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From the Desk of the Director



By: Khaled Ksaibati

We are up to a good start at the WYT2 center in 2021. As you can see in this issue of our newsletter, we have scheduled a significant number of virtual training events. These training events include topics ranging from highway safety to pavement materials and maintenance. In addition, some of our trainings concentrate on certifications in materials testing, ATTSA, and LPA. We are hoping that you will all take advantage of these training/certification opportunities before the busy summer construction/ maintenance season would begin.

There is also an article in this newsletter about a proposed pavement testing facility. We are hoping that this feasibility study will turn into reality in the future. If the facility is approved for construction, there is a chance that the test tracks may include not only heavy traffic volume roads but also a low volume road track which would be helpful for all local agencies managing low volume roads.

The WACERS meeting will be held virtually as part of the Annual Wyoming Safety Congress Month. You can join the meeting on the phone or with a computer. The zoom link will be provided to you after you register.

Finally, a couple of weeks ago, we sent a pamphlet about our drones program to all counties. More details about this program will be presented at the drone session of the safety congress. Please reach out to us if you are interested in a demonstration or to get additional details. A quick guide for how to establish a drone program will be posted on our web site by the summer.

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COVID 19 Safety Tips:

-Wear a mask that covers your nose & mouth in public

-Wash or sanitize hands after being in public spaces, before touching your face or after coughing/sneezing

- -Avoid close contact and stay home if you're feeling sick
- -Clean and disinfect common areas
- -Monitor symptoms & take your temperature daily

26th ONLINE Annual Wyoming Safety Congress Month

April 2021

By: Jessica Andersen

After a year of having the COVID-19 pandemic, many hoped 2021 would improve with the vaccine coming out. Unfortunately, the rate of dispersing the vaccine is not fast enough for us to feel comfortable having the Safety Congress in person. This April, we are excited to have the Safety Congress as a month long online conference with events scheduled for each day (calendar on next page). The cost of the Safety Congress is \$100.00 per person. Once registered, participants can attend any of the events they are interested in.

Zoom is an online platform that allows participants to join the call and view the presenters screen and presentation. Each event will have a Zoom link that we will email to the person that registered. The events that will be presented include: Work Zone/ATTSA & Local Project Administration (LPA) Certifications and WACERS Meeting Other topics will include Excavation & Trench Safety, Pavement Marking, Reducing Highway Crashes, Implementing a Drone Program, Setting Speed Limits and more. Each Monday we will have Vendors present about their product. Giveaways will be mailed to those who participate!!

Anyone registered for the ATTSA Certification will need to send us their mailing address for the test they will need to complete/pass. There will be a hands on flagging test during the class, and we ask that those who have registered have something to use.

The WACERS Meeting is a semi –annual meeting for the Wyoming Association of County Engineers and Road Supervisors and will cover a wide range of topics related to local governments in the state. The agenda will be sent to the members prior to the Zoom meeting.

The Local Project Administration (LPA) is a 3 year certification that ensures a sub-recipient agency has a fundamental understanding of the requirements in executing state and Federal Highway Administration rules. The goal is to assist local agencies in bringing projects to successful completion. This event will be hosted both in person and on Zoom. The in person certification will be at the WCA Regional Training Center (Casper, WY). The in person training has limited seats in the class (20 people) and we will add people as we receive the registrations. Depending on when you register you may be given the Zoom link to take the certification online. There is a short test that will be administered online at the end of the certification.

To check if your certification is still active, you can follow the link below to see our list: <u>http://</u><u>www.uwyo.edu/wyt2/certifications/index.html</u> The list is in alphabetical order depending on last name or in order of renewal date, latest renewal first. If you would like to search for a particular city/ renewal date you can use adobe's search function (CTRL-F) and enter in the city/renewal date to easily find certified individuals.

Certificates of Continued Education:

If you are interested in receiving certificates of continued education we ask that you send us an email at the END of the month listing which you would like. We will send them though email.

Registration:

Follow the link below to register and click on the blue button for the Safety Congress: http:// www.uwyo.edu/wyt2/workshops/index.html *If you want to register a group, contact us and we can work it out.

