

## **Members of the EG10**

Christos Vrettos (Convenor)  
Áurea Perucho (Spain, Secretary)  
John Atkinson (United Kingdom)  
Ivan Vanicek (Czech Republic)  
Jana Frankovska (Slovakia)  
Liudvikas Furmonavicius (Lithuania)  
Achim Hettler (Germany)  
Jean-Paul Volcke (France)  
Sergio Gobbi (Italy)  
Tudor Saidel (Romania)

## **Scope of work**

- i) critical review of existing calculations models in EN 1997;
- ii) review of calc models in supporting national standards, for possible inclusion in next version of EC7;
- iii) review of the international literature in order to ensure that calc models are the best currently available.

# Progress achieved

## **Bearing capacity of footings**

- Agreement on basic equations
- Example demonstrated some issues: effects of water pressures, shear-strength parameters at peak/critical and residual state; drained vs. undrained
- Review of large scale footing tests and associated equations
- Two methods: a) pseudo-coupled procedure (combining Boussinesq/Steinbrenner with oedometer tests) and b) empirical method based on pressuremeter test

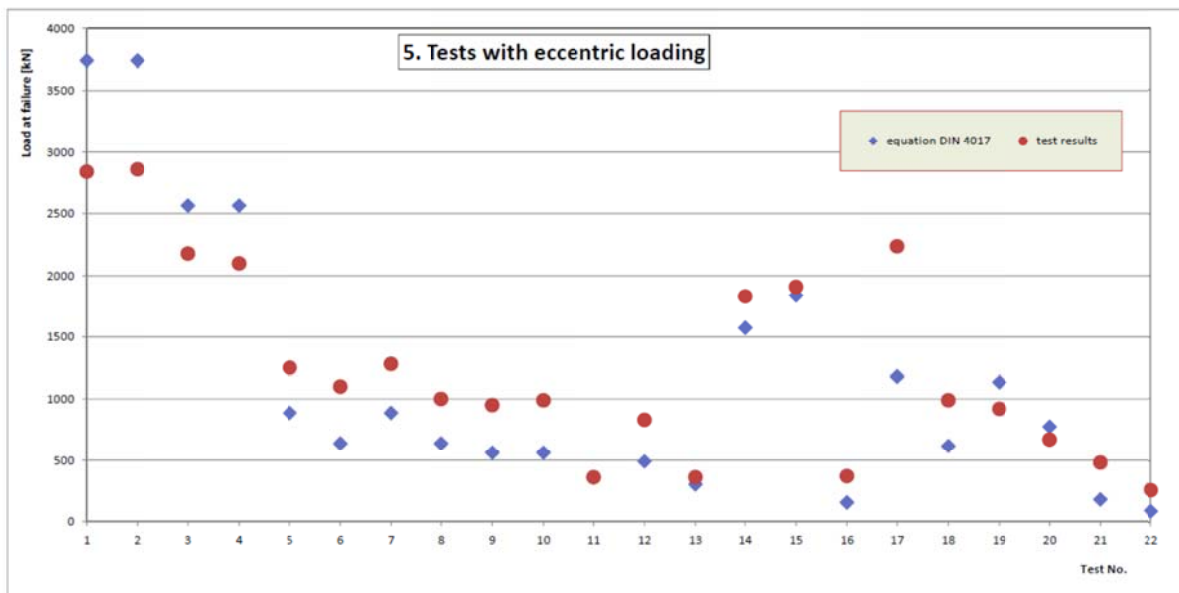
## **Slope stability analyses**

- Method of slices: Bishop simplified, method of wedges

## **Appropriate models**

- A theoretically sound solution satisfies equilibrium, compatibility and material properties; so much is obvious. For soils this must also correctly account for pore pressure and effective stress.
- We are searching for calculation models that can be used in hand calculations with pencil/paper or spreadsheet. We are not searching for complex numerical methods that require computers for solutions
- Any solution includes approximations and the question is the balance between approximation and complexity.

phi	20	25	30		
N <sub>q</sub>	6,40	10,66	18,40		
N <sub>gamma</sub>	2,68	6,27	14,40	Salgado from Martin	
	<b>3,93</b>	<b>9,01</b>	<b>20,09</b>	<b>DIN / EC7</b>	
	2,87	6,77	15,67	Meyerhof	
	2,17		13,14	Martin	delta/phi=1/3
	2,61		14,03		delta/phi=2/3
	2,84		14,75		delta/phi=1



## **Settlement calculation**

- Linear-elasticity vs. nonlinear models
- Selection of appropriate soil stiffness (observation, lab tests, field tests), Poisson's ratio
- Layered soils
- Raft foundations: modulus subgrade reaction
- Composite foundation systems