

FEBRUARY 2012 MEETING

Wednesday, February 8, 2012 (1.0 PDH)

TECHNICAL PROGRAM

Roller Compacted Concrete Pavement: Design and Construction

Speaker: Mr. Matthew Singel, P.E., Cement Council of Texas, 1820 Harwood Court, Hurst, Texas, Tel. No. 817-540-4437

Mr. Matthew Singel is currently the program manager for soil cement and roller-compacted concrete pavement at the Cement Council of Texas. He provides educational awareness and technical support for owners, specifiers, designers, contractors and state and local government officials across Texas. He has earned a Bachelor of Science in Civil Engineering Technology from the University of Pittsburgh, Pennsylvania. Mr. Singel has been employed by Benatec Associates, Inc. (Camp Hill, PA), E.J. Breneman, LP (Reading, PA and Atlanta, GA) and the Southeast Cement Association (Atlanta, GA) with geographic responsibilities across multiple states in the northeast, mid-Atlantic and southeast United States. His diverse background provides a unique perspective on alternative construction methods.

PRESENTATION SUMMARY

To an audience of about 65 at the HESS club, Mr. Matthew Singel presented "Compacted Concrete Pavement: Design and Construction". Roller compacted concrete (RCC) pavement has its origins in the logging industry when durable high strength roads were required to be placed quickly for harvesting and shipping. RCC provides the same final properties as conventionally placed concrete but uses different placement methods and techniques. RCC concrete does not require reinforcing steel, finishing, or forms. A typical mix design would include 450-550 pounds/CY of cement, 3400-3700 gallons/CY of aggregate, and only 20-30 gallons/CY of water.

Final water cement ratio is usually between 0.3-0.45. The sub-base preparation is the same for RCC as for conventional concrete, however the placement of RCC is achieved by creating a zero slump product, placing the mix in bulk, spreading with a high density paver and then achieving final compaction and densities with a steel wheel drum roller. Whereas the RCC product is a cementitious concrete, the production and placement process resembles that of asphaltic concrete.



Data presented by Mr. Singel shows that RCC pavement provides a final product equal in appearance, strength, and durability to conventionally placed wet mix concrete. Core samples from RCC projects were indistinguishable from conventional core samples, both visually and by strength test results. The key difference is that RCC pavements eliminate several steps required of conventional wet mix concrete and therefore saves time and money. Although the dry mix methods would seem to inhibit shrinkage cracks, surface curing is recommended after final compaction. RCC appears to produce a very strong and durable pavement and surface. The mixing and placing techniques appear to make RCC pavements ideal for larger projects and projects that require heavy duty surfaces.

A number of successful local projects were illustrated including the Port of Houston, the Central Freight yard in Austin Texas, a 15-acre border station in Brownsville Texas, a 2-acre port staging site in Corpus Christi Texas, the Bayport Phase 1 Container yard, and the Port of Houston Bayport Terminal paving project which covered 50 acres and saved 5 months of construction time.

For additional information, contact Mr. Singel at the [Cement Council of Texas](#).

To download a copy of Mr. Singel's slide presentation [click here](#)

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