

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 Jon Ites with 15 voting members/alternates at the table.

Agenda review/modification

- No changes were requested.

Approval of the minutes

- Mark Nahra moved to approve the minutes. Jim Berger second. Carried with 15 yea, 0 nay and 0 abstaining.

Review/Select proposals from the second solicitation for FY 05-06

Proposal (IHRB-05-08), Examination of Curing Criteria for Cold-in-Place Recycling

- The modification presented funding at the initial level of \$100,000 with proposed delivery of expected research at that funding level.
- The proposal excluded provisions for a Phase II with additional funding a possible consideration in the future at the amount of \$50,000.
- Mike Heitzman, Iowa Department of Transportation, recommended approval of the proposal at the initial \$100,000 and that the option of additional funding not be considered at this time.
- Motion made to approve the proposal at the \$100,000 level and not consider the secondary project objectives by Jon Ites. Second by Mark Nahra.
- Motion carried with 14 yea, 0 nay and 1 abstaining.

IHRB-05-09 Performance Evaluation of Concrete Pavement Granular Subbase

- Objectives 6 and 7 of the report relating to environmental aspects were removed and additional test sections were added for the remaining test criteria at the Board's request. It was stated that environmental research could be done as a separate RFP at a later date when issues relating to regulatory requirements were more clearly defined.
- Motion made by Scott Dockstader to accept the proposal as resubmitted. Second by Jeff Krist.
- Motion carried with 14 yea, 0 nay and 1 abstaining.

Problem Statement Continuation "Evaluation of Hot Mix Asphalt Moisture Sensitivity Using the Nottingham Asphalt Test Equipment" [Phase I TR-483]

- Presentation was made by Chris Williams, Iowa State University. The formal research proposal, background summary, objectives, and five tasks of the research plan as well as issues with the AASHTO T-283 test, moisture damage relating to asphalt, recent research and re-creating these conditions in the laboratory with additional considerations was presented.

- The estimated budget for this 15-month project is \$75,000.
- John Joiner moved to approve the continuation of the study. Mark Nahara second.
- Motion carried with 14 yea, 0 nay, and 1 abstaining.

Final Reports

Final Report for TR-503, “Utility Cut Repair Techniques – Investigation of Improved Utility Cut Repair Techniques to Reduce Settlement in Repaired Areas”

- Presentation was made by Dr. Muhannad Suleiman, Iowa State University. Dr. Suleiman thanked the Board and Statewide Urban Design and Specifications (SUDAS), CTRE, as well as other individuals who contributed to the study.
- Dr. Suleiman presented the introduction and main points of the presentation, including the Objectives, Survey Results, Field Observations, Field and Laboratory Testing, Summary and Conclusions as well as Proposed Trenches and Research.
- Conclusions: Many utility cuts fail within 2 years; lift thicknesses less than 12 inches should be used; for granular backfill materials, *relative density test* (not proctor) should be used for determining compaction effort; when determining compaction based on relative density, a minimum value of 65% is suggested to achieve a densely compacted material and finally, that the range of bulking moisture content should be avoided in the field by watering the backfill material during construction.
- Future research includes the need to continue monitoring utility cuts in Ames, Des Moines, and Cedar Rapids for two more years and the completion of construction of the proposed trench details with monitoring of those trenches for two years.
- Q: You mentioned that Burlington is the only place in the state to use flowable fill; is that because flowable fill is not available here or there is a concern about it? A: Two things: 1) Often it’s needed late at night and the flowable fill is not readily available and 2) it’s not easy to excavate it the next time.
- Q: Is additional training something SUDAS is going to do as part of their normal operation? A: The information is being incorporated into the SUDAS manual. Discussion on how to get to the ‘right’ people, meaning those that are going to be in the field, is taking place. Workers need to be shown how to do the repairs; they may not always get to the SUDAS meetings.
- C: It may be useful to communicate with the maintenance superintendents with the Counties (meetings are every September).
- Q: Were most of these constructed (the backfill) by the utility companies or was it something the cities did? A: Done by the cities. We actually had a hard time getting to the sites where the different companies/contractors were working; we had easier access with the cities. Contractors sometimes had issues with us being on site.

- C: Trying to coordinate with franchise utilities was very difficult.
- Q: Were utilities allowed to do their own backfill? A: Yes.
- Motion made by Jeff Krist to approve TR-503. Second by Roger Schletzbaum.
- Motion carried with 15 aye, 0 nay, 0 abstaining.

