

2010 Research and Technology Transfer Committee-Iowa
February 16, 2010

MINUTES

Present

John Adams	Iowa DOT
Chris Anderson	Iowa DOT
Chris Brakke	Iowa DOT
James Berger	Iowa DOT
Mark Dunn	Iowa DOT
Jim Grove	FHWA
Jon Hanson	City of Ankeny
Todd Hanson	Iowa DOT
John Joiner	City of Ames
Brian Keierleber	Buchanan County
Ron Knoche	City of Iowa City
Sandra Larson	Iowa DOT
Jeff May	City of Knoxville
Shashi Nambisan	InTrans – Director
Lubin Quinones	FHWA, Iowa Division
Greg Reeder	City of Council Bluffs
Lisa Rold	FHWA, Iowa Division
Gordon Smith	ICPA
James Webb	Iowa DOT

Absent

Jim Alleman	ISU
Harry Allender	Allender/Butzke
Jim Cable	Cable Concrete Consultant
Joe Clendenen	Holcim
Bob Dawson	Iowa DOT
Jim George	Dallas County
Tom Green	Allied Construction Co., Inc.
Robert Kieffer	Boone County
James King	Fayette County
Kevin Merryman	Iowa DOT
David Patterson	Washington County
Tom Rohe	Plymouth County
Dave Suchorski	Ash Grove Cement Co.
Mark Trueblood	Martin Marietta Aggregates
Rick White	Howard R. Green Co.

Admin Group

Tom Cackler	CP Tech Center
Dale Harrington	CP Tech Center
Sabrina Shields-Cook	CP Tech Center
Bob Steffes	CP Tech Center
Halil Ceylan	CP Tech Center
Kejin Wang	CP Tech Center
Paul Wiegand	CP Tech Center
Denise Wagner	CP Tech Center
Melisse Leopold	CP Tech Center

The Research and Tech Transfer-Iowa Committee of the National Concrete Pavement Technology Center met on Tuesday, February 16, 2010, at the ISU Institute for Transportation in Ames.

The minutes of the January 22, 2009 meeting were reviewed. Motion to approve by Greg Reeder, second by Sandra Larson. Motion carried and approved by the committee.

Research in Progress

Tom Cackler gave a PowerPoint presentation to the committee on some of the major projects that are currently underway at the CP Tech Center. Tom discussed research areas to help stimulate some ideas for future projects in Iowa. He concentrated in the area of sustainability and how it is a big focus for the country. Tom pointed out the CP Tech Center's *Building Sustainable Concrete Pavements* booklet that is available through the CP Tech Center. A project booklet was handed out at the meeting and is also available on the CP Tech Center website at: www.cptechcenter.org. Tom Cackler explained some of the projects that the CP Tech Center is currently working on with other states. He stated as the information becomes available on the projects tech briefs will be developed and distributed to share the findings.

Dale Harrington discussed the 2009 proposed research projects that did not make the cut off list of priorities for funding for the Iowa Research and Technology Transfer Committee (handed out in the packet). He asked the committee to look at the prior suggested projects and see if any of the projects should be moved forward. Dale stated the committee would vote on projects to be submitted to IHRB later in the meeting.

Paul Wiegand gave an overview of the IHRB projects that are currently underway. He stated the projects could be reviewed by the committee for current consideration. Paul also pointed out the 2009 Research Topics for Project Prioritization list that was included in the packet. He gave a brief description of the projects.

Halil Ceylan gave a description of the Effectiveness of Geosynthetics and Geogrids in Stabilizing Soft Subgrades for Local, and State Roadways Systems project and what the study would include.

