

Welcome

North Dakota
ASPHALT
conference

NDSU | UPPER GREAT PLAINS TRANSPORTATION INSTITUTE
NORTH DAKOTA LOCAL TECHNICAL ASSISTANCE PROGRAM



NORTH DAKOTA ASPHALT CONFERENCE

**LEARN →
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**VIRTUAL
EVENT**

APRIL 6-7, 2021

(photo credit: Shane Biggs, Bowman County Highway Superintendent)

Nighttime Paving

Jack Kolberg



North Dakota Asphalt Conference

Bismarck, ND - April 6th & 7th - 2021

Virtual Event

First there was daylight.....

Then there was Night and darkness.....

And someone said....."Let's Pave"!



Nighttime Paving

Awareness about worker safety in nighttime construction has been a major concern because it is believed that nighttime paving creates hazardous work conditions, however, there have not been many studies to indicate this.

Understanding whether nighttime paving is more conducive to have work zone crashes provides valuable information when agencies select appropriate work zone strategies.

Arditi et al (2007) concluded that most work zone crashes occur in clear daylight and good weather conditions, however, a study done in 1998 (Bryden et al) concluded that one third of all nighttime work zone accidents involved impacts with traffic control devices and safety features introduced into the construction zone because of activity. 37% of those accidents caused serious injury both to the motoring public and highway workers!

Night Time Work Zone Safety

- Night time work can be dangerous – Plain & Simple!
- Reduced Visibility
- Worker Fatigue
- Lighting Issues
- Positioning of TCD's & Glare from lights
- Distracted, Tired and/or Impaired Drivers
- Road RAGE!
- 21 Fatalities on ND roads as of today!



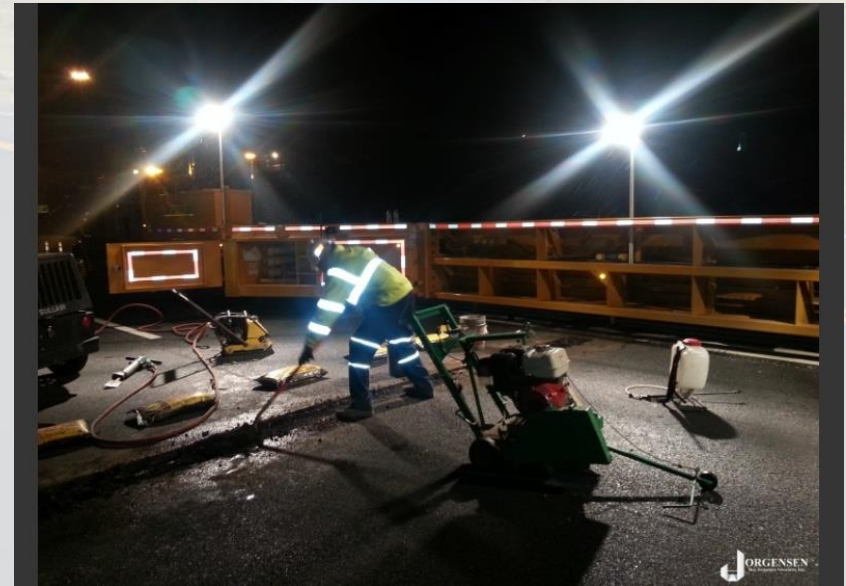
But When Done Safely, There Can Be a Number of Benefits

- Lower Traffic Counts
- Cooler Temperatures
- Reduced Delays for Motorists and Construction Vehicles
- Easier Control of Side Access Roads



Two Ways to Insure Safe Construction

- #1
- Properly Train Work-zone Employees With JSA's & Daily Work Huddles
- Insist on Maximum Retro-Reflective Visibility of TCD's and Garments



High Visibility



- We must see and be seen!

ANSI - MUTCD - OSHA

- ANSI changed the standard for high visibility clothing (ANSI 107) in November of 2008.
- The changes were incorporated into the MUTCD in 2009.
- The Standard (considered a voluntary consensus standard) has been adopted by OSHA and is enforceable by CSHO's (Compliance Safety & Health Officers) for all workers on public access roadways.
- Class II is for speed limits under 50 mph and is often recommended for daytime hours.
- Class III is for speed limits over 50 mph and is recommended for nighttime or hours with low light conditions.

