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Upcoming Workshops:

- 22nd Annual Safety Congress
April 12, 2017
- Work Zone Safety and Flagger
April 12, 2017
- Local Project Administration
Certification
April 12, 2017
- Asphalt Training TBD
- WMTC Concrete Certification
January 4-6, 2017
March 15-17, 2017
May 10-12, 2017
- WMTC Aggregate Certification
January 23-25, 2017
May 15-17, 2017
- WMTC Asphalt Certification
January 25-27, 2017
May 17-19, 2017

T² Roads on the Range

The national Local Technical Assistance Program mission is to foster a safe, efficient, and environmentally sound surface transportation system by improving skills and increasing knowledge of the transportation workforce and decision makers.

Project Administration (LPA) Certification

WY T2/ LTAP provided a day long workshop November 9, 2016 on Local Project Administration (LPA) Certification. There were 26 people in attendance. Beginning with the 2012 fiscal year, WYDOT has required that federally funded local projects be overseen by a certified representative of the local agency. Certification is valid for three years, after which recertification will be required. Federal requirements can be overwhelming to local agencies, especially if federal funds are infrequently used. The goal is to assist local agencies in bringing projects to successful completion, to ensure a sub-recipient agency has a fundamental understanding of the requirements in executing state and Federal Highway Administration rules. Any local public agency employee or

consultant project manager who will be responsible for the oversight of the federally funded project should attend this certification workshop. The Local Public Agency (LPA) must have a certified staff member when a cooperative agreement is signed. A certified staff member is defined as one that has taken the certification course and passed the final exam and has the ability to advise on the execution of the project. Attendees are expected to already possess a working knowledge of this subject. WYDOT and FHWA provide the instructors for this training.

The topics for the LPA Certification workshop are: Certification Requirements, Program Management, Consultant - Selection Negotiation and Contract Execution, the Federal NEPA Process, Land Acquisition, Federal Requirements, Contract Advertisement Award, Construction Contracting, and Reimbursement. A Short Certification Exam is given at the end of the day.

The next LPA Certification will be in Casper, April 12, 2017. Registration can be found on our Web site, <http://www.uwyo.edu/wyt2/>

By Bart Evans



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The 31st Annual North Central Regional Local Roads Conference

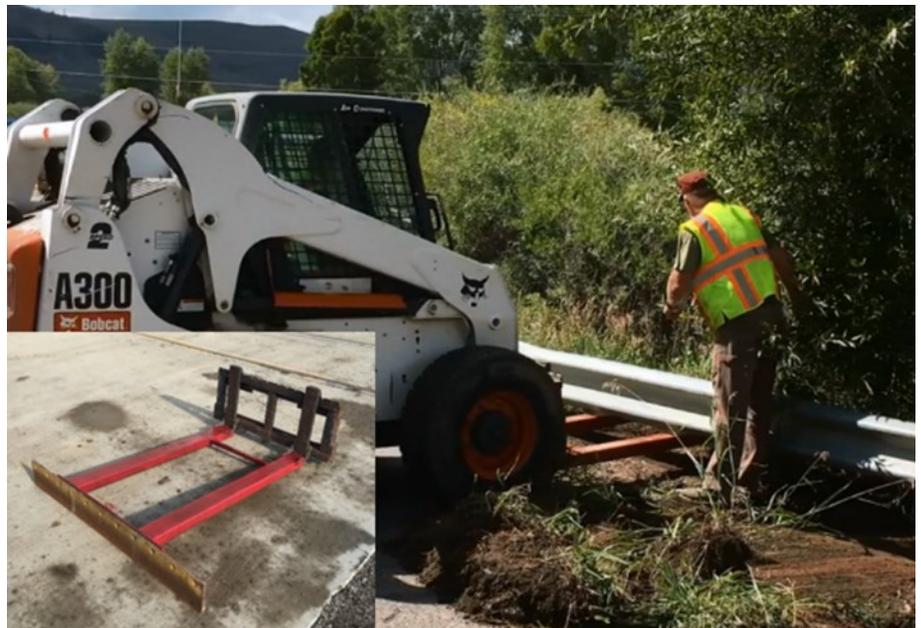
The regional local road conference is held once a year in Rapid City during the third week of October. The conference began with a warm welcome filled with announcements and introductions from the Nebraska Local Technical Assistance Program. After the initial welcome, two gentlemen from Tensar provided a very informative discussion about **Geogrid Stabilization Basics**. They discussed geogrid mechanisms in roadway applications, design methodologies, usage protocols, and general roadway applications. The vertical pressure of a tire on the roadway causes a lateral shear flow in the base material resulting in an unstable subgrade. The unreinforced shear surface of the base material and the subgrade of the roadway is reinforced by a lateral restraint of the Tensar TriAx Geogird. This geogrid can reduce the undercut of the roadway, decrease section thickness, replace chemical stabilization methods, and fortify a typical section.