At this point in the meeting, the order of Items on the Agenda was changed because presenters were running late: Item 8 became 7; Item 9 became 8; Item 10 became 9 and Item 7 became Item 10.

Final Report for TR-526, “Feasibility of Cooperative Development of Wetland Mitigation Projects”

- Presentation was made by Dr. Tim Ellis, Iowa State University. He thanked all those involved who contributed to the study.
- Dr. Ellis presented the objectives, sponsors, milestones, survey distribution results and discussed the number and percentages of respondents, the levels of interest and the need for mitigation of wetlands.
- Outlines were presented for Mitigation Difficulties and cost vs. acres mitigated, types of mitigation undertaken, functional assessments and types of partnerships made, the Iowa Department of Transportation process of mitigation and 404 and 401 permits as well as success rates and cooperative solutions.
- An Iowa map showing Mitigation Acres was shown for 1992-2005 as well as a graph illustrating the USACOE 404 permits for 2000-2004; however only 3 counties applied for more than 50 acres mitigated in that period (Butler, Johnson and Polk).
- The Iowa DOT 5-year Construction Program and resources for cooperation were presented as well as a summary of DOT, DNR, NRCS WRP and NRCS FWP acquisition of wetlands leases.
- Recommendations: site-by-site mitigation should remain the core of the IA DOT mitigation program, but partners should be sought.
- Considerations should include the ideas presented by the focus group which met in February made up of over one hundred professionals from different agencies from federal, state, conservation groups, consulting engineers and academics for an Identification Clearinghouse to address current issues concerning Wetland Mitigation. Topics covered include: finding mitigation sites, buying excess acreage due to market conditions, the DOT’s position of not wanting to own excess property or the ability to manage sites and the sustainability of mitigation sites and the need for improvement.
- A survey was sent out from the focus group to over 300 state and federal conservation groups in July which was used to develop a framework for quality of mitigation. 381 surveys were sent out and 103 were returned. Of those, 83 were interested in some sort of cooperative mitigation.

- Counties and conservation boards showed the highest interest, with most of the activity on the minimal to moderate side. Of the respondents 23 wetland projects had been identified. Assessment of difficulties was made in the areas of cost, location, administrative time, regulatory procedures, assessment, funding, mitigation ratios of acreage and impact and other frustrations were addressed.
 - An Iowa DOT Mitigation Map showing HUC-8 and MLRA for sites was shown. The difficulties involved in gaining permits was discussed because both HUC-8 and MLRA classifications are required for mitigation. One prominent issue was that at least a 25-acre site needed to be identified.
 - Resources available for cooperative mitigation include involvement of a mitigation banking review team currently in place.
 - Many types of partnering relationships were addressed. Recommendations for partnership clearinghouse actions might include: finding other mitigation needs potentially leading to larger mitigation sites; finding a potential clearinghouse manager and potential site managers; using GIS-based research using a National Wetlands Inventory as a pre-NEPA planning tool and conducting a study to develop larger mitigation service areas.
 - Q: Is it possible to work cooperatively on a wetland in an adjacent area? In the past they wanted it within an area smaller than a HUC-8 area. Will they now consider an adjacent area? We span 3 HUCK 8 areas within our 5 county area. A: The Corp wants to avoid destroying the wetlands in the first place. The way the rule is written, ultimately the Corp has discretion.
 - Q: You mentioned the 25 acre threshold; is that an identified 25 acreage or is that a mitigated acreage? A: That is unknown. Generally the banking review team wants 25 mitigated acres.
 - Q: Is that an economic threshold or a functional area? A: Bigger is usually better but the concern is that if one (area) gets started, that will they continue to let us buy into it until the entire thing is sold, or will it be you've got one wetland here so let's start another one.
- Q: Part of our interaction with the Corp was the sense that they were somewhat negative towards banking. If you build a bank people are going to use it. How many permits have been denied over the years? Ultimately, those permits are approved so there are wetlands being mitigated regardless. A: We're hoping for more cooperation with the Corp of Engineers. We've done a couple of these and some small ones. One is doing well and one is not. It's very difficult to get the small scale ones to take off; generally it's easier to find more success with larger ones.
- The smooth delivery process in North Carolina was discussed. The fact that they can have a fully functioning wetland in place before construction appears to be a benefit. However, there are some risks involved in development of that banking ahead of time.
 - Motion made to approve the Final Report for TR-526.
 - Moved by Mark Nahra. Second by Clark Scholz.
 - Motion carried with 15 aye, 0 nay, 0 abstaining.

