

News

“Soil Improvement” Touring Lecture organized by ATMS and ISSMGE in Tunisia 15-16th December 2006

At the opening session, M. Bouassida welcomed the participants and described how the touring lectures were organized by member Societies and held under the auspices of the ISSMGE. This was in fact the first time such an event was organized in a French-speaking African country.

Day One: Rigid inclusions

The two scheduled lectures were given by François Schlosser and Alain Guilloux (Terrasol-France). In the first lecture Mr. Schlosser presented guiding principles for the design of inclusion-reinforced structures, and focused on the importance of model testing to assess design methods. In the second lecture, and using case histories, Mr. A. Guilloux illustrated the difference between design methods compared with in situ observations.

The exercise sessions included three case histories of reinforced rigid inclusions projects in Tunisia. Presentations were given by Mme Salma Khdhiri (Hydrosol Fondations) and Kamel Zaghouni and Aymen Chouikha (Terrasol-Tunisie). Mrs. S. Khdhiri described the case of rigid-inclusions used to reinforce the foundations of a building in Tunis that had suffered differential settlement and raft tilting on the completion of construction. Mr. Zaghouni and Mr. Chouikha presented a case history of the reinforcement of an unstable slope with a nailed wall. The context of the projects, the reasoning behind the techniques used, and the evolution of the design process were discussed. The various phases of the project were illustrated. Mr. Zaghouni also presented an example of geotextile reinforcement for slope rehabilitation. As before, the project's context, the reasoning behind the techniques used, and the evolution of the design process were discussed. Participants were interested in comparing the two techniques (geosynthetics and rigid inclusions) used in slope reinforcement. Mr. F. Kanoun, advisor to the President of the Republic of Tunisia, as well as Mr. S. Haffoudhi (Director of Hydrosol Fondations) and Ghazi Cherif (senior project manager, Rades La Goulette) played active roles in the discussion sessions. Mr. F. Schlosser and Mr. A. Guilloux, together with Mr. F. Kanoun described the first experience in Tunisia (in 1979 in Saïda Manoubia, a suburb of Tunis) of slope stabilization by rail elements incorporated in concrete-filled drilled holes. This case history is a good example of how reinforcement techniques are feasible, despite the absence of specific standards related to these techniques.

This session should, to some extent, encourage Tunisian consulting bureau to more actively recommend reinforcement techniques as a modern solution for a wide variety of projects. Some participants expressed their concerns that some reinforcement solutions are not yet accepted by insurance companies in Tunisia, which clearly requires further work to be done.

Day Two: Reinforcement by columns

The two scheduled lectures were given by Professor Mounir Bouassida (National Engineering School of Tunis) and Jean Marc Debats (Vibroflotation-Europe). M. Bouassida presented various design methods and demonstrated how they may be adapted according to different column reinforcement processes. A particular design methodology was presented to emphasize its advantages over more traditional methods using force equilibrium. Mr. Debats presented an overview of methods of stone column installation, the material, and equipment for monitoring quality control. This was illustrated by case histories from different countries, specifying in each case the objective of the reinforcement. Engineers from building control offices insist on the safety required by the insurance companies acting for building owners, especially for buildings supported on stone columns. In spite of the widespread use of the technique, when the technique on an international scale the participants enquired about the possibilities of using in Tunisia reinforcement by stone columns, which until now had focused on the application of sand piles installed to accelerate the consolidation of soft ground beneath new oil storage.

There were two parts to the exercise session. The first was devoted to a case history where stone column reinforcement techniques were used to reduce settlement. Mr. Debats described in simple terms the procedure in designing a network of stone columns as a function of loading conditions of a large raft and other shallow foundations. He also described the use of available installation equipment, depending on the geometry of the foundations. In the second part, M. Bouassida used two case histories in Tunisia to describe the direct application of a new design methodology which takes into account settlement and the increase in bearing capacity that can from column reinforcement.

Closing ceremony

M. Bouassida reminded the participants of the importance of joining the Tunisian Society of Soil Mechanics, and consequently ISSMGE, which would mean easier access to geotechnical engineering programs and activities. An additional advantage is the reduced registration fees for ISSMGE members at international conferences.

Reported by Prof. M. Bouassida, Vice President of International Society of Soil Mechanics and Geotechnical Engineering for Africa.