



Research Paper

## **Critical Nature of Wall Thickness/Diameter Ratio in Reinforced Concrete Silos**

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Traditionally the design of the wall of a circular silo has been on the basis of a calculated pressure assumed to be uniform in the horizontal plane at a given position hence leading to a wall tension per unit height =  $P \cdot D/2$ , as for a pressure vessel, where  $P$  = internal pressure and  $D$  = diameter.

Although those responsible for the design and operation of silos are aware that the pressure is not uniform, due to many reasons such as variable material properties surges asymmetrical outlets, etc., analytical work has still concentrated on assumed uniformity of pressure in the horizontal plane.

Even with the advances which have been made during the last twenty years, in the understanding of the mechanics of particulate solids, we seem to be still far from agreement on silo pressures and silo design. Perhaps it is for this reason that there appears to be a ground swell of opinion, judging by comments at conferences and meetings that we should concentrate our minds more on a study of existing silos both sound and damaged to correlate the features of successful silos with a design method.