

# IOWA HIGHWAY RESEARCH BOARD (IHRB)

*Minutes of December 8, 2005*

## **Regular Board Members Present**

J. Adam	L. Jesse
T. Fonkhert	J. Joiner
S. Dockstader	J. Krist
R. Ettema	C. Marker
J. Ites	C. Schloz
R. Schletzbaum	A. Abu-Hawash
E. Jaselskis	M. Nahra

## **Alternate Board Members Present**

M. Kerper  
J. Berger  
R. Gould

## **Board Members with No Representation**

L. Brehm

## **Secretary**

M. Dunn

## **Visitors**

Ed Engle	<i>Iowa Department of Transportation</i>
Sandra Larson	<i>Iowa Department of Transportation</i>
Mark Kerper	<i>Iowa Department of Transportation</i>
Reg Souleyrette	<i>Iowa State University/CTRE</i>
Neal Hawkins	<i>Iowa State University/CTRE</i>
Tom McDonald	<i>Iowa State University/CTRE</i>

The meeting was held in the East/West Materials Conference Room at the Iowa Department of Transportation (Iowa DOT), Ames, Iowa. The meeting was called to order at 9:00 A.M. by Larry Jesse with 14 voting members/alternates at the table.

### **Agenda review/modification**

- J Krist requested that item 3 be moved to just after item 6. L.Jesse requested that elections of board officers be inserted after the minutes, item 2.

### **Approval of the minutes**

- C. Marker moved to approve the minutes and the modifications to the agenda. Jeff Krist seconded. Carried with 14 yes, 0 no and 0 abstaining.

### **Change of Board Members, Certificate of Appreciation, and Election of New Officers**

- Charles Marker and Lyle Brehm have finished their terms on the board. They had received certificates of appreciation the night before. Their replacements on the board will be their alternates, John Rasmussen and Dennis Short respectively. The new alternates have not yet been chosen.
- John Adam will be renewing his term in the coming year.
- Roger Gould will be leaving the DOT at the end of the month and so will be moving off the board after this meeting. A replacement for Roger has not yet been named. The board presented Roger with a certificate of appreciation. We will certainly miss Roger's insight and experience in overseeing research at the Iowa DOT.
- It is the counties' turn to have a representative as chair of the board and universities for vice-chair. M. Nahra nominated Jon Ites for chair and Rob Ettema for vice-chair. R. Schletzbaum seconded. Carried with 12 yes, 0 no, 2 abstaining.

### **Problem Statement, "Local Agency Pavement Marking Plan"**

- Dr. Neal Hawkins, ISU, discussed the background and scope of this project.
- The Iowa DOT currently has done a lot of pavement marking work focused on Iowa DOT systems. This proposal is intended to look at concerns with pavement markings on local roadways – county roadways and city streets.
- There are many products and methods (such as tape placed in grooves) in the marketplace that offer excellent reflectivity and durability. But these are also often at a very high price per unit. The focus of this effort is on long term solutions that meet the economic realities local agencies face.
- A lot of cities and counties contract out their pavement marking work, in contrast to the Iowa DOT which does their own. The reflectivity of the work for the counties sometimes suffers because the contractors are being paid by the mile – better marking performance is related to truck speed. This proposal looks to make recommendations on better contracting methods – paying on a quality/quantity basis for example.
- Lots of maintenance efforts, such as shoulder edge rut correction and snow/ice removal cause serious damage to the pavement markings.

- The proposed research would do a survey of three counties and one city and then create maps showing all of the pavement markings and their reflectivities. The map would display graphically the locations and types of markings that are performing well and not so well. This would give the local agencies the ability to determine where best to spend limited available funding for trouble spots.
- The proposed research would come up with three specific deliverables: a reflectivity guideline, an application matrix, and a quality control guide.
- Potential funding was discussed. Part of the equipment funding would cover purchase of a reflectometer. Dr. Hawkins noted that the Iowa DOT has 12 of these, 2 in each district. If researchers were able to borrow one of those instead of buying another one, that would save significant funds. However, the Iowa DOT would likely be using them during the seasons when researchers could use them.
- Also included in the budget was money for materials that the Iowa DOT is not currently using that might be useful in special cases for counties and cities.
- Q: If the districts only have two reflectometers available, how would the counties be able to do sustained follow-up testing? A: That's where a dedicated reflectometer housed at CTRE or the Iowa DOT would be useful.
- Comment: Counties are not going to be able to afford to buy these. Also there is no standard for the performance of the reflectometers yet. The federal government has not yet established minimum levels of reflectivity for pavement markings. Also if the retroreflectivity of signs is a guide, the federal government has allowed more than one way of managing the reflectivity. I'm a little concerned, after reading the proposal, with stating a minimum level of reflectivity so that we can decide when we should repaint. I think we want to guide toward similar language that we have proposed for signage which allows for nighttime inspections. A: What we were meaning to say is that we would establish guidelines, but at the same time ensure quality control.
- Comment: It would be important to us to concentrate on some of the specific challenging areas, such as school zones, railroad crossings and the like rather than centerlines and edge lines.
- Q: There has been some discussion about the widths of pavement marking lines. Do you see this proposed research looking at similar aspects? A: Yes. The matrix would take that into account. The matrix would look, essentially, into what is the best combination of characteristics for the local conditions.
- Comment: I still have reservations about talking about minimum reflectivities and service lives until we see where the FHWA is going with their recommendations. I'd like to see it addressed in the proposal that there is more than one way to determine maintenance levels. A management system needs to be encouraged rather than making reflectivity the sole criterion. A: We want to study products and their performance in Iowa in general and not just look at reflectivity.
- Comment: The recommendations and matrix should also take into account the use of different materials on different types of pavements. We've had problems with a couple of specific paints on HMA pavements.

