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GeoMo 2007
Subgrade Stabilization - Foundations &
Pavements

by

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UTC
ETT190

A University Transportation Center Program
at Missouri University of Science & Technology

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| 16. Abstract One day seminar given by two of the leading authorities on the soil stabilization. Course participants will gain familiarity with the concepts and related topics for optimization of soil stabilization and pavement design. The recently published TRB chemical and mechanical stabilization committee circular on evaluation of chemical stabilizers will be provided and discussed. The course includes a full day of lectures, extensive notes and pictorial examples of up to date methods for subgrade stabilization. | | | | |
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**UMR - UNIVERSITY TRANSPORTATION CENTER
ADVANCED MATERIALS AND NON-DESTRUCTIVE TESTING TECHNOLOGIES**

PROJECT REPORT

Event Date: May 18, 2007

The event attracted 60 professional and academic attendees from Missouri and the neighboring states. The speakers arrived to Rolla on time and ready to deliver 6 hours of instruction. Certificates of completion were issued for each participant with the corresponding PDH credits. The Luncheon Keynote Speaker was Dr. W. Kent Wray, UMR Provost and geotechnical engineer.

THE SUBJECT AND WORKSHOP:

**GeoMo 2007
Subgrade Stabilization - Foundations & Pavements**

Subgrade stabilization - Foundations and Pavements is a practical short course on the improvement of problematic subgrade soils, providing support for foundations and pavements. Subgrades to be discussed include expansive clays and weathered loessial soils. The workshop provided answers to questions that frequently arise about engineering design using these problematic soils:

- What practical and well understood agents and methods can be used for soil stabilization?
- What depth of subgrade needs to be stabilized?
- How to compare and select agents and optimal amounts to use?
- What testing is needed to be certain of design and construction results?
- How to most practically deal with expansive clays?
- How to practically apply agents and methods in the field for efficient results?
- What is sulfate induced heave-can it happen here- how to overcome this phenomena?
- How to evaluate non standard chemical stabilizers?
- How to deal with potential reflective cracking in pavements over soil cement?
- What is the future of testing and design of pavements?
- How to apply mechanistic design to subgrades, bases and pavement designs?

Course participants gained familiarity with the concepts and related topics for optimization of soil stabilization and pavement design. The recently published TRB chemical and mechanical stabilization committee circular on evaluation of chemical stabilizers will be provided and discussed. The course includes a full day of lectures, extensive notes and pictorial examples of up to date methods for subgrade stabilization.

The Lecturers:

Dr. Thomas M. Petry, P.E. is professor of Civil, Architectural and Environmental Engineering at UMR. Dr. Petry has been at UMR for 12 years following 21 years at the University of Texas at Arlington. He has extensive experience and expertise in characterization and stabilization of expansive clays as a researcher and consulting engineer since 1972. He has been active in TRB committees dealing with clays and stabilization since 1975, serving as chairman of the Chemical Stabilization Committee for 6 years. His numerous presentations have been given at ASCE and TRB conferences, international conferences in Paris, Taiwan and Guatemala. His contributions to testing of clays and evaluation of chemical agents have been significant to the understanding of sulfate induced heave and how chemical agents act in clay soils and affect soil suction. He is the leading author of a recent TRB Circular on the Evaluation of Chemical Stabilizers: State-of-the-Practice Report. He will address the fundamental physicochemical properties of difficult fine-grained soils, such as expansive clays, and their stabilization for effective foundation and pavement construction.

Dr. Dallas N. Little, P.E. holds the E.B. Snead endowed chair in Transportation Engineering in the Zachry Department of Civil Engineering at Texas A&M University. He is also associate director of the International Center for Aggregates Research. He has been head of the materials and pavement division of the Texas Transportation Institute and assistant agency director for the Institute.

Dr. Little has authored numerous significant reports and delivered many important lectures in 40 states and 12 foreign countries. He has been involved in TRB committees since 1976 and been a member of several expert task groups within the USA and abroad. His research interests include: (1) improved understanding of asphalt-aggregate mixture design; (2) constitutive models and behavior of unbound bases; (3) Studies of the mechanisms of micro-damage and its healing in asphalt concrete, along with prediction of rutting susceptibility; (4) Techniques to explain the behavior of stabilized aggregate systems and the benefits of low levels of chemical stabilization; (5) Improved mixture design methods to assure durability of lime and lime-fly ash stabilized soil and aggregate systems; (6) Improved designs of pozzolanically stabilized mixtures to meet the demands of airport pavements; and (7) rheological and multifunctional effects of calcium hydroxide in bitumen and asphalt mixtures, among others. He is currently co-chair of the FHWA's expert task group on Fundamental Properties of Asphalt Materials and the editor of the TRB's millennium report on soil stabilization with lime, Portland cement and fly ash. Dr. Little will address the future of pavement design using modern mechanistic design