Investigation of the load - bearing capacity of rectangular and cylindrical reinforced concrete oil product tanks

Abstract

In the master thesis presents concrete cylindrical (radius R=15m, height h=7m) and rectangular (30x20м, height h=8.3 m) underground storage tanks for petroleum and petroleum products. The tanks depending on location can be pressurized (active), and gravity (passive), ie, those from which oil and petroleum products can enter the system just by pumping pump. In our case, they are pumping.

The rectangular tank is located below ground level to 5 meters. The tank capacity is 4980 м^3. The tank is covered with a gentle shell, with the rising height of 4.13 m and side arrows lift 3M and 2M which is connected to the wall via a support ring.

Cylindrical tank is located below ground level to 5 meters. The tank capacity is 4948 м^3. The tank is covered with a spherical dome, with the rising height of 4.13 m. which is connected to the wall via a support ring.

In this study partially underground monolithic concrete cylindrical and rectangular tanks for storage of oil and oil products (are designed).

The tank is in the capital to a second class of structures, the second degree of durability and to category D on fire safety.

Calculation and reinforcement of the dome, walls and base plate are made analytically. In addition, the determination of their stress-strain state, Finite Element Method (FEM) performed using the computer program SCAD.

In this study reinforcement shallow shell (was not done) because of the complex design. However, the determination of its stress-strain state (was done using) finite element method using computer program SCAD.

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