

TPF-5(268) – Sustainable Pavements Consortium

TAC Webinar – September 1, 2015

AGENDA

1. Introductions – *Ben Bowers- VCTIR., Kevin McGhee – VCTIR, Mike Wells – VDOT, Steven Koser – Pennsylvania. Girum Merine – Wisconsin DOT, Mike Sullivan – Mississippi DOT, Nadarajah Sivaneswaran (Siva) – FHWA, Gerardo Flintsch – VT, James Watkins – Mississippi DOT, Alex Middleton – Mississippi DOT, Jed Peters – Wisconsin DOT, Lisa Tarson – Pennsylvania DOT, Senthil Thyagarajan – FHWA, Mike Sprinkel - VCTIR*
2. Recap of the last TAC meeting – *Kevin McGhee*
 - a. Met at ICMPA – Gerardo sent out notes. Ben can follow up if anyone missed those notes.
 - b. Discussed goals and objectives, ongoing projects, education and outreach.
 - c. *Action items:* Plan webinar for presentation around TRB. Pursue another International Sustainable Pavements Workshop. Making projects, etc. available at VT Library.
 - d. Recycling workshops: Virginia (early on in Consortium) and Wisconsin (last year) – Ben will post a link to the conference program and all of the powerpoints to the TPF website.
 - e. <http://www.pooledfund.org/Details/Study/497> -- Gerardo will work on making this simple to access by creating an easy-to-use web address.
3. Local / regional recycling workshops – *Gerardo Flintsch*
 - a. Virginia
 - i. Posted all presentations, etc. on website (VTTI).
<http://www.vtti.vt.edu/impact/vprc-2012.html>
 - ii. Covered aspects of how to design/set up projects, what help is available, etc.
 - b. Wisconsin
 - i. 6 hour workshop discussing design, performance, etc. of recycled materials
 - ii. Over 55 people came to the training. A lot of interest in this program within WI after this training.
 - c. The Consortium is ready to support an additional workshop if anyone is interested. Registration/travel is provided.
4. Potential ideas for new projects (brief statements *and commentary* following) – *Ben Bowers*
 - a. *Siva* - Sustainable Pavement Program – ETG interest on understanding what the pooled fund is trying to accomplish as well as what is trying to be accomplished in the sustainable pavements program. Industry folks are interested in understanding where things fit. It would be good if Ben and/or Gerardo can attend next Sustainable Pavements Program meeting. Growing membership will possibly be more beneficial/easier when we synergize with the Sustainable Pavements Program.

- b. Can industry contribute to the pooled fund? *Kevin* – Industry can participate, it is just important that we watch the participation level. Typically involvement would be at a lower rate. We would need to check with the pooled fund program managers to make sure that this is okay to do. *Gerardo* – Belief was that we wanted to get established before introducing industry partners. *Siva* – Perhaps get an idea at the next sustainable pavement program meeting whether or not industry may be interested in participating.

- 5. 2nd International Workshop on Sustainable Pavements – *Gerardo Flintsch*
 - a. More information coming.

- 6. VCTIR direct involvement in research – *Ben Bowers*
 - a. *Kevin* -- Put potential work into a budget, etc. for a more tangible way for the committee to see where VCTIR and Virginia Tech may work together.
 - b. *Gerardo* – Probably can't start all three projects this year. Would be good to perhaps vote on how we want to proceed and when we want to start new projects, etc.

- 7. Discuss scheduling next meeting/webinar – *Ben Bowers*
 - a. *Siva* – TRB can be really challenging. Anything more than 3-hours or so may have to be on Friday. Do some brain-storming into what kind of projects we want to move forward with may need more time. But progress update, etc. may not need a lot of extra-time.
 - b. *Gerardo* – it may be helpful to have this in Charlottesville, Blacksburg, or DC. Let's vote on this.
 - c. Perhaps we should have a quarterly webinar.

BRIEF RESEARCH STATEMENTS

P1. Synthesize long-term performance data from states with active in-place recycling programs

Some agencies are still somehow reluctant to use in-place pavement recycling treatments because of concerns about the performance of these treatments in comparison with more traditional pavement maintenance and rehabilitation treatments. However, there are a number of successful experiences that show that these treatments can perform very well and provide significant savings in costs and environmental burdens. The potential collaborative project is aimed at synthesizing available information on the performance [Hot-in-place Recycling \(HIR\)](#), Cold-in-place recycling (CIR), Cold Central Plant recycling (CCPR), and Full-depth reclamation (FDR) treatments across the US and Canada. The synthesis will compile:

1. Design and construction details for a sample of pavement recycling and equivalent conventional resurfacing and rehabilitation treatments applications from those agencies that have used these treatments for some time.
2. Collect functional and structural pavement evaluation data for the recycling and equivalent conventional treatments.