Final Report for TR-532, “Evaluation of Transverse Joint Forming Methods in PCC Pavement”

- Presentation of the Final Report was made by Dr. James Cable, Iowa State University. Mention of research done when Bob Steffes was in the Research Office and the ‘Bobsled’ or Longitudinal Knife used to form longitudinal joints was made. That was about a one year project and people in the industry asked for research for a Transverse one. This project is an outgrowth of that request.
- Images of two unrelated cuts were presented in the report. Using an L-shaped piece of metal, the question was where to mount it on the dowel basket. After negotiation, a project near Fort Dodge initiated. 6 joints were put in 6 different sites. 3 of those had metal L-shaped pieces under the dowel basket; the difference was in the height of the metal.
- The goal was to see how much height it takes to get it to crack; the goal was to get it to crack on the bottom without having sawing it on the top.
- 3 sets of 6 each were put on top of the dowel basket. In between are at least 10 joints that were sawed.
- A Spanish joint system was also considered but the researchers were unable to have it delivered to the site; a concern was the top of the joint material has to be very close to the top of the slab. That creates a construction problem for pavers with vibrators on the top portion. In the future it could be done as the paving machine can lift the vibrators.
- Constructed in May of 2005, the year 2006 was listed on page 8 of the report and Dr. Cable indicated a correction would be made.
- June was a wet month. Although paving was done on June 17 & 18 the project went for 28 days with no cracking on the surface. A decision was made to saw the joints. The report showed pictures of those joints.
- Other ideas were mentioned that are currently being used to ease friction during sawing, including something Dr. Schaefer refers to as ‘cookie cutters’ or saws covered in vegetable oil.
- Motion made to accept Final Report TR-532.
- Moved by Mark Nahra. Second by John Rasmussen.
- Motion carried with 15 aye, 0 nay, 0 abstaining.

Final Report for TR-537, “Iowa Data Collection and Analysis for the 2005/2006 National Surface Characteristics Field Experiment Plan”

- Presentation was made Dr. James Cable as surrogate for author Dale Harrington.
- This research is part of a national surface characteristics project and includes a small demonstration set of payments. The question posed by this research is: What can we have contractors reasonably build in the way of surface treatment? The original objective was to build 10 different surface treatments that represent what are believed good, bad or different from what was first believed.

- Representatives from the DOT were partnered with federal officials and academics in this project; Hwy 30 maintains 18 test sites east of LeGrand, Iowa. Page 12 of the Final Report contains a list of test sites.
- A series of pre-texture (used right behind the slip-form paver) and textures were utilized. The burlap drag and longitudinal tining device were also used.
- Theories and variables were discussed, including noise at the wheel and way-side levels, transverse tining, friction, durability and tire depth. Results are in the preliminary stage.
- Testing: DOT Office of Special Investigations are currently doing profile and friction testing before roads are open to traffic and testing for detailed profiles is being done with 3D lasers; noise meters for noise at the road level are also being used.
- The burlap test is a very quiet one; transverse tining has been disregarded with reduced noise levels. There is a definite relationship when profile and noise are plotted underneath; they usually match each other on many surfaces put down.
- Motion made to approve the Final Report for TR-537.
- Moved by Larry Jesse. Second by Mark Nahra.
- Motion carried with 15 aye, 0 nay, 0 abstaining.

Remarks

- Dr. James Cable spoke briefly on the Construction Report for TR-520, “Evaluation of Dowel Bar Retrofits for Local Road Pavements” and apologized for not getting the report out in a timely manner. He said it holds promise for those pavements 7” or thicker. After putting dowel bars in the pavement and doing the grind, he said the community is satisfied with the smoothness of the pavement. This is the 2nd of a 4 year project.
- It is not customary to make a presentation on the Construction Report, however the project is in the Storm Lake area and invitation was made to those present to visit the test site.
- Sandra Larson said that the “Surface Characteristics Project” has been a success for Iowa and across the country. The project has leverage funding from multiple sources; on page 2 of the Final Report funding sources are listed; this is a multiple state pools fund project that just started and has been very successful.

Final Report for TR-521, “Field and Laboratory Investigation of Hydraulic Structures Facilitating Fish Abundance and Passage through Bridges in Western Iowa Streams”

- Presentation was made by Dr. Thanos Papanicolaou, The University of Iowa. Objectives, structures researched, hydrologic and geomorphologic approaches as well as goals and recommendations on how to solve the problem of streambed erosion in river channels in western Iowa caused by change of the profile of the stream bed and the formation of knickpoints and how to prevent erosion and facilitate fish passage and migration through those areas were discussed.

