Article Abstract

Title:	**Design aids for fixed support reinforced concrete cylindrical shells under uniformly distributed loads**
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Abstract:	Shells are objects considered as materialization of the curved surface. Despite structural advantages and architectural aesthetics possessed by shells, relative degree of unacquaintance with shell behavior and design is high. Thin shells are examples of strength through form as opposed to strength through mass; their thin cross-section makes them economical due to low consumption of cement and steel as compared to other roof coverings such as slabs. Current study presents design curves for reinforced concrete open barrel cylindrical shells for different geometric parameters. The analysis is done in two parts namely: i) RC shell subjected to uniformly distributed load that remain constant along its length and curvature of the shell surface; and ii) RC shell subjected to uniformly distributed load varying sinusoidally along its length in addition to different symmetric edge loads present along its longitudinal boundaries. Design charts are proposed for easier solution of shell constants after due verification of results obtained from finite element analysis. Expressions for stress resultants proposed in closed form make the design more simple and straightforward; stress resultants plotted at closer intervals of φ can be useful for detailing of reinforcement layout in RC shells. Axial force-bending moment yield interaction studied on shells under uniformly distributed loads show compression failure, initiating crushing of concrete.
Keywords:	Cylindrical shells; design curves; open barrel; reinforced concrete; stress resultants