

## **SEPTEMBER 15, 2004 - Long-Term Effects of Remedial Foundation Underpinning**

*Speaker:* Ms. Carolyn LaFleur, P.E. of Sustainable Systems Engineering, The Woodlands, TX, Tel: 931-321-3412

### **PRESENTATION SUMMARY**

Carolyn LaFleur, M. Eng., P.E., a licensed professional engineer who holds BSCE and Master of Engineering degrees from McNeese State University in Lake Charles Louisiana presented, to a room of about 55 attendees, a paper she co-authored with Dr. D. Jeff Jackson, Ph.D., P.E., CFEI, Principal of Applied Inspection & Engineering, Inc., of Elgin, Texas, for the American Society of Civil Engineers' Texas Section Fall Meeting in Dallas, Texas on September 26, 2003, entitled, "Long-Term Effects of Remedial Foundation Underpinning."

Using a PowerPoint presentation, Ms. LaFleur explained that slab-on-grade foundations on expansive clay soils that are repaired using underpinning might experience additional movement. This can occur due to the introduction of dual foundation systems (slab-on-grade and piers or piles), the omission (sometimes) of grout below the lifted slab and neglecting moisture maintenance after repair.

To solve the problems cited, Ms. LaFleur suggested an approach called "Lift and Grout." She said that conventional piers or piles, or shallow pads would be installed below the grade beams for leveling purposes. After grouting is completed and set the jacks or shims are removed to restore function as a slab-on-grade without discrete points of support (as from piers or piles). She stressed the importance of moisture maintenance following repair, and that in some cases vertical moisture barriers may be appropriate. She acknowledged that the need to remove the shims after grouting would require a second site trip, which could add cost to the job. Therefore, contractors practicing this method must explain its benefits to their customers.

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