

RESEARCH ADVISORY COMMITTEE MEETING MINUTES

The Research Advisory Committee (RAC) met in the Geology Conference Room, in the Planning Building, on Friday, April 8, 2016. The meeting commenced at 9:00 a.m. The following members were present, constituting a quorum.

Mark Eisenhart, P.E., State Field Operations Engineer
Peter Hallsten, P.E., District 5 Maintenance Engineer
Greg Milburn, P.E., State Materials Engineer
Mark Gillett, P.E., District 4 Engineer
Matt Carlson, P.E., State Highway Safety Engineer
Kevin Lebeda, Right of Way
Jim Coffin, P.G., Chief Engineering Geologist

Also present at and participating during the meeting were:

Tim McDowell, P.E., State Programming Engineer
Jeff Purdy, FHWA, Supervisor, Transportation Planner
Kam Ng, University of Wyoming, Assistant Professor
Kathy Ahlenius, Winter Research
Khaled Ksaibati, University of Wyoming, Professor
James Evensen, District Traffic Engineer WYDOT
Josh Hewes, InterAlpine Associates
Rand Decker, InterApline Associates

Chairperson White called the meeting to order. Minutes from last meeting were edited and approved by the RAC.

Ms. White discussed the open projects and the time extensions since the last RAC meeting. Discussion was held on CrossRef (digital object identifier database), and explained what digital object identifiers are and how they are used. It was noted that Ms. White will be presenting in two breakout sessions during the AASHTO RAC Summer Meeting in Providence, Rhode Island this July. The first session will be on public access and the second session will be on intellectual property, specifically copyrights and research reports.

PROPOSALS, REQUESTS FOR ADDITIONAL FUNDING AND ADDITIONAL TIME

1. Updating and Implementing the Grade Severity Rating System (GSRS) for Wyoming Mountain Passes.
Khaled Ksaibati, University of Wyoming
James A. Evensen, District 4, WYDOT

Mr. Evensen made the introduction for the project and informed the RAC that District 4 has experienced a rise in truck crashes above Dayton and Ranchester on Hwy 14. In a majority of the crashes, the driver is from out of state and is not use to driving mountain roads. Survivors of the crashes state that they have never driven a mountain pass like this before. The current signage on the pass says things like “steep grade”, and use “low gear”, but there is no mention of speeds for different trucks and weights. Mr. Evensen informed the RAC that the last GSRS was put out in the 1980s and is out of date.

Mr. Ksaibati discussed the project, the work that will be preformed, and the fact that the safety coalition recommends this project. He discussed the various studies that have been conducted regarding GSRS, and how all the studies are based on old models. Mr. Carlson discussed the safety collations support on the project. Mr. Gillett discussed the conversations he has had with the Governor’s Safety group regarding this project. Mr. Ksaibati discussed the truck that they will be using to test the downgrades, road conditions and other aspects of the study. It was noted that this study could have national impact. The project is estimated to cost \$157,004, and should be completed around December of 2018.

Questions: Discussion was held on a study out of Colorado and how Mr. Ksaibati intends to work with DOTs in different states. It was mentioned that there are no relevant articles available regarding this research subject. Discussion was held on the tasks to be performed, implementation, the instrument box, and on whether implementation of this project could be tied to the connected vehicle study.

2. Climate Change, Snowpack Distribution, and Highway Winter Maintenance.

Rand Decker, InterAlpine Associates

Kathy Ahlenius, Winter Maintenance, WYDOT

Ms. Ahlenius discussed the background for the study.

Mr. Decker discussed the phases of the proposal, the tasks to be conducted, the national implications, climate change, how the project will affect others, and the hydrologic studies that have been conducted on snow impact. Mr. Decker provided information on the highland snowcaps, watersheds, snow packs, and how each could impact winter maintenance. Mr. Decker provided a video showing snow pack and draught conditions in the Wasatch Mountains, and this is indicative of what is going on all around the United States.

