

TXLTAP MONTHLY NEWSLETTER

Deicers: Short-Term Solution or Long-Term Problem?

Do deicers damage concrete? This is the tough question. We've looked at alternative options to the standard rock salt applications, including beet juice, brine solutions, sand, and even corn derivatives. With all of these options, what is the long-term effects of deicing? Not such an easy question to answer since that's going to be based on the quality, strength, and durability of the pour. There are many factors that contribute to the deterioration of concrete. These can include:

- Ingredient Quality: below standard ingredients can contribute to physical and chemical vulnerabilities.
- Ingredient Ratios: wetter concrete is easier to work with but cures to a weaker finish.
- How it's Mixed: mixing in a mixer leads to a more thorough mixing to ensure that it's uniform and consistent.
- Curing Conditions: weather, temperature, and moisture all contribute to proper or improper curing.
- Purpose for the Pour: different mixtures and qualities can be used depending on the purpose of the pour.

Newer concrete (younger than 1 year) is also much more vulnerable to damage than older concrete. Concrete cures rapidly at first, then gradually until completion and can take years to be fully cured. During the first year or so, that concrete is extra susceptible to the environment and deicers aren't recommended.

Most concrete is damaged not by chemicals alone, but by the cycle of freezing and thawing on inferior concrete. Spalling damage, the flaking or chipping away of surface concrete, is also known as scaling. This happens when the surface is weak or hasn't been properly sealed. Moisture seeps into the porous concrete and freezes. The freezing process expands the water an average of 10%, creating pressure every time it freezes and thaws. This repeated abuse on the concrete causes spalling in increasingly damaging

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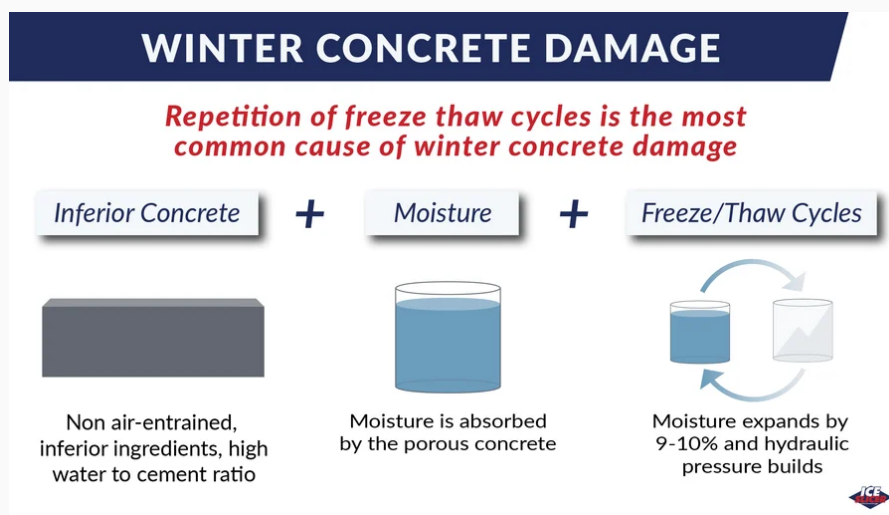
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increments. Deicers, by doing as they're designed, melting snow and ice, increase the number of freeze/thaw cycles. Most deicer themselves, do not damage the concrete. It's the increased number of cycles that creates the damage. This is especially true if the concrete is newer or subpar.



To mitigate the harmful effects of deicing chemicals, it's essential to use them responsibly. This includes applying them in moderation, only before a storm to prevent ice bonding, and selecting less corrosive products. Mixing sand with deicers can reduce the amount needed and provide additional traction. Furthermore, promptly shoveling snow before it bonds to the surface can significantly lessen the need for chemical deicers.

One of the most effective preventative measures is sealing the concrete. Sealants can provide a protective layer that minimizes the penetration of water and chemicals. It's recommended to apply a high-quality sealant before the onset of winter and to reapply it every few years, depending on the product's durability and the severity of local winter conditions.

Regular inspection of your driveway can help catch damage early, allowing for more straightforward, less costly repairs. Look for uneven surfaces, discoloration, and small cracks. Keeping a record of these observations can help track the progression of damage over time. Environmental concerns and the desire to protect infrastructure have driven the development of more eco-friendly deicing options. These include products like CMA (calcium magnesium acetate), which is less corrosive and safer for concrete and the environment, though often at a higher cost.

Lastly, if you are involved in the initial pouring the concrete, remember the importance of using the right concrete. Depending on what you're planning on using the concrete for, you need high-quality, low water-to-cement, air-entrained concrete.

<https://cornerstoneconcretellc.com/the-effects-of-deicing-chemicals-on-concrete-driveways-what-you-need-to-know/>
<https://blog.iceslicer.com/ice-melt-and-concrete-a-little-science-lesson>
<https://apwa.partica.online/reporter/october-2023/features/ice-melt-and-concrete-do-deicers-damage-concrete>
<https://civiconcepts.com/blog/mixing-concrete>



Snowplow Simulators, a Viable Option?

We all know the saying, “If you don’t like Texas weather, just wait 10 minutes.” This is absolutely true, especially in winter. Whether it’s an ice storm, snowstorm, or a tornado, we need to be prepared for just about anything. Cities like Amarillo, have ample experience dealing with the winter months on our roadways. Running snowplows is common practice. But what about cities like Austin, that don’t receive much snow? With the amount of employee turnover these days in public works, how do they keep their employees prepared? The State of Arizona is just one of many states that have found the solution to winter weather training. ADOT’s website provides a summary of their program:

“Immersive simulation helps operators train for ice, snow and other winter driving conditions. Each winter Arizonans count on snowplow operators to clear highways when snowstorms roll through Arizona’s high country. Operators of the Arizona Department of Transportation’s 200 snowplows have been training since mid-September on snowplow simulators to prepare for the upcoming season.”

“ADOT’s five snowplow simulators, located in Flagstaff, Kingman, Holbrook, Phoenix and Tucson, are programmed with scenarios that are meant to mimic what operators may encounter on Arizona roads. A given training session can have a driver working in daytime or night in locations that include highways around the San Francisco Peaks near Flagstaff or the Grand Canyon National Park Airport, which ADOT operates. It’s a convenient and effective way for the drivers to learn and boost safety on the state’s highway system during the winter.”

“These simulators help us to train our employees at a fraction of the cost that it would be if they were to take a plow out, spend funds on fuel and risk damaging equipment,” said Mario Ortega, ADOT training delivery manager. “With the simulator they can hit a sign, hit a vehicle, and we can start over. In the real world, there are no do-overs.”

“Instructors can create different simulations that give ADOT snowplow operators the opportunity to drive in various scenarios, including daytime and nighttime conditions, rainy or low visibility circumstances and even the iciness and material of the roads. The simulator will react, allowing an operator to feel what it’s like to drive over railroad tracks or encounter an icy highway. All ADOT snowplow operators are required to complete a refresher class on the simulator every year in addition to holding a commercial driver license.”

The State of New York has partnered with a local community college, using the college’s simulator once a year for annual training. The State of Delaware has worked for years to develop a successful training program and facility to provide training on their simulator for roughly \$175 for an hour per seat.

Simulator costs are above