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FOREMAN DELAY SURVEY

A CONSTRUCTION INDUSTRY FOREMAN DELAY REPORT

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ABSTRACT

Productivity has decreased every year for the past decade, in part because of increasing design complexity, worker participation, facilities to workers, lack of trust, gradual decrease in pays and other incentives, more rigorous federal and state regulations, socio-economic changes affecting the work force and lack of proper attention to eliminate delay reasons. Our findings indicate that how Foremen productivity is affected and recommendations for improvement of productivity.

It is often difficult to accentuate the positive side of worker motivation, but it is essential to eliminate the negatives, which may be more potent psychologically. Surveys at major construction projects have yielded a significant list of demotivators. The most common are: lack of material, project confusion, communication breakdowns, rework, unavailability of tools and equipment, disrespectful treatment, lack of recognition, little participation in decision making, lack of cooperation, incomplete engineering, restrictive or burdensome procedures and regulations, poorly trained foremen, and restrictive work practices in labor agreements.

Our findings indicate that foremen are often unable to motivate the average craftsman today. But they also suggest that craftsmen will motivate themselves given the right conditions and opportunity. So the construction manager's role in improving the productivity of the work force on construction projects must be to make sure that supervisors at all levels are sufficiently skilled in handling subordinates that they can satisfy the craftsman's need for a sense of achievement, his wish to be wanted, and his desire to account for something. The chain of command in today's labor agreements, from superintendent to general foreman to foreman to pusher to craftsman, has grown too long and, on large projects, often involves too many people to let instructions get through accurately.

Effective first-level supervision by foremen is generally considered to be prerequisite to efficient performance by any work group. They control, influence or have the greatest impact on most of the ingredients of productivity. When the potential for productivity improvement is examined, the need for more highly motivated, cost conscious and responsible foremen crops up repeatedly.

In some cases it has been found that waiting or other idle time consumes 30% of the work day so in this study we will elaborate reasons for delay and their remedies based on the survey from the foreman, discussion with engineers and contractors and site investigations.

INTRODUCTION

Quantity as well as quality of production has become a major area of concern for many manufacturers. The construction industry is among those faced with reports of low productivity by its work force. Since construction labor amounts to an average of 25% of the direct capital costs of a project, ways and means must be found by the industry to arrest declining productivity.

Many items contribute to falling productivity, i.e., ineffective management and supervision that leaves material unavailable when it is needed, incompetence in staff personnel, delays in transmitting engineering information, communication breakdowns, rework, the unavailability of tools and equipment, lack of recognition and little participation in decision making by foremen and their crews. On the union side, restrictive work practices in collective-bargaining agreements hamper contractors' efforts to employ and deploy their labor force efficiently. Also in the union sector, productivity problems are worsened by the fact that foremen and general foremen are members of the same bargaining unit as the employees they supervise. This is frequently cited as a major reason why the management role of foremen is limited and often ineffective, especially on large construction projects built by transient contractors - that is, contractors who are not locally based. In these situations, the motivation and actions of foremen often conflict with management's efforts to improve productivity.

One area for concern in this multi-faceted problem is worker motivation. Construction workers seem to take less pride in their work than was true in past years. The work ethic seems to have weakened considerably, possibly because of social welfare programs, unemployment benefits or, at least in some years, economic prosperity.

The nature of construction work also may have changed in recent years to reduce worker morale.

But our study is mostly limited to the delay reasons Foreman is facing during construction.

PREVIOUS STUDIES

Many Studies have been conducted to find out the causes of Foreman delays wheather in the form of material, work type or in the form of foreman management in handling labor and decisions making. Most of the studies include Foeman delay as a part of construction projects delay reasons. Like

“Construction Productivity and Job Satisfaction” in Journal of Construction Division, ASCE, September 1974

“Motivation of Construction Workers” in Journal of Construction Division, ASCE, September 1976

“Causes of Delay in Large Building Construction projects” By Al Hazmi in June 1987 under the Supervision of Dr Sadi A. Assaf KFUPM.

“Delay Factors and Cost With Case Study” By Al Utaibi,Abdullah in April 1989

“US Construction Labor Productivity Trends” in 2000 by Almon Et Al

Most of them surveyed Engineers, Contractors, Supervisors and Foremen and found more or less similar reasons of delay. Extensive research on the causes of delay will go long way to provide necessary information desperately needed for an economic and efficient employment of labor; this is what this study is carried out.