Iowa Highway Research Board Process

Mark Dunn gave an overview of the IHRB process and guidelines. He explained the funding and ranking process. Mark stated usually 8 to 10 projects are funded off of suggested project lists received from entities throughout Iowa. If a submitted project receives at least one vote from the Board the project will go back into the list of topics for the following year. If a project does not get at least one vote it is removed from the list. Mark suggested limiting the total projects submitted to 3 to 5 project topics as they may get better consideration by IHRB. The projects are due the first week of March to IHRB. Typically projects \$100,000 to \$150,000 funding range have the best chance and it helps to have co-funding available for the project. Additional information regarding the IHRB process and guidelines is available on their website: http://www.iowadot.gov/operationresearch/iowa_highway_research_board.html.

New Proposals for IHRB Consideration

Dale Harrington pointed out the list included in the handout packet (No. 4) for the committee to review and look at for suggested topics for funding.

Jim Grove presided over the discussion on new research and priorities. He asked the committee to look at what research projects would help them with problem areas and issues they deal with. The committee were handed out slips of paper and asked to write three research projects they felt were important. After they were handed in Dale and Jim, with the help of the committee, combined certain subjects and listed them on a board. After the topics were submitted the committee voted on which topics they felt had the highest priority. Following each topic listed below is the amount of votes the topic received by the committee:

<u>Potential Project</u>	<u>#Votes</u>
• Impact of curling and warping on long term pavement performance	11
○ How to Reduce	
• Long term evaluation of soil stabilization	11
• Granular sub bases on local roads – cost effectiveness – evaluation	11
• Joint repair – long life/cost effective	9
• Overlays – milling, ski control, mapping, QC	8
• Early opening for overlays/all pavements under traffic	8
• Cost effective pavement system on poor soils	5
• Late season paving, how to treat	5
• Percent of fines in drainable bases	3
• Street creep	3
○ Research / literature search	
• Maintenance bonds – clarification of failures	3
○ Causes of failures	
• Uniformity – concrete batching	2
○ Real time monitoring of moisture	
• Reduce freeze/thaw in PCC Pavement & Drainage	1
○ Measurement	
• Investigate burlap drag surface only	1
• Hot weather concreting – guide book for the field	1
• Protocol for assessing water proofers (bug juice)	1
• Measurement of Concrete Properties (sensors)	
• Examining synthetic air entrainment admixtures	
• Compare IRI to pavement support system	
• Equipment to Measure air system	
• Random cracking, what is the cause and how to prevent	
• Cost effectiveness of Overlay features	
○ Evaluation of failures	
• Thin pavement design – base, fibers, sawing	
• Improvements in full depth patching techniques	
• Shrinkage reduction	
• Effective application rate for curing compound	
• Pre overlay surface mapping	
• Iowa success of ultra thin white topping	

The top seven projects were:

<u>Potential Project:</u>	<u>#Votes</u>
Impact of curling & warping – how to reduce	11
Long term evaluation of soil stabilization	11
Evaluation of granular subbases for local roads	11
Joint repair – techniques & effectiveness (get out in the field – Minnesota method)	9
Early pavement opening & overlay issues (milling, survey)	8
Treatments for late-season paving	5
Cost effective pavement system – poor soils	5

The committee directed that the three highest priority projects below were to be submitted to the IHRB for possible research funding:

- Long term evaluation of soil stabilization – 11; Evaluation of granular subbases for local roads –11; Cost effective pavement system – poor soils – 5 (to be combined into one if possible)
- Impact of curling & warping – how to reduce - 11
- Early pavement opening & overlay issues (milling, survey) - 8

The CP Tech Center will put together problem statements on the topics and submit them to the IHRB for funding consideration.

The following joint repair subject will be handled as a tech brief and webinar in cooperation with IDOT.

- Joint repair – techniques & effectiveness (get out in the field – Minnesota method) - 9

Technology Transfer

Sabrina Shields-Cook discussed the interactive training on demand modules that are available through NHI. She stated you can also access the training modules via the CP Tech Center website which will redirect you to the NHI site. Chris Anderson stated to the group if you go to the Iowa DOT website it is easier to access all the training available.