Everything You Do In The Daytime, You Can Do At Night With a Few Steps!

- #2
- Correct Level of Lighting
- Diffuser's (balloons) vs Traditional Lighting



What is considered “Night Work”?

- Night work is defined as a 7 hour period which includes hours between midnight and 5:00am usually between 11:00pm and 6:00am.
- Night workers should not work more than 8 hours in a 24 hour period where such work involves any “special hazards or heavy physical or mental strain”.

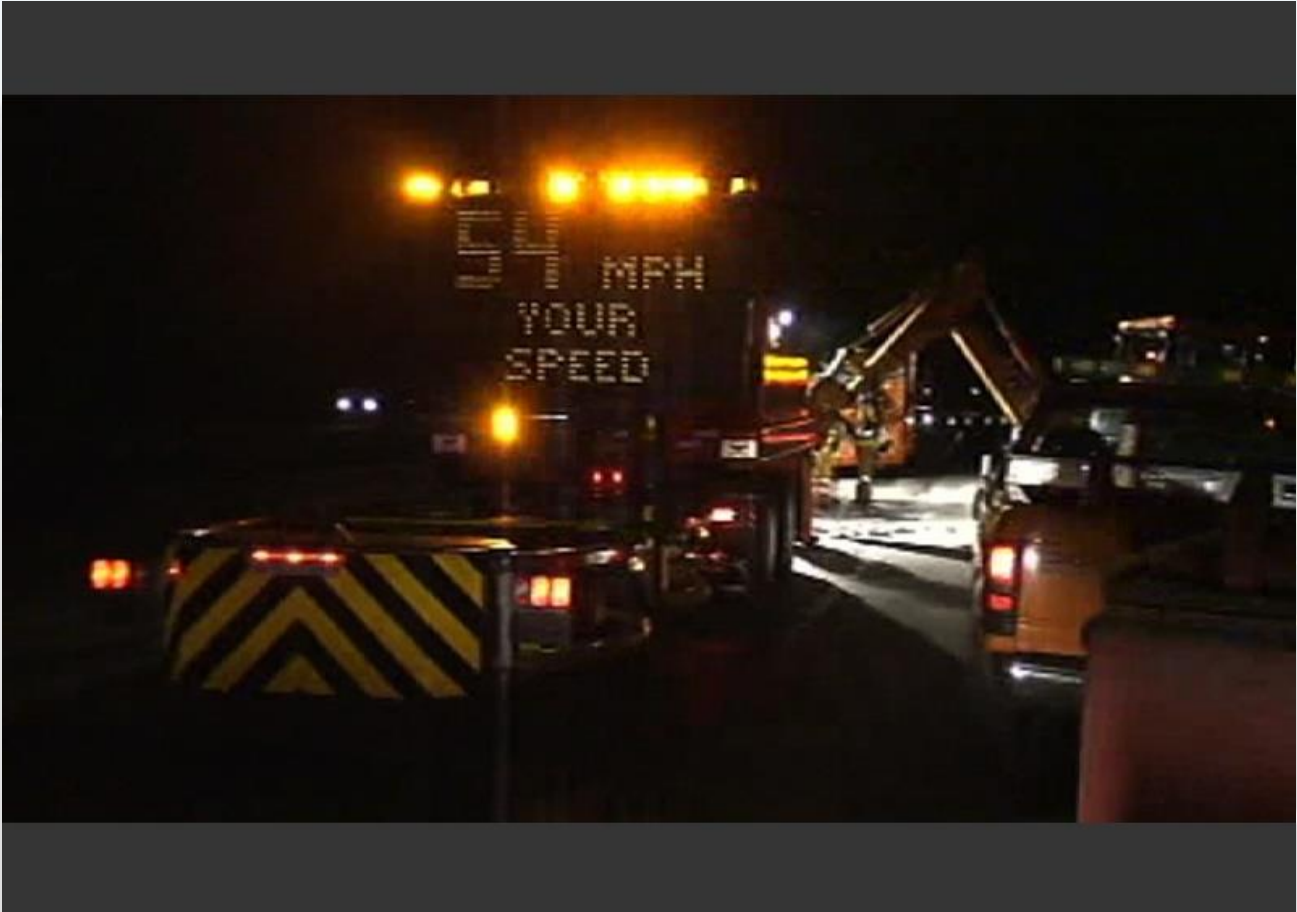


Safety Management Plan

- A management plan should be developed and well documented so that both the contractors and employees can benefit from a safe work site.
- This is also important as a means of protecting assets in the event of an accident.



