Concrete shell reinforcement design

Legacy Information:
As of SAP2000 V14.0.0, shell reinforcement design is based on Eurocodes. The content of this article will be updated accordingly.

The SAP2000 formulation for shell reinforcement design is based on the following publications:


The formulation is documented in the technical note Concrete Shell Reinforcement Design, available through Help > Documentation > Technical Notes > Concrete Shell Reinforcement Design.

Setting shell design parameters

Default shell design parameters, such as rebar cover, may be modified through Define > Section Properties > Area Sections, as shown in Figure 1:
Reviewing results

After analysis is run, design parameters may be reviewed through Display > Show Forces/Stresses > Shells by selecting the component type Concrete Design, as shown in Figure 2:
AS1 represents reinforcement in the 1 direction of the shell, and AS2 is in the 2 direction. The reinforcement calculated for either the top or bottom face of the shell object may be displayed separately, as shown in Figure 3:
Figure 3 - Reinforcement for top or bottom surface and orientation