- Jeff Krist moved to approve the problem statement. John Joiner seconded. The motion was amended to ask the researchers to incorporate the board's stated concerns into the problem statement and to accept the problem statement as a proposal. Carried with 14 yes, 0 no, and 0 abstaining.

### **Final Report for TR-527, "Guidelines for Removal of Traffic Control Devices in Rural Areas"**

- Dr. Reg Souleyrette, ISU, presented the background and results of the project.
- There are a lot of rural stop-signs in Iowa. The focus of the project was to look at stop controls in low volume settings both in rural and neighborhood areas.
- The objectives were:
  - (1) To evaluate the performance of low-volume intersections using stop control and no control.
  - (2) To see if it was possible to quantify the occurrence of stop sign 'disrespect' that had been anecdotally reported.
  - (3) Determine if, when and how particular signs should be removed; and the legal liability and safety concerns of the action or inaction.
- Based on a survey of county engineers in Iowa, researchers concluded that there was no consistent policy on the use of stop control in low volume rural applications.
- Most counties use crash history, sight distance and public input to make their decisions.
- The cost benefit analysis settled on a traffic level of 150 vehicles per day (vpd) as the dividing line between making the intersection controlled versus uncontrolled. Higher than 150 vpd may warrant adding a control.
- Researchers also looked at the legal ramifications of removal of controls in specific cases where warranted. The legal opinion was that statutory immunity would be provided in the case of removal of a stop sign if it is removed according to a policy that needs to be established. Therefore the number one recommendation from the research is that each county develop a written policy on when a stop sign is needed and how to go about removing a stop sign.
- Q: Iowa code states that once a stop sign is up, it must be maintained. How would we practically go about removing a stop sign and stay within the law? A: That was exactly what we looked into as part of the case law review. There was a case (in California) where a sign was damaged and not repaired. A collision occurred at the intersection. The party sued because the sign wasn't put back up. But it turned out that the sign was not warranted because it was an urban intersection. The supreme court ruled that the jurisdiction was not at fault because the sign was not needed in the first place. If the sign was needed and they had failed to maintain it, they would have been held liable. Obviously, the local agency should seek their own county or city legal council before taking one of these actions.
- Q: So before we go to remove a sign, we should go through the steps of warranting it to provide documentation that it is not warranted? A: Yes. And the warrant levels are quite high – something like 2000 vpd. And it's very important that everything be documented.
- Charles Marker moved to approve the report. Mark Nahra seconded. Carried with 14 yes, 0 no, and 0 abstaining.

### **Develop/Finalize RFPs IHRB-05-11 for the Second Solicitation for FY 05-06.**

- Mark Dunn, Iowa DOT, presented a draft RFP for Restoration of Borrow Land to Maximum Agrucultural Productivity.
  - (1) Board members Lyle Brehm and Jon Ites assisted Mark with preparation of the draft.
  - (2) An addition that should be made is to discuss the costs associated with each restoration technique.
  - (3) Funding levels and project duration were discussed. Q: Is this project going to include field tests? It may require more funding if that's the case. A: We didn't have field tests in mind. They could conceivably be considered as a second phase if necessary. Also, it may be possible to simply take samples and monitor locations that are already undergoing restoration as part of contemporary construction projects.
  - (4) Staff is expecting the need to send the RFP out to a broader distribution than is routinely done. Mark asked if there were suggestions for additional recipients. A: Seed and fertilizer dealers, compaction equipment vendors, U.S. Department of Agriculture. This might be an appropriate project for University of Iowa and Iowa State University to do jointly. Mark asked those present to forward any specific names to him within the next week.

Jeff Krist had to leave early, leaving 13 voting members/alternates at the table.