Traffic Control Plan



Best Work Practices

The Federal Highway Administration has published a Work Zone Best Practices Guidebook that has many positive examples how to work at night.

(<https://ops.fhwa.dot.gov/wz/practices/best/bestpractices.htm>)

Mobile Barriers



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A site hazard control plan to consider various factors

- Risks (breaks for flag persons, when do local bars close? Etc.)
- Illumination (What type and where)
- Nuisances (wildlife, bars, high traffic counts etc.)
- Productivity (trucks, delivery vehicles, profilers/roto-mills, pilot cars)
- Cost (lighting and equipment, additional PPE, training)
- Objective and relative speed (posted work zone speed limits vs actual)
- Law Enforcement Participation?
- Sight distance (hills, curves, weather, fog etc.)
- Side Road access and control (farm to market and housing)

Light Placement

- Mobile Job – Work Moves Forward As Paving Progresses
- Be Careful Around Curves And Hills



LED Balloon Lighting on Paver



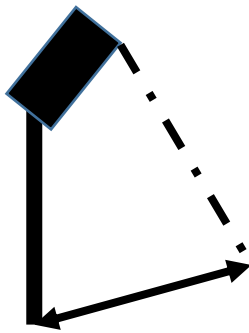
Light Levels

- Level I – (54 LUX – 5 Foot Candles) All work operations areas; setup of lane or road closure, tapers, and flagging stations.
 - Level II – (108 LUX – 10 Foot Candles) Areas around or on construction equipment; asphalt paving, milling and concrete placement/removal.
 - Level III (218 LUX – 20 Foot Candles) Pavement or structural crack/pothole filling, joint repair, pavement patching/repairs, installation of signal/electrical/mechanical equipment.
- * A footcandle is defined as a unit of illumination that is equal to one lumen per square foot or 10.764 LUX.

