

The Center Line

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ND ASSOCIATION OF COUNTY ENGINEERS (NDACE) ANNUAL CONFERENCE

By Steve Chase

The North Dakota Association of County Engineers (NDACE) held its 60th annual conference Feb. 3-5 at the Ramkota Hotel in Bismarck. The 182 attendees included county commissioners, road department staff, consultants, vendors and other interested local transportation related individuals. A total of 28 vendors displayed their products.

Various transportation related issues were discussed relative to the agenda presented. Ken Swedeen, Dakota Asphalt Pavement Association, made a presentation on warm mix asphalt. Check this website for information on the “Fly Ash Facts for Highway Engineers” report by FHWA: <http://www.fhwa.dot.gov/Pavement/recycling/fafacts.pdf>. Other presentations included Emergency Release issues, forecasting rising waters, concrete pipe repair, section lines, weed control, rural road safety, and high carbon fly ash.

NDACE’s new executive committee is as follows:

- President: Kerry Johnson (Barnes County Highway Superintendent)
- Secretary/Treasurer: Mike Rivinius (Wold Engineering)
- Vice president: Mike Zimmerman (Stutsman County Highway Superintendent)
- First Year Director: Kevin Fieldsend (Ramsey County Highway Superintendent)
- Second Year Director: Steve Mamer (Interstate Engineering)
- Third Year Director: Sharon Lipsh (Walsh County Highway Superintendent)
- Past President: Chuck Glynn (Dickey County Highway Superintendent)

(The members are pictured in order from left to right.)

The recipients of the \$1000 NDACE scholarships are Cale Wegner, civil engineering at NDSU; Robert Shirey, civil engineering at NDSU; Zachary Verke, construction management at NDSU; and Adam Zach, civil engineering at UND.

Dana Larson, Ward County Engineer, received the Engineer of the Year Award. Cretex Companies Inc. received the Vendor of the Year Award. This is a new award that will be given to long-term partners and supporters of NDACE. The name of the award will be changed to the Friends of NDACE Award and any member that is not eligible for full membership can qualify for this award. Those eligible could include, vendors, sponsors, local government staff, LTAP, county commissioners and others. Charles (Chuck) Morman, retired Morton County highway supervisor, received the Lifetime Membership Award. This award is given to members when they retire with at least 20 years of county service.

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SAFETY CORNER

by Steve Chase

Ergonomics is the science concerned with designing and arranging things that people use so that people will interact with the environment most effectively and safely. Ergonomics means arranging the environment to fit the person.

On the worksite, ergonomic principles are used to help adapt the job to fit the person, rather than to force the person to fit the job. Redesigning the job to fit the worker can reduce stress and eliminate many potential injuries and disorders associated with the overuse of muscles, bad posture, and repetitive motions.

As a worker, your hands, wrists, arms, shoulders, backs, and legs may be subjected to thousands of repetitive twisting, forceful, or flexing motions during a typical workday. Many construction jobs can expose you to excessive vibration and noise, eyestrain, repetitive motion, and heavy lifting.

If machines, tools, and the workflow are poorly designed, they can place undue stress on tendons, muscles, and nerves. In addition, temperature extremes may aggravate or increase ergonomic stress. Your ability to recognize ergonomic problems on the construction site is the essential first step in correcting these problems and improving construction worker safety and health.

The three most important issues related to ergonomics for construction workers, and ways to control them, are listed below:

BACK SAFETY AND LIFTING

- Practice proper lifting techniques.
- Get help with large loads.
- Use materials-handling equipment.

EQUIPMENT AND TOOL VIBRATION

- Use only the force necessary to perform the job.
- Hold and use tools properly.
- Rotate tasks and take breaks from tasks during the workday to avoid vibration for too long a duration.

REPETITIVE MOTION

- Follow proper procedures at all times while performing tasks.
- Select the right tool for the job.
- Rotate the tasks you perform during the work day to avoid a single type of repetitive motion for too long a duration.



COMING EVENTS

ND LTAP/TLN

Please visit the NDLTAP website
<http://www.ndltap.org/>

LOCAL AGENCY SIGN RETROREFLECTIVITY TOOLKIT NOW AVAILABLE

Agencies are closing in on two years from the deadline to have a method in place to manage the retroreflectivity of their signs.



Adequately maintained traffic signs and pavement markings help improve highway safety, especially at night. The retroreflective properties of traffic signs bounce light from vehicle headlights back toward the vehicle and the driver’s eyes, making the signs appear brighter and easier to see and read at night. Because the retroreflective properties of traffic control devices deteriorate over time, agencies need to manage the maintenance of their signs and pavement markings. Recent retroreflectivity standards are set forth in the Manual on Uniform Traffic Control Devices (MUTCD) and compliance dates

are coming up soon. Did you know that by January of 2012, all agencies must implement a sign maintenance program that addresses the nighttime visibility of their signs?

