

MONTANA DEPARTMENT OF TRANSPORTATION
Helena, Montana 59620-1001

MEMORANDUM

To: Craig L. Abernathy/Pavement Analysis & Research Section
Kent M. Barnes, P.E./Materials Bureau (absent)
Robert E. Burkhardt/FHWA
John D. Craig/ Transportation Planning Division
Jim Greil/Aeronautics Division
James E. Hyatt/ Maintenance Division
Drew F. Livesay/Motor Carrier Services Division (absent)
Joel M. Marshik, P.E./ Environmental Services
Jeanne Nydegger/ Pavement Analysis & Research Section
Brooke Page/Pavement Analysis & Research Section
James A. Walther, P.E./Engineering Division

From: Susan C. Sillick
Manager, Research Program

Date: June 20, 2000

RE: Summary of Minutes from the Tuesday, February 29, 2000 RRC Meeting

Jim Walther chaired the RRC meeting and welcomed champions and submitters of research ideas, who were in attendance to support their research ideas prior to the RRC and District Administrators ranking these ideas.

99.018 – Hydraulic and Sediment Transportation Characteristics at Bridge Crossing on the Upper Yellowstone River

Dick McIntyre and Chuck Parrett were present to support this project, which is part of a larger pooled-fund project.

The proposed USGS cooperative project will investigate and describe various hydraulic characteristics of the mainstem Yellowstone River from Gardiner to the mouth of Mission Creek downstream from Livingston, Montana. The project will focus on four interrelated tasks that include (1) surveying channel-geometry (cross-section) data for mainstem Yellowstone River; (2) water-surface profile analyses; (3) flood-plain and floodway delineation; and (4) sediment-data collection and sediments-transport modeling in a portion of the proposed study reach.

MDT's share of this study will be \$60,000.00. Park County Conservation District is committing \$108,250.00 with the Montana Department of Natural Resources committing \$7,500.00 in direct services. This amounts to \$175,750.00. USGS will match this amount in Federal Funds.

99.019 – Bridge Scour: Field Measurements to Determine and/or Calibrate Scour Equations Applicable to Montana Streams

Tim Conway (Hydraulics) was present to discuss this project. According to Tim, since the early 1950's, MDT has had 40 bridge failures (70% of all bridge failures) due to flooding (scour). There are 3 basic types of scour, but this research is directed towards local scour or more specifically pier scour.

FHWA has published Hydraulic Engineering Circular #18 (HEC18) for the purpose of evaluating scour at bridges using the CSU equation. Although this equation works well for fine bed materials in Montana, it overestimates scour in streams that possess larger channel bottom material. Because of this, the Froehlich equation was developed by analyzing field data measured in streams with large channel bottom material.

Results from the Froehlich Equation appear to correlate more closely with observed scour in Montana streams that possess larger channel bottom material. However very limited research has been conducted in Montana to document this correlation. The proposed research would bridge the gap and offer Montana, geographically specific documentation that the Froehlich Equation is applicable. Currently, the Froehlich Equation is applied to streams with an average channel bottom material that is greater than 65mm. The proposed research will verify the applicability of this cut-off size.

99.007 – Supplemental Research on Montana Seasonal Variation of Pavement Materials Moduli in Regards to Spring Thaw

Bill Vischer was present to discuss this project.

In a previous study, CRREL used 2 years of modulus data gathered from the Road Rater to document Seasonal Modulus changes for various areas in Montana. The purpose of this study is to improve the confidence of the previous results by incorporating more data gathered by the JILS to establish a credible seasonal adjustment model for use in our mechanistic design process.

99.023 – Material Characterization for Montana Asphalt Paving, Base, and Sub-Grade Materials

Bill Vischer was present to discuss this project.

The purpose of this project is to dynamically characterize materials using modulus tests to establish a state materials database in support of our mechanistic design process.

99.009 – Effects of Magnesium Chloride (Liquid-Deicer) on MDT's Bridges

Jim Stevenson was present to discuss this project

The Bridge Bureau and Maintenance Division have concerns about the high amounts of chloride on the bridge decks.

The purpose of this project is to determine the corrosive effects of Liquid-Deicers, if any, on the rebar in bridge decks.

99.028 - *Highway as Potential Barriers to Migration and genetic Exchange in Small Vertebrates*

Joel Marshik introduced Dr. Dan Pletscher-UM, Dr. Lynn Irby-MSU, Dr. Al Zale-MSU, and Dale Paulson-FHWA. All were present to discuss this proposal.

The purpose of this project is to determine if traffic levels and road widths have an effect on the genetic diversity of small mammals and amphibians, which could lead to local extinction and less viable populations.

99.008 - *Erosion Control* – No one was available to speak on this subject today

Following the conclusion of the discussion on the proposed research topics, the regular RRC meeting began.

1. **Budget Report:** Attached – No additions or corrections

2. **Research Project – current listing:** Attached

2a. *Maximizing Use of RWIS for Highway Operation and Design-A Strategy for MDT* – Technical Panel Recommendation – Attached

2b. *Project Changes in Human Population Density and Highway Access Demand in Western Montana* – Technical Panel Recommendation – Attached

John Craig moved that the RRC uphold the technical panel recommendation on 2a. and 2b. to not proceed with either of these studies, Jim Hyatt seconded the motion. All present voted in favor of the motion.

2c. *Development of Performance Prediction Models to Support Mechanistic Design* – (To Be Distributed)

This is a current project that the RRC had approved from their 1998 Solicitation. The technical panel has met several times pertaining to this proposal and is now ready to put it out for an RFP.

However, prior to issuing an RFP, the technical panel would like to know if the RRC supports the concept of this project.

