

## Shells

### Problem 1.

A spherical shell (Radius = 100 ft,  $\phi=65^\circ$ ) is subject to a uniform load of 40 lb/ft<sup>2</sup> (includes dead, live load and safety factors). The shell will be supported by tension rings at its lower part in order to provide the required strength for the tensile hoop forces. Design a meaningful pattern of tension rings, specify how many you will use and their location, and estimate their nominal diameter (assume solid section), if made of a steel cable with an allowable strength of 40,000 psi.

### Problem 2.

In the problem above, what would be the maximum tensile strength in the shell, if it were 4" deep? Would concrete be able to take such a tension?

- a beam
- a column