

# Material Management Practices Of “Foundation Silver Spring” Residential Building Project Using Microsoft Project (MSP)

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**Abstract** - Construction materials constitute a major portion of the project cost hence effective material management is a key to success of a construction project. All the practices cannot be implemented for a particular project as it might not be necessary so every company manages materials through different practices depending upon the necessity. This research is to explore the construction materials management practices in Mysuru region and study the necessity of these practices and obstacles in implementing these practices in construction projects below 100 cores and finally suggest material management techniques and practices to improve material management in residential construction projects.

A questionnaire survey is used to collect the necessary data. Questionnaires were distributed to 44 respondents and responses were analyzed. A case study was conducted on a residential construction project in Mysuru region to study the shortcomings due to improper material management. This research concludes that material management practices and techniques are not fully adopted in the construction industry and there is a significant difference between necessity of these practices and their usage. This research shows that lack of support from the top management and lack knowledge about material management practices are the main obstacles in implementing these practices. Case study shows that, if necessary material management practices are not implemented, there will be wastage of materials which increases the project cost.

**Key Words:** Material Management, Material Requirement Planning, ABC Analysis, Supplier, Performance Evaluation, Correlation.

## 1. INTRODUCTION

The material management is application it consists of tools and techniques. Project management is applied in many projects to provide scheduling and maintain the resource data, generally in residential and fabrication industry. To govern the construction project i, e. scheduling and resource leveling is a difficult task. However the maximum contractors do not control and update scheduling due to lack of proper method. This project handles mainly material directions and construction industries finishing time. The commenced scenario of requirement of materials for in the

ongoing project and up to finishing of project, according to which companies were trying to maintain material now a day's management find new process of project management for effectively managing the industry. In multiple industries, new organizations techniques becoming a more important factor and work atmosphere has been changed affectively as inter displayed and general work team. In order to accomplish best in each construction activity using micro soft project software. The doubts in projects can change/modify the result, to overcome this effective planning is essential, using Microsoft project (MSP) it can be succeeded. MSP is the leading software for project using construction industry, MSP is multi network application using this efficient scheduling, controlling and supervise is easily down.

## 1.1 Microsoft Project

Now days ultimate using in Microsoft project software is one of the leading successive using project management. The MSP software is using a construction material by several activities. Maximum of the assembly are providing the MSP software in the construction enterprise and they terminate, that MSP is commendable software for prepare the planning the activity but it is precise challenging to use. While protect the status for finishing of the management. In MSP is also crucial to use duration performing hung-up investigations. It helps to enterprise indoors the project, to be interacted, executed, controlling and supervise, prepared the planning and perfected in finest adequate route MSP is a several user multi- project application software for enterprise project management.

## 2. OBJECTIVE OF THE STUDY

- To planning the schedule of “foundation silver spring” in residential building project using MSP software.
- Estimate the activity definition, categorization of activity evaluation the period for activity to finishing the project.
- To inspect the commenced material management practice and study their purpose in public building.
- To mention the obstacles material in practice of material management manner in residential buildings in Mysore areas.

- Advise material management techniques and practice to promote materials management in residential building construction projects.

### 3. SCOPE OF THE STUDY

The scope of the study is based on the construction projects whichever being carried out by the construction authority. Where there is have being a lock management process in Mysore region. The study period was carried of 2016 to2017. In aligning to arrive at the applicable formula for scheduling forecasting the case studies was carried out a multistory building in Mysore. For corresponding case study was conducted an industrialized building reality construction in Mysore.

The implementing material management method is very useful and it demand of resources, in maximum of the large scale projects. Whereas they have to contract with large number of materials performance of materials management is necessary. Here may not be equal as in case of middle scale construction project because they contract with comparatively less number and mass of materials and having less amount resources. These manners should be monitor for its necessity and feasibility and changed is necessary in advanced implementing it in middle scale project.

### 4. LITERATURE REVIEW

**Abdul (2014):** reported duration is the major element that each and every contractor has to deals with while workout the construction activities. The several approaches and tools have been introduced over the past decades to encourage material management projects. They Identified commonly used techniques and software of time management together with their performance level in major construction projects. The data was collected from the construction management that deals with overhang projects. Importance index estimate was employed to assess the level of success for time control techniques and software packages introduced in the construction project. The final result gives the most common and good time management technique and software Package are Microsoft Project and CPM respectively.