forms for cattle guard foundation members. The idea has now improved labor costs, as well as minimized injuries associated with struggling with old deformed, heavy hinged type forms. The Nebraska contest winner submitted their invention of a magnetic metal reclaimer. The public and county employees were complaining about excessive flat tires due to nails and other metal pieces on road surfaces. The invention has prevented many flat tires, improved safety of the roadways, as well as time spent collecting the materials. Since the development of this invention, 4.5 tons of nails, steel, and other metallic material has been removed from the roadways over the last two years. The North Dakota I contest winners developed a new ramp that extends from a pickup truck to minimize the dangers of installing road signs. Employees have been hurt while installing signs from falling off ladders and slipping and falling in the pickup box due to adverse weather conditions. The sign ramp has greatly improved employees safety by eliminating the need to climb ladders with heavy signs on uneven ground or standing in a pickup box leaning and reaching over the side. The pickup with the sign ramp is ready to go and also saves time to get to emergency sign repair improving safety for the traveling public. The South Dakota winner created a sign trailer to keep roadway signs and barricades in a more organized fashion, as well as keep them in good shape and ready to use. This also helps keep sandbags dry and in good shape. Their invention helps road closure efforts be done quicker and more efficiently. The overall regional contest winner was the "Guardrail Reclaimer" from Gunnison County in Colorado. Congratulations to them all! May these inventions be a representation to how simple solutions and innovations can continue to improve safety for everyone.

An interesting topic was Rosmarie Anderson's, with the FHWA, presentation about **Communicating about Local Road**

Following the presentation from Noel Clocksin (South Dakota Department of Transportation) announced some very innovative ideas submitted to the **You Show Us Contest**. Each LTAP center in the North Central Region submits their state winning project to compete in our regional contest. The state and regional winners are presented with awards at the Annual Regional Local Road Conference. The Regional winner will then compete at the national level in the "Build a Better Mousetrap" Contest. The Colorado contest winners submitted an invention designated to remove built up debris affecting the functionality of guardrail. This used to be a slow and intensive process, but the invented guardrail reclaimer has improved this process to be more efficient. The Montana contest winners developed an innovative idea for improving concrete



The 31st Annual North Central Regional Local Roads Conference

Continued from p.2



Safety with Local Elected Officials. Her presentation highlighted effectively solving local road safety issues in our communities. This calls for expertise and participation from various agencies representing multiple disciplines. We the power, and the responsibility, to make local roads safer for your constituents and travelers through your community by working with road managers to take a big-picture look at road safety on your network, examining the crash data to understand the types, locations, and causes of crashes on your roads, develop a plan of action together with transportation agencies, police, emergency medical technicians, educators, and other safety stakeholders to improve safety on your roadways, and engage with transportation safety experts from Federal, State, and regional agencies.

Another highlighted topic for the viewers was a very informative presentation from Dale Heglund (ND LTAP) and Al Lee (Subsurface, Inc.), covering **Culvert Basics** in the field and design. Dale discussed culvert applications of design in the field and why culvert drainage is an important component of roadway construction and general use. Lee presented his expertise on modern technology and the latest products used in the drainage field, as well provided information on slip lining, RCP joint repair, cured in place piping, and soil stabilization and void filling. He emphasized not all culverts are the same and many solutions can be used to improve culvert repair.

The following day of the conference began with an interesting overview from Megan Patent-Nygren (NE LTAP) of Traffic Incident Management (TIM).