Types of lighting

- Portable light towers or plants
- Balloon lighting or diffusers
- LED lighting

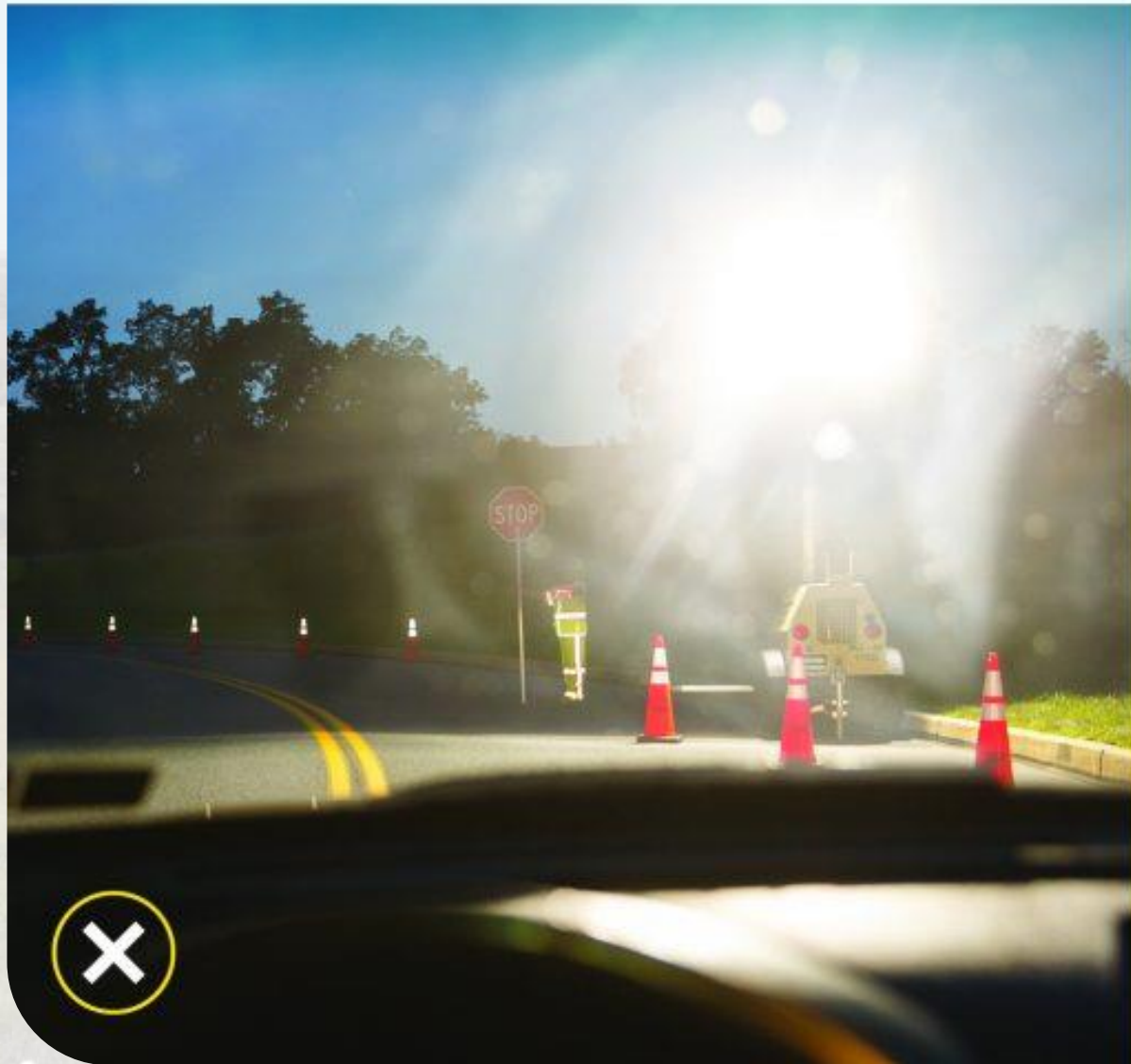
* Portable light towers should not be rotated outward more than 30 degrees



Less than 30 degrees

INCORRECT LIGHT ANGLE ◀

▶ CORRECT LIGHT ANGLE



Glare Control

- All lighting shall be designed, installed and operated to avoid glare that affects traffic on the roadway or to workers within the work zone.



Flag Person Training

- May Require Additional Training
- Review Each Night's Paving to Identify Near Misses and Problems
- Class III Level II Garments
- As a rule of thumb, practitioners should ensure that motorists can see flagging stations a minimum of 1,000 Feet at night.



Fatigue

- May Require Some Time to Acclimate Adaption to Sleep Patterns
- Close Shades During Daytime Sleep to Encourage Rest
- Avoid Excess Alcohol Use When Not Working



Emergency Response

- Post local numbers
- Advise local authorities of night work.
- Determine approximate response times.
- Instruct all personnel of plan.





2021 National Work Zone Awareness Week



Drive Safe. Work Safe. Save Lives.



www.nwzaw.org

2021

NATIONAL WORK ZONE AWARENESS WEEK



APRIL 26 - 30, 2021

HOW TO PARTICIPATE

GO ORANGE DAY

Wednesday, April 28

Participate in Go Orange Day by spreading the message of work zone safety with your friends, family and community and by liking, commenting and sharing on social media using the hashtags **#CAWPWZSAFETY**, **#NWZAW** and **#GoOrange4Safety**.

Drive Safe. Work Safe. Save Lives.

CAWP Contractors are busy improving Pennsylvania's roads and bridges. When you encounter our work zones, please keep the safety of highway workers in mind. Our industry actively supports the National Work Zone Awareness Week and participates in outreach efforts to educate the traveling public about dangers of driving through work zones.