- Preventative benefits of hydraulic structures to facilitate fish migration using riprap weirs, grouted weirs and fish ladders include: the prevention of the formation and propagation of knickpoints; creation of backwater effects which minimize the level of turbulence and protect bridge pilings and stream banks upstream; structures work as fish-passageways, thus satisfying the requirements for catfish passage determined by the IDNR (the minimum required flow depth is 1 foot and the maximum velocity requirement is 4 feet/s).
- Survey measurements included: cross-sections, water surface profiles, weir slope, flowpaths, scour holes and other basic topographic details such as debris and vegetation.
- Acoustic Doppler Velocimeter (ADV) time-averaged flow point measurements for fall 2004 and fall 2005, and an explanation of the ADV Technique using a transducer were made with Large-Scale Particle Image Velocimetry (LSPIV) Measurements for fall 2004 & spring 2005.
- LSPIV Measurements for Fall 2004/Spring 2005 were calculated using the two-dimensional (2-D) velocity field around the structures. Calculated discharge (ungaged streams) is used for developing stage-discharge equations. The technique is an inexpensive method utilizing video equipment and a geodetic survey to describe the region of interest (ROI). A camera that is set on a mobile truck (LSIV truck) is capturing the movements of small particles (mulch) as they float on the water surface. The errors in the measurement of the mean velocity are less than 1.5%.
- Recommendation based on hydraulic measurements include: the best performance, without consideration of drainage areas, was exhibited by the low gradient grouted or riprap weirs or by the fish ladder with baffles. The medium gradient weirs also performed satisfactorily.
- Considering the drainage areas, it is recommended that when drainage areas are less than 20 mi² the best structure is the low gradient. When the drainage areas are between 20 and 100 mi² the best structure is either in the low or medium gradient. When the drainage areas are larger than 100 miles² the best ones are the medium gradient.
- Recommendations: future studies and continuous observations should be made for longer periods of time in order to capture higher flow events; a useful tool to facilitate such a need would be the installation of sensors for continuous recording of basic flow characteristics related to fish passage and isolated measurements obtained from atop structures which are sufficient for evaluating the hydraulic performance of the structures.
- Q: Are cost factors considered in the recommendations? A: Yes, initially we just looked at hydraulic performance of structures but then also, yes, we have considered economic factors.
- Q: Were any of these structures subject to laboratory investigations before they were built? Or were they just built in place without much in the way of design in relation to performance? A: They were built consolidating laboratory investigation and those structures are 10 years old. It would be nice if a laboratory investigation was in place...whoever was involved in the design of the structures had good intuition. Overall, laboratory investigation and design performed well. There were no major problems.
- Q: It this the draft we're voting on or the Final Report? Figures seem to be missing. A: The report does not have the TR-521 on the front cover and disclaimer as required. Another printing will be made with the required title documentation and printed as the Final Report. Also, the appendix is a

very large document and has not been printed because the size was significant. All of the figures and list of tables were included in the appendix on the CD sent to the Board.

- Mark Dunn said hard copies were not made of that material but that the appendix was in the Board packets sent out before the meeting.
- C: It's fair comment to provide any editorial changes to any of the reports before they're put on the website. The board is not here to just rubberstamp a report if there are comments.
- C: It is typically understood that most of these [reports] are drafts until given final approval.
- C: So when we vote this is not final approval? A: Yes, this is final approval with the understanding that there may be corrections to be made.
- C: It is recommended to have a Table of Contents that includes a list of figures and tables.
- Motion made to approve TR-521 by Jon Ites.
- Moved by John Rasmussen. Second by Mark Nahra.
- Motion carried with 15 aye, 0 nay, 0 abstaining.

Development of Strategic Research needs for FY 06-07

• Mark Dunn, Secretary, presented comments as follows to the Board: February's meeting this year is when a list of topics for next year's consideration will be developed. Due to the length of this meeting, it was hoped that most of those topics could be collected outside of the meeting. A list will not be compiled until the first week of March. Topics can be mentioned here or they can be sent to via email, which is probably the best thing as they can be cut and pasted into a summary document. Mark requested everything be submitted by March 3 where they will be summarized by different topics and thus, can be addressed at the April meeting and ranked.

- No comments were made.