Her presentation discussed the basics of the National TIM Responder Training and why it is important for all responders to achieve consistent training for their safety, effectiveness, and reliable communications. In a typical year, 12 law enforcement officers, five fire and rescue personnel, 60 towing and recovery officials, and several other transportation professionals are struck and killed when responding to a traffic incident. The purpose of TIM is to efficiently plan and coordinate multidisciplinary processes to detect, respond to, and clear traffic incidents in order for traffic flow to restore as safely and quickly as possible.

Trenna Terrill of the Wyoming T2 center also presented at the conference, discussing the **Wyoming Rural Roadways Safety Program (WRRSP)** and the benefit it has proven to be for the counties within

our state. The WRRSP assists counties and Indian reservations in identifying high risk crash locations and developing a strategy to obtain funding for low cost safety improvements. The purpose is to achieve a significant reduction in traffic fatalities and incapacitating injuries on rural roads. In the past nine years, the following sixteen of the twenty-three counties in the state of Wyoming have implemented the program: Albany, Big Horn, Carbon, Crook, Fremont, Goshen, Hot Springs, Johnson, Laramie, Lincoln, Park, Sheridan, Sweetwater, Teton, Washakie, and Weston. The program continues to be a great success for our rural roads in Wyoming, as well other rural roads on Tribal lands within the region. The Annual Road Conference is a great opportunity to get new ideas and meet other Road and Bridge folks around the area. Hope to see you next year.

By Trenna Terrill



The 19th Annual National Tribal Transportation Conference



The National Tribal Transportation Conference provides a wonderful opportunity for tribal governments to further participants' abilities to plan and improve multi-modal transportation systems. It offers many opportunities to share information across multiple jurisdictions and network with other industry professionals. This year, the conference was held over October 3rd – 6th in Anaheim, California. The conference always supplies a warm welcome and invites all parties to enjoy the vendor booths. The invited vendors and sponsors are dedicated to promoting safe livability and transportation facilities on Tribal lands. Many vendors are of the American Indian/Alaskan Native Nations, and bring a sense of Native American culture to the conference. They are always a very appreciated component of the conference.

The conference brings in many individuals from an array of different backgrounds in the transportation field and Tribal studies. Presentations range from topics of transportation and Tribal safety, leadership in transportation programs on Tribal lands, project management, planning and technical components, and new technology being developed in improving transportation safety and coordination. Trena Terrill of the Wyoming T2/LTAP presented at the conference and covered new methods used in improving safety on Tribal roads in the Rocky Mountain and Northern Plains region. The critical needs of tribal communities can be addressed only through partnerships with transportation agencies and industries. These will encompass both strategic and tactical elements. As sovereign nations, tribal lands have their own unique challenges with livability and sustainability. Many reservations are rural in nature and face many of the same struggles as other rural communities. They too, like so many of their rural counterparts, suffer from lack of resources. They are sovereign nations and do not fall under the jurisdiction of the respective states. Their governments are typically small and the several

responsibilities are distributed among a few individuals. A tribe will rarely have its own planners, engineers and public works department. They must rely heavily on technology transfer from collegial partners with state, federal and other local governments. The Bureau of Indian Affairs (BIA), Tribal Technical Assistance Program (TTAP), Local Assistance Programs (LTAP), the Federal Highway Administration (FHWA) and state agencies are among the many agencies that will provide assistance in addressing the development and transportation needs within tribal communities across the nation. This presentation discussed the results of a safety improvement methodology implemented on the state highways within the Wind River Indian Reservation (WRIR). In collaboration with the goal to eliminate fatal and serious crashes, the Wyoming Department of Transportation (WYDOT) partnered with the Wyoming Technology Transfer Center/Local Technical Assistance Program (WYT²/LTAP) to address the high fatality rates on the WRIR. The topics presented in this presentation were intended to assist other agencies and Tribal leaderships in reducing fatal and injury crash rates on their state highway systems through understanding the importance of collaboration.

