

## A QUESTIONNAIRE SURVEY ON CONSTRUCTION PROJECT MANAGEMENT OF WATER TREATMENT PLANT

B.Y. Nawgaje <sup>\*1</sup>

T. D. Kadam <sup>2</sup>

<sup>\*1</sup> Bhavesh Y. Nawgaje (P.G. Student, Construction Engineering & Management, Department of Civil Engineering, PRMCEAM, Badnera, Maharashtra, India).

<sup>2</sup> Tejaswini D. Kadam (Professor, Construction Engineering & Management, Department of Civil Engineering, PRMCEAM, Badnera, Maharashtra, India).

### ABSTRACT

Urban population growth, particularly in developing countries, places immense pressure on water and land resources; it also results in the huge water usage most of it not potable at all. So, water treatment is increasingly necessary due to potable water shortages and growing needs of global population. Today, it is not at all safe to use water directly from rivers, reservoirs, and lakes as it contains various micro-organisms, pathogens, and other contaminants that have an adverse effect on the health of humans, plants, and animals. This situation of unhealthy and unsafe surface water has generated the need for the Water Treatment Plant. This study aimed at assessing Construction Project Management practice of Water Treatment Plant of capacity 5.5 MLD for the supply of potable water to 30 villages in Shegaon, Maharashtra. Therefore, the function of construction project management which includes defining the requirement of work, establishing the extent of work, monitoring the progress and adjusting deviations of work. This aims to achieve goals of project leading to completed construction by virtue of planning, executing and controlling time, funds with human and technical resources for the construction of water treatment plant. Data for the study was obtained through well-structured questionnaire administered to executive engineer, contractor, client and site engineer working on the project. This study is carried out for the knowledge of implementing, assessing and adapting the construction project management of water treatment plant.

### Keywords:

Water Treatment Plant, Construction Project Management, Potable Water, Construction Industry, Public Sector Projects, Labour Intensive Culture.

### 1. INTRODUCTION

According to the study the construction industry has been widely criticized for its low quality of delivery of construction projects of water treatment plants. For this to be achievable the construction companies must engage in production of products that meet the specified needs and expectations of their clients. Thus, it is relevant to bear in mind that the current market is very competitive with ever changing customer requirements, the construction companies of water treatment plant must come up with unique competitive strategies and produce goods and services that continuously meet and exceed these demand and expectations. Thus, the adoption of construction project management practice by the companies building a water treatment plant to not only enhance their service delivery but increase their competitive advantage, profit margin, clients' satisfaction and clients' loyalty, and reduction in rework and delays. With new research and developments, the field of construction project management continues to grow in terms of knowledge and

practice. Project management has been accepted by many industries and, with on-going globalization, international projects and markets, is practiced almost the world over. In India, however, the construction industry has been and still is very labour intensive, this labour-intensive culture mostly leads to delay of projects in India that's why there is quite a need of proper management of construction project like WTP is a necessity. This WTP comes under the district council of Buldhana for the 30 villages in the town of Shegaon, Maharashtra. The potable water from the plant to be reached and accessed to these villages' elevated storage reservoirs, mass balanced reservoirs and/or water tanks fulfilling the need of 40,000 rural population. The plant is been under construction at Vari Hanuman, near the Hanuman Sagar dam on the river Van. The water to be fulfilled by this dam itself to the WTP which would be further treated and supplied to those 30 villages. Now a days WTP projects are far more complicated than ever before due to large capital investments, embrace several disciplines, widely dispersed project participants, tighter schedules, strict and precise quality standards, increasing cost, environment shocks, increasing stakeholders' power. So, there is need of proper management of constructing the plant.

## 2. AIM AND OBJECTIVE

### **Aim:**

The aim of this study is to find out the reasons and changes in methods necessary for adapting and implementation of construction project management at water treatment plant of capacity 5.5 MLD from experienced professionals.

### **Objectives:**

Objectives of this study are as follows,

1. The issues that are been faced right now in the public sector projects like water treatment plant.
2. To overcome issues such as, low efficiency, going over the budget, delay in completion period, communication issues, poor quality construction, poor safety, disputes and claims etc.
3. To study the various reasons that leads to low quality, and, poor construction of water treatment plants.
4. To use the results of this study to assist the public sectors constructing water treatment plant in applying construction project management to improve the quality of their work and avoid problems.

## 3. METHODOLOGY

The purpose of this study is to collect data from a survey done by experienced professionals on management of the construction project of water treatment plant. A well-structured questionnaire would be asked and data will be collected from contractor, executive engineer, site engineer, professors, designers, inspectors and the representative of client i.e., Assistant Engineer of water supply department of district council Buldhana. The data collected was analysed and taken into consideration in order to study the construction management of this project. The data collected through questionnaires could give the suggestions about the application and use of construction project management. Interviews taken of the staff, engineers and contractors will give the knowledge about the project and scope of construction project management of this project in the public sectors' projects like water treatment plant.

- 3.1. The questionnaire was constructed using google forms and the was collected from experienced professionals only in the field of construction industry. The google form was shared through emails and social media platforms to about 200 people out of which 115 responded and answered the questions professionals as per there experience and honestly. A total of 26 questions

were constructed which were mixed as multiple choices, descriptive and opinion oriented for the better understanding of construction management related issues and what measures should be taken on that. The questions that were responded were analyzed and the data was interpreted in various charts and diagrams.