**Shrestha (2014):** reported major function of MSP software is to offer to help, and enhance the good quality of result with less effort than standard ways. A project has separate requirements and goal of the adopted software is to fulfill those requirements effectively with acceptable time and cost. With this, the issues of scheduling, tracking and physical constituent must be considered while adopting the project management software.

**Patil and Pataskar (2013)** carried out a research which gives existing common practices in the construction industry and adopted inventory control technique to investigate the impact of material management on construction projects.

Research was done in 2 phases. The prime phase was a qualitative analysis using MSP software for analyzing planned vs. actual material consumption using the S curve. In the next phase quantitative analysis was done, which aimed on ABC and EOQ analysis. This was done in industrial building which was constructed in Pune by Scop. According to this investigation major effect in variation of projects were administrative cause, contractors rework, and material delay, consultant inefficiency and client reason.

Further, not proper accomplishing of material management practices has a direct cause on the Cost of the project. Controlling and monitoring of management practice are very essential.

**Arunprakash and Nandhini (2013)** analyzed about stock management practices in large scale, medium scale and small scale companies separately. This analysis has two main parts primary and secondary, in the prime analysis questionnaire survey were carried out. Secondary data were obtained from non government companies and ABC and EOQ analysis was carried out for the analyzed quantities of materials. It was observed that 60% of the companies maintain 5% cement stock, 50% of companies maintain 5% to 10% steel stock, only 40% of companies give more prominence to stock management and 60% of companies use expert personnel for stock management. ABC analysis vastly used inventory control technique. Managing stock and proper recording will fetch profit will fetch profit for companies.

After implementing management skills it is important to analyze the performance to get the efficiency of the practice and problems in entire system.

### 5. SITE LAYOUT DETAILS

**Company name:** Foundation infrastructure Pvt ltd

**Name of the project:** Foundation Silver Spring

**Floors:** 8 floors

**Place:** Hootagalli, Hunsur to Mysore main road.

**Cost:** 50crores

**Area:** 2acre

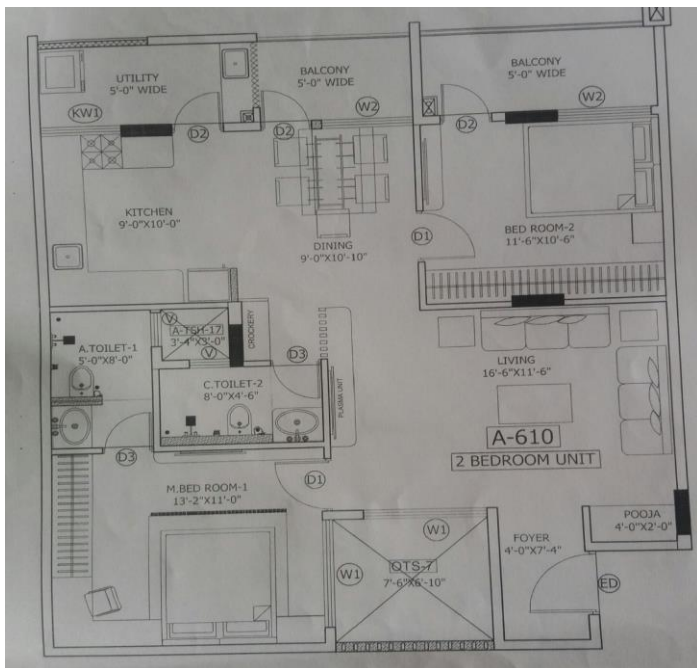


Fig -1: Layout of "FOUNDATION SILVER SPRING" residential building

## 6. METHODOLOGY

This indicates the economic project management practices appear in the actual study is discussed and it consist the effective application of the catalogue, resource and price with the material management, the executive methodology are included following procedure.

### 6.1 Scheduling Using MSP Software

To implement of scheduling for "foundation silver spring block" in residential building project using MSP software

- Studying of Different Components of MSP Software
- Schedule Development
- Schedule Estimate
- Resource Planning

### 5.2 Material Management

The construction material management is a mixed approach to affectively conduct all the materials handle in construction projects. In the process of materials constitute a main portion of the construction cost i.e. 50 to 60% [1], it is all important to handle these materials effectively finishing right practices. Irregular management of the particular construction materials leads to depend losses, as it direction to delay in completed of projects. The major goal of material

management act to be providing right volume and quality/parameter of materials to locality at the proper time.

