MEMO

Office of Materials and Road Research
Mailstop 645
1400 Gervais Avenue
Maplewood, MN 55109

DATE: January 29, 2009

TO: TAP members

FROM: Tom Burnham, Project Manager

PHONE: (651) 366-5452

SUBJECT: Minutes from first TAP meeting for TPF 5-165 (Transportation Pooled Fund) Project "Design Guide for Thin and Ultrathin Concrete Overlays of Existing Asphalt Pavements."

The first Technical Advisory Panel (TAP) meeting for the Transportation Pooled Fund Project 5-165 "Design Guide for Thin and Ultrathin Concrete Overlays of Existing Asphalt Pavements" was held on December 2, 2008. The meeting was hosted by Julie Vandenbossche (principal investigator) and Tom Burnham (project manager) at the University of Pittsburgh. State DOT and FHWA TAP members participated in the meeting via a web-based meeting and conference phone call. **Special note: I apologize to the TAP members who attempted to join the meeting and either had trouble connecting, or became frustrated with the web meeting process (confusing messages from me, or misunderstanding that the audio was through conference call). It was our maiden voyage with this technology, and at the time, I thought we had enough people connected to go forward with the meeting. If you have any questions or comments, please contact me.**

Meeting attendees were:
Julie Vandenbossche – Principal Investigator – University of Pittsburgh
Tom Burnham – Project Manager – Minnesota Department of Transportation
Mike Brinkman – TPF state representative – New York State Department of Transportation
Hua Chen - TPF state representative – Texas Department of Transportation
John Donahue - TPF state representative – Missouri Department of Transportation
Bill Barstis – TPF state representative - Mississippi Department of Transportation
Mike Long - TPF state representative – Pennsylvania Department of Transportation
Jim Sherwood – TPF FHWA representative
Mark Russell – Washington State Department of Transportation
Bernard Izevbekhai - Minnesota Department of Transportation
Luis Ramirez – Student - University of Pittsburgh

Feng Mu – Student - University of Pittsburgh
Manik Barman – Student - University of Pittsburgh

TAP members not in attendance:
Nelson Cruz – TPF Administrative liaison - Minnesota Department of Transportation
Dale Harrington – Snyder & Associates (Representing National Concrete Pavement Technology Center)
Art Bolland - Minnesota Department of Transportation
Jerry Geib - Minnesota Department of Transportation
Maria Masten - Minnesota Department of Transportation
Rod Garver - Minnesota Department of Transportation
Matt Zellar – Concrete Paving Association of Minnesota

Meeting Summary
Following introductions from each of the meeting attendees, Tom gave a brief review of what the project was about and what was to be accomplished in the meeting. Tom also stated that the terms whitetopping and concrete overlay of asphalt pavement would be used interchangeably throughout this project.

Next, Julie began discussing the details of each task of the project. Audience members were encouraged to ask questions as they arose.

Task 1: The primary objective of this task is collect, compile, and review information related to the performance of thin and ultra-thin whitetoppings. A one page survey will be submitted to the participating states to capture as much information as possible on the performance of whitetoppings within their state. Julie's asked that the surveys, one for each known project, be completed and returned to her before February 28, 2009. Julie suggested that only basic information needed to be completed on each survey form, and that her students are available to help in efforts to gather more detailed information on a particular project of interest. **Action item: Tom will send a copy of the survey form to participating state and FHWA representatives as soon as possible (Note: the survey forms were sent to TAP members on 12-18-2008 via email). Tom will send a reminder to participating states on February 13, 2009, that the deadline for returning survey forms is February 28, 2009.**

Task 2: This task involves a literature search to identify models suitable for predicting structural and bond fatigue in thin and ultra-thin whitetopping pavement systems. John asked which response models would be considered, and Julie responded that she is initially reviewing those developed in Illinois and Colorado. The findings from task 1 will strongly influence which models can be adopted, or if the need arises to develop more comprehensive models.

Task 3: This task involves the characterization of the bond between layers in whitetopping systems. Tom asked the TAP whether there is still interest in characterizing bond for the design method, and the response was overwhelmingly "yes." While the task has provision to study interlayer bonding through a laboratory study, major efforts will first be put into

analytical modeling. If those models identify some specific area that might be answered more efficiently through a laboratory study, a plan will be devised. Tom suggested that if further funding were needed in this task to accomplish a more extensive laboratory study, the National Concrete Pavement Technology Center may be a place to start, as they have expressed interest in contributing to this pooled fund project. There has also been continuing interest in contribution from the Washington State DOT.

While discussing this task, a discussion began regarding the use of supplementary fibers in the concrete for whitetopping systems. Jim stated that fibers tended to lower the material strength properties of concrete mixes. Jim and John both agreed that fibers help with the toughness of a mix. John suggested that fibers will not prevent cracking, but do a good job of keeping the pieces together. John also suggested that the design flexural strength should not be increased during design if fibers are used in a mix. Tom asked the TAP whether the option of fibers should be considered in the design method, and the overall response was “yes.”

Task 4: This task will examine the effects of climate on whitetopping systems. Julie discussed the need for determining seasonal resilient modulus values for HMA layers during design. Bill asked about the difference between HMA resilient modulus and dynamic modulus values, as they are more commonly used in the new MEPDG. Julie suggested that either value could be used in a design method, however the determination of those values must be economical, as there is a lot of variability in the stiffness of the HMA that will be overlaid.

Bernard discussed the importance of considering the compatibility of layers in the design procedure being developed.

Task 5: This task will provide guidelines on project suitability for whitetopping systems. Hua asked how to best characterize the existing HMA for a design. The TAP agreed that this will be the major question to answer in this task. Bill suggested, and others agreed, that most of these projects will not have much field characterization prior to their design. There may be some limited FWD testing, but it is not envisioned that any laboratory testing would be done.

Task 6: This task will consist of developing the final product of this project, a rational mechanistic-empirical design procedure for thin and ultra-thin whitetoppings. Bill questioned the suggested use of ESALs to characterize traffic in the design method. John discussed their experience with traffic characterization using the MEPDG. There was general consensus by the TAP that the use of ESALs is more conducive to existing DOT pavement management systems, and that a future implementation project for the design method could include the introduction of load spectra into the design procedure.

Tasks 7 and 8 were not discussed in detail during this meeting.

Following the discussion of the tasks, Jim gave a presentation on his experiences with accelerated testing of ultra-thin whitetopping sections at the FHWA Turner-Fairbank

Highway Research Center. Julie also showed some photos of whitetopping distresses observed on her recent trip to Minnesota. It appears that larger panel sizes (10'x12') can exhibit significant transverse joint faulting if subject to higher volumes of heavily loaded trucks. Also, reflective cracking is an issue in cold climates if the stiffness of the underlying HMA exceeds the flexural strength of the bonded concrete overlay. Mike said that New York is experiencing corner cracks in their 4'x4' panel sizes, and that they are considering larger panel sizes in future projects.

Julie concluded the meeting with a project status update. The current focus is on gathering survey information for the Task 1 effort.

The TAP agreed to meet next during the fall of 2009. Given the success of this meeting using the web meeting format, as well as significant savings in travel costs to the project, future TAP meetings will utilize the web meeting format. **Action item: Tom will work with Julie to schedule the next TAP meeting for some time during the fall of 2009.**