The questions that were constructed and asked were as follow:

- Q1. Your work experience in construction industry.
- Q2. Are you aware of Construction Management?
- Q3. What experience you have in supervision or management?
- Q4. How would you rate yourself as manager on construction site?
- Q5. Do you think proper management is necessary for construction of government projects?
- Q6. What do you think are the reasons for delay in public projects like WTP?
- Q7. What do you think are reasons for low quality of work in government projects?
- Q8. What do you think are reasons for going over the budget in construction projects?
- Q9. What do you think are the reasons for disputes in government projects like WTP?
- Q10. Does public projects lack in ideal workflow?
- Q11. How often do public projects miss deadline?
- Q12. Have you ever heard about failure project of water treatment plant?
- Q13. Do you get the availability of skilled labor whenever it is necessary for good quality work?
- Q14. Is language a barrier for communication with the labor due to which you may be unable to finish the tasks in time.
- Q15. Do you think construction industry in India is much labor intensive?
- Q16. What are your opinions on this traditional approach of labor-intensive industry?
- Q17. Does excess temperature in your region affect the workers causing delay in tasks on-site.
- Q18. Do you think that more machinery would help in increasing the speed of construction?
- Q19. Do you think Water treatment plants have complicated design structure?
- Q20. Do the mistakes happen during construction of WTP leads to any difficulties in water discharge on daily basis? If yes, could you give any example below.
- Q21. On a scale, how much are you able to utilize the workforce on government projects to their full potential.
- Q22. On a complex structure like WTP it is for sure there is lot of material produced during construction, what actions do you take on that?
- Q23. What safety factors you take into consideration on WTP project?
- Q24. Do you think small WTPs needs a proper construction manager separately in order to improve results and solving problems?
- Q25. Do you think that water supply projects in India lacks in construction planning and project management?
- Q26. Do you think corruption in construction industry is also major factor affecting problems and mismanagement?

The questions were precisely answered and taken into consideration for the further study.

#### 4. CONCLUSION

Among the 120 respondents 16% were having a professional experience of more than 10 years in construction industry while almost 38% of people were having experience from 5 to 10 years in their respective fields. The majority of the personals were aware about the scope and implementation of construction management which gives a more genuine responses for the questionnaire. However over 50% of professionals rated themselves as excellent manager for a construction site, and above 40 % of people rated as above average which is very helpful for the purpose of this study in order to get the exact thinking and management skills which are been applied and need changes. Since the majority of people i.e., almost 98% of people thinks that there is a serious need for the proper management in the construction of the government projects since they lack in the management skills which leads to various problems which were further asked, that 72% of people thinks that these kind of projects like water treatment plant and various other public projects lacks the ideal flow of the work which is very necessary for the management point of view. Which points out that the public projects whatever it may be misses the deadline and leads to the delay of the project which is not a good thing for all the personals involve in the process. In India, the construction industry is much more dependent on labours and there is very less knowledge and management skills for using the advanced technologies and various machineries which can not only save the time but also make the work for labours far easier. 86% of the respondents say the same that Indian construction industry is labour-intensive and more that 80% of the people thinks that rather than more dependent only on labours the work done by modern machineries would speed up the work and also makes project excellent. But there arises a point that there is requirement of skilled labours for the various applications of technologies and machineries now 65% of respondents says that there is skilled labour available for the work at construction site but problem arises that they required a high pay scale and less amount of hard work which is hard to find in India. Also, there is a communication gap between those labours and the managers and contractors which is another reason for the quality management of work. On the plus side there is also another reason in India that there is quite high temperature weather all over which also makes the labour dependent work tasks getting delayed on daily basis.

There are various reasons in the public projects like water treatment plant that leads to the necessity of management in construction. More than 60% of people thinks that inefficient management, inadequate planning, impropriate scheduling, poor material management, labour challenges are the reasons for the delay in the construction. While all the people responded the survey thinks that complex design, poor material and project management, no guidance on drawings and poor workmanship leads to the low quality of construction for which public projects have bad name. While these projects often go over the budget due to issues like poor planning, lack of coordination, not understanding project and various other reasons. Due to this there arises the relationship conflicts in between the people involve which leads to disputes in the projects that causes various problems.

Now the projects like water treatment plants are quite complicated. To understand just the drawing and blue prints one needs to be an experienced professional who can guide the site engineer, labour contractor, supervisor and all the people involved. Since 63% of professionals in the survey claims that the water treatment plants have quite complicated design. So, if proper management is not done it may lead to the certain failures and problems post construction while operating the plant for the discharge of water which is claimed by more than 75% of people in the survey. Therefore 86% of people thinks that there is need of a good construction manager for the projects like water treatment plants. Almost 80% of professionals reacted that water supply projects and the treatment plants lacks in the construction planning and project management.

The application of construction management ensures all the decisions for the benefit of project. It maximises the communication between the owner and client and minimizes conflict. The improvement in productivity of the public sectors' project like water treatment plant is achieved. In India maximum water treatment plant projects lack in the delivering the project in time, this will be

overcome and quality decisions are made. As these projects affecting the environment and habitat of civilians can be taken into consideration and the output should be advantageous. The effect of construction project management will be beneficial and will change the image of WTP industry with the appreciation of contractors, clients and people related. Thus, the construction project management should thoroughly be applied to projects like water treatment plant for great outputs.

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