

An Investigation of Maintenance Management of Construction Equipment for Residential Building

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Abstract - The maintenance of heavy construction equipment is a vital function for many construction contractors. A regular, structured preventive maintenance program can be a worthwhile investment for several reasons: Reduced field breakdowns; more efficient equipment and operator utilization; elimination of unnecessary parts damage and reductions in inventory requirements; preservation of warranties; more productive mechanics; and longer-lasting repairs.

This article discusses an integrated preventive maintenance system developed for a large, multi-site quarrying operation. The research adopted a two-phase exploratory sequential mixed-methods design. During Phase I, in-depth interviews were conducted with 19 experts who have been involved in the delivery of multistory building projects. The qualitative data were analyzed, and construction equipment management practices that have the potential to improve productivity were identified. In Phase II, data were collected from principal contractors on 39 projects using questionnaires.

Key Words: Reduce, Breakdown, Warranties, Multi-story.

1. INTRODUCTION

The greatest influence to construction cost occurs at the front end of the project. Assumptions made by design engineers during the conceptual and design phases of a project dictate the choice of equipment that will be used for the particular project, just as it will dictate the choice of materials used in construction. Thus, sometimes the design may, in fact, restrict the best and most cost-effective solutions from being utilized. For example, many sewer projects are designed on the basis of traditional specifications, materials, and equipment, when more advanced materials, techniques, and equipment may, in fact, be safer, more environmentally and socially acceptable, and more cost-effective. This is especially true of sewer projects in urban areas, where modern construction techniques, such as micro tunneling and pipe bursting, utilizing new pipe materials such as glass fiber-reinforced polymers (GRP) and high-density polyethylene (HDPE), are replacing the traditional dig and replace methods of sewer construction. It is important for design engineers and construction engineers to be knowledgeable about construction equipment. Construction equipment and integral part of the construction

process. The cost of construction is a function of the design of the construction operation.

1.1 GAP IDENTIFICATION

It enables the engineer to handle huge project with less manpower. However maintenance of equipment takes an important role in achieving the target. This purpose of this chapter was to present a literature review that will set the stage for a fuller understanding of the chapters that lie ahead. First, literature on economic replacement models was reviewed to provide a broad context for the need for cumulative repair cost equations. Cost minimization, profit maximization, and repair limit theories were discussed. Following the discussion of economic theories in general, important contributions and enhancements that have been published over the years were discussed. This provides the background needed to understand the Cumulative Cost Model which will be discussed after discussing economic theories, forecasting methodologies were described. First the general tenets and methods of forecasting were put forth, then some methods intended specifically for machinery were discussed. This provides the background needed to understand the development of the test methodology, It will also give the background to understand comparisons made to other forecasting methods which will be accomplished.

1.2 PROBLEM STATEMENT

Construction Equipment Costs Associated with Lack of Availability and Downtime to maintain of construction equipment so that is study minimize maintains. Study performance of planned equipment on a building projects, if they are sufficient in planned production of a project. To study effects of Equipment hours used related to planned production studying delays, Idle due to break down ,failure of Equipment and Quantum of delay on account of equipment breakdown due to improper maintenance. According to Traditional cost accounting method the downtime cost of equipment's was so high as they were using the traditional costing method.

2. METHODOLOGY

Different tasks related to equipment are required to be studied in details. Therefore analysis the tasks based on B.O.Q. in same following areas requires due consideration.

- Nature of task and Specification.
- Daily or hourly forecast of planned production.
- Quantity of work and time allowed for completion.
- Distribution of work and time allowed for completion.
- Distribution of work at site.
- Interference expected and interdependence with other operation.

2.1 OBJECTIVE

- 1.) To study the excavators Equipment used on construction site.
- 2.) To study various types of maintenance of construction equipment
- 3.) To minimize downtime due to breakdown of machinery.
- 4.) To find loss incurred in production due different reason of failure of equipment in project.
- 5.) To maximize availability of machinery and facilities needed for smooth production.
- 6.) To minimize downtime due to breakdown of machinery.



Fig -1: Excavator(JCB)

In today's competitive manufacturing market, production efficiency and effectiveness are among top business priorities. Thus, production equipment becoming the central focus of interest as it is the backbone of the manufacturing process and key performance indicator of productivity. The requirements of outstanding performance force companies to substantially consider reducing their machines downtime frequency and its consequential costs.

3. CONCLUSIONS

From data collected it is seen that Equipment Utilization on site has to be Studied in details. There can be various reasons which ultimately affect the overall productivity in construction activity on the project. Mainly Due breakdown more loss in time and money is occurred.

In above table we seen the Preventive Maintenance Required for Maximum Equipment's, Because of **only Reactive Maintenance Used** on site contractor loss in production, loss in time, & loss in rupees occur. Other type of maintenance also required for some equipment, & some equipment's are old so replacing new equipment wherever required. Proactive and Predictive Maintenance are also helpful for minimizing failure of equipment, Generally **Preventive Maintenance** required for each Equipment, Preventive maintenance is best type of maintenance because the failure & accidents are minimize & also cost of maintenance will be reduce

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