### 5.3 Research Design

The research design main goal of this study, present analyzes material authority practices and study their needful and find the obstacles in make possible these in that activity. Questionnaire and case study have adopted in this research.

- Data Collection and Questionnaire Design
- ABC Analysis
- First in First Out

### 5.4 Categorizing

Since of more number of materials are stocked in construction layout, having a chance of confusion, difficulty in searching of the materials. To come out from complication each material are arranged and coded. The categorizing method is codifying as follows.

- Expressing Coding Structure
- Non Expressing Coding Structure

### 5.5 Alphanumeric Coding

The alphanumeric tabulate system, alphabets (A to Z) and the numbers system are used, to coding the material representation graphically are used in a specific position to decide the main groups and following numbers of characters, this coding method is used when number of primary group is lesser.

### 5.6 Economic Ordering Quantity

All the time when a pattern is placed, ordering price and record carrying amount is incurred. If order is placed for an irregular quantity the price gets expansive. From here order in size, whichever is economical, have to be calculated, have is known as economical ordering quantity, EOQ equation as shows below.

Record Carrying Amount Includes

- capital interest
- Insurance and tax.
- Storage amount such as labor charge, accommodate facilities for storage.
- Faculty salaries.

## 6. ANALYSIS

Analysis associates for the formation of scheduling of project by applying the Microsoft software and it serves to develop sensible and effective schedule for construction. The effectual scheduling will connect the activity definition in which period of activity has to be evaluated and resource to be largely estimated using component schedule.

- Preparation Of Schedule
- Defining Of Activity
- Material Administration
- 5 Case Study Methodology
- Material Requirement Planning
- Material Requirement Preparation And Selective Control
- Organize Of Construction Materials
- Economic Ordering Capacity
- Construction Material Supplier Conduct Estimation

## 7. RESULT AND DISCUSSION

Result and final output which is implemented by the whole process, which characterized is the construction project. The full study of the material construction project is very helpful to finishing project profitably without any abstractions of the project. Throughout the time implemented the records by using MSP software. It has applied each and every hopeful condition to tasks approximating task constrains and logical relationship to maintain the project achieved. In this project result successfully after improving of catalogue management and investigation of material administration for "foundation silver spring residential building" is as below.

### 7.1 Performance in Month of October 2016

As per catalog or record in this month is floor filing is done in 6th floor to 7th floor. According to design and drawing. The tile flooring is hall kitchen rooms bathrooms toilets etc. In this process are involved in bulwarking floor clearance and 7th floor rooms and windows erection internal pointing on 5th floor is finish.

### 7.2 Performance in Month of November 2016

As per schedule, in this month of November the club house building marking and excavation work is done and after C.C bed and footing also done. The differential activities are included in the work are layout declaration removing blame

green grass marking as per design drawing footing CC bed and pit shallow surface dressing or water bar removing. PCC reinforcement work bar bending shuttering and centering RMC concrete work and finally de-shuttering formwork have completed as shows the Fig -2 and 3