Discussion of May Traveling Meeting options

- The May meeting is typically when the traveling meeting; topics can be suggested with the final selection at the April meeting.
- One project that may work out (the time table is undetermined) is "Pre-Cast Panels for Bridge Approach Sections". Hopefully that will be moving forward in the next two weeks but it is unknown when the placement will actually occur and whether that will coincide with that date.
- The May meeting is actually on June 2 this year due to the Memorial weekend.
- The traveling meeting is something that can have the date adjusted in correlation with what is going on with projects.
- The Pre-Cast Bridge Approach Panels will be up in the Sheldon area in the NW side of the state; it's a long way up there but it will be an interesting project. If it doesn't coincide with the Board

meeting, there will be an open house during the placement of those in conjunction with the Federal Highway Administration that will be taking place regardless of what the Board decides.

- C: The last away meeting was down in SW Iowa. Prior to that there were 2 meetings in NE Iowa in Buchanan County. Before that we were in Iowa City, so we may want to consider other parts of the state.
- Q: When was the last time we were in Iowa City? A: About 5 years ago.
- Q: What is going on there? A: A number of things—the hydraulics labs, experiments on bridge abutment, etc.
- C: Tom Schnell had some pretty neat presentations at TRB this year.
- R: General agreement.
- No further discussion.
- Mark Dunn said that if there is any other ideas they should be sent to him and the Board can make the final determination at the April meeting.

Selections of proposals from the Innovative Projects RFP for presentation at the April meeting

- Projects were listed by number for the Board's consideration. There were fourteen possibilities with 9 voted on for future presentation. An estimated funding total of \$200,000 will be distributed between those selected.
- County engineers selected six as a group for consideration: 2, 4, 5, 6, 11 & 14.
- State engineers selected six as a group for consideration: 2, 3, 11, 12, 13 & 14.
- City engineers selected a group of three for consideration: 4, 5 & 13
- It was determined that both university representatives would abstain from voting as they are deeply invested in research proposals. A show of hands was used, with 6 votes given to each member. The top vote-getting proposals are invited to present their proposals in the April meeting.
- C: A question had been raised as to the budget amount; there is no actual set budget. Maybe of the 5 or 6 to be selected, a proof of concept be done for less funding so more than 2 projects would be selected out of the process. A goal in all this, aside from getting new ideas to the Board, is introducing new 'faces' to the Board. Criteria looked at includes who is new here, particularly younger people who have not yet connected with the DOT, counties or the cities, rather than re-funding people who are well established.

- Voting ensued as follows:

Item Number	Number of Votes
2	9
3	2
4	12
5	9
6	6
11	12
12	3
13	9
14	8

- Motion was made to invite the 6 top vote-getters (8 votes or more) to present to the Board.
- Moved by Clark Schloz. Second by Mark Nahra.
- C: The \$200,000 is not a fixed number but a target as far as is available. Hopefully, 3-4 projects will be funded with an amount between \$180,000-\$220,000.
- C: There is a conceptual basis for an idea here that may cost less but get something going. I think we should know that from the presenters. That is the case talking with a few colleagues. Some of these initial Proof of Concept(s) can be done for less money than is indicated here.
- Mark Dunn said that when he responded to those 6 who were selected, he would communicate that the Board would be interested if there was a way to reduce the cost and that would be taken into consideration for selection.
- C: There were a couple of projects listed, good ideas, that could be considered under regular planning next time, such as “Ultra-high Performance Concrete Substructures” that could easily be included in the prioritization.
- C: Projects that were not selected will be included in the projects considered for prioritization at the April meeting.
- C: One of the earlier objectives of this program was to flush out new ideas that come to the Board other ways.
- C: In regard to cost: These are estimates on what these projects would cost to give us guidance when the Board is trying to set an estimated project cost by looking at similar type work. Sometimes when developing a problem statement we’re unsure just how much we can get for the money...or how much money can we get for the idea we need to learn about.
- Motion to entertain the top 6 proposals for presentation.
- Motion carried with 14 aye, 1 abstaining and 0 nay.

New Business

- None

Jon Ites entertained a Motion to Adjourn. Moved by Mark Nahra. Second by Larry Jesse. Carried with 15 yea, 0 nay and 0 abstaining.

Date of Next Meeting: The next meeting will be held Friday, April 28, 2006 AT 9:00 a.m. in the East/West Materials Conference Room at the Iowa DOT, Central Complex in Ames, Iowa.

Mark J. Dunn, IHRB Secretary