Cost: \$100.00 per person (once you've registered you can attend any event)

For more information or questions, please contact Jessica Andersen at the T2 center. Phone: (307)-766-6743 Email: wyt2c@uwyo.edu

Wyoming Safety Congress Month ONLINE

April:

Monday	Tuesday	<u>Wednesday</u>	<u>Thursday</u>	<u>Friday</u>
5 <u>Vendors</u> 1:00PM-4:00PM	<u>6</u> <u>Session 1:</u> <u>WORK ZONE</u> 8:00AM-12:00PM <u>ATTSA Flagger</u> 1:00PM-5:00PM	Z <u>Session 1:</u> <u>Excavation &</u> <u>Trench Safety</u> 8:00AM-12:00PM	8 Innovations in Pavement Marking 10:00AM-12:00PM	<u>9</u>
12 WACERS Meeting 9:00AM-11:00AM Vendors 1:00PM-4:00PM	13 Session 2: WORK ZONE 8:00AM-12:00PM ATTSA Flagger 1:00PM-5:00PM	14 Local Project Administration (LPA) 8:00AM-5:00PM	15 Impact of Highway Signs on Reducing Crashes 10:00AM-12:00PM	<u>16</u>
19 Establishing Passing Zones 10:00AM-12:00PM <u>Vendors</u> 1:00PM-4:00PM	20 Session 3: WORK ZONE 8:00AM-12:00PM ATTSA Flagger 1:00PM-5:00PM	21 Setting Speed Limits 10:00AM-12:00PM	22 <u>Understanding</u> <u>Wyoming</u> <u>Highway Crash</u> <u>Data</u> 10:00AM-12:00PM	<u>23</u>
26 <u>Vendors</u> 1:00PM-4:00PM	27 Session 4: WORK ZONE 8:00AM-12:00PM ATTSA Flagger 1:00PM-5:00PM	28 Implementing A Drone Program 10:00AM-12:00PM	29 Session 2: Excavation & Trench Safety 8:00AM-12:00PM	<u>30</u>

A Proposed Road Track Pavement Testing Facility on I-80 in Wyoming for the Dry-Freeze Climatic Region

By: Marwan Hafez

A road-testing track provides full-scale methods to test pavement materials and structures under actual traffic loading and environmental conditions. A new road-testing facility has been proposed by WYDOT on I-80 in Wyoming to assess the long-term pavement performance in the dry-freeze climatic region. The facility will include a main testing track on I-80, as well as a low-volume road. This is significant because several benefits and enhancement can be achieved for not only Wyoming but also for all other states in our region. The outcomes of testing both flexible and rigid pavements on the proposed road track are expected to refine the pavement design methods, asphalt material specifications, concrete material specifications, and management/construction techniques. The road track will also allow the investigation of cutting-edge materials and treatments to improve pavement preservation strategies. The Wyoming Technology Transfer Center (WYT²/LTAP) is undertaking the feasibility study of this project in the first research phase.

Collecting performance-related information of pavement through a real-world experiment can provide useful information for different design methods and specifications. For decades, several experiments of road-testing tracks have been conducted on major testing facilitates, including the Minnesota Road Research Project (MnROAD) on I-94 in Minnesota and the National Center for Asphalt Technology (NCAT) closed test loop in Alabama. Although cost-effective enhancements are being achieved in pavement design and preservation strategies, pavement conditions behave differently in distinct climates due to different responses, stresses, and environmental effects. There are four main climatic regions in the U.S. The dry-freeze climatic region covers the north-west portion of the country. Yet, no road track testing facility has ever been implemented in our region.



A Proposed Road Track Pavement Testing Facility on I-80 in Wyoming for the Dry-Freeze Climatic Region

The implementation of the proposed testing facility requires a significant investment in infrastructure and management. Hence, the research effort of this project is divided into two phases. The first phase is conducted jointly by the Wyoming Department of Transportation (WYDOT) and the University of Wyoming (UW). The current efforts of the first research phase are focusing on the feasibility of building a state-of-the -art regional testing facility. In this phase, a comprehensive literature search is conducted to find key concepts of pavement testing facilities currently existed across the country. All potential stakeholders and partners will be identified and contacted. There are a lot of organizations and industrial entities that can benefit from the proposed road track.



