

## **Seismic Strengthening of Intze Type RC Elevated Water Tank by Jacketing: A Pushover Approach**

**Abstract**— Earthquake is one of the natural calamities that produces the vibration to the ground which cause to produce most destructive forces on earth, and have potential to cause damage to lives and lifeline facilities. Elevated storage reservoir need to be functional even after the major earthquake event. During past earthquakes elevated storage tank experience damage or collapse all over the world.

This paper presents nonlinear static analysis (Pushover Analysis) to evaluate seismic demand for 600 m<sup>3</sup> capacity of intze type elevated water tank at zone V, soil type III in reservoir full, reservoir 60% full and reservoir empty condition. This gives the plastic hinge formation and plots the total base shear verses top displacement curve, which is known as ‘capacity curve’ of the structure. The analysis is performed using CSI SAP2000 V17 software package to evaluate base shear demand and performance point. The initial structure consisting of inadequate frame staging system and study is focused on column jacketing and braces replacement technique of retrofit and then base shears, fundamental time periods and performance points are compared. Final structure after retrofit is safe in major seismic event as it have performance point base shear greater than design base shear and all the column and braces hinges are at Immediate Occupancy (IO) performance level at Design Base Earthquake (DBE).

**Keywords**— Column Jacketing, Capacity Curve, Performance Point, Pushover analysis, DBE, Intze type Elevated water tank.