### **Review of Recent IHRB Research Implementation**

- Ed Engle, Iowa DOT, presented an overview of the approach that staff are taking to encourage and track implementation of research overseen by the board, and some specific examples of recent research projects.
- The main purpose of focusing attention on implementation of research is to avoid the “report sitting on a shelf” situation. The work this board oversees is important and it's important that the public benefits from the results.
- There are four basic tenets of implementation:
  - (1) In what form will the results of research be distributed (report, manual, workshop, etc.)?
  - (2) Who/what entities will be affected?
  - (3) What standards, specifications and practices will be affected?
  - (4) Are there any issues, roadblocks or preliminary steps that are of concern?
- In the October meeting, the board agreed to some changes in the business plan. One of them placed the responsibility for answering these four questions with the technical advisory committee (TAC) and the principal investigator (PI). In essence this group will be responsible for laying the groundwork of implementation.
- Because this is just the start of the process, the TACs and PIs have not had time to generate implementation reports, although we expect to have those starting in 2006. In the meantime, Ed Engle presented a brief review of some of the recently approved projects and their implementation. The hope is to have a report such as this regularly to the board, perhaps quarterly.
- TR-469 Reduction of Concrete Deterioration by Ettringite Using Crystal Growth Inhibition Techniques.

This research showed that the formation of ettringite crystals could be inhibited in concrete samples. However, there is controversy about the impact this has on concrete deterioration (cracking). The position of the Iowa DOT materials laboratory is that the ettringite crystals are the

result of cracking with water penetration, not the cause of the cracking in concrete. As such, the Iowa DOT has chosen not to move forward with implementation of the results of this research.

- TR-470 Development of a method to Determine Pavement Damage Due to Detours and Haul Roads.
  - (1) The results of this research were distributed as a final report.
  - (2) The entities affected are all levels of state transportation: Iowa DOT, counties, and cities. The group involved in the implementation includes an Assistant District Engineer, District Construction Engineer, Resident Construction Engineer, two county engineers, and two city representatives.
  - (3) Iowa DOT Policies and Procedures policy 600.5 -*Temporary Closure of Primary Highways and Establishment and Revocation of Detours*, will be modified to implement this research.
  - (4) The implementation group has not noted any problems or concerns.
  
- TR-509 AASHTO 2002 Pavement Design Guide Implementation Plan  
Implementation of this project is somewhat ironic because it's an implementation in itself. AASHTO came out with the new Pavement Design guide in 2002. This is a multi-volume, mechanistic design process. The purpose of the TR-509 research project was to provide a plan for how the Iowa DOT should go about implementing the new design guide.
  - (1) The results of this research were distributed as a final report.
  - (2) The entities affected are the Iowa DOT Office of Design, Office of Materials, and local agency design offices and engineering consultants.
  - (3) No standards or policies are directly affected by this research. Instead, ISU will be doing follow-up work with more detailed work plans for the various implementation tasks. These work plans will be presented to Iowa DOT management for funding separately as necessary to move the implementation forward.
  - (4) No problems or concerns have been noted.
  
- TR-512 Measuring Pavement Profiles at the Slip Form Paver  
The intent of this research was to provide profile and smoothness of a PCC pavement at the time of paving rather than after the pavement had hardened. This could potentially allow the contractor to make adjustments during construction to improve the quality of the final product rather than performing remediation after the fact.
  - (1) The results of this research were distributed as a final report.
  - (2) The entities affected are the Office of Construction at the Iowa DOT and counties and cities.
  - (3) Work practices for PCC paving would be affected. Also there is the possibility that standards for smoothness, and contractual incentive levels would be affected.
  - (4) Problems and Concerns: The research did not prove it was possible to measure the profile directly behind the paver and get a direct relationship with the hardened concrete profile. It is possible to predict rough or smooth at this point but not to provide an exact number. What the research did show was that the contractor can use the equipment to determine what part of the paving operation is inducing roughness and make corrections.
  
- Q: What about training. Isn't that a valid implementation goal? A: Yes. Training wasn't involved in these particular projects, but for many projects training would be the main focus of implementation. And the Research and Technology Bureau will look at funding of implementation in general and training in specific cases as appropriate.
  
- Comment: Perhaps we should submit abstracts and/or reports to the ICEA Service Bureau for wider distribution. A: The Service Bureau has a link to our website which has all of the abstracts

and all of the newer reports in digital form. We're working to make the website better and easier to use. We also send out notices of each final report to a broad range of people and organizations, all counties in Iowa, all the states, and others.

- In addition, we plan to make tech briefs (similar to those already produced by CTRE) available in the future for all of the research projects done by and for the Iowa DOT.

**New Business**

- None

**Charles Marker moved to adjourn the meeting. John Adam seconded. Carried with 13 yes, 0 no, and 0 abstaining.**

**Date of Next Meeting: The next meeting will be held Friday, January 27, 2006 AT 9:00 a.m. in the East/West Materials Conference Room at the Iowa DOT, Central Complex in Ames, Iowa.**

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Mark Dunn, IHRB Secretary