

CONSTRUCTION PROJECT MANAGEMENT OF WATER TREATMENT PLANT**B.Y. Nawgaje** ^{*1}**T. D. Kadam** ²

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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 safe to directly use the water 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.

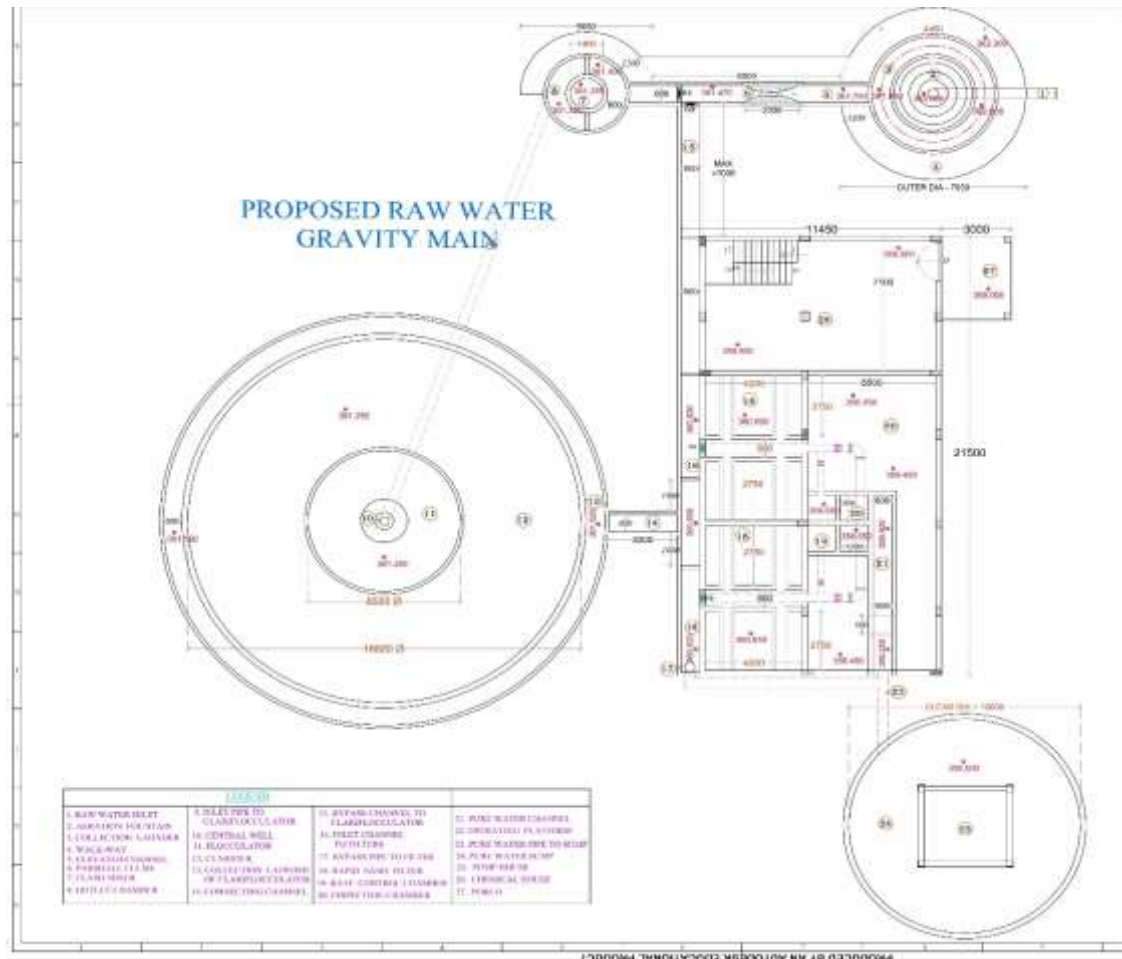
Keywords:

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

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.

Components of Water Treatment Plant:



AIM AND OBJECTIVE

Aim:

The aim of this study is adapting and implementation of construction project management at water treatment plant of capacity 5.5 MLD.

Objectives:

Objectives of this study are as follows,

1. The benefits of application of construction project management in the public project 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. The effects of project management on this construction of water treatment plant than the traditional approach of labor-intensive work.
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.

