February 2009 MEETING

Wednesday, February 11, 2009

TECHNICAL PROGRAM

Sulphur Applications for Civil Engineering Materials

Speaker:***Speaker***: Gary Fitts, P.E. with Shell Asphalt Solutions, Shell Oil Products USA, Garden Ridge, TX., Tel: 210-241-0195.

PRESENTATION SUMMARY

To an audience of about 40 at the HESS Club, Gary Fitts, a licensed professional engineer with BSCE and MSCE degrees from UT Austin and Regional Manager for Shell Sulphur Solutions in the southeastern USA, working out of Garden Ridge, Texas, presented "Sulphur Applications for Civil Engineering Materials". Mr. Fitts experience includes 17 years as a regional engineer for the Asphalt Institute providing technical service to the asphalt paving industry.

Shell utilizes two primary applications of sulfur for additives. The first application is Shell Thiocrete® (sulphurconcrete) and the second application is Shell Thiopave® (sulphur-enhanced asphalt).

Benefits of utilizing Shell Thiocrete® in concrete products include: high strength, rapid curing, resistance to water and acid, tolerance of a wide range of aggregate properties, enables a wide range of colors, textures and finishes, easy to recycle, requires no water, and has a significantly lower carbon footprint than Portland cement. Shell Thiocrete® is supplied in liquid or pellet form, mixed with aggregate @ 275° F and poured into molds. When cooled to ambient temperature, it's ready for use. Shell Thiocrete® is often used by suppliers and fabricators of pre-cast concrete.

Shell Thiopave® is solid pellets with plasticizers, a compaction agent and fume suppressants that are approximately 97% sulphur. Benefits of utilizing Shell Thiocrete® in asphalt products include: pellets can be stored on the ground or in silos, there is no concern with moisture during storage, and the pellets can be blended with the *mixture*, ***not*** directly with asphalt binder. In addition, there is a cost savings associated with utilizing a Shell Thiopave®/ bitumen proportion in place of pure bitumen. The pellets melt in a hot-mix plant dispersing into the mixture at a temperature below 285° F.

With Shell Thiocrete® there is a 20-25% reduction in bitumen demand, increased stiffness at high service temperatures, reduced temperature susceptibility, and improved resistance to rutting and permanent deformation. The ability to increase the total binder content and use softer binders may prove to improve resistance to thermal and fatigue cracking. Please note that it is extremely important to keep the mixing temperature below 285° F in order to minimize or eliminate the release of toxic gases such as H2S and SO2.

To download Mr. Fitts's slide presentation, click here

For a summary of Mr. Fitts previous FPA talk in February 2008, click here.