TR202609 Fly Ash Alternatives: Q&A

1) Could MoDOT clarify what types of structures it is most interested in evaluating for the use of fly ash alternatives – such as on-grade pavements, bridge decks, or other specific applications which fall under MoDOT's jurisdiction?

MoDOT's interest was alternatives for concrete in general and was not structure specific accordingly. Pavements would probably be of most interest as MoDOT and industry evaluate performance engineered mixes.

2) Aside from corn cobs, corn stover, and rice husks, are there specific agricultural waste materials that the state of Missouri considers a priority for assessment as potential fly ash alternatives?

No, the listed agricultural waste products were selected based on NCHRP Synthesis 656: Use of Supplementary Cementitious Materials for Concrete. MoDOT's main concerns are that the proposed material functions as an SCM and is economically available.

3) What are the typical dosage ranges of fly ash that MoDOT specifies or allows for various types of concrete mixtures it purchases?

Fly ash is typically used at 15-25% cement replacement. MoDOT Standard Specifications Section 501 limits fly ash replacement to 25%.

4) Are these specific technical performance criteria MoDOT expects for candidate fly ash alternatives, and should proposals include these targets for each application type?

MoDOT Standard Specifications Section 501 requirements for concrete pavement: strength, air and water-to-cement ratio.

AASHTO R101 - "Developing Performance Engineered Concrete Pavement Mixtures" has guidelines for shrinkage, transport properties, and durability properties. Recommendation would be to evaluate the proposed material against AASHTO R101 guidelines for these properties. Transport properties, resistance to deicing salt damage and freeze-thaw durability would be of highest interest.

5) Are there any preferred sources or suppliers for agricultural by-products that MoDOT recommends?

No, the listed agricultural waste products were selected based on NCHRP Synthesis 656: Use of Supplementary Cementitious Materials for Concrete.

6) Is there a specific definition or guideline for what constitutes “economically viable” alternative materials to fly ash, and will MoDOT assist in obtaining data needed to assess economic feasibility for new fly ash alternatives?

MoDOT would not be able to assist in obtaining this data. The researchers would need to discuss the economic viability of the material with the material supplier. MoDOT would probably need an estimate of the unit cost of the material and how much of the material could be supplied annually.