Ci Section cut first steps

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Name:	Section cut first steps
Description:	Introductory tutorial for using section cuts.
Program:	SAP2000
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Status:	Finalize
ld:	na

Section cuts can be used to obtain resultant forces acting at section cuts through a model. Section cuts can be defined using quadrilateral cutting planes, groups, or simply drawn in the graphical user interface. The sections below describe the basic procedure for each type of section cut.

Section Cuts Defined by Quadrilateral Cutting Planes

- Use "Define > Section Cuts > Add Section Cut..." menu command to launch the "Section Cut Data" form.
- Select Section Cuts Defined By "Quadrilateral Cutting Planes" and define the planes by specifying joint coordinates for the plane joints:

SAP2000 v12.0.2 Advanced - MC tion Cut Data				
t				
Section Cut Name SCUT1	Coordinate S	System	Unit	ts N, m, C 💌
Section Cut Defined By C Group C Quadrilateral Cutting Planes	Positiv	orted Are On Thi re 3 Axis Side of ive 3 Axis Side o		18
Section Cut Group ALL	Number of	l Cutting Planes - Quadrilaterals Iisplayed Quadrila	ateral: 1	
Analysis (F1, F2, F3, M1, M2, M3)	Point	x	Y	z
C Design (P, V2, V3, T, M2, M3)	1	0.	0.	0.
	2	1.	0.	0.
Results Reported at this Location	3	1.	1.	0.
C User Defined	4	0.	1.	0.
X Coordinate	———— by quadrila	it results are repo		ral Its that are fully cut bjects included in
Section Cut Local Axes Orientation - Analysis				
		[OK	
Rotation about Y'			Convert	
Rotation about Y' JU. Rotation about X'' D.			Cancel	

• Press F1 button to get context help on other fields available on the form.

 Once you run the analysis you can obtain section cut forces in a tabular format using "Display > Show Tables > ANALYSIS RESULTS > Structure Output > Other Output Items > Table: Section Cut Forces - Analysis"

📕 SAP2000 v12.0.2 Advanced - MODEL	
Choose Tables for Display	
Edit	
 MODEL DEFINITION (0 of 48 tables selected) System Data Property Definitions Load Pattern Definitions Load Case Definitions Load Case Definitions Connectivity Data Joint Assignments Area Assignments Options/Preferences Data ANALYSIS RESULTS (1 of 14 tables selected) Joint Output Element Output Base Reactions Model Information M Other Durut Items M Table: Section Cut Forces: Analysis 	Load Patterns (Model Def.) Select Load Patterns 1 of 1 Selected Load Cases (Results) Select Load Cases 3 of 3 Selected Modify/Show Options Set Output Selections Set Output Selections Delete Named Set Delete Named Set OK Cancel
Table Formats File Current Table Formats File: Program Default	

Section Cuts Defined by Groups

• The procedure is very similar to defining section cuts by quadrilateral cutting planes, except for that you specify a group of elements that will define the section cut. Then, SAP2000 calculates the section cut forces by summing the element joint forces from the frame, shell and link members included in the group that defines the section cut. The joints that are considered are those at the same location as the point objects that are included in the group:

it	
	Coordinate System
Section Cut Name SCUT1	GLOBAL KN, m, C 💌
Section Cut Defined By	
Group	
C Quadrilateral Cutting Planes	
Section Cut Group	
Group ALL	
Section Cut Result Type	
 Analysis (F1, F2, F3, M1, M2, M3) 	
 Design (P, V2, V3, T, M2, M3) 	
Results Reported at this Location	
Default	
C User Defined	
× Coordinate	
Y Coordinate	
Z Coordinate	
Section Cut Local Axes Orientation - Analysis	
Rotation about Z 0.	
Rotation about Y" 0.	
Rotation about X" 0.	Cancel
Advanced Axes Advanced	

Section Cuts Drawn In Graphical User Interface

• Another alternative is to draw section cuts within the graphical interface using "Draw > Draw Section Cut" menu command. This will display the section cut forces directly on the "Section Cut Forces & Stresses" form shown below.

	ne				
	×	Y	Z		
Start Point	15.9187	6.9595	0.		
End Point	15.8445	-2.5372	0.		
Resultant Force Li	ocation and Angle				
	X	Y	Z	Angle (X	
	15.8816	2.2111	0.	269.5524	
					and the second
Include	🔽 Frames 🔽	Shells 🔽 Asolio	ds 🔽 Planes 🔽	Solids 🥅	Links
Include ntegrated Forces		Shells 🔽 Asolio			Links
	✓ Frames ✓ Right Side 1 2	Shells 🔽 Asolia		F Solids 「」 ft Side 2	Z
	Right Side			ft Side	z
ntegrated Forces	Right Side	z	Le	ft Side	

See Also

- <u>Section cuts</u> page in the Technical Knowledgebase
- F1 context help, Topic "Output Conventions"
- Example Problems B, N, S (available from F1 context help, Topic "Example Problems") illustrate the use of section cuts

Labels

status-ready-for-review section-cut quality-a first-steps

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