Fig -2: Activities of "FOUNDATION SILVER SPRING" residential building Project

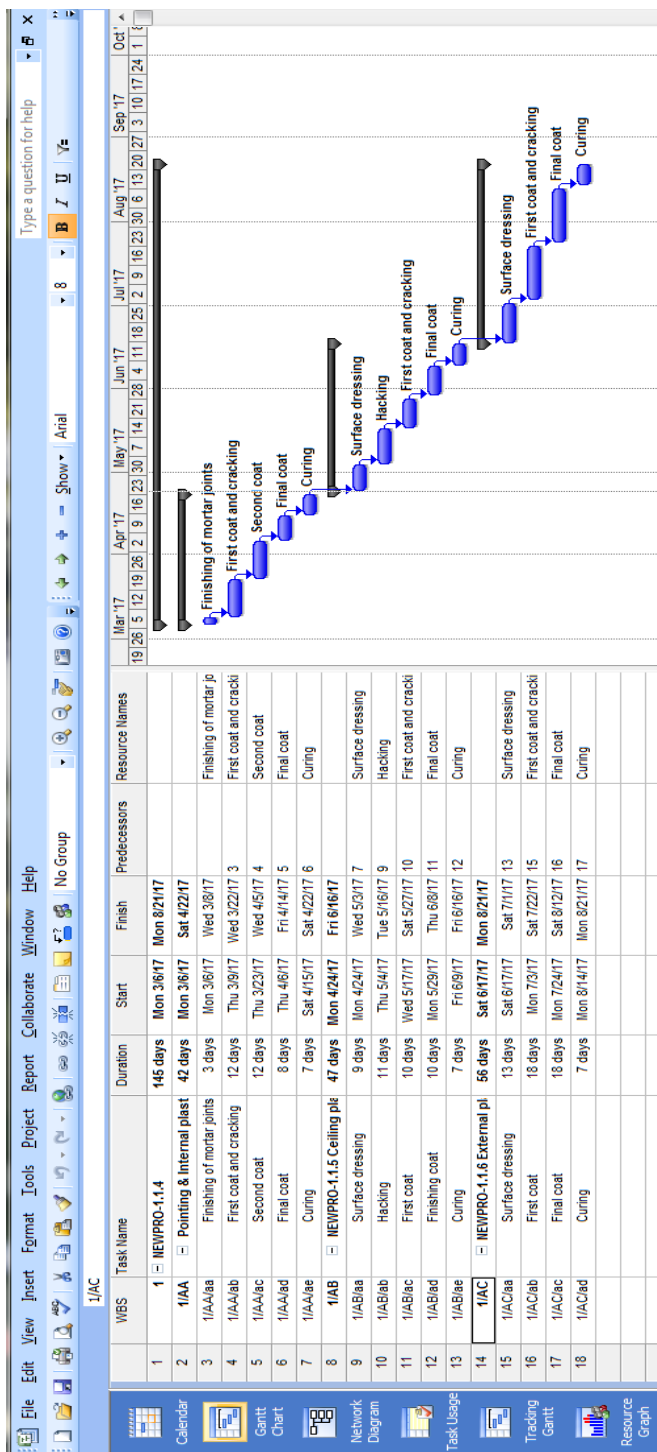


Fig-3: Activities of "FOUNDATION SILVER SPRING" residential building Project

### 7.3 Performance in Month of December 2017

As per record in this month December the substructure ground floor plinth beam as per design and drawing, footing and column marking and stair ease marking and stair ease marking and concreting work is finish. As for deferent working activities are including in the works are bar bending

work shuttering concrete pouring de-shuttering and after removing around the plinth beam trench and column around the gap between backfilling for footing and finally curing the plinth beam column and stair case as per design.

### 7.3 Performance in Month of January 2017

As per record in this month the brick masonry work OM 7th floor block B as per design a d drawing. First to marking the wall construction and carried out masonry wall construction and after one day curing process is started as per design is 14 days curing. The different kind of activity involved is making mortar preparation horizontal and vertical plumb checking are done.

### 7.4 Performance in Month of February 2017

As for the record, in this month of February is 6th floor electrical and water supply and sanitary work are finishing. The various activities are included in this work is PVS pipe are inserting the slab be force concreting, grooving the walls and inserting the PVS pipes sockless boxes, junction box boxing wirings as per design and drawing kitchen pipe hues wash basis boxing all plumbing pipes are used in CPVS facing the small urinal have being finished.

### 7.5 Performance in Month of March 2017

According to scheduling in this month is carried out plastering in 7th floor B block and internal and external plastering is 1th floor to 7th floor in both the side. In this activity is included are surface preparation hacking wall brushing remove the undulation holes preparing the 1:6 mortar move in internal plastering and 1:3 scaffolding in first floor to 7th floor in external wall plastering is done.

### 7.6 Performance in Month of April 2017

As per record in this month the 8th floor making a column stair case beam work is being done. The various activities are including are making bar banding shuttering and centering process pouring the RCC concrete de-shuttering curing as per design 28 days have being done and same month process of pointing in first floor to 4th floor is done. In this work are including is preparing the surface removing the holes undulation etc and the uniform thickness of points are pointed in horizontal in wall surface is done in 2 to 3 coat.

