

**The Impact of Wide-Base Tires on Pavement Damage - FHWA National Project
Panel Group – Kick-off Meeting - Conference Call
May 16, 2011**

Attendance

A meeting of the FHWA National study for “The Impact of Wide-Base Tires on Pavement Damage” was held via webconference, on May 16, 2011. Those present for the meeting were:

Imad Al-Qadi (University of Illinois)
Eric Weaver (FHWA-TFHRC)
Brian Diefenderfer (VA DOT)
Richard Sanders (Minnesota)
Shongtao Dai (MnDOT)
Wes Yang (NYSDOT)
Keith Brewer (Rubber MFR Assoc)
Zhen Leng (University of Illinois)
Jaime Hernandez (University of Illinois)
Hao Wang (University of Illinois)

Introduction

Eric Weaver opened the meeting with self-introductions. The official project start date was April 13.

Presentation

Imad Al-Qadi gave a PowerPoint presentation and overview of the project plan. Imad gave a brief overview of the recent research on wide-base tires. He stated that the trucking industry is moving forward with using wide-base tires. There are significant benefits for using the wide-base tire, but what is not quantified or understood is the damage that it may cause to the pavement. It is assumed that the wide-base is causing deterioration in the pavement. Imad stated that the research team wrote the proposal with one main goal in mind and that is to quantify what the deterioration or distress that these tires can cause to pavement, how we can account for this, and how much it will cost.

Imad explained who was involved in the project, who was the lead on each project task, timeline for each task, and the details of each task. The people who are involved in the project are from five different entities and each entity is providing some unique capabilities in order to accomplish the project from a holistic point of view. Imad stated that phase I includes the literature review and synthesis, accelerated pavement testing plans, modeling framework, and development of analysis tool approach. Phase II includes, preparation of experimental equipment, performing experiments, modeling, and tool development. The project includes a task for presentations and reports. Imad stated that the phase I task, literature review, has started and the phase I report will be submitted in July. The group agreed that given the late kick off meeting that October will be a good and appropriate target date for a face-to-face meeting.

Imad asked the panel what kind of dual tire and wide-base tire should be used in this project (size and manufacturer). Imad stated that we will most likely use a 445 or 455. This may be an

issue, as more manufacturers are offering these tires, yet not all tires can be included in the experiment. Recommendations to the Technical Advisory Committee (TAC) will be included in the phase I report on how to resolve this.

The pavement damage is defined as rutting and cracking distresses. The finite element model will be run for a matrix of experimental conditions and results will be used to create an input database for the purpose of training and artificial neural network (ANN). The ANN will allow predicting the relative damage ratios without running finite element analysis in the future. Loading, pavement structure, tire, and environmental factors will all be considered. Results will be used to create a tool that allows pooled fund participants to evaluate the effect of wide-base tires on their networks. This tool may be web-based or as a standalone package (TBD by panel).

Roundtable discussion

Brian Diefenderfer asked that along with APT testing if FWD testing will also be done. Imad stated that it was not initially in the plan to do but it is a good idea and can be done. Brian also asked if the results from the APT test to calibrate the models are being used will there be any problems with binder aging. Imad stated that it has been discussed at length and Florida has experience in aging of pavements and it is still being debated on how important this will be and how it will be effected. Imad discussed his experience with it and gave examples.

Shongtao Dai asked in terms of pavement structure will low volume roads be included in the APT sections?. Imad stated that it was not in the plan, but is willing to include those roads if the panel is interested in that. Eric stated that low volume roads are a major concern for this study from the state participants. Imad stated that he does have some data that can be analyzed that will add value to the project. Imad will continue to discuss with Minnesota the idea of optimizing the sections to control cost and include low volume roads. Eric recommended that the research team consider the factors associated with considering pavement structure, including modeling technique, existing data sets and APT costs and to offer alternatives to the TAC that control overall cost to the project. It would be prudent to hold another webconference with the TAC to discuss these alternatives, as well as the tire selections issue, prior to the delivery of the phase I report.

Imad asked Keith if the manufactures would be willing to donate 4 sets of tire-wheel combinations (wide-base and dual) for testing in CA, FL, and IL and stress measurements in South Africa. Keith stated that he will bring it up at the next policy meeting. Imad stated that the tires can be returned at the completion of the project if desired. Eric suggested using the tire contact stress distribution data for some of the tires from previous research from the 3 manufactures. This will make it easier to justify picking one manufacturer. Imad stated that Morris' previous research did not use 445 or 455, but he does have some data for the dual tire. Imad likes the idea of testing tire by various manufacturers for their contact stresses. Eric stated that he would like to build upon previous data and research where possible. Eric suggested that in phase I after looking at all the data available and then develops different scenarios for the pavement structure and experimental design for the panel to choose from. Imad stated that looking at all the data available will take some time.

Imad proposed having a face-to-face meeting within the next 6 months. The panel discussed a date and agreed on doing in October. Imad stated that there will be a teleconference between now and October. Lori Carpenter will send out the meeting minutes within the next two weeks and along with that she will send a doodle poll of available dates in October. The panel agreed

that the face-to-face meeting will take place at the University of Illinois. Imad will send the proposed idea for the experimental design in mid-September to be discussed at the face-to-face meeting in October.

The meeting was adjourned at 3:30 p.m.

Action Items:

- Imad will email the PowerPoint presentation to the project panel.
- Keith will talk to the manufacturers at the next policy meeting in regards to donating a wide-base and dual tire for the project (4 wheel-tire combination).
- Lori will send the meeting minutes within the next two weeks along with a doodle poll of available dates in October.