

## PRECIS

This volume contains documentation on a series of example problems that have been solved using *UDEC*. These verification problems are tests in which the *UDEC* solution is compared directly to an analytical (i.e., closed-form) solution.\*

[Table 1](#) presents a summary of the *UDEC* verification problems contained in this volume. The table also identifies the specific *UDEC* feature examined in each problem.

In addition, verification problems and example applications for specific features are provided in **Constitutive Models**, in **Special Features** and in **Theory and Background**: continuously yielding joint model in [Section 2](#) in **Constitutive Models**, structural elements in [Section 1](#) in **Special Features**, fluid flow analysis in [Section 2](#) in **Special Features**, thermal analysis in [Section 3](#) in **Special Features**, dynamic analysis in [Section 4](#) in **Special Features**, and energy calculations in [Section 3](#) in **Theory and Background**.

The problems in this volume represent a brief sampling of potential applications for *UDEC*. We plan to update this volume on a regular basis and will send new examples as they are prepared. We also invite users to submit their own examples for inclusion, or inform us of any type of problem they would like to see in this volume.

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\* All problems in this volume were run on a Intel Core i7 computer running Windows 10.

**Table 1** Summary of verification problems

DESCRIPTION	PAGE	INPUT FILE	BLOCK MODEL							JOINT MODEL		Boundary Elements	STRUCTURAL ELEMENTS				ANALYSES			
			double-yield	Drucker-Prager	elastic, isotropic	Mohr-Coulomb	null	strain-softening	ubiquitous joint	Coulomb slip	continuously yielding		reinforcement	cables	beams	supports	static	dynamic	thermal	fluid flow
1 Cyclic Loading of a Specimen with a Slipping Crack	1.1	SLIP.DAT SLIP_CY.DAT SLIP.FIS			X X					X	X						X X			
2 Sliding Block Between Two Slightly Skewed Rigid Walls	2.1	SKEW_IN.DAT SKEW_PR.DAT SKEW.DAT			X					X							X			
3 Thick-Walled Cylinder Subject to Internal Pressure	3.1	CYL_IN.DAT CONT_CYL.FIS CYL.DAT				X				X							X			
4 Response of an Unlined Circular Tunnel in a Biaxial Stress Field	4.1	TUN_IN.DAT CONT_TUN.FIS TUN.DAT				X				X							X			
5 Circular Tunnel Problems	5.1	CYLBE_IN.DAT CONT_CB.FIS CYLBE.DAT COMP_A.FIS COMP_B.FIS COMP_C.FIS			X	X				X		X			X		X			
6 Elastic Behavior of a Jointed Medium	6.1	N_LOAD.DAT S_LOAD.DAT SINGH.FIS N_LOAD.FIS S_LOAD.FIS			X X					X X							X X			
7 Crack Shear By Reduced Friction	7.1	CRACK.DAT			X					X		X					X			
8 Rough Footing on a Mohr-Coulomb Material	8.1	PRAN.DAT				X											X			