The following presentation highlighted that with the right information, technology and tools, transportation safety issues can be predictable and preventable. Tribes can prevent or reduce the severity of motor vehicle crashes and other transportation safety hazards through transportation safety planning efforts that include collaboration between enforcement, engineering, education, emergency services, and everything else. Each of these elements compliment the other, and successful transportation planning incorporates them all. This presentation analyzed transportation systems on tribal lands within the Northern Plains and Rocky Mountain regions, and relatable challenges pertaining to these elements that multiple tribes have faced. It provided comparisons between tribes on the Wind River Reservation in Wyoming, the Fort Peck Reservation in northeastern Montana, the Standing Rock Sioux Tribes in North and South Dakota, as well as the Yankton Sioux and Sisseton Wahpeton Tribes in South Dakota. The goal of this presentation was to help tribes across the nation recognize the importance of technical collaboration between engineering, enforcement, education, emergency services and everything else to meet their own personal needs as a tribal community.

This conference is truly a pleasure to attend and offers so much new knowledge to the growing field of Tribal Transportation. The speakers, directors, sponsors, and vendors do an amazing job at putting together such a hospitable conference. Every personnel who comes to represent their town, city, state, Tribe, or community gains great benefit from a professional focus on improving development of infrastructure, and advancing safer Tribal communities.

New Technology for Back-Up Alarms

Eliminate Noise Nuisance Complaints and Improve Safety

“With ongoing noise concerns your agency may be experiencing from equipment reverse alarms while plowing snow in the early mornings and late evenings, this new technology could possibly be a solution.” John Baker, Road Supervisor, Town of Snowmass Village, CO

Technologies that could mitigate problems from backup beepers have existed for over two decades. Nonetheless, the conventional single-tone backup alarm still dominates road construction and maintenance sites. If annoyance level is any indication, backup beepers may be one of the most harmful noises. In a 2010 report titled *Technology for a Quieter America*, the National Academy of Engineering cited backup beepers as one of the six top noise sources people associated with behavioral and emotional consequences. (2) During Boston’s Big Dig project, which rerouted much of the traffic through the heart of the city, people lodged more complaints about noise than about any other annoyance factor and far more complaints about backup beepers than any other noise source. (4) Similarly, 20 State Departments of Transportation identified them as a major problem in generating nighttime construction noise. From a safety perspective, an investigation by the federal Occupational Safety and Health Administration (OSHA) found that an original equipment manufacturer backup alarm failed to prevent two-thirds of backover accidents analyzed. (3)

One alternative technology to the traditional backup beeper is the **broadband** beeper. This type of device has the same cadence as the conventional beeper but broadcasts a “white-noise”, whooshing sound. According to the Health and Safety Executive, one quarter of all workplace vehicle accidents are caused by reversing vehicles and, as such, reversing alarms are one of the most important and cost effective devices you can fit. (1)

Reverse in Safety

Reversing beep-beep alarms were first introduced to Europe in the 1970s. At the time, they provided a vital step forward in safety, but have been shown to have a number of inherent problems; specifically concerning their environmental impact, but also in terms of compliance and safety. Advances in technology mean there is a new alternative – the BBS-Tek® *White Noise Reversing Alarm* manufactured by Brigade Electronics.

In contrast to the beeping sound of the old fashioned high pitched pure Tone alarm, the BBS-Tek® back up alarm uses broadband sound, also known as “white

sound”. It is easier on the ears, yet equally as effective as a conventional alarm, even 5 decibels quieter. Additionally, because broadband sound dissipates at twice the rate of a pure tone sound, it doesn’t cause noise nuisance to neighboring residents or other workers on site. This multi-frequency device operates by emitting sound at multiple frequencies attenuated above 4000Hz so that the sound is perceived to dissipate more quickly.

The Science behind It

The way we react to a broadband sound is part of our survival system. Deep inside both human and animal brains is the superior colliculus which alerts us when it hears certain noises. The noises it reacts to are not narrow-band sounds with their tighter frequency range, but rather broadband (white noise) sounds which give away their direction and make our heads turn towards them. The “white” description derives from white light which is composed of all the colors in the spectrum. Similarly, **white sound** is composed of all frequencies in the audio spectrum. White sound has the unique characteristic of its source being instantly locatable. White sound does not have to rely on high sound pressure (decibels) in order to be heard because, being multi-frequency, competing single frequencies cannot mask it. (5) At their lowest setting of ~92-95 dB, these alarms are about three-quarters as loud as standard backup beepers. Quite literally, you only hear the white noise reversing alarm if you’re in the danger zone where you need to.