Questions: Ms. Ahlenius discussed how FHWA and TRY have been examining climate models and what Mr. Decker was proposing was innovative/cutting-edge research. This research would be the first rung on the ladder in climate research. Discussion was held on how this research will be beneficial for WYDOT, on where, geographically, the research would occur, and on who would pick the roadways for the project. Discussion was also held on how this research could affect bridges, pipes, culverts, roads, and other maintenance issues. Ms. Ahlenius discussed how we need to begin somewhere and how this is the perfect project to do this – this is ground-breaking research. We can do more than just throwing darts in planning sessions.

Update on a Comprehensive Technology Assessment for Avalanche Hazard Management: Developing and applying an avalanche hazard technology optimization process to a case study on US Route 189-191 in Hoback Canyon, Wyoming and request for additional funds and time

Rand Decker

Mr. Decker has been working with WYDOT for over fifteen years on avalanche matters. There are numerous measures that have been used in Teton County, in fact, Teton County is one of the national test beds for avalanche technology. Mr. Decker provided a brief history of the avalanche mitigation tools that have been used over the years, and the current project.

This request asks for a one year extension to obtain one more winter season's data, and additional funding to purchase a third Obell X. This project can be uncoupled. The first task is to deploy a new Obell X. This will assist WYDOT eliminate the need to use military weapons when dealing with avalanches in the area. The second task would be to review and rewrite the manuals used to install the Obell X, and other hardware when using ISO standards. ISO standards have no standard constructions plans in the United States. Mr. Decker mentioned that this could cause big mistakes when installing and deploying the Obell X. This task will take the ISO foundations and translate them into domestic dimensions. Discussion was held on the third Obell X, the cost of avalanche mitigation tools, and fatalities from avalanches. Discussion was held on where to place the third Obell X and how this will meet the needs of the Cow of the Woods avalanche zone.

Questions:

Discussion was held on why the Obell X cannot be moved from one pedestal to another in the winter and how one is needed in each area. Discussion was held on how the first two Bells were purchased. Discussions were held on the three starting zones in the area that need to be covered. WYDOT is still shooting military rounds in the third area, which takes about three hours. Deploying the Obell X only takes about one hour. Discussion was held on how WYDOT will need to file a second Buy America Waiver if this project is funded.

BREAK

Design and Performance Evaluation of a Semiflexible Snow Barrier for Avalanche Protection.

Joshua Hewes

Jamie Yount

Mr. Hewes introduced himself to the RAC. He discussed the new types of defense systems available for avalanche mitigation, and how the snow supporting umbrella (SSU) system will benefit WYDOT. This system focuses on the starting zone defense and is a passive defense that keeps the snow pack from moving down the mountain. Mr. Hewes explained the difference between flexible and rigid systems and the need to implement the proper type for reforestation. WYDOT began using foundation system as early as 2002. In 2010, the construction of the snow supports on the 151 began which have held the avalanches from hitting the highway. Mr. Hewes discussed the difference between the snow nets and

the snow umbrellas and why they umbrellas are better for the 151 snow slide area. Mr. Hewes either will purchase a SSU from a company in France, or will try to design one to be used in the 151 area. He has performed a patent search and will review his findings. The electronic equipment used in the snow supports on the 151 can be used for this project and will save money. This should be a three year project.

Questions: Discussion was held on the Buy America Waiver if the SSU needs to come from France. If Mr. Hewes builds his own, the steel must come from America. Discussion was held on the maintenance of the SSU and possible issues with the SSU. Mr. Hewes believes that he will need 3 – 6 units to complete the research.

Request for extension of time and cost extension for the Jackson South Snow Supporting Structures Proposed Performance and Health Monitoring of WYDOT Project No. N104085, Teton County, Jackson, Wyoming research project.