As part of the feasibility study, a comprehensive online survey was developed by the WYT² Center. The objective was to reach out to all interested states, including Alaska, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, North Dakota, Oregon, South Dakota, Utah, and Washington to share their experiences and thoughts on building and operating the proposed testing facility. The survey consisted of a series of questions to investigate how the proposed testing track will serve the needs of transportation agencies in the region. In addition, the survey verified the willingness of states' DOT and other transportation agencies in the dry-freeze region to participate in future pooled fund studies in the second phase. Another survey was disseminated to vital stakeholders in the pavement industry to evaluate novel industrial pavement products and technologies. Such potential participation in sponsoring the testing facility will accelerate the implementation of cutting-edge solutions recommended from the pavement industry. The results from these surveys were summarized showing different interests of participation in the proposed testing facility. The interests range from technical and advisory support to sponsoring pooled fund studies on the test track. In addition, a feedback was received from participants showing their experience and thoughts on building and operating the proposed testing facility, including the layout design, supporting facilities, test sections, design of experiments, instrumentation, data collection, and research needs.

A Proposed Road Track Pavement Testing Facility on I-80 in Wyoming for the Dry-Freeze Climatic Region

Another important pre-study determines the feasibility of the proposed testing facility in terms of expected benefits and associated costs. All costs associated with constructing and operating the testing facility were estimated based on a literature search. For benefits, all potential revenues were estimated in addition to the cost saving achieved from the pavement research on the proposed testing track in Wyoming. The benefits were estimated in forms of savings in binder products, precise pavement thicknesses, and higher performance pavement structures. The benefit-cost analysis was conducted and the results provide an overall benefit-cost ratio of 9.0 for the regional states. The results reflect a healthy return on investment in the feasibility stage. In addition, a sensitivity analysis was conducted to minimize the uncertainty in funding availability and assess the consequences of different funding scenarios from FHWA, states, and industrial partners. Promising results were found for the overall B/C to be ranged from 9.4 to 10.7. These results encourage both states and federal partnerships for a successful implementation of the testing facility in the second stage. All in all, participation is highly encouraged for cost-effectiveness, knowledge transfer and improved pavement performance in the dry-freeze region. The findings of this study were presented in the 2021 TRB annual meeting



Considering effective participation and technical guidance, the WYT² center held interactive meetings with the officials of MnROAD and NCAT testing facilities. Two meetings were held virtually for an initial contact with the facility managers. In these meetings, the best practices of managing and operating the testing facility were collected. It is evident from the meetings that there is a need for more test track facilities like MnROAD and NCAT in all different climate zones to improve the understanding of pavement behavior and performance. Moreover, MnROAD and NCAT have enormous experiences in instrumentation, contracting, data collection and management over the years which would be beneficial for the proposed facility in Wyoming. WYDOT and participating states can consider several recommendations derived from the MnROAD and NCAT experiences. Two reports were developed to document the lessons learned from MnROAD and NCAT activities over years. Also, both MnROAD and NCAT teams expressed willingness to cooperate with WYDOT and principal investigators, and provide the necessary guidance and information needed for a successful implementation of the project. Future studies are considered for selecting the location of the testing track on I-80 as well as summarizing research needs proposed for pavement and non-pavement research that are currently urgent for the regional states. This study is supported through a WYDOT grant. Keith Fulton (WYDOT Assistant Chief Engineer) and Greg Milburn (State Materials Engineer) initiated this research study. Please contact us at the WYT2 Center if you need additional details about this important study.

Statewide Sign Program



The WYT²/LTAP Center, WYDOT, and FHWA have been working with counties around the state to help improve safety on rural roads. In an effort to continue safety improvements that help reduce fatal and incapacitating injury crashes, three rounds of the WRRSP sign program have been implemented, a fourth round of this program will be implemented in 2021.