LITERATURE REVIEW

1. **Atul Auti and Martin Skitmore (January 2008)**, published in International Journal of Construction Management used the methodology, A questionnaire was sent to a convenience sample of 150 organizations and potential participants for response via email. The potential respondents consisted of various project managers, architects, engineers, surveyors and consultants

currently active in the industry in India and considered capable to providing the required feedback. The conclusion was the effective implementation of project management may contribute to it reaching new levels of success and higher standards. The qualities that project management offers should change the image of the industry and also be appreciated by everyone including clients, stakeholders and end users.

2. **Abdelnaser OMRAN (2011)**, published in Annals of faculty engineering Hunedoara – International Journal of Engineering used the methodology, The researcher had a session of interview and obtained important information about all process regarding the plant. The technician introduced every stage of water treatment and all the facilities that existing in the plant. Other data was obtained by internet, books and previous papers. The conclusion was the treatment plant was achieved the objective of operation to provide portable water service for consumers use. They have successfully supplied clean water to consumers and they are satisfied with the performance of plant operations. The discussed result on several factors showed that the water treatment performance is satisfied.
3. **N A Haron, P Devi, S Hassim, A H Alias, M M Tahir, and A N Harun (2017)**, published in International Conference on Architecture and Civil Engineering used the methodology, A questionnaire comprising 16 closed ended questions were developed with a mixture of multiple choices, five-point Likert scale options. A pilot test was undertaken with 30 targeted respondents to ensure that respondents would understand the questions and identify possible problems with the completion of the questionnaire. The conclusion was the drastic use of project management should be avoided so as not to lead to a disruptive change in their business. Project management training or courses should be conducted in higher education institutions, to increase the knowledge of practitioners. Construction industries have greater impact on climate and environment which could be taken into consideration by knowledge of project management.
4. **Shahriyar Mojahed, Fereydoun Aghazadeh (June 2007)**, paper published in International Journal of Project Management used methodology, Data was collected by previous papers and research. A survey of contractors with over \$100 million annual turnover in WTP market was conducted. Visits and study of several water and wastewater treatment plant construction jobsites were performed to gain better understanding of the influence of major productivity factors and recommend practices to be implemented at jobsites for improving productivity. The conclusion of this paper concludes that improvement in productivity is achievable by changing the work practices in the field and directing attention to implementation of best practices at construction jobsites. A comparison of major productivity factors in this study to another study performed in the USA three decades ago and also to other studies around the world show that the major productivity factors vary among projects, companies, and geographical areas.
5. **Osegbo C U, Okolie K C, Okeke A U, Ezeokoli F O, Akaogu A C (October 2021)**, study published in international journal of progressive research in science and engineering used the methodology, this study was carried out by using survey method. A total of 180 questionnaires were administered to different construction companies, out which 120 were returned for analysis thus representing 66.67% of the population. Questionnaires were developed to collect data from project managers, project engineers, builders, quality managers, and other key personnel involved in the quality management plan of the different construction's firms. The conclusion was the study discovered that quality decisions are made by management. Therefore, management of organizations are responsible for the quality practice in the organization. The study recommends that building construction firms should establish and implement a well and clearly defined quality management strategy, develop quality policy, objectives, organization strategic direction and train their employees regularly to keep abreast with the trend in the global market.

METHODOLOGY

The purpose of this study is management of the construction project of water treatment plant. An interview will be conducted with the contractor of this water treatment plant, the site engineer introduced every stage of water treatment and all the facilities that to be constructed. A well-structured questionnaire would be asked and data will be collected from contractor, executive engineer, site engineer and the representative of client i.e., Assistant Engineer of water supply department of district council Buldhana. Other data is obtained from previous articles and research papers along with the use of internet and books. Multiple visits on the construction site would be

taken in order to understand the construction techniques and methods which are been used, the types of tools and machinery been used. This data collected will later been 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. The data from the internet and books will be useful for this implementation and its scope. Study of previous research papers will be useful for the methodologies, ideas, innovations, their results, discussion and conclusion for the objective of this study of construction project management of water treatment plant.

CONCLUSION

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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