3. Compare the evaluation of condition over time for the recycling and conventional treatments.
4. Document cost and environmental impacts when available.

Siva – Where was this project developed from? (Just looking for background information)

Mike Wells – A lot of discussion during spec development etc. within internal task force and industry about “What are other states seeing? What are they doing? What experience could we pull from for our program?” It would be beneficial to have this information at our fingertips. This would help promote recycling within Virginia and other states.

Mike Wells – Is there interest in HIR? *Steve Koser* – Penn looking at having state project with HIR soon. Local projects have been done by cities and townships. Concept of long-term performance data would be helpful – some areas in PA have done CIR for a long time, but it’s not statewide. PA also has a lot of short-term performance experience with FDR. *Incorporate HIR*, synthesis sounds good.

James Watkins – HIR used in 1998 that didn’t go well. Would be interested to see what other states are doing to see and perhaps it could be used. It would be nice to have all of this in one document to pass along to upper management.

Girum Merine – Upper management is interested/questioning long term performance of CIR. Gathering this kind of information would be helpful for future work.

Siva – Project 2-years in. Looking at total energy use, supposed to look at state of the art, long-term performance, etc. “In-place recycled paving methods energy use analysis”.

P2. Evaluation of asphalt rubber applications

At least two of the consortium members have been experiencing with asphalt-rubber gap-graded mixes. During the kick-off meeting, the group proposed a potential collaborative project aimed at documenting the long-term acoustic and durability characteristics of these pavement surfaces. After the voting the project was deterred for a later time. The effort could include:

1. Documenting the design and construction of the experimental sections.
2. Collecting before and after noise and other surface characteristics.
3. Conduct a LCCA/ LCA analysis of the asphalt-rubber gap-graded mixes.

Steve Koser – Does this have to be focused on gap-graded as opposed to dense graded? *Gerardo* – Gap graded was used to look at noise issues specifically. *Steve* – About 3-years’ experience with gap-graded mixtures and they’ve been performing well versus traditionally polymer modified material. They are just now starting dense-graded applications. Steve is more interested in durability than noise reduction, but noise reduction is icing on the cake. Could this study involve performance over time? *Gerardo* – This could be included.

Kevin McGhee – VDOT experience was open-graded with a little bit of gap-graded experience. VA has done a bit of dense-graded. *Steve* – Is this being looked at in lieu of traditional polymer modification? *Steve* – yes.

P3. Influence of additives on mix design of in-place recycled materials

The mix design procedure for in-place recycled materials has some key differences as compared to that of traditional asphalt mixtures. Some of these differences include finding the optimum moisture content for the RAP, adding a secondary additive/active filler such as hydraulic cement, and finding of optimum foamed asphalt contents, among other differences. While there are standard mix design procedures outlined by multiple groups such as the Asphalt Recycling and Reclaiming Association (ARRA) and the Wirtgen Group, it would be beneficial to help agencies better understand the mix design process, its differences from a traditional asphalt mixture, the most appropriate methods to assess the mixes, and the impact that different mixture constituents play on the mix design procedure. In effort to address these objectives, the following is proposed:

1. Synthesize mix design procedures outlined in the Basic Asphalt Recycling Manual (BARM), Wirtgen design, and other in-place recycling design methodologies and produce an easy to follow and explanatory mix design process for member states.
2. Investigate the impact of different secondary additives/active fillers such (hydraulic cement, fly ash, lime, etc.), gradation and variation from suggested gradation windows, additives such as rejuvenators, and compaction procedures on the mix design process as well as the mixture performance characteristics.

Mike Wells – Looking at test procedures, etc. What are the critical performance measures to look at? Marshall Stability or Indirect Tensile strength – are these ideal? Are there other procedures and protocols that could be used in conjunction with these? Is strength in the lab and density in the field enough? What associated performance testing is available and that would give a reasonable indication in the lab setting? Would be nice to have something simulated in the lab.

Girum Merine – Looking at the impact of curing on CIR before the overlay is placed could be helpful. Right now there is a measurement of moisture content, but is there another testing method?