The goal of this project is to calibrate deterioration/performance models to local conditions as one of the essential steps in implementing a successful, credible mechanistic design process. To that end, we need to begin the establishment of the necessary modeling tools and basic performance database, based on local Montana materials and conditions.

Following a discussion, Jim Hyatt moved to approve the concept and have the technical panel go ahead with the RFP, seconded by Sue Sillick. All present voted in favor of the motion.

3. Reports:

3a. *LTAP* – Quarterly Progress Report July through September 1999 – Attached

3b. *Field Evaluation of Corrosion Inhibitors for Concrete* – Quarterly Progress Report 10/1/99 to 12/31/99 – Available Upon Request

3c. *Rehabilitation Techniques for Stripped Asphalt Pavement* – Quarterly Progress Report 10/1/99 to 12/31/99 – Attached

3d. *Crack Sealing Cost Effectiveness* – Quarterly Progress Report 10/1/99 to 12/31/99 – Attached

3e. *Behavior of Steel Pipe Pile-to-concrete Cap Connections Under Lateral Loads* – Quarterly Progress Report – 10/1/99 to 12/31/99 – Attached

3f. *LTAP* – 4th Quarterly Progress Report – Oct/Dec '99 – To Be Distributed

3g. *Field Evaluation of Corrosion Inhibitors for Concrete* – Quarterly Progress Report – Jan/Mar 2000 – Available Upon Request

There were no comments on any of the above reports. It was noted some were attached to the pre-meeting agenda packet and others were available upon request.

4. Contract Extensions: None

5. Proposals:

5a. *Development of Regional Relationships for Bankfull Stage in Natural Channels of the Upper Missouri and Upper Columbia River Basin of Western Montana* – Attached

This is a Pooled-Fund Study among Fish, Wildlife and Parks, USGS, and MDT.

The purpose of this project is to increase the amount of creditable scientific data used to evaluate and design various channel restoration projects at impaired stream reaches throughout Montana. Three interrelated tasks to gain better knowledge of the relationships between channel morphology and streamflow under natural conditions include: (1) determination of bankfull discharge and measurement of several morphological variables at various gauged sites in western Montana; (2) determination of Rosgren Level II stream classification values for each gauged site; and (3) Development of regression equations relating bankfull discharge and discharges having reoccurrence intervals of 2, 5, 10, 25, 50, 100, and 500 years to significant morphological variables.

Following a discussion, Jim Hyatt moved that we approve this proposal in concept, seconded by John Craig. All present voted in favor of the motion.

5b. Memorandum of Agreement on Transportation and Wildlife Ecology – Attached

Joel Marshik, Gordon Stockstad, Sandy Straehl, Jim Currie, Dr. Dan Pletscher-UM, Dr. Lynn Irby-MSU, Dr. Al Zale- MSU, and Dale Paulson-FHWA, were all present to support this MOA.

The purpose of this MOA is to develop a long-term (10-year) relationship among MDT, U of M, and MSU for research of mutual interest in Wildlife Ecology and Transportation. As a result of this research, the Department's decision making process concerning wildlife issues can be improved. The MOA involves an annual funding level of \$300,000.00.

The RRC was asked to endorse the concept of the Memorandum of Agreement. Following comments and discussion from various individuals, Joel Marshik moved to approve the concept of this draft memorandum, seconded by Jim Hyatt, and all present voted in favor of the motion.

5c. Pavement Marking Life Cycle – Pooled-Fund Study – To Be Distributed

This proposal is a request from the Utah DOT to develop a pooled-fund study to develop failure curves of different pavement marking materials relative to variables such as pavement types, ADT, environment, etc.

There will be around 15 participants in the pooled-fund study; the scope of the research will be developed at a meeting in Rapid City, South Dakota in June.

Joel Marshik made a motion that the RRC support this pooled-fund study with \$50,000.00, seconded by Jim Hyatt. All present voted in favor of the motion. Hyatt did not vote as he was called out of the meeting and the vote was taken before he returned.

6. Implementation: None

7. Additional Agenda Items:

7a. New Field Representative to the RRC

Sue reported that she had one recommendation (Stefan Streeter/Billings District) for the position of field representative to replace Loran Frazier on the Research Review Committee. Since this was not previously discussed at a DA meeting it was decided that Jim Walther would bring it before the next DA meeting on April 3rd prior to making a final selection.

7b. Solicitation Process

The new solicitation system was discussed.

First, the RRC agreed that they liked the idea of champions and sponsors. They also liked hearing from the champions prior to ranking new research ideas.

The question was then asked, since we have an internal champion and sponsor for new research ideas making these ideas high priority, do we need to rank the ideas?

It was decided to keep the ranking system since RRC members like to see where the support is coming from. By keeping this system as is, there is a mechanism in place to be able to cull a project if it shouldn't go any farther.

cc: Bruce H. Barrett/District Administrator-Billings
D. John Blacker/Maintenance Division
Russell G. McDonald/Human Resources Division
Loran Frazier, P.E./Missoula District
Michael D. Ferguson/Aeronautics Division
Jason Giard, P.E./District Administrator-Butte
Gary A. Gilmore, P.E./Engineering Division
Michael P. Johnson/District Administrator-Great Falls
Joseph P. Kolman, P.E./Bridge Bureau
Drew F. Livesay/Motor Carrier Services Division
Thomas E. Martin, P.E./Right-of-Way Bureau
William L. McChesney/District Administrator-Glendive
Carl S. Peil, P.E./Preconstruction Bureau
Patricia Saindon/Transportation Planning Division
William G. Salisbury/Administration Division
Robert D. Tholt, P.E./Construction Bureau
Jon S. Watson, P.E./Pavement Analysis and Research Section
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