

# Concrete confinement for Caltrans sections

Tutorial	
Name:	Concrete confinement for Caltrans sections
Description:	Changing the confinement characteristics for reinforced-concrete Caltrans sections within the Section Designer.
Program:	SAP2000
Version:	14.2.4
Model ID:	na

Figure 1 presents a three-core Caltrans section created using the [Section Designer](#). Different concrete properties may be assigned to each region, including the core (red), cover (yellow), and intermediate region (blue).

Cross-sectional design parameters which may be assigned include:

- The unconfined Mander model;
- The confined Mander model for circular sections;
- The confined Mander model for rectangular sections; and
- For each core, the longitudinal-steel size and quantity, and the transverse-steel size and spacing. These specifications then correlate with confined-concrete properties, which the software calculates automatically.

SAP2000 v14.2.4 Advanced - (Untitled)

### Caltrans Section Properties

**Geometry**

Shape: Round

Chamfer: 62.5

Height: 500.

Width: 1000.

☐ Small Base Dimensions

Base Height: 500.

Base Width: 1000.

No. of Cores: 3

**Casing**

Thickness: 0.

Longit. Factor: 0.

**Rings**

No. of Rings: 1

Ring1 Cover: 41.6667

Ring2 Cover:

Ring3 Cover:

(-250, 250)

Region	Ring	No. of Bundles	Bundle Type	Bundle Bar No.	Bundle Area	Bundle Material	Conf. Type	Conf. Spacing	Conf. Bar No.	Conf. Area	Conf. Material
Core1	Ring1	Show	8 Single	#5	199.9996	A615Gr60	Hoop	250	#3	70.9676	A615Gr60
Core2	Ring1	Show	2 Single	#5	199.9996	A615Gr60	Hoop	250	#3	70.9676	A615Gr60
Core3	Ring1	Show	8 Single	#5	199.9996	A615Gr60	Hoop	250	#3	70.9676	A615Gr60
Interlock1	Ring1	Show	1 Single	#5	199.9996	A615Gr60	N/A	N/A	N/A	N/A	N/A
Interlock2	Ring1	Show	1 Single	#5	199.9996	A615Gr60	N/A	N/A	N/A	N/A	N/A
Prestress		Edit	0. Tendon	N/A	0.	N/A	N/A	N/A	N/A	N/A	N/A
Casing			N/A. Casing	N/A	0.	N/A	N/A	N/A	N/A	N/A	N/A

**Concrete Model**

Material: 4000Psi

**Core Concrete**

**Other Concrete** Mander-Unconfined

**Outer Concrete**

Core1

Core2

Core3

Mander-Unconfined

Mander-Confined(C)

Mander-Confined(R)

Show... Show... Show...

OK Cancel

Figure 1 - Caltrans section

Select Show to specify any applicable modeling parameters (Figure 2). Some parameters are not available for editing because they are either taken directly from the material definition or are computed from the variables input on the Caltrans Section Properties form.

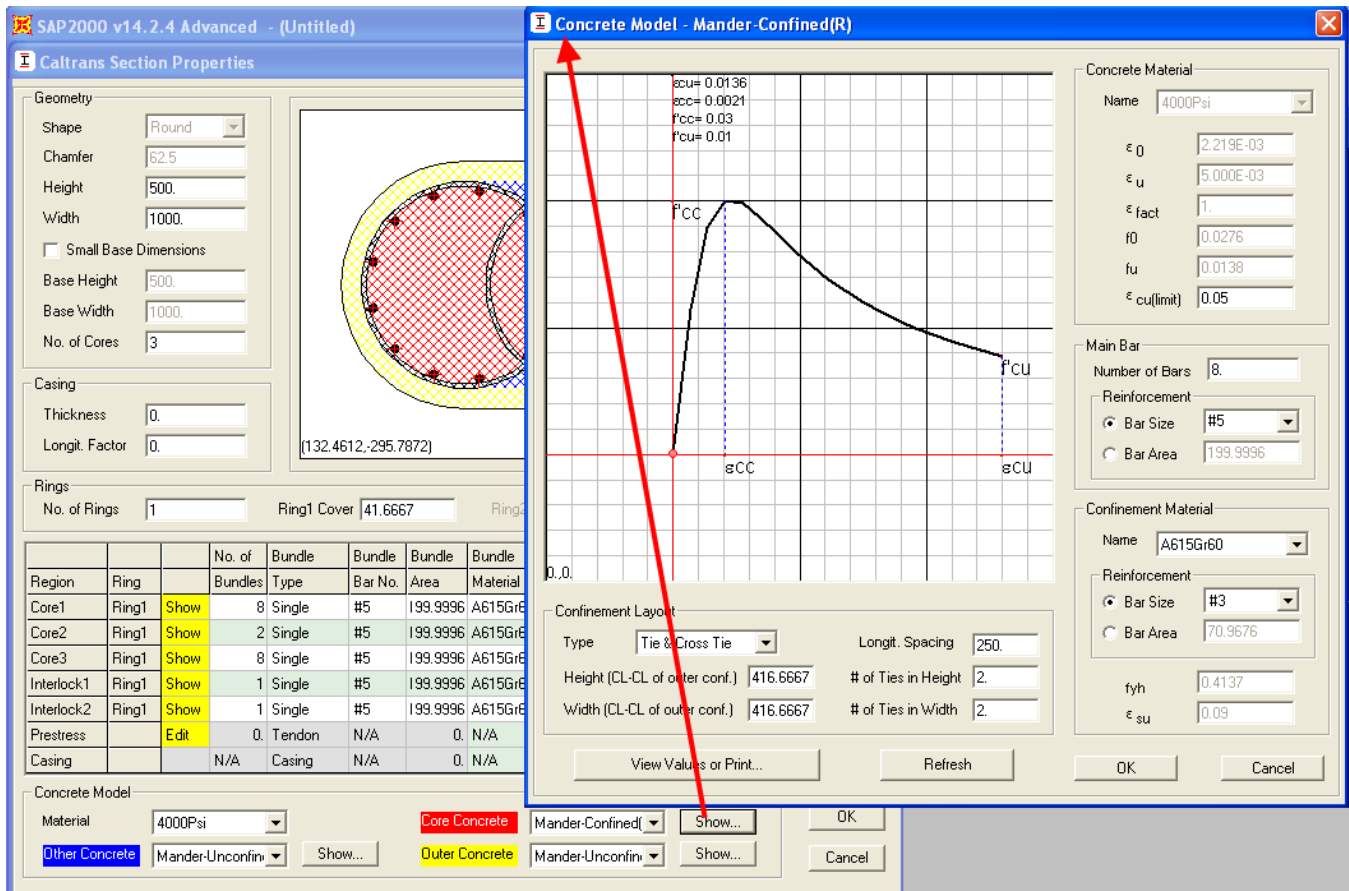


Figure 2 - Mander confined-concrete specification

## See Also

- Technical Note: Material stress-strain curve (available through Help > Documentation > Technical Notes)