

2011 Research and Technology Transfer Committee-Iowa
February 21, 2013

MINUTES

Present

Jim Alleman	ISU CCEE
Chris Anderson	Iowa DOT
Jim Cable	Cable Concrete Consultant
Fatih Bektas	CP Tech Center
Joe Cory	City of West Des Moines
Jon Dienst	City of Dubuque
Mark Dunn	Iowa DOT
Matt Ferrier	Bolton & Menk
Jim Grove	FHWA
David Kamp	City of Des Moines
Brian Keierleber	Buchanan County
Robert Kieffer	Boone County
Peggy Knight	Iowa DOT
Ron Knoche	City of Iowa City
Jeff May	City of Des Moines
Duane McDonald	Manatts, Inc.
Greg Reeder	City of Council Bluffs
Gordon Smith	ICPA
John Cunningham	ICPA
Sarah Okerlund	City of Ames
Bob Steffes	CP Tech Center
Larry Stevens	HR Green
Dave Suchorski	Ash Grove Cement
Kejin Wang	CP Tech Center
James Webb	Iowa DOT
Paul Wiegand	SUDAS

Absent

Harry Allender	Allender/Butzke
James Berger	Iowa DOT
Chris Brakke	Iowa DOT
Joe Clendenen	Holcim
Todd Hanson	Iowa DOT
Craig Hughes	Cedar Valley Corp
James King	Fayette County
Matt Horsfield	Horsfield Construction
Brian Manatt	Manatts, Inc.
Kevin Merryman	Iowa DOT
Lubin Quinones	FHWA, Iowa Division
Tom Rohe	Plymouth County
Lisa Rold	FHWA, Iowa Division
Matt Triggs	Absolute Concrete
Mark Trueblood	Martin Marietta Aggregates
Trent Wolken	Dallas County

Admin Group

Tom Cackler	CP Tech Center
Peter Taylor	CP Tech Center
Dale Harrington	CP Tech Center
Sabrina Shields-Cook	CP Tech Center
Melisse Leopold	CP Tech Center

The Research and Tech Transfer-Iowa Committee of the National Concrete Pavement Technology Center held a web conference on Thursday, February 21, 2013.

Tom Cackler opened the meeting with roll call and explained we would be talking about the new products and activities and would like to get their input as on future priorities for research and technology transfer. Tom stated we would like to submit the research requests to the Iowa Highway Research Board for their next meeting scheduled for March 4, 2013.

- Tom stated as we go around the country and in Iowa we see a lot of interest in concrete overlay methodologies. There are some key pieces of research that are important in the area of concrete overlays and we would like to get the committee's thoughts on the subject.
- The February 23, 2011 Iowa Research and Tech Transfer Committee meeting minutes were sent to the committee prior to the call. Tom asked if there were any comments on the previous minutes and the committee did not have any comments.
- Tom stated it has been two years since the committee has met and we are now looking to get the research priorities refreshed.

Research (CP Tech Center)

- Peter Taylor went through the work that has been completed and research in progress at the Center. He stated there are five different aspects of the Mix Design and Analysis Track (MDA) they cover.
- Peter stated the following topics were studied and reports prepared:
 - Effect of Paste Quality on Performance
 - Effect of Aggregate Systems
 - Guide Spec and Commentary
 - Air Void System Needs
 - XRF for field evaluation
 - Ternary
 - Laboratory Concrete
 - Field Demonstrations
 - Deicer Scaling
 - Joints
 - Joint Deterioration Causes
 - Joints Manual 2nd Ed
 - Surface Characteristics – guide and specifications
- Peter stated all the above reports are available on the CP Tech Center website.
- Peter covered the work that is currently underway at the CP Tech Center:
 - Mix proportioning
 - Joints
 - Mechanisms
 - Patch mixtures
 - Deicer Phase 2
 - Internal Curing Bridge Deck
 - Environmental
 - TiO₂ – Titanium Dioxide
 - Albedo – FHWA contract to look at heat modeling
 - Paste permeability

Research & Priorities from the Committee

- Dale Harrington covered the previous research project listing from IHRB list.

Dale stated the only project currently under research which was requested by the Center is IHRB is *2011- Optimizing Pavement Base, Subbase, and Subgrade Layers for Cost and Performance on Local Roads* (2 yrs)

- Dale stated the next topic is the research that has been previously turned into IHRB but not funded. He said these projects are added to the list the committee will be voting on and he then reviewed each one of the following topics:

Materials

5.01. *2011 Use of Recycled Concrete Aggregates in New Pavements* – **8 IHRB Votes**

Pavements

7.01. *Concrete Overlay: Surface Milling of Asphalt Pavements* – 2010 Iowa Research and Technology Transfer Committee of the CP Tech Center – 2 IHRB Votes

7.02. *Impact of Curling and Warping on Concrete Pavement* – 2010 Iowa Research and Technology Transfer Committee of the CP Tech Center – 1 IHRB Vote

- Gordon Smith stated one of the questions is on thinner overlays. In a number of county overlays conventionally jointed are performing well. He would like to determine what should be the joint spacing because a number of overlay projects have performed well without short joint spacing.