The T2 Center will provide counties with crash data and roadways eligible for the statewide sign program by the end of April. Counties interested in the program, can then send their requests for signs, posts, and hardware to the T2 center by the 16th of August, 2021. The T2 center will work with WYDOT to compile the requests from all counties, secure quick agreements with the counties, and then purchased the signs and have them delivered to each county most likely in the Fall of 2022.

All signs and posts are provided to each county at no cost. All signs need to be in compliance with the Manual of Uniform Traffic Control Devices (MUTCD). In Addition, the signs must be regulatory or warning signs. The counties are responsible for installation only. Counties are asked to install the signs as soon as possible and notify the T2 Center when the work is complete so that we can inspect and finalize reports on this important project.





In the three previous rounds of the program, almost 5000 signs were requested and installed on county roads in the state. Twenty out of the twenty three counties have participated in at least one of the previous three rounds of this program.

The T2 Center will provide counties with the signs request forms by May, 2021. More details about the program will be provided at the annual safety congress in April. **Please feel free to contact us at the center if you need any additional information or if you have any questions about this program.**

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Animal-Vehicle Crashes in Wyoming and Across the U.S.

By: Uttara Roy

Unlike you and me, Wyoming's wildlife doesn't look both ways before crossing the road. Most evenings on my way home from work I see a herd of pronghorns grazing in the field near my home. On occasion, I'll see them standing right next to the road choosing their moment to make a dash across the road. We are lucky to live in such a gorgeous state with wildlife that lives among us, but we need to be alert drivers to avoid hitting any of them.

Around one million wildlife vehicle collisions occur annually in the United States and it results in billions of dollars of property damage, personal injuries and fatalities (Huijser et al. 2008). The count of fatalities incurred in animal-vehicle crashes was rising from the mid 1970's to 2007 and settled thereafter (Insurance Institute for Highway Safety, 2021). Approximately 180 fatal, 13,000 injury and 265,000 property damage only crashes involving animals were reported in 2015 by NHTSA (National Highway Traffic Safety Administration, 2015). If the record from Wyoming is considered, it was found that there was a total of 2,658 crashes in the state of Wyoming involving a wild animal in 2019. Of those 2,658 crashes, 70 people were injured, and 1 crash was fatal. Hitting a wild animal impacts everyone involved. Depending on the size and type of animal, it can cause major damage to the vehicle and will hurt the animal. These crashes occur more often during the fall and spring seasons when wildlife migrations and breeding activity are thriving. The majority of animal crashes involve property-damageonly (PDO) collisions with deer on rural two-lane roads. In addition, such crashes are underreported since the damages, in terms of cost, are lower than the reporting thresholds. Animal-vehicle crash (AVC) data are typically collected from crash reports and animal carcass (AC) counts.



In order to reduce the number of such crashes in Wyoming and across the US, the Wyoming Technology Transfer Center researchers are working with multiple partners from around the country to identify the characteristics of such crashes, how to reduce the severity as well as the frequency of such crashes. This work is sponsored by the appropriate Transportation Research Board (TRB) committees. The research team has identified two core areas where there is a gap in existing literature related to AVC. There are no current numbers on the national and statewide trends of AVCs. Therefore, the first part of the research will investigate the trends and characteristics of AVCs. The research will also examine annual crash rates per vehicle miles travelled (VMT) taking the data from Bureau of Transportation Statistics. Proportion of fatal, injury and property damage only AVCs to the total crashes will also be computed for each year. Next, the research will investigate the characteristics of AVCs. First, temporal distribution of AVCs will be evaluated. This includes monthly, weekly and hourly trends of AVCs. Then demographic profiles of drivers involved in AVCs will be investigated. This includes age, gender, seatbelt usage, driving under influence (DUI), whether airbag is available or not, travel speed, etc. Next, vehicular factors such as type and age of vehicle, initial impact will be examined. Environmental conditions which include light condition and weather condition related to AVCs will be investigated. Finally, spatial patterns of AVCs will be studied.

