International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 09 Issue: 02 | Feb 2022 www.irjet.net p-ISSN: 2395-0072

Design of Intze Water Tank by Using Staad Pro for Hathipur Village

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Abstract - *The Intze type water tank is actually a surface water tank used to supply water to a home. This important fluid structure has to withstand different types of environmental loads i.e., earthquake loads, wind load, snow load, rainfall load, extreme temperature variations, etc. Previously these types of water tanks were designed in the form of working stress provided by IS: 3370- 1965 Indian Standard CODE OF PRACTICE FOR STRUCTURES FOR SYMPTOMS STORAGE PART II CONFIRMED SERVICE STRUCTURES in this way we get the thickest and thicker sections. Build in the form of a border condition given to IS: 3370 -2009. COMMON INDUSTRIAL STRUCTURE FOR ALCOHOL STORAGE - CODE. This activity will give you a brief overview on how a water tank is made. We are constructing a water tank in a small rural area (Hathipur) in Kanpur district of Uttar Pradesh based on the relevant local data. First we will do the weather forecast and then according to how we design the tank. We will list all types of loads coming to the building.*

Prior to taking the design, the most appropriate type of tank suspension and appropriate load balancing including structural proportions especially in relation to overlapping joints are performed. The design is done taking into account the possible combination of loads, times and shekels from direct loads and horizontal loads that work in any direction where the tank is full and empty. In this project by doing an analysis of the Intze tank, deviation formation due to hydrostatic pressure and stress, etc. it is analyzed.

A water tank can be defined as a structure used to store water. The importance of this structure has arisen since the civilization of the rivers, thus contributing to the same theme of water storage in various streams such as drinking, firefighting, irrigation, agricultural agriculture, both crops and livestock, food preparation, chemicals. Production, and many other applications. These structures should be of good strength and should be proof of leak. It should also be strictly checked that the concrete in these structures should not be cracked on the surface of the water and should have high traction capacity and low porosity.

***Key Words*: Intze Water Tank, Water Need, Loads, Hydrostatic Pressure, Staad Pro**

1.INTRODUCTION

Storage dams and overhead tank are used to store water, liquid petroleum, petroleum products and similar liquids. The structures are made of stone, steel, reinforced concrete and pre-reinforced concrete. In this case, stone and metal tanks are used for small skills. The cost of steel tanks is high and that is why they are rarely used to store water. Reinforced concrete tanks are high and therefore rarely used to store water. Reinforced concrete tanks are very popular because, apart from the construction and designs they are simple, inexpensive, and naturally monolithic and can be leaked proof. Normally no cracks are allowed to occur in any part of the R.C.C tank structures that store liquids and make water solid by using a rich mixture (not less than M20) of concrete. In addition sometimes waterproofing materials are used to make the tanks stronger. The durability of concrete is directly related to the water content of cement. The combination that should be used with vibrators should be done to achieve non-corrosion. Cement content from 330 Kg / $m3$ to 530 Kg / $m3$ is recommended to keep the weight down. Leaks have a high head and it has been noted that a head up to 15m does not cause a leak problem. It is recommended that the 415 high-grade concrete bars be used to construct fluid storage structures. Proper placement of reinforcement, use of smaller sizes and the use of disabled bars lead to distinct cracks. Split width of 0.1mm is accepted as the allowable value for liquid storage structures. When designing fluid storage structures the recommendations of the "Liquid Code Practice Code- IS3370 (Part I to IV)" should be considered.

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2. LETRATURE REVIEW

1. Animesh Gaurav, et.al (2021) [5]: They made a water tank for storage purposes. They built a reinforced concrete structure by taking the concept of pre-constructed liquid structures that they considered for all types of load where the water tank may suffer. They took good care of the joints and deviations due to Liquid retention. They created this water structure with the design philosophy of the working stress method used earlier because through this philosophy the structure became larger and the dead load increased.

2. Vaseem Akhtar, et.al (2021) [9]: Consider a high quality water tank for storage as they will provide adequate head water flow under gravity. Consider many construction features and materials to choose from based on the following 1. Tank position 2. Volume 3. Pressure required for water flow 4. Air load 5. Earthquake load 6. Temperature pressures. They used staad pro in analyzing water tank.

3. Javed Ahmad, et.al (2020) [7]: Design and measure an intze-type water tank. They design using a stress-relieving approach. they are trying to prevent fluctuations in water demand through the construction of a water tank. in this case describe the construction of an intze water tank

4. Akshit Lamba, et.al. (2017) [4]: Designed to take the Sloshing Effect is considered a burden of tropical and subtropical climates. To produce less stress in the structure. Based on the analysis of the structure and temperature after setting the parameters in the low pressure tank earthquake load is performed and the tank modification will be analyzed to proceed.

5.Neha. S. Vanjari, et.al (2017) [8]: Water is the most important element in life on earth. It is a liquid that covers about 71.4% of the earth's surface. It is something that is found throughout the human body. The surface water tank is the most effective storage area for domestic or even industrial purposes .They design using the Regional Boundary Method using code I.S 3370: 2009.

6. Hemish Kumar Patel, etal. (2016) [6]: They put the economy first by making different combinations of baggage.. The size of the tank floor slab has taken up a small tank economy. The water weight unit in the tank has taken over the small economy of the Intze tank.

3. PURPOSE

- Learn the different energies that work in a water tank. Understand the most important factors that play a role in the design of a water tank.
- Read guidelines for water tank design according to IS code and design inspection.
- Knowledge of the design philosophies for the construction of a water tank.
- Improving the design of an economical and safe water tank, which provides proper steel reinforcement for concrete and learning its safety in accordance with various codes.
- Every day there was a shortage of hathi pur water, so we decided to find a solution so that the first thing that came to mind was the type of water tank.
- Conduct research on the analysis and design of water tanks.
- Conduct research on the design guidelines for liquid storage structures in accordance with the IS Code.
- Knowledge of the philosophy of designing a safe construction and saving of a water tank.
- Implement plans to design a flexible water tank with a solid foundation and a subterranean tank to avoid annoying statistics.
- Finally, plans are verified by the results of the manual manipulation provided in the Visual Structure manual.

4. EXPECTED RESULTS

After the construction of this water tank the village of Hathipur will be able to easily meet the daily need of water for 24 hours. During the summer the water level drops dramatically so they have to travel long distances to fetch water. Now after construction they will receive water from door to door to carry out their daily activities.

5. CONCLUSIONS

The storage of water for drinking and washing tanks, swimming pools for exercise and recreation, and sewage disposal tanks is becoming increasingly important in modern life. With less energy we travel in rectangular water tanks, and with more energy we provide round water tanks. Intze is a modified round tank. The Intze tank was built to reduce project costs because the low dome in this construction is resistant to horizontal targets. The construction of the Intze water tank is a very tedious process. The entire structure is hand-crafted with the M30 grade concrete in mind. Detailed drawings are provided in AutoCAD software, which is displayed accordingly. The platform is designed with high safety and effects due to seismic strength and wind power are also considered. Therefore, in general, this project can be implemented in a specified area, namely, Hathipur

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