Sabrina went over the five new briefs that came out in 2009. She stated there are three tech briefs planned for 2010 (listed below).

1. Joint Deterioration
2. Benefits and Costs of Concrete Overlays
3. Concrete Joint Repair

Sabrina went over the 10 MAP Briefs that are planned for 2010 (See packet). Chris Anderson stated there are a few new web-based courses that will be available soon.

Tom Cackler stated the first week of April 2010 the NC2 is meeting to discuss upcoming tasks which include national training on concrete pavements. Tom stated the state of Michigan is going into a state based training program for concrete training using the IMCP and preservation modules.

Technology Transfer Forums

Paul Wiegand discussed the Tech Transfer Forums that have been held over the past several years. Some of the recent topics covered were:

- Pervious Concrete
- Concrete Pavement Troubleshooting
- Subgrade and Subbases for Concrete Pavements
- Concrete Pavement Preservation – Concepts & Strategies
- Concrete Pavement Full Depth Repair

Paul pointed out the list to be considered for the topics to be covered in future regional forums for 2010. Dale Harrington asked the committee to review the list and then mark their priorities. The committee reviewed the list and marked which topics they felt were the top five priorities for future presentations which were compiled after the meeting. The following topics received the most votes and will be covered in future “lunch and Learn” forums offered quarterly in each Iowa district:

1. Joint Deterioration
2. Jointing Sawing
3. Contractor input/suggestions for design, construction, etc.
4. Finishing of pavement & texturing & latest in smoothness measurement & technology
5. Quality Assurance and Quality Control

Chris Anderson suggested video taping the lunch hour forums and placing them on the website for those to view who couldn't attend during the season.

Dale stated the other Iowa one and two-day workshops offered in 2009 were included in the handout packet to the committee. He asked the committee to review the past Iowa workshops and to suggest five or six new subjects to present in the future. The committee submitted their suggestions which will be considered for future presentations (listed below).

- Base treatments for pavements
- Durability of coarse aggregates
- Thin PCC experiences on stabilized bases
- Impacts of light vehicles on new PCC (can cars damage as early as two hours after sawing)
- Subbase texturing / noise
- Concrete pavement smoothness and texturing
- Overlays – not held since 2006
- With shrinking revenues how are cities cutting back expenditures

- Pavement maintenance techniques and programs, what works and what doesn't work
- What is the optimum pavement design for city streets
- Iowa DOT programs to assist local agencies on proper inspection / documentation of work, etc.
- QA/QC efforts and why are they needed
- Pothole repairs / what is needed for better results
- Good design practices for concrete pavements (geometry, mix design, etc.)
- Mechanistic Empirical Pavement Design Guide
- Nondestructive Testing and Evaluation for Concrete Pavements
- How to achieve well performing long lasting concrete pavement joints
- Use of falling weight deflectometer for condition assessment of pavement systems
- Concrete constructability
- Best construction practices at the paving site
- Construction innovations, equipment & paving processes
- Concrete cracking resistance
- Life-cycle analysis of pavements
- Joint deterioration – causes and repair
- Early age cracking
- Building quality pavement foundations
- The saw cutting window; how soon can you saw cut / is early entry saw the answer
- Cost benefit ratio for granular subbases
- Random cracking
- When should admixtures be avoided
- Admixtures (ACI)
- Proper jointing and reinforcing
- Joint maintenance
- Street creep
- Maintenance bonds
- Concrete paving plant operations and process control
- Cementitious materials (ACI)
- Overlay lessons learned
- How to use StreetPave, what parameters can be modified and what can't
- Pavement rehabilitation
- Top 10 to minimize failures
- PCC thickness vs. HMA thickness – how do you compare
- How does PC CPR fit in stimulus / accelerated projects of pavement
- SUDAS update / review (new PC section)
- How to do more with less

The meeting adjourned at 1:30p.m. The committee would like to meet annually and will meet again in 2011.