO AUSA)	
COST OF 500M ROAD TENDER	COST USING PRIMAVERA FOR 500M
2.26	1.73



By using Primavera we can control the project duration and cost of road to focusing on the critical activities as given.

• **Compensation**

Sr. no	Activity with float	Cost without Primavera	Cost With Primavera
1	General excavation	430000	260000
2	Installing sewer lines	1045000	720000
3	Toll Plaza	6700000	5000000
4	Major And Minor Bridges	6700000	5000000
Total		14875000	10980000
compensation		3895000	

• **Type of Claims Include in Contract**

Type of Cost Claimed	Type of Claim			
	Delay Claim	Scope-of- work Claim	Acceleration Claim	Changing- site-condition Claim
Additional direct labor hours	/	/	X	/
Additional direct labor hours due to lost productivity	/	X	X	X
Increased labor rate	X	X	/	X
Additional material quantity	/	/	X	/
Additional material unit price	/	/	/	/
Additional subcontractor work	/	/	X	/
Additional subcontractor cost	/	X	X	X
Equipment rental cost	/	X	X	X
Cost for owned-equipment use	X	X	X	X

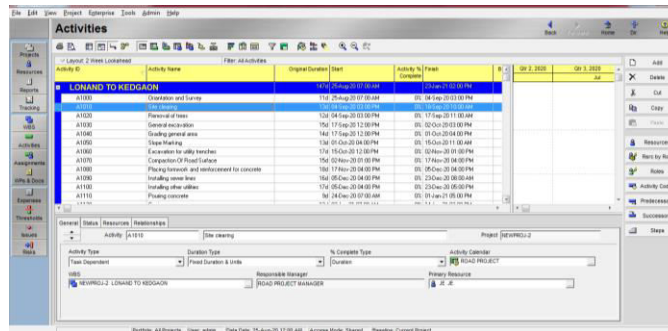


Cost for increased owned-equipment rates	/	X	X	X
Job overhead costs(variable)	/	X	X	X
Job overhead costs(fixed)	/	/	/	X
Company overhead costs (variable)	/	/	X	/
Company overhead costs (fixed)	/	X	/	X
Interest or finance costs	/	/	/	/
Profit	/	/	/	/
Loss of opportunity profit	/	/	/	/

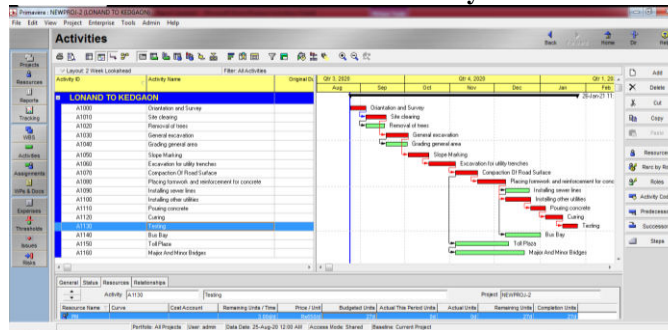
Remarks: / = included; X = Not included

**B. Prepare Scheduling In Primavera for Study Area 2- Lonand to Kedgaon**

• Create Activities



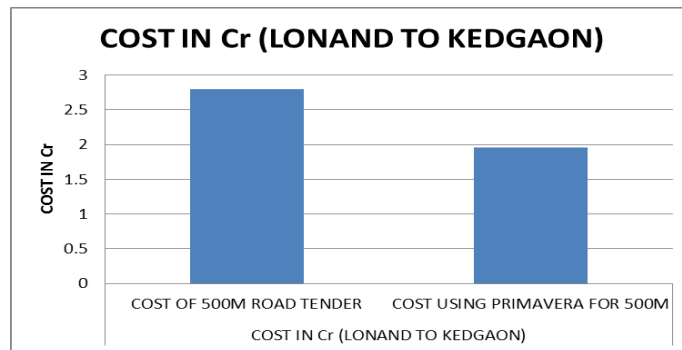
• Find Critical Activity





• Total Cost of the Project

COST IN Cr (LONAND TO KEDGAON)	
COST OF 500M ROAD TENDER	COST USING PRIMAVERA FOR 500M
2.8	1.96



By using Primavera we can control the project duration and cost of road by focusing on the critical activities as given.

• Compensation

Sr no	Activity with float	Cost without Primavera	Cost With Primavera
1	Removal of trees	790000	582000
2	Grading general area	845000	756000
3	Installing sewer lines	287000	144000
4	Bus Bay	3100000	2500000
5	Toll Plaza	2800000	2000000
6	Major And Minor Bridges	6750000	5000000
Total		14572000	10982000
compensation			3590000

• Type of Claims Include in Contract

Type of Cost Claimed	Type of Claim			
	Delay Claim	Scope-of- work Claim	Acceleration Claim	Changing- site-condition Claim
Additional direct labor hours	/	/	X	/



Additional direct labor hours due to lost productivity	/	X	X	/
Increased labor rate	/	/	/	X
Additional material quantity	/	/	X	/
Additional material unit price	/	/	/	/
Additional subcontractor work	/	/	X	/
Additional subcontractor cost	/	X	/	/
Equipment rental cost	X	X	X	X
Cost for owned-equipment use	/	/	/	/
Cost for increased owned-equipment rates	/	/	/	X
Job overhead costs(variable)	X	X	/	X
Job overhead costs(fixed)	X	/	/	X
Company overhead costs (variable)	/	/	X	/
Company overhead costs (fixed)	/	X	/	X
Interest or finance costs	/	/	/	/
Profit	/	/	/	/
Loss of opportunity profit	/	/	/	/

**Remarks:** / = included; X = Not included

### V. CONCLUSIONS

- This research work presented the impacts of construction claims on the project success and the importance of having efficient claim management within the contractor’s organizations.
- From applying the case of study in PCM and analyzing claims it appeared that applying and getting results from the software consuming less time and efforts from doing the job manually. This decreases the time, efforts and number of employees assigned for claims preparation job.
- This study added a new method for tracking project documents in order to mitigate or control construction claims and apply delay analysis using one of the web-based programs which are Primavera P6.

### RECOMMENDATIONS

- Applying the PCM system in their companies as early as possible, to gain the most advantages for all the project phases and especially when claims arising.
- Force all main stakeholders to get involved in the PCM system and link releasing their invoices by applying and respecting the system, and this will decrease the number of claims arising in the project.
- Continues training for employers is needed to reach the required level of document controlling in the project, it's also important to customize the program reports and forms to compatible with the Organizational Process Assets.
- More researches are needed in this field to compare the process and reach the easiest procedure which leads to solving claims with no efforts and before reaching the disputation level.





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