There has also been a scarcity of literature which focuses on the severity of AVCs. Therefore, the second part of the research will identify different driver, roadway, crash, vehicle, environmental conditions, and temporal characteristics that have strong association with the severity of AVCs. First, important characteristics (driver, roadway, crash, vehicle, and environmental conditions) related to AVCs will be identified and then how these factors affect the severity of AVCs will be examined developing statistical model.

Animal-Vehicle Crashes in Wyoming and Across the U.S.

The model which will be developed will be helpful to determine which factors contribute to the severity of AVCs. The results of the study will be thus helpful to identify means of mitigating these factors which will be ultimately reduce the severity of such crashes.

Finally, to investigate how to reduce the frequency of such crashes, frequency modeling will be conducted. Different factors that will be considered in the modeling of AVC frequency are lane width, number of lanes, median width, horizontal curve, grade, shoulder type, left shoulder width, right shoulder width, posted speed limit, average annual daily traffic, and restrictive access control. Results from the model will be helpful for transportation agencies to develop effective countermeasures which will reduce the number of AVCs.

Recommended courses of action intended to address animal crashes include the following (Huijser et al., 2008):

- -Integrate animal crash mitigation strategies into the initial phases of transportation planning projects.
- -Propose standards for collecting data on animal crashes and comply with those standards.
- -Put forth standards that guide transportation professionals on assessing animal crash countermeasures.
- -Assess the efficacies of animal crash countermeasures that are suggested for indepth investigation (e.g. animal sensors).
- -Deploy countermeasures that are known to be effective. They include installing fences, constructing animal crossings (e.g. culverts), deploying animal sensors, placing warning signs that alert drivers of animals crossing the road and educating the public about animal crashes, among others.
- -Estimate statistical animal population regression models to aid road agencies in devising their strategic plans targeting animal crashes.

Recommended course of actions needs to be taken once hit by an animal are (WYDOT):

- -Pull off the road and turn your hazards on.
- -Stay in your vehicle to protect yourself from cars driving by, if you need to exit the vehicle make sure to stand far from the road.
- -Call the Wyoming Highway Patrol (800)442-9090 to report the event.



Road sign to alert drivers of animals that may cross

Finally, AVCs are a significant public health burden. The likelihood of AVCs increases when human population expands and invades natural areas for wildlife. Therefore, continued research on AVCs is important to identify the underlying causes of such crashes and to identify the effective countermeasures to reduce such crashes. This will protect both endangered wildlife populations and humans.

References

- Huijser, M., McGowen, P., Fuller, J., Hardy, A., Kociolek, A., Clevenger, A., Smith, D., Ament, R., 2008. Wildlife-Vehicle Collision Reduction Study: Report to Congress. Report Number FHWA-HRT-08-034. Federal Highway Administration, McLean, Virginia.
- Insurance Institute for Highway Safety, 2021. Collisions with Animals. Insurance Institute for Highway Safety, Arlington, Virginia. https://www.iihs.org/topics/fatalitystatistics/detail/collisions-with-fixed-objects-andanimals#collisions-with-animals. Accessed January 6, 2021.
- National Highway Traffic Safety Administration. Traffic Safety Facts 2015. National Highway Traffic Safety Administration, Washington, D.C., 2015.

Wyoming Department of Transportation. Report on Traffic Crashes. <u>http://www.dot.state.wy.us</u>. Accessed February 7, 2021.

Upcoming Workshops &
Certification Courses
Asphalt Pavement Maintenance & Management Webinars:
-Managing Your Network, Evaluating Your Pavement (February 18)
-Preserving Your Pavements (February 22)
-Maintaining Your Pavements (February 25)
-Asphalt Overlays, Through Thick & Thin (March 4)
-Pavement Rehabilitation-Not the End of the Road (March 11)
-From Data to Action: Utilizing Wyoming Pavement Management System Reporting (March 1
 26th Annual Safety Congress Month – Events each day in the month of April
Culvert Slip-Lining & Trenchless Rehabilitation Webinar (May 12) or (May 13)
Concrete III Certification (May 17-19)
Asphalt III Certification (May 19-21)
Aggregate III Certification (May 24-26)

For more information and to register for upcoming workshops, please follow the link below. http://www.uwyo.edu/wyt2/workshops/index.html

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