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IMPLEMENTATION OF VALUE ENGINEERING IN CONSTRUCTION PROJECT TO REDUCE TIME OF THE PROJECT

Nilesh Satish Brahmane[1], Sharadkumar Shankarrao Bachhav[2]

[1]Student, Department of Civil Engineering, Bapusaheb Shivajirao Deore College of Engineering, Dhule, Maharashtra, India
[2]Associate Professor, Department of Civil Engineering, Bapusaheb Shivajirao Deore College of Engineering, Dhule, Maharashtra, India

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Abstract - *Infrastructure development in construction industry is a key driver in socio economic development of the country. As construction industry plays a vital role in economic growth and development of the country, it is in need to have proper construction techniques which are cost effective and time effective. This Paper presents the basic fundamental of value engineering and it's different techniques that can be implemented to optimize time. As reduction of time in construction is a goal for construction industry. Value engineering play a very important role regarding quality, reliability, durability and enhancing the performance throughout the life of the project It covers the role of value engineering as a time reduction technique as well as stages of value engineering in construction.*

Key Words: Value Engineering, Time Reduction, Quality, Construction.

1. INTRODUCTION

Now a day's importance of value engineering has grown within construction industry. Value engineering plays important role regarding quality, reliability and enhancing performance of the project. During the process of construction various techniques such as "CLC brick walls", "Granite tiles", "Mivan technology" are beneficial for optimization of time, which comes under value engineering.

1.1 Value Engineering?

Value engineering is a systematic application of recognized techniques which identify the functions of the product or service, establish the worth of those functions, and provide the necessary functions to meet the required performance at the lowest overall cost. Value engineering concentrates on the effectiveness through stating functions, goals, needs, requirements and desires.

1.2 Where to find more about value engineering?

The best and most convenient way to learn the technique of Value Engineering and its application, is by becoming a member of Indian Value Engineering Society (INVEST).

INVEST is a professional society established in October, 1977 and dedicated to the advancement of Value Engineering through education. This provides a better understanding of the principles, methods and concepts of value technology. INVEST has members in virtually every state in India. It maintains a network of chapters throughout the country and provides its members with additional educational opportunities at the local level.

INVEST is affiliated to the Society of American value Engineers (SAVE).

1.3 Scope Of Value Engineering

WHAT IS REQUIRED**:** If the cost and time estimate is over budget, the project is required to go through a time reduction phase that brings the project back in line with the approved budget.

WHO TO SEE: The entire design team and project management team must be involved in balancing the cost and time so that good decisions are made for the benefit of the entire project. This meeting(s) will be organized by the Project Manager.

WHAT WILL HAPPEN: Three basic strategies are employed to reduce the cost and time on capital projects – value engineering, alternatives and scope reduction.

VALUE ENGINEERING: VE is the process of finding systems or methods of achieving the same programmatic goals using a different system that do not materially affect the desired outcome.

1.4 Benefits of value engineering

Value engineering is used:-

To determine best design alternative

To reduce cost

To identify problems and develop solutions for them

To improve quality

To increase reliability, availability and customer

To save time

To increase safety

2. PROJECT PLANNING

2.1 The Job Plan

Value engineering is often done by systematically following a multi-stage job plan. Larry Miles' original system was a six-step procedure which he called the "value analysis job plan." Others have varied the job plan to fit their constraints. Depending on the application, there may be four, five, six, or more stages. One modern version has the following eight steps:

1. Preparation
2. Information
3. Analysis
4. Creation
5. Evaluation
6. Development
7. Presentation
8. Follow-up

Four basic steps in the job plan are:

1. Information gathering - This asks what the requirements are for the object. Function analysis, an important technique in value engineering, is usually done in this initial stage. It tries to determine what functions or performance characteristics are important. It asks questions like: What does the object do? What must it do? What should it do? What could it do? What must it not do?

2. Alternative generation (creation) - In this stage value engineers ask: What are the various alternative ways of meeting requirements? What else will perform the desired function?

3. Evaluation - In this stage all the alternatives are assessed by evaluating how well they meet the required functions and how great the cost savings will be.

4. Presentation - In the final stage, the best alternative will be chosen and presented to the client for final decision.

The value methodology is a systematic process and is applied by a multi-disciplinary team to improve the value of a project through the analysis of functions. The team leader should complete Value Engineering study and should have additional Value Engineering experience as a team member of VE Project.

2.2 Application of Value Engineering Can Be Done In Following Stages

1. Information Phase

2. Creative Phase

3. Evaluation Phase

4. Development Phase

5. Presentation Phase

3. METHODOLOGY

The value methodology is a systematic process which is applied by a multidisciplinary team to improve the value of a project through the analysis of functions. We are using some alternative parameter in our case study instead of traditional one in our case study. Now-a-days we saw some (2 or 3) of these parameters were implementing in construction industry but we are going to implement these all parameters in one building, So that we would know how these going to be beneficial to construction industry.