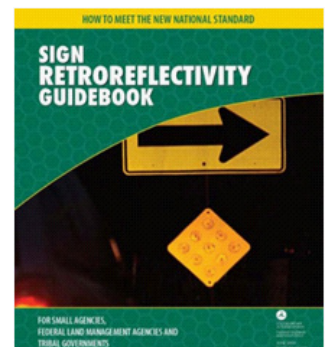
A tool has been developed by the FHWA Retroreflectivity Team, with the help of Texas Transportation Institute, to help local agencies with this task. The Sign Retroreflectivity Guidebook and Toolkit is targeted towards those agencies with no traffic engineer on staff, such as townships, counties, and tribal governments – and it is FREE! It provides information and templates that will assist small-medium sized agencies without traffic engineering staff to meet the new federal requirements for maintaining traffic sign retroreflectivity.

The toolkit contains two documents. One is a stand-alone computer based package on a compact disc (called the “Toolkit”) that contains more detailed information, resources, and automated features. The second document is a hard copy of the computer-based package known as the “Guidebook.” These documents are designed to assist local agencies in making informed decisions before implementing a retroreflectivity maintenance program while considering resource limitations. The two documents follow a simple step-by-step approach and include: a narrated explanation of the new requirements, inspection procedures, steps to implementation with an interactive budget estimation tool, sample forms and letters, funding resources, and more.

The Guidebook, pictured here, includes the toolkit which is on CD. The package is also available from the FHWA Report Center. The CD part of the package (the toolkit) can also be downloaded from the FHWA Safety Nighttime Visibility website at www.fhwa.dot.gov/retro, listed as the top “NEW” item.

ORDER YOUR FREE COPY TODAY

Contact North Dakota LTAP at denise.brown.1@ndsu.edu, 1-800-726-4143; or you can request publication number FHWA-CFL/TD-09-005 from the FHWA Report Center at Report.center@fhwa.dot.gov or call 814-239-1160.



CASS COUNTY HIGHWAY 11 CONCRETE OVERLAY

by Jason Benson, Design and Construction Engineer, Cass County Highway Dept.

In late 2008, the Cass County Highway Department began to look for cost-effective alternatives for paving. The goal was to prolong the life of the existing bituminous surface from the expected increase in truck traffic on a five-mile section of Cass County Highway 11 north of the town of Mapleton. Cass County



engineering staff met with Dave Sethre of North Dakota Ready Mix & Concrete Products Association, Inc. and discussed options in concrete overlays. The county engineering staff began the preliminary design work and researched concrete overlay data, using information from the NDDOT – Highway 2 whitetopping project at Rugby, the Muscatine County Highway Department in Iowa, the Iowa Concrete Paving Association, the Illinois DOT concrete overlay software, and the “Guide to Concrete Overlays” by the National Concrete Pavement Technology Center.

As the design team continued its work, Cass County looked at two alternatives: a 3 inch bituminous overlay with a 20-year life with a maintenance chip seal required in years 5 and 14 and a 5 inch concrete overlay with a 30-year life. After developing initial engineer estimates for both alternatives, we analyzed them and determined that with a 2% discount factor, the break even construction inflation rate is about 7%. In other words, inflation rates above 7% favor the concrete overlay and inflation rates below 7% favor the bituminous overlay. Because of the rapid rise in costs in the asphalt industry, the concrete overlay was chosen.

With the concrete overlay option accepted, the design team evaluated the pavement criteria looking at the thickness (4 inch vs. 5 inch vs. 6 inch), roadway width (24 feet to match the existing surface or 28 feet with stapled tie bars and thickened edge), and transverse/longitudinal joint spacing. After evaluating these alternatives, the decision was made that the final surface would consist of a 5 inch thick bonded overlay, 24 foot concrete driving surface with 4 foot gravel shoulders. In addition, a 6 foot x 6 foot transverse/longitudinal joint spacing was selected (nearly 37,000 feet of saw cut per mile).

The design team continued developing the final plans nearly the same as when designing an asphalt overlay. The team also looked at several other design considerations: traffic control and road closure, intersection leave outs, matching into bridges and intersections, concrete pavement – 2 pay items for concrete – whitetopping 5 inch by the CY and by the SY, and added 15% in CY’s for irregularities in the profile and repairing the cross slope. We also worked with the NDDOT and developed five special provisions including PCC well-graded aggregate, uncontrolled cracking, longitudinal tining, surface tolerance grinding, and whitetopping.

(Concrete Overlay continued on Page 5)

(Concrete Overlay cont.)

The project was awarded to Upper Plains Contracting Inc. (UPCI), from Aberdeen, SD, and work began on the project with construction surveying in May 2009. Upon completion of the survey work, Cass County developed a new profile that would most nearly match the existing surface, allow for a 1 inch to 2 inch milling of the existing surface, and provide a smooth ride. With the new profile, UPCI completed shoulder prep and began running stringline for the milling operation. In early June, Industrial Builders, Inc. moved in their milling machine and completed the five miles of milling in one week. Throughout the milling operation, the millings were placed out on the shoulder to be blended with Class 5 aggregate during the final shouldering.

