



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكرو فيلم

بسم الله الرحمن الرحيم



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شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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Improving the Crew Productivity for Construction of Pre-stressed Concrete Bridges

A THESIS

Submitted in Partial Fulfillment for the Requirements of the Degree of
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ABSTRACT

In our present time, precast pre-stressed concrete is playing an important role and being constructed worldwide for a variety of functions in environmental conditions, in the upcoming buildings, malls, convention centers, hospitals, bridges, underground works, railway stations, industrial buildings, and skyscrapers, etc.

Precast pre-stressed beams system in bridge projects differ from conventional structural engineering projects mainly in the special problems that have to be considered during construction, transportation, erection, installation, and operation.

The crew productivity improvements in bridges are attributed to the technological advances in equipment and construction methods over the last two decades. Many factors impact the crew productivity has a system in bridges.

For every projects, productivity, time, cost, and quality have been the main concern. The purpose of the study discussed in this thesis is improving the crew productivity and projects' performance for the construction of precast pre-stressed beams in bridges.

The research was conducted by making personal interviews, copy of literature review, researchers' knowledge, telephone calls and correspondence via an email. After we collecting 95 factors in a questionnaire we designing a model on Excel to calculate the important index , frequency index , Servite index and the variance for measuring and evaluating crew factors productivity for construction process of precast pre-stressed in bridges based also on several main factors that affect the precast, After that we designing s model on MATLAB, measuring and evaluating the crew productivity of construction of pre-stressed in bridges for based on the several factors Collecting and the calculation on the Excel model process to conclude in model with the recommendation for improving the crew productivity in bridge .

The construction industry can use the findings in this thesis as a basis for improving the crew productivity and projects' performance for the construction of pre-stressed in bridges projects

Keywords

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ABBREVIATIONS

HC	Heavy Construction
HRA	Highway, Railroad, and Airport
PI	Productivity index
TFP	total factor productivity
MTS	A Motion and Time Study
HMMS	Highway Maintenance Management System
PPE	Personal Protective Equipment
RII	Relative Importance Index
CAD	Computer-Aided Design
CNC	Computer Numerically Controlled
CAM	Computer Aided Manufacturing
HSSE	Health, Safety, Security, and Environmental
QA	Quality Assurance
QC	Quality control
ASTM	American Society of Testing and Materials
AWS	American Welding Society
SJI	Steel Joist Institute
AISC	American Institute of Steel Construction
QAI	Quality Assurance Inspector
QCI	Quality Control Inspector
NECA	National Electrical Contractors Association
EVM	Earned value management
EVPM	Earned value project/performance management
BCWS	budgeted cost of work scheduled
BAC	budget at completion
PV	Planned value

EV	Earned value
BCWP	budgeted cost of work performed
ACWP	the actual cost of work performed
AC	Actual cost
SV	Schedule variance
CV	Cost variance
CPI	Cost performance index
EAC	Estimate at completion
ETC	Estimate to complete
IMP	Importance Index
%	Percentage
USA	United States of America
e.g.	Example
i.e.	That is
BCSA	British Constructional Steelwork Association
SCSC	Steel Construction Sustainability Charter
CSCEC	China State Construction Engineering Corporation
RQSC	Register of Qualified Steelwork Contractors for Bridgeworks
AISC	American Institute of Steel Construction

CHAPTER (1)

(INTRODUCTION)

1.1 OVERVIEW

Nowadays, bridges are assuming a critical role in the world significantly in Egypt. Precast pre-stressed beams systems are being utilized in the more significant part of the development bridges projects. The adaptability, speed of erection and the financial advantages that it accommodates the originators and the contractual workers. Improving construction crew productivity is a complex subject. Numerous elements influence crew productivity in precast pre-stressed in bridges. Pre-stressed beams are a generally unique field of development of bridges projects. It about the structure and establishment of various undertaking components as indicated by different purposes. Precast pre-stressed in bridges projects can differ from the conventional structural project fundamentally in the uncommon issues which must be considered amid development stages, transportation, establishment, and activity.

The deliberate estimations of efficiency in bridges can compare either to those used to compile the estimate or to some production standards. Although no formal standards exist in many countries for the case of precast, pre-stressed bridges project, would then be able to be contrasted either with those used to assemble the gauge or to some generation measures. Companies and from many sites can fill in as generation principles. A few investigations identified with efficiency are performed for the development industry in the past. Several of them were identified with estimating profitability, work efficiency, improving construction productivity, factors influencing productivity in construction labor and loss of productivity.

At present, there are no all-around acknowledged norms to factors influencing the team profitability in development. This lack of methods for effects highlights the need to enhance factors influencing the group efficiency in development in the construction of pre-cast / pre-stressed beams in bridge projects.

The highly challenging issue facing the development industry in the last decade is the way by which to improve profitability.

Productivity on a building site can be seen from a few points of view:

- Projects are done on schedule time.
- Reduction in project costs.