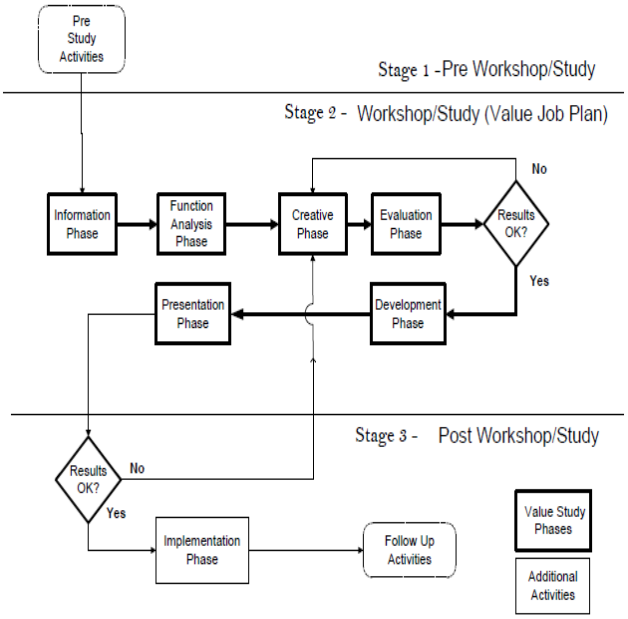


Fig 1: Flow chart for methodology/job plan

3.1 Some alternative techniques

1. CLC Bricks

2. 800 x 800 Granite Tile

3. Mivan Technology

STUDY AREA 1 - Application of this methodology is at construction site in Pune. Location of site is near Pashan. Name of the project is 'AMAR LANDMARK'.

Total Area:2.8 acres
Built-up Area:15570sq ft

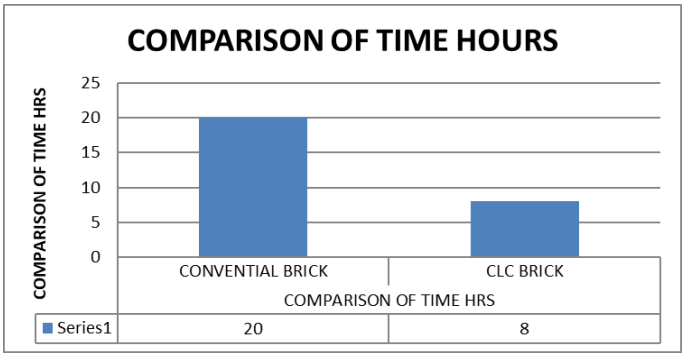
STUDY AREA 2 - Application of this methodology is at construction site located at Kiwale, Pune

Total Area:4125 m2
Built-up Area:3103 m2

4. RESULTS

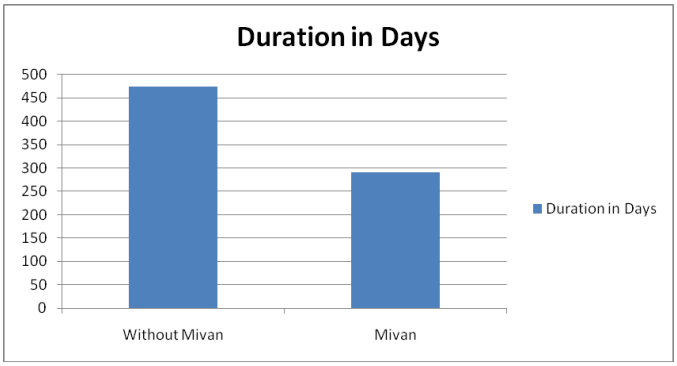
STUDY AREA 1:

CLC Brick Work takes less duration than Conventional Brick Work.



STUDY AREA 2:

Construction with mivan takes less duration than conventional technique.



5. CONCLUSION

It was discussed that using value engineering by multidisciplinary team, value and economy are improved through study of alternative design concepts, material and construction methods without compromising functional requirement and quality. In this paper the various methods of formwork and materials are used for implementation of value engineering. Hence value engineering techniques can help in reducing the duration and increase the speed of construction project.

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BIOGRAPHIES

Mr.Nilesh Satish Brahmane
Student
Department of civil Engineering
Bapusaheb Shivajirao Deore
College of Engineering Dhule,
Maharashtra ,India -424005

Mr.Sharadkumar Shankarrao Bachhav
Associate Professor
Department of Civil Engineering
Bapusaheb Shivajirao Deore
College of Engineering, Dhule,
Maharashtra, India -424005