Upon the completion of milling, the paving equipment was brought in and paving stringline was installed. Concrete paving began on June 22 and was completed in one week. Throughout the paving operations several key lessons were learned. First, the special provisions specified that if existing surface is between 100°F to 110°F the surface must be cooled to below 100°F and if it gets above 110°F then paving must stop. To counter this we would spray water on the surface 50 feet to 200 feet ahead of the paver and have the air compressor operator 50 feet ahead of the paver cleaning the surface and removing any excess moisture. We found spraying water more than 200 feet ahead only wastes water and allows the surface to reheat to over 100°F.

The next lesson learned focused on night paving which had several key benefits for our paving operation. Night paving allowed us to get maximum production from the Aggregate Industries Fargo plant and negated the issues with paving on hot, sunny days and dealing with existing surfaces over 110°F. To alleviate night-time safety concerns, we had all workers wear reflective vests and pants, and used trailer-mounted light sets that we moved along with the paving operation. We had no issues with night time traffic control because the road was shut down.

Following the paving operation we removed the stringline and shaped the shoulder to allow local traffic and sawing operators to use the shoulder. Due to the high quantity of sawing joints, the sawing crew ensured they had adequate equipment and personnel to keep up with the paving operation. Once the concrete had gained adequate strength, we allowed local traffic to utilize the roadway and began asphalt paving in the transition areas and gravel shouldering.

At the completion of this project we were able to limit the road closure to less than 30 days. We worked directly with home owners and local farmers to ensure they had adequate access to their homes and land throughout the closure. In the end this project was highly successful with a streamline progression from surveying to final shouldering. The cooperation we had between UPCI, subcontractors, and local residents ensured this project was successful and exceeded our expectations.





STOCKPILE TARP WEIGHTS

Reprinted from Between the Lines (Articles for and by maintenance employees)

Submitted by the Minot NDDOT District



Some of the Minot sections are using stockpiled materials to aid in covering salt/sand stockpiles. In the photos above, salvaged 6 inch box beams from guardrails are used as weights to hold the tarps from flying away in the wind. The beams are placed at tarp splice locations and any other areas vulnerable to wind. At the top of the pile, these beams are chained together for stabilization. Ropes are also placed uniformly over the pile from side to side and tied to the beams lying along the base of the stockpile. In some instances when steel box beams aren't available, other salvaged materials such as old timbers are also used. This method of protecting the stockpiles seems to be working very well.



DISTRACTED DRIVING CREATES DANGEROUS SITUATIONS

Chief Murray Pendleton

Chairman, Connecticut Police Chief's Association
Highway Safety Committee

Driving large municipal trucks and special purpose vehicles, including cars, can be challenging enough even when full attention is given to the road and potential hazards.

It only takes a second for a crash to happen.

Distractions occur when drivers concentrate on something other than operating their vehicles – such as engaging in cell phone conversations. NHTSA (National Highway Traffic Safety Administration) estimates that 25% of all crashes involve some form of driver distractions.

National surveys show that most drivers at least occasionally engage in behaviors that draw some of their attention away from their driving task. The most common of these behaviors include such general activities as:

- Talking or texting on a cell phone
- Talking with passengers
- Changing radio stations or CD's
- Eating or drinking while driving

Operating municipal trucks is unique. The fact that most of the trucks have special equipment requires more attention to detail, leaving no room for distractions.

Driving is a full-time job, and operating snowplows, trash pick-up trucks, fire engines, etc. while using a cell phone, reading a road map, or talking to fellow employees is potentially dangerous.

- Make adjustments to vehicle controls such as radios, air conditioning, or mirrors before beginning to drive or after the vehicle is no longer in motion
- Don't reach down or behind the driver's seat, pick up items from the floor, open the glove compartment, clean the inside windows, or perform personal grooming while driving
- You should not eat or drink while driving, but if you do, get something that is not messy and that you can hold in one hand. Set your food up next to you before you take off and make sure you use a cup holder for your drink.

- Know where you are going and how to get there before you start out.

For more than 10 years, studies have been conducted which focus on the risks associated with various types of distractions. There clearly is ample information to believe a distracted driver is at an increased risk of a crash.

Your complete attention to driving is not only in the best interest for you and your passengers but can clearly save lives as well as reduce serious injuries.

Below is a list of common distracters:

- *Use of cell phones*
- *Eating/drinking/smoking*
- *Texting and e-mailing*
- *Personal hygiene*
- *Changing radio stations/CD's/DVD's*
- *Sight Seeing/gawking*
- *IPods*
- *In-car information screens*
- *Adjusting mirrors/heat/AC*
- *Searching for items*
- *GPS*
- *Unsecured objects*
- *Reading maps/directions/books/magazines*

Such distractions may not only cause you to lose control of your vehicle, they may cost someone, including you...your life.

Texting is a Major Distracter

The National Safety Council estimates that 80% of Americans admit to using cell phones, and 20%



admit to texting, while driving. That amounts to about 100 million drivers.

Driving while using a cell phone incurs a four times greater risk of crashing, which is equivalent to driving while drunk (with a 0.08 blood-alcohol level.) For texters, the risk is eight times greater.

Talking on a cell phone while driving slows down the reaction time of even the most experienced driver.

All drivers of municipal vehicles must be committed to reducing serious injuries and deaths on our roadways. This starts with your commitment to

NOT become a DISTRACTED DRIVER!



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