7.03. *Prevention and Restoration of Water Related Pavement Distresses* - National Concrete Pavement Technology Center – 0 IHRB Vote

- Dale stated there is a pool fund study on joint deterioration. He stated we have presented to several states on the joints issue. Dale explained to the committee that we know what causes joint deterioration but there is a need for a guide on how to handle the joint deterioration.
- Dale stated the following are new research priorities to be considered for submittal for funding to IHRB:
 1. Concrete Overlay Performance in Iowa
Examine the performance of concrete overlays in Iowa. Site field examination would be included, where necessary, to develop a database that provides the type of overly, thickness, unique characteristics, age of overlay, joint spacing, etc. The performance would be included in a summary of lessons learned.
 2. Causes & Prevention of Early Failures of Bonded Concrete Overlays of Concrete
The performance of bonded overlays over concrete has not been as great as other types of concrete overlays. The causes of failure in these overlays need to be examined along with how to prevent the early failures.
 3. Standard Plan and Supplemental Guide Specifications for Concrete Overlays
With the assistance of SUDAS, IDOT and counties, develop a standard plan layout and supplemental guide specification which can be used for all types of concrete

overlays on primary and local roads in Iowa. This would include recommendations on overlay surveys.

- Peter Taylor presented the following research he thought would be good for IHRB funding consideration:
 - Workability tests
 - Use of fibers or internal curing to reduce warping
 - Sealants in joints – putting something else in the concrete panels to prevent cracking
 - Sealants on D-crackers
 - Setting time and joint sawing
 - Interlayer for unbonded overlays – have more understanding on when to use and how it affects drainage on the geotextile interlayer. Gordon stated that Warren county will have a 4 or 5 mile unbonded overlay where they will use an interlayer
 - Durability tests
- Peter asked the committee if they had any additional topics to be considered for research.
- Jim Cable stated Lyon County is doing some work on two lift pavements in Texas. He stated this may be something to keep an eye on in Texas for a study topic.
- Chris Brakke stated that Iowa DOT is part of the pooled fund study for interlayers for unbonded overlays for the design procedure of the unbonded overlays. One aspect of the research project is to develop design parameters for the interlayer.
- Dale asked everyone to give state their top three topics they would like to see submitted for research funding to IHRB. Peter Taylor used a spreadsheet with all the above research listed and filled in each committee member's choices as they stated them to him. Peter totaled the votes and the following four topics will be submitted to IHRB in order of the number of votes received:
 1. **Overlay Performance in Iowa**
 2. **Restoration of Water Related Pavement Distresses**
 3. **Joint Spacing for Overlays**
 4. **Setting time and joint sawing**
- Dale asked Mark Dunn if he felt it would be acceptable to submit four topics to the Board or should it be three. Mark felt it would be fine to submit four.
- Greg Reeder stated his number one need is, “what is causing the joint deterioration”. Greg stated he would look at the completed research to see if it answers his questions.

Technology Transfer

Chris Anderson gave an overview of the Iowa Technical Training and Certification Program. She stated the Code of Federal Regulations requires qualified people on projects and the Iowa TTCP certifies individuals to perform the testing to fulfill this requirement. The Iowa DOT trains and certifies agency and industry individuals in certification levels including aggregate, PCC, HMA, Profilograph, Soils, and Erosion Control. She stated TTCP currently has around 4000 certified technicians in Iowa holding approximately 13,000 certifications. Last year they

had 3000 attendees for 300 classes. Those classes totaled around 3000 hours of instruction between December and May. The DOT continues to offer and instruct several non certification classes. All TTCP information, available classes, registration information, etc. is located in the Registration booklet and on the website.

Chris state the Iowa DOT training website has a section for web based courses that are available. There are over 60 courses available in the areas of Materials, Construction, and Maintenance, and Safety. There are two new courses on the site developed by the Iowa DOT on Structure Inspection and Erosion Control. All courses on the site are free to anyone. The web based course information is on the training website by clicking on Web Based Training.

Chris gave an update on the Transportation Curriculum Coordination Council. She stated the group was originally organized through the FHWA, but will soon be a part of AASHTO. The Council has developed employee competency matrices as well as a Core Curriculum Matrix. We originally developed some classroom courses but have been focusing on on-line course development since 2008 with now over 85 courses now available. Through a partnership with NHI, the TCCC courses are available through the NHI website. Over the last 5 years more than 40,000 individuals have taken the TCCC developed courses.

Chris presented slides that gave the number of viewers for the PCC courses that are offered by TCCC.

