



## University Reservoir No.2 Rehabilitation Santa Cruz, California

### Civil and Structural Engineering



#### Client Reference:

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**Budget: \$750,000**

The University Reservoir #2 is a one million gallon capacity domestic water welded steel storage tank. The existing tank has a diameter of 74 feet and a shell height of 32 feet. It was designed and constructed in 1959 by McDonough Steel Company. The reservoir had a truss-supported dome roof supported at the periphery by the shell and top angle. The trusses were supported at the center by a structural steel compression ring.

MME performed a structural analysis and condition assessment of the tank structure to determine the general condition and load capacity of the existing roof system. In an effort to quantify the extent and severity of the observed corrosion, we developed a Condition Rating (CR) scale which identifies the general corrosion level in each element and the expected loss of strength. Based on our evaluation it was determined a entire new roof system was more cost effective than repairs.

We also prepared a reservoir static and seismic structural analysis for the shell and floor in conformance with the latest AWWA D100 standard.

To assist the Santa Cruz Water Department with a final replacement roof system we developed conceptual sizing and configuration of several roof types for their consideration. The final roof system consists of a welded steel cone roof with integral stiffeners. Combined with the other upgrades, including tank coating and painting this critical part of the water supply will remain in service for many more decades.