### 7.7 Construction Material Management

This discussion deals about knowledge gained about material management practices which are practiced during a period of 7 months in a company. Which are manner in the construction company have being observed, the drawbacks and point at issue or problems are observed in this practices were discussed. The data was collected for engineer

observations or owner observation interview of the workers, The contraction engineers inspection are done day by day or weeks by week is done easily.

## 7.8 Preparation of Material Requirements

The construction authority has been faced in following problems in arrears irregular material preparation requirements are.

- In this month of December 350 bags of cement was ordered, whichever not essential that period of cement and the next needed of cement was in February, from have 350 of cement bags was decade due to the hardening. The total loss of cement bags is estimated.
- The requirement of fine aggregate obtain only 2358cft in month of January and February but 8554cft is purchase till February, according it clearly shows in order that there is a overflow of fine aggregate in the construction layout.
- In the month of January there have being a insufficiency of 20mm steel bars, so large 16mm steel bars are used instead of 20mm steel bars.

In the case study distinctly showing that material planning (MRP flow chart) in -important, hence it is MRP is maintain to the management can have the following benefit.

- To minimization in list inventory.
- To minimization of unnecessary waste of construction material.
- To help of deal in team to be know the exact essentials of each and every materials which is significant for different material purchasing decisions

## 7.9 Select Control

The construction authority handle to following questions due to improper supervise of materials.

- The wastage of M25 and M30 grade of concrete using the column concreting is inspected. The M25 and M30 concrete are class a material and diffusion of this materials example to construction depletion to the authority or company.
- Comparatively using in the cement bags which company procured prior. The brand-new bags have used. This over to waste of cement bags if it consummates its shelf life.
- More wastage in construction materials of concrete and steel were noticed, whatever is not measurable. Since

that concrete, bricks, stone and steel are class. A material, these wastages beginning considerable losing.

In this case study showing in order that selective control approach are essential. Accordingly ABC analysis and first and first at an end techniques are suggested. In this techniques are fixing in the management, it is possible to overcome each and every the question or problems are with regarding to supervise of materials in the construction layout.

## 7.10 Material Coding

In this "Foundation silver spring residential building" project having few materials so no confused and main A class materials such as steel, RMC bricks, which is no more stored and each reinforcement steel bars can be quickly, identified with ease. Form here there is no need of codex of materials for the construction layout.

## 7.11 Economic Ordering Quantity (EOQ)

Investigation of EOQ cannot be improvement being each and every materials for illustration RMC, as a result of the essential of ready mix concrete varies with group of work, whereas slab concrete we essential we need approximately 170cum per day. While column concrete we required to approximately 20cum per day (The total quantities are among respect to layout below this case study), total quantity of concrete cannot organized each period. Throughout the time ordering materials other than RMC economic quantity shall be ordered in material of construction.

## 7.12 Construction Materials Supplier Fulfillment Assessment

In material supplier's good calculation have been developed taking each and every necessary specification into account as showing in annexure6. The each and every construction material suppliers shall be estimate using regularly (once in a month) and good dealer should be liable the first importance. The material buyer should be aware of the calculation record so that inspirit him to satisfy higher quantity of material.

## 8. CONCLUSIONS

The confusion and questions are frequent in complicated work. The particular in the construction residential project, there are so many problems arise in the finishing the project. The executing these problems lead to set optimum result in the construction project with the help of MSP software. Based on the results following conclusions are drawn.

- The Scheduling using MSP-software is identified in the list of tasks, the relationship between the tasks and calculate roughly the resource are done and self-controlled easily.
- By using MSP software for catalog gives the conclusion about risks associated while execution of work.
- The material documentation of movement of materials within the layout, in the beginning inspection of procured materials and testing of materials by 3rd party are the most appropriate material authority practice in the construction industry.
- The balanced necessity of main techniques like material qualification and requirement planning (85%) and the material of selective control (82%) is high, assumption of the above techniques decreases as 62% and 45.5% respectively.
- The primary obstacles in implementing material authority practices and techniques are lack of support from main authority and lack of knowledge around material management.
- In this case study it can be concluded that, the primary material authority practice and techniques are not adopted, the project authority will have to bear the losses.
- In the small project the materials coding system is not essential.
- The material management is complicated in understanding the application of material authority practice is the limits of knowledge around the material management process and ignorance of these practice

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