

JULY 2013 MEETING

Wednesday, July 10, 2013 (2.0 PDH)

TECHNICAL PROGRAM

Asphalt Materials, Asphalt Mix Design and Asphalt Plants

Speaker: Danny Gierhart, P.E. Asphalt Institute, Danny Gierhart, P.E., 2696 Research Park Drive, Lexington, KY 40511-8480

Danny Gierhart, P.E., has been the Asphalt Institute's Southeastern Regional Engineer since 2009, primarily serving the states of Texas, Oklahoma, Arkansas, Louisiana, Mississippi, Alabama, and Florida. He earned his Civil Engineering degree from the University of Oklahoma in 1985 and has been a registered professional engineer since 1990. He has had a diverse career, working in industry, agency, and academia. His 20 years with the Oklahoma DOT included three years roadway inspection and five years in research and development. For most of his ODOT career, he held the position of Bituminous Engineer, managing both the liquid asphalt and asphalt mix laboratories, plus writing all asphalt-related specifications for the agency. He spent four years in industry as Materials Engineer for Broce Construction Company, managing all asphalt mix design, QC/QA, and materials cost estimating for the company in Oklahoma, Texas, Kansas, Colorado, and New Mexico. He served the College of Engineering at the University of Oklahoma as an adjunct instructor from 1999 to 2010, teaching CE 5303, "Asphalt Materials and Mix Design."

PRESENTATION SUMMARY

To an audience of about 45, Regional Engineer Danny Gierhart of the Asphalt Institute covered three principal topics: Asphalt Materials, Asphalt Mix Design, and Asphalt Plants.

Mr. Gierhart discussed a variety of topics related to asphalt materials including an overview the three main categories of liquid asphalt: cutbacks, emulsions, and binders. The characteristics of asphalt binders were thoroughly discussed to give the audience a better sense of asphalt behavior. Cutback products were discussed at length and addressed curing characteristics of the products including naphtha, kerosene, and diesel products. The ratios of solvent to asphalt cement and the effect on viscosity was covered. Emulsions were presented including the three types of setting classifications. Grades of emulsions were also discussed along with their usages as chip seals, tack coats, and fog seals. Binders, the glue that holds aggregate together, were also covered. Grading systems, climate applications, temperatures, reliability and modified versus unmodified binders were topics of discussion.



Asphalt mix design was discussed including characteristics of asphalt mixtures, specifications, and best practices were part of the design process overview. Factors to consider during the design process include strength/stability, rut resistance, raveling, durability, crack resistance, shoving, and flushing. Several examples of the basic design procedure for hot mix asphalt (HMA) were presented. Worksheets from TxDOT's automated Mix Design Report were shown as illustration. It was stressed during the design procedure presentation that different materials or sources should never vary from the approved sources of local agencies.

The section on asphalt plants identified the two major plant types and their components, which duplicate the mix design on a large scale. The discussion focused on the basic function of plants and best practices for aggregate stockpiling and handling, and how these practices affect the final in-place mixture. Stockpile problems such as contamination and segregation and their effects on asphalt quality were discussed. Information on tanks, bins, conveyors, dryers, filters and emissions controls was provided.

Mr. Gierhart may be contacted at the link shown above.

Click below for a copy of Mr. Gierhart's presentations.

[Asphalt Binders](#)

[Asphalt Mix Design](#)

[Asphalt Plants & Production](#)

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