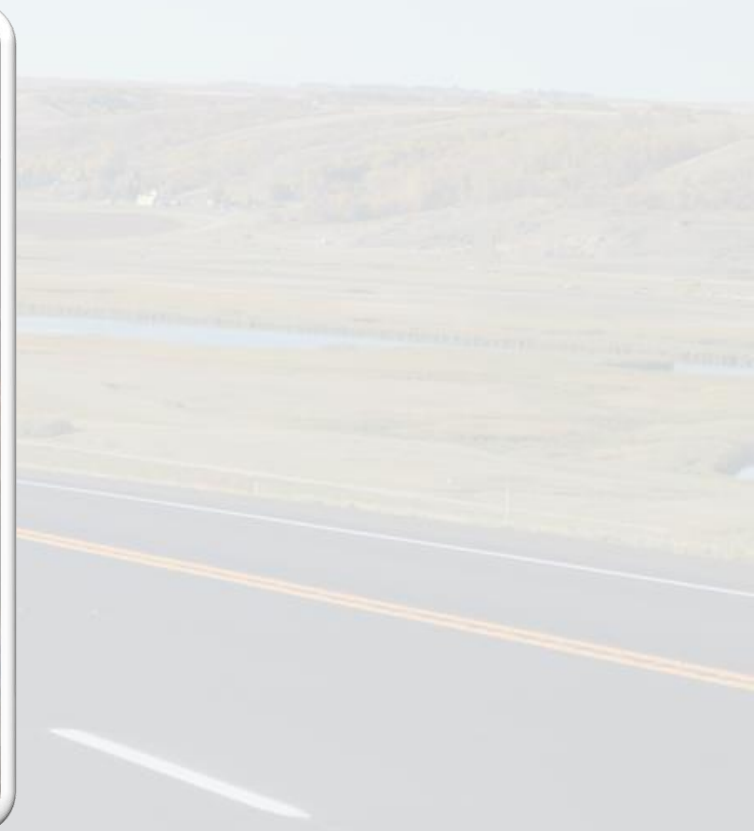
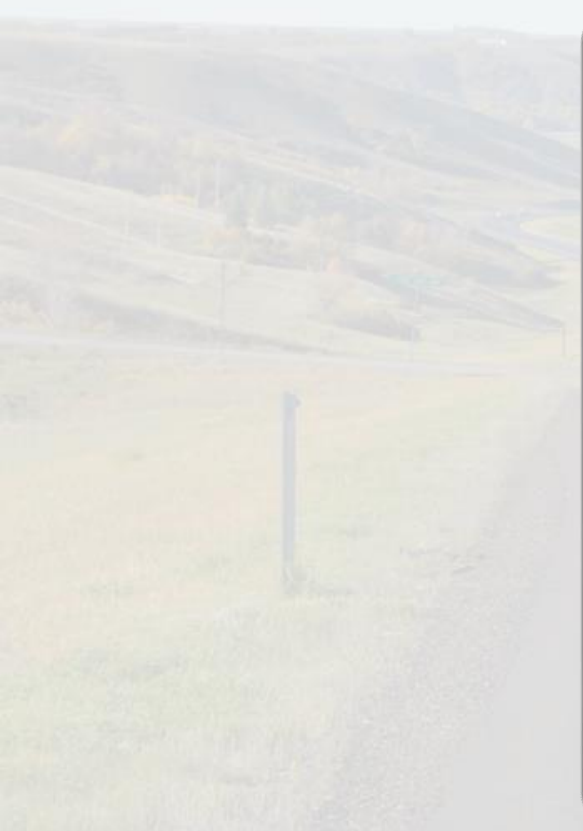
National Work Zone Awareness Week (NWZAW), in its 21st year, is a national public awareness campaign that spreads the message that we are all responsible for work zone safety. This year's NWZAW is April 26-30, 2021 with the theme of "Drive Safe. Work Safe. Save Lives."

cawp.org/work-zone-awareness/

nwzaw.org



Thank You
Let's Pave!



Jack Kolberg - Safety Consultant - AGC of ND

“Safety Isn’t Expensive – It’s Priceless”





Dakota Asphalt Pavement Association, Inc.

"Dedicated to Quality Asphalt Paving Through Engineering, Research, and Education"



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