She stated there are a total of 28 courses that have been developed in the area of Portland cement concrete. Many of these are from materials that were originally developed by the National Concrete Pavement Technology Center and then converted to web based through the help of the TCCC. The Concrete Series is from the IMCP manual and can be taken as a complete series or is also offered as individual modules. This is also true of the Pavement Preservation Series.

Chris stated as we look into the future and look beyond the pooled fund, a more formal partnership with AASHTO is essential. The TCCC is and will continue to be a STATE initiative. Partnering with AASHTO provides distinct advantages that do not exist with the FHWA partnership. The Pooled Fund concept is not viable long term, state financial support of an AASHTO program concept is more appropriate. The TCCC will be meeting in a couple of weeks to work on the transfer to AASHTO.

Sabrina Shields-Cook presented the publications that the CP Tech Center has developed over the last couple years and stated they are available on the CP Tech Center website:

- Guide for Concrete Overlays of Asphalt Parking Lots
- Guide to the Design of Concrete Overlays Using Existing Methodologies
- How to Reduce Tire-Pavement Noise: Better Practices for Constructing and Texturing Concrete Pavement Surfaces
- Partial-Depth Repair of Concrete Pavements
- Sustainable Concrete Pavements: A Manual of Practice
- Guide to Dowel Load Transfer Systems for Jointed Concrete Roadway Pavements
- Interim Guide for Optimum Joint Performance of Concrete Pavements
- Guide to Cement-Based Integrated Paving Solutions

Sabrina stated the following MAP Briefs were developed as part of the CP Road Map – there is a link to these on the CP Tech Center website:

- Concrete Pavement Sustainability

- Full-Depth Repairs
- Precast Concrete Pavements
- CP Road Map, 2nd edition
- Full-Depth Reclamation of Asphalt Pavements with Cement
- Potential Materials Incompatibilities
- Partial-Depth Repair
- Preventing Joint Deterioration
- Fly Ash as an SCM
- Intelligent Compaction for Bases and Subbases
- SmartCure for Intelligent Construction

Sabrina stated the following Tech Briefs were developed by the CP Tech Center:

- Design of Concrete Overlays Using Existing Methodologies
- Recommendations for Standardized Dowel Load Transfer Systems
- Variability and Visualization of Tire-Pavement Noise Measurements
- Specifications for Reducing Tire-Pavement Noise
- Measuring and Reporting Tire-Pavement Noise Using On-Board Sound Intensity
- Measuring and Analyzing Pavement Texture

Peter Taylor presented the following for the training that is underway:

- Durability Synthesis
- Joints Workshops
- Ternary Manual
- Overlays 3rd Ed
- Overlays for joints repair
- Recycling – National Open house this summer with the Illinois Tollway (August 2013)
- Preservation Training – Dale stated will be writing new documents and presentation modules and present to states

Tech Transfer & Workshop Topics

Dale Harrington talked about the Tech Transfer Topics. The prior topics are as follows from February 2011 R&T Committee:

1. Joint Resealing and Crack Sealing
2. Three subjects tied:
 - Joint Deterioration
 - Stringless Paving
 - Surface Characteristics
3. Concrete Cracking
4. Two subjects tied:
 - Increasing the Sustainability of Concrete Pavements
 - Concrete Pavement Preservation; Curing and Crack Reduction
5. Three subjects tied:
 - Contractor input/suggestions for design, construction, etc.
 - Building Sustainable Pavements with Concrete
 - New and Promising Technology for Concrete Pavements

Dale stated the Iowa districts were asked during the lunch hour forums that were presented, what they wanted for training in the future. He stated their responses were tabulated into a summary chart which was shown to the committee. Dale asked the committee if they had any additions to

the summary list and the committee agreed to follow the suggestions the Iowa Districts had chosen.

Dale presented the prior topics that were presented in 2011 and 2012 at the Municipal Streets seminars. Dale asked the committee to vote for just one topic for future workshop topics. He stated industry will look at the suggested topics and their input will be considered also. Greg Reeder asked to add the asset management/pavement management topic to the list. Peter Taylor compiled a tabulation of the committee's votes for future topics. Following are the results:

- Effect of subbase on pavement life, pavement thickness, etc., Stressing need for subdivisions and developers to use subbase & subdrains – 13 votes
- Pavement performance – cover other pavement defects and remedies as done with joint performance segment – 2 votes
- More practical conversations with regards to construction issues (i.e., trench, subgrade, etc.) – 2 votes
- Asset management – 2 votes
- Truncated domes, contractor focus – 1 vote
- Like to see a contractor's point of view on concrete overlays. Presentation from a contractor – 1 vote
- Unsealed vs. sealed joints – 1 vote

Dale Harrington and Tom Cackler thanked the committee and the speakers for their time attending the meeting. Meeting adjourned at 2:45p.m.