Safety Impact

The white noise reversing alarm is also considered safer because unlike conventional alarms whose noise can be heard all around the work site, broadband is localized. This means the sound is directed only into the hazard zone and not everywhere else which increases response to the alarm and diminishes the chance of it being ignored. In a busy working or urban environment, anyone in the danger zone can recognize that the sound is coming directly from the reversing vehicle near them. Even in areas where the background noise levels vary considerably, the smart auto-adjusting models automatically monitor and set the warning sound level to between 5 and 10 decibels above ambient level to ensure optimum safety.

Instantly locatable, it enables pedestrians to discern exactly which vehicle is moving and in which direction, allowing them to move to safety. This also makes them a safer option for the visually impaired who may not be able to see the vehicle reversing but will hear the direction it is reversing in. The wide spectrum of frequencies created, means the hearing impaired are often able to detect some noise, unlike with narrow band single tone alarms. (6)

Approved for use in construction vehicles in all areas of New York City, and implemented on all equipment at the Town of Snowmass Village, CO, white noise reversing alarms are proving to be an optimal choice for many municipalities and local authorities wishing to minimize noise pollution and increase pedestrian safety in confined or densely populated work areas.

See page 10 for references.

Reprinted with permission from the Summer/Fall 2016 issue of the University of Colorado Boulder Local Technical Assistance Program Newsletter.



Snow and Ice Control 101

Winter is in full swing and local agencies should start preparing now for what is sure to be a wet, white, and slippery start to the season. To remove snow and ice from roads, you can use a combination of strategies: anti-icing and deicing, plowing, and abrasives.

Anti-icing and deicing

Anti-icing is a proactive approach in which chemicals are applied to the pavement before, or at the very beginning of, a storm. The chemicals create a carrier layer that helps prevent snow and ice from bonding to the pavement surface.

Deicing is a reactive strategy of applying chemicals to the pavement after a storm to break the bond between snow or ice and pavement.

Chemicals use for anti-icing and deicing

Salt is the most common deicing material and, in the form of brine, the most common anti-icing material used in Iowa. Salt is cost-effective and, in its dry form, can provide rapid anti-skid protection while starting the melting process.

To melt snow and/or ice, salt must be in a liquid solution. The salt dissolves into the solution, lowering the freezing point of water. For effective melting action, there must be enough salt concentrated in the solution to lower the freezing point of water to a temperature that is below the current air temperature.

Salt brine is produced by circulating water through salt to achieve a desired concentration level of brine. For anti-icing, the brine is spread on the roadway before a storm begins. However, salt brine is only effective at temperatures above 20 degrees F.

For deicing, it has become common to pre-wet salt so that some of the salt is already in solution

when applied. Wet salt has another advantage: it is less likely to bounce off the road or to be blown off by traffic saving 20 to 30 percent in wasted salt.

Salt can be pre-wet by spraying it as it is loaded into the truck or, with truck-mounted equipment, as it leaves the spreader.

Common chemicals used for pre-wetting salt are liquid calcium chloride, magnesium chloride, and salt brine.

Liquid calcium chloride and magnesium chloride are widely used because they draw moisture from the air and release heat when they dissolve. Calcium chloride has the added advantage of melting snow/ice at lower temperatures—down to 0 degrees F in proper concentrations.

Using salt brine to pre-wet is becoming more common because of its lower cost. But remember, salt brine should only be used for pre-wetting in temperatures above 20 degrees F.

Applying salt for deicing

On two-lane pavements with low to medium traffic volumes, apply a windrow of salt in a strip along the centerline. Traffic will move salt off the centerline. The salt brine will move down the pavement cross slope and toward the shoulders, melting snow and ice across the entire road width. This application pattern wastes less salt and quickly gives vehicles clear pavement under at least two wheels.

On multiple-lane pavements with medium to high traffic volumes, apply salt in a pattern that covers the full width of the roadway to provide melting action over the full width of the pavement.