Joshua Hewes

The current project is scheduled to wrap up in September of this year. This project is on time and within budget. At this time, the frames have been instrumented and visual evaluations have been completed. They are continuing to measure the snow depth and pressure. The measures they cannot obtain at this time are creep and glide of the snow pack. At this time, 20 pressure cells are monitoring pressure. This request would allow Mr. Hewes to obtain one more year of snow data. It would also allow him to deploy a glide shoe to help measure creep and glide of the snow pack. Mr. Hewes has researched a glide shoe that is manufactured in Italy, and believes he can build something like this for this project. If he uses the glide shoe from Italy, he will need a Buy America Waiver. If he builds one, he needs to review patents for the original glide shoe. The request is for one year extension and \$9,000 extra dollars in funding.

Questions:

Discussion on whether there will be a delay in the umbrella project if this project is implemented. Discussion was held on the SSU and whether they will enhance what is up on the mountain side already. Discussion was held on the functionality of the SSU and the snow structures already in place.

BUDGET DISCUSSION

Ms. White outlined the monies that are available in FY2016, the monies that still need to be paid out, and the FAST Act funding.

VOTE ON PROPOSALS, EXTENSIONS FOR TIME AND FUNDING

Updating and Implementing the Grade Severity Rating System (GSRS) for Wyoming Mountain Passes

Mr. Eisenhart moved and Mr. Milburn seconded that this project should be forwarded to Executive Staff and FHWA for funding approval.

Discussion. Mr. McDowell stated that he has received calls from Executive Staff regarding this project and whether it has gone to the RAC yet. Mr. Carlson disused the interested in this project. The Highway Safety Office approves of moving this project forward. Discussion was held on the placement of safety devices, information from other passes in the state, and how the information from this project will be beneficial to the stakeholders. Discussion was held on connected vehicles and weights in motion.

By a unanimous vote, this project will be forwarded to FHWA and Executive Staff for a funding approval.

Climate Change, Snowpack Distribution, and Highway Winter Maintenance

Mr. Gillette moved and Mr. Hallsten seconded that this project should be forwarded to Executive Staff and FHWA for funding approval.

Discussion.

Mr. McDowell reminded the RAC that this project could be funded for the full amount or could be broken down into smaller projects. Discussion was held on future predictions and how this would not assist WYDOT. Maintenance will need to take each storm and each work load on a case by case basis. Discussion was held on how they did not think that the expenditure of funds on this type of research was warranted. Do not know what the benefit would be for WYDOT. Might shift resources on what is occurring at the time.

By a unanimous vote, the RAC chose not to forward this project to FHWA and Executive Staff for a funding approval.

Design and Performance Evaluation of a Semiflexible Snow Barrier for Avalanche Protection

Mr. Milburn moved and Mr. Eisenhart seconded that this project should be forwarded to Executive Staff and FHWA for funding approval.

Discussion. Discussion was held on the use of the SSU, how it would benefit WYDOT, the design of the SSU, and the foundation.

By a unanimous vote, this project will be forwarded to FHWA and Executive Staff for a funding approval.

Update on a Comprehensive Technology Assessment for Avalanche Hazard Management: Developing and applying an avalanche hazard technology optimization process to a case study on US Route 189-191 in Hoback Canyon, Wyoming and request for additional funds and time

Discussion was held on the extension of time and the money for each stage of the request. Mr. McDowell reminded the RAC that this project could be funded for the full amount or could be broken down into smaller projects. He further informed the RAC that the Obell X has been tested and the research proves that the unit works in the Cow of the Woods area. Discussion was held on whether it is a good use of research funds to purchase the Obell X since the unit has already been tested. Discussion was held on the standards and ISO specs. It was stated that it was not as big an issue; they make the conversions all the time, and do not believe spending research funds on an everyday practice was

warranted. The RAC believed this is a design function not research. By a unanimous vote, the RAC chose not to forward this project to FHWA and Executive Staff for a funding approval

Request for extension of time and cost extension for the Jackson South Snow Supporting Structures Proposed Performance and Health Monitoring of WYDOT Project No. N104085, Teton County, Jackson, Wyoming research project

Mr. Milburn moved and Mr. Lebeda seconded that this project should be forwarded to Executive Staff and FHWA for funding approval. There was no discussion on this motion. By a unanimous vote, this project will be forwarded to FHWA and Executive Staff for a funding approval.