Comparison of different shape of Water Tank with respect to various properties

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***Abstract*- Water tanks can be seen in communities all across the country, but how well are they designed? In this work, we study the optimal shape of water tanks to _and the fastest emptying time. In particular, we compare emptying the for different shaped water towers with the Same volume, height, and cross-sectional outlet area. We _rest review a formula for the emptying time as a function of the volume and the tank's height and then compute the emptying time for several speci_c tank shapes. The question of whether there exists a tank with a minimal emptying time is also considered in the context of prior work. Finally, our added contribution is to _x the volume of a typical water tank and compute the area and the emptying time for di_erent tank shapes, including composites, in order to develop an understanding for how an optimal tank might be designed.**

Index terms- Different shape of ESR, IS 3370:1965, IS 3370:2009(new version), Limit State Method and Working State Method

I. INTRODUCTION

Since the dawn of civilization, the retrieval of water has been a fundamental problem for humanity. To address this problem, early humans would be forced to settle near a body of water. Water was primarily used for drinking, sanitation, and watering crops [10]. However, as cities were built and infrastructure became more common, the need for water in each individual building became more apparent along with the rise of the amount of uses of water. Thus, the need to e_ciently move water from one place to another quickly arose. One such solution came in the form of an aqueduct in the Roman times. However, the Minoans, who
were much before their time in terms of water systems, used aqueducts before the Romans during the Bronze age [2]. The Minoans had aqueducts, a _ltration system, harvested rain water, sewage pipes, etc. Specally, the aqueduct made it possible for humans to live farther away from bodies of water; however, this range remained limited. The logistics of water remains an issue due to the necessity of water for human life. Storing water for immediate use at speci_c times has become the modern day equivalent of these logistical issues. The most common way to store water is to use a water tower

II. OJECTIVE OF STUDY

1. To study the different shape of water tank with different parameters. IS 3370 – 1965 and IS 3370 – 2009 (new version).
2. To analyze which shape is more economical and efficient.

III. IS CODE USED

The water tanks designs are designed by the following IS code.
1. IS 3370 (1965). (Old Version)
2. IS 3370 (2009). (New Version)

Following shape is considered to analysis with respect to different shapes
1. Cone
2. Composite
3. Hemisphere
4. Sphere
5. Cylinder
6. Inverse cone
7. Circular
8. Rectangular

The time for emptying the tank is calculated and discharge is also calculated and efficiency is studied.

Tank Shape	k
Composite 3	1.17
Cone	1.2
Composite 2	1.39
Hemisphere	1.4
Sphere	1.6
Composite 1	1.63
Cylinder	2
Inverse Cone	3.2

IV. ACKNOWLEDGMENT

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V. CONCLUSION

1. Selection of shape is also depends on different Parameter such as cost of material, asthetic appearance, Design procedure, construction problems etc.
2. Among all the considered shape composite shape gives Better result but construction of composite material is very Difficult .
3. Cone shape water tank gives better storage and flowing Time is also less for discharge.

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