Plowing

Snow plowing is used to clear snow and loose ice



Snow and Ice Control 101

from the road during and after a storm. Plowing can be a challenge in both rural and urban areas. Operators in rural areas face challenges such as blowing and drifting snow and decreased visibility. In urban areas, operators must deal with parked cars, narrow streets, and cul-de-sacs.

To minimize dilution and waste of deicing chemicals, plow immediately before applying chemicals to the road.

Abrasives

Abrasives provide little to no snow- and ice- melting capability, but they are most useful in providing traction. The most popular abrasive is sand.

Many agencies in Iowa combine sand with salt as a half-and-half mixture. This mixture helps provide some traction support with some melting capability. In a winter where salt stores may be scarce, reducing the amount of salt used can be a useful strategy.

Final thoughts

Know your route: Snow plow drivers who know their routes well can navigate them more easily and avoid hazards. Review your route before the storm.

Know traffic volumes: Traffic volumes can impact the rate of chemical application since traffic can help work salt into the snow/ice and aid the melting process. Agencies can use a lower rate of application with higher traffic volumes.

Know the weather: Weather conditions can also affect the rate of application. A windy route, for example, will be more prone to rock salt blowing around.

Reprinted with permission from the July-September 2016 issue of *Technology News*, a newsletter of the Iowa Local Technical Assistance Program

Safety tips for snow fighters

Check with your supervisor and follow your agency's policies and procedures.

Suggested personal safety gear

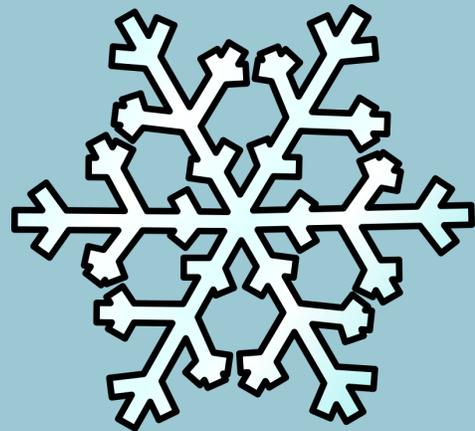
- Layers of clothes, extra gloves, heavy boots
- Shovel and ice scraper
- Flashlight for night operations
- Sunglasses for glare
- Water and/or hot liquid

Advance preparation

- Be properly trained and thoroughly familiar with all equipment and chemicals.
- Make sure an up-to-date first-aid kit, emergency contact information, and handheld radios or cell phones are available in your vehicle.
- Be in good physical condition with adequate rest.
- Perform a pre-trip safety check of truck and equipment. Make sure the vehicle has adequate warning lights in good working order.
- Make a practice run of assigned route to check for obstacles and potential problem areas.
- Know the contact procedures for reporting crashes or equipment breakdowns.

During operations

- Dress in layers with heavy boots.
- Wear highly visible apparel when out of your vehicle.
- Plow at appropriate speed.
- Watch for pedestrians and other vehicles.
- Don't back up without a spotter.
- Operate wings carefully.
- Make sure warning lights are activated.



Snow Plow Policies—Montana LTAP—Winter 2016

The following information was derived from various county road departments' snow plowing policies. These may be something to add to your department's manual.

Suggested Policy - Snow Plowing

Districts

Each equipment operator is assigned a certain area for snow plowing during the year. When need arises, operators will assist in other areas of the County, depending on snow conditions.

School Bus Routes

School bus routes are given first priority.

High-Use Roads

High Volume Roads are given second priority.

Other Roads

Paved roads that are not school bus routes are given third priority. Gravel roads which are not school bus routes are given fourth priority. Unimproved dirt roads will be plowed as time allows and upon request.

Snow Removal for State Hwy or other Jurisdiction

Contract services with providers or cooperative agreements with MDT, Cities, BLM, FWP, or other government agencies.

Operations

Equipment used for snow removal includes snowplows, motor graders, loaders, trucks, and chemical applicators. Abrasive material used to improve traction once a snow or ice floor (or frost) is established will be 3/8 minus graded material and sand. Rock salt or proprietary products may also be used.

Liquid Products: Salt brine, Magnesium Chloride, Calcium Chloride, may also be used for a variety of applications. Applications include:

1. Anti-icing
2. Deicing
3. Treatment with abrasives

Snow fences are established in areas to prevent drifting of snow on roadways.