OBJECTIVES AND LIMITATIONS

The main objectives of this research are to:

1. Undertake analysis for causes of delays on site

2. Identify the most severe factors ranked by foreman causing delays in construction industry

3. Make recommendations to alleviate these severe factors

4. Discussion with Contractors and experienced engineers to identify reasons of foremen delay.

The research will be limited to :

1. Delays in construction phase only
2. Questionnaire is prepared for the Foreman only excluding participation of Foremen decisions making, incompetence in staff personnel and workers motivation which is asked from the contractors and engineers directly.
3. The Questionnaire is filled on one day and may not contain the calamities other then that day.

RESEARCH METHODOLOGY

Questionnaire Design.

This investigation was undertaken in three stages. The first stage is collection of data. This stage included literature search, field visits and interviews. The second stage focuses on data analysis and identification of most relevant factors influencing time delays on site during construction. This led to the formation of questionnaire which had been distributed personally. This questionnaire was used for the purpose of collection of data and information from experienced foremen in the field. Numerous fields visits were made to different construction sites, contractor main offices and engineers. The discussions were collected and studied in order to develop final questionnaire format. This investigation was necessary to assure that structured questionnaire covers the full dimensions of the subject. At the same time, it allows researchers to know how to deal with various interviewing situations and to improve questioning process. The questionnaire was fully designed in light of previous investigations and in the framework developed. The researcher typically depended upon printed copies to carry out the two ways communication task. This in turn made it possible to get survey.

The questionnaire consists of two parts. The first part is introduction of foremen and crew and the second part concerns the reasons of delays during construction.

For each question, the foreman has to specify the number of hours lost and number of men. Thus calculating total hours lost.

The causes of delays considered in questionnaire are related to following areas:

1- Availability of material.
2- Manpower
3- Equipment
4- Change orders
5- Move to work area
6- Coordination
7- Interference with other crews

TABLE

Foreman Delay Survey

		CRAFT:				
NAME OF FOREMAN:		GENERAL FOREMAN:				
(DATE) DAILY EVALUATION:		NUMBER IN CREW:				
PROBLEMS CAUSING DELAY						
		MANHOURS LOST				
		Number of Hours	**X**	**Number of Men**	**=**	**Manhours**
1.a	Waiting for materials (warehouse)					
1.b	Waiting for materials (not received or not ordered)					
2.	Waiting for tools or tools not available					

3.	Waiting for equipment
4.	Equipment breakdowns
5.a	Changes/redoing work (design errors)
5.b	Changes/redoing work (prefabrication errors)
5.c	Changes/redoing work (field errors)
6.	Move to other work area
7.	Waiting for information
8.	Interference with other crews
9.	Overcrowded working areas
10.	Co. coordination/authorizations
11.	Other

COMMENTS:

Discussions with engineers and contractors.

The third part comprises of discussions and meetings with experienced engineers and contractors regarding reasons of foreman delay.

The reasons the specified and suggestions by them about eliminations of delay in the productivity of foreman and his crew.

RESULTS, DATA ANALYSIS AND FINDINGS:

FOREMAN DELAY SURVEY COMPARISON

PROBLEMS CAUSING DELAY

	HOURS LOST / DAY		
	FOREMAN 1 (22 workers)	**FOREMAN 2** (18 workers)	**TOTAL** (HRS Lost)
Waiting for materials (warehouse)	54	8	62
Waiting for materials (not received or not ordered)			
Waiting for tools or tools not available			
Waiting for equipment	9	4	13
Equipment breakdowns		5	5
Changes/redoing work (design errors)			
Changes/redoing work (prefabrication errors)	4		4
Changes/redoing work (field errors)	6	2	8
Move to other work area			
Waiting for information	11		11
Interference with other crews			
Overcrowded working areas			
Co. coordination/authorizations	40		40

FINDINGS.

The major factors effecting delays during construction are presented hereby:

1- **Availability of material**: Material changes in types and specifications when construction is considered to be the major source of delay. This would require the location materials of equal quality and quantity in local market or to import them from outside. This might require long time and consequently causing delay. The contractors feel that the delay in special manufactured construction material cause considerable delays. On the other hand, storage and supply of this material to the site is also important to be considered. The foremen and the contractors rank this factor higher because from this problem they are usually suffered directly.

2- **Changes / redoing work**: Because the foreman is not related to drawings design and approval but the design errors, prefabrication errors and errors committed on fields take ample time and are responsible for long delays.

3- **Equipment and Tools**: In general most of the construction equipments and tools are available and there is no shortage of such equipment, but the productivity of equipment is also dependant upon operators. Sometimes the equipment or tools get out of order and there is no alternate option available for the foreman thus affecting the schedule of that day.

4- **Climate:** Weather affects on construction activities seems to be not as expected where the severity indices given to this factors is low. Consequently, there is improvement in familiarity of construction teams with hot weather in the kingdom.

5- **Social And Cultural Impacts:** Another unexpected result is the affect of social and cultural factors on the work of laborers where the society in Saudi Arabia somehow might affect the productivity of labor. Laborers might no socialize with Saudis and they are somehow isolated form the society which reduces their moral. However, the affect of this factor is low in causing delays.

6- **Site Conditions:** Sometimes the problem of water table and foundation conditions encountered in the field affect the construction process which might result in time and cost overrun. The foreman feels that high water table condition is a normal problem and they are familiar how to deal with it. This problem might be raised due to insufficient data of subsoil condition.

The other factors affecting performance as found in discussion with contractors and engineers are:

1. **Communication:** The role of communication in construction industry especially critical if you can't communicate with the worker you can't do much to change his work attitude. The six factor found affecting the matters of communication are: 1) good working relationship among the foremen and workers and at the same time contractor's supervisor and foreman, 2) an adequate orientation program, 3) good safety program, 4) recognition, 5) goals define, 6) suggestions solicitation.

   The demotivating factors are: 1) disrespectful treatment 2) communication break down 3) lack of recognition.

2. **Training**: The Foreman training in job planning, scheduling and motivation should be considered. The attitudes of workers are greatly influenced by effectiveness of their foremen. The firm greatest asset is its people. Training is one key to superior performance. Training can increase productivity, moral, reduce load on foreman, improve safety, increase organization stability and flexibility.

3. **Extended work hours:** Improving the flow of engineering in the project can have more positive affect on worker motivation. Where overtime is required the most productive plan is ten hours days, if they are limited to no more than eight days in row. Many companies have found ten hours day as very effective and successful incentives which in turn increases productivity and reduces absenteeism.

4. **Absenteeism and Turn Over:** The absenteeism and turn over is relatively minor concern to work men but they can have major impact on total project productivity. High rates of absenteeism are a concern, however, to individuals who have to carry extra work loads to compensate for missing crew members.

5. **Recognition:** Good work should be recognized and receive suitable publicity, or other public show of appreciation.

CONCLUSIONS

Based on the above information, the following conclusions see justified.

The delivery system of transporting material, distribution and storage of materials needs further improvement to help in meeting the daily schedule. The availability of material may also be affected by delayed supply of manufacturers .

The productivity of equipment is based both on skill of operator and maintenance of equipment which needs proper maintenance and training of operator.

Most of the problems faced due to climatic and sub soil conditions are not considered major problems.

Foreman is the person who reflects the actual problems in field so he should be involved in decisions regarding site.

General motivational techniques such as goal setting, incentives, work facilitation, positive reinforcement, recognition and worker participation have to be used to increase productivity.

Foreman and workers participation in plans for the detailed execution of construction projects are exceedingly important for optimum performance. Some worker suggestions may fail to recognize the potential overall impact of the suggestions on the entire project, but all ideas presented to management should be given thoughtful consideration.

RECOMMENDATIONS

It is fully recognized that foreman has primary responsibility on site work activities of his workers, but the contractor has also to support the foreman for motivation and production. The key to motivating construction foremen appears to be organizing the project and its resources to let individuals be productive. More than anything else, this promotes job satisfaction and provides an incentive for individuals to increase their productivity.

The following recommendations establish the basic role of foremen in order to obtain effectiveness in construction program.

1. Appreciate proper planning in construction activities, storage and supply of materials and equipment to avoid any delay during construction.
2. Avoid redoing works, it reduces the morale of foremen and workers thus causing delays.
3. Support good communication and co ordination between Client, Consultant and Contractor to avoid delay on site during construction.
4. Enthusiastically support a foremen and labor motivation program. Provide site management supportive of motivation concept principles.
5. Assist eliminating demotivating items such as changes during construction, late deliveries on site, improper co ordination.
6. Establish clear, open and open communication systems to project.
7. Provide opportunities for recognition for effective work practices.
8. Insist on and/or providing good working conditions.
9. Insist on and support an effective safety program
10. Consider Foremen in program development and implementation.
11. Work should be made more interesting.

12. Workers should be educated about the need for productivity and the importance of profit if a company is to offer continuing or repeated employment.
13. Pay should be increased as a worker's skills improve.
14. There should be no artificial barriers to communication between workers, foremen and management.
15. Management should provide company sponsored recreation to boost up their morale.

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GROUP # 5

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