Procedures

Jurisdiction roads will be kept as passable and as safe as natural occurrences allow. Winter storms vary in duration and severity. Officials will use forethought, judgment and skill to match maintenance application to winter storms and allowable budget. As a storm moves in, a likely sequence might be:

1. Observe Weather Predictions.
2. Apply anti-icing chemicals.
3. Observe presence of snow and ice.
4. Plow to remove excessive snow.
5. Continue to plow and apply chemically treated abrasives in key areas such as intersections and approaches.

6. De-ice with chemicals in key areas using care not to use chemicals where drifting snow could cause refreezing.

7. Repeat Steps 1 and 2 as well as pray for sunshine.

General Policies

Normal snow plowing shall be conducted during daylight hours between 6:00 a.m. and 5:00 p.m., five days per week. Upon the discretion of the Road & Bridge Superintendent, snow plowing roads shall occur during early morning hours and/or weekends. The "Department" will not plow snow during high winds, unless it is an emergency.

The "Department" will not be liable for any fence damage that occurs to fences which lie within the County's right-of-way.

The "Department" will not be liable for any mail boxes knocked over or damaged due to snow being plowed. However, the "Department" will replace any mail boxes which are physically hit by the "Department's" snow plows. Paved roadways will be plowed when there is a significant accumulation of snow. Graveled roadways will be plowed when there is a significant accumulation of snow according to priority list.

The "Department" will sand subdivision approaches inside the County right-of-way during emergency situations only. When necessary, paved roads will be sanded on regular basis at major intersections, hills, curves, etc. Graveled roads will be sanded only in emergency situations, or at the discretion of the Road & Bridge Superintendent.

Training New Drivers

Become familiar with designated snow routes.

Become familiar with School Bus routes.

Drive routes in summer or fall when roads are clear to become aware of hazards.

Keep driver consistent with route when possible.

Have new driver ride with experienced operators.

Inform driver to get proper rest and nutrition. If driver is unable to perform safely he should not be used.



22nd Annual Transportation and Safety Congress

Please join the Wyoming Technology Transfer Center for our 22nd Annual Transportation and Safety Congress in Casper from April 12, 2017. Registration includes lunch and all conference materials. Various manufacturers, suppliers, and contractors will be showcasing their products and services. Attendees will be able to see “what’s new” and discuss how to enhance the safety of their street and highway operations.

This year we are going to hold the Safety Congress in one (1) day. The day will be filled with the following concurrent sessions:

LPA Certification

April 12, 2017

8:00am – 5:00pm

Work Zone Safety and ATSSA Flagger
Certification

April 12, 2017

8:30am – 5:00pm



Transportation Track with Guest Speakers

April 12, 2017

9:00am – 4:00pm

Lunch (Road Scholar Presentation)

12:00 am — 1:30 pm

WACERS MEETING

The WACERS meeting will be held immediately following the conclusion of the Safety Congress. This meeting will begin at 5:00pm with dinner and

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1000 E. University Ave., Dept. 3295
Laramie, WY 82071

Return Service Requested



New Technology for Back-Up Alarms

Eliminate Noise Nuisance Complaints and Improve Safety

References:

- 1) Brigade Electronics; <http://brigade-electronics.com/>
- 2) *Vehicle Motion Alarms: Necessity, Noise Pollution, or Both?*, David C. Holzman, *Environmental Health Perspectives*, 2011 Jan; 119(1): A30–A33. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3018517/>
- 3) Purswell JP, Purswell JL. *The Effectiveness of Audible Backup Alarms as Indicated by OSHA Accident Investigation Records*. *Advances in Occupational Ergonomics and Safety*. Amsterdam, the Netherlands: IOS Press; 2001. pp. 444–450.
- 4) FHWA. *Effective Noise Control during Nighttime Construction*. Washington, DC: FHWA USDOT; 7 Jul 2008. Available: <http://tinyurl.com/2c8lxd3>.
- 5) Iveco Shop; <http://web.iveco.com/>.
- 6) Beacons and Lightbars; <http://www.beaconsandlightbars.co.uk/White-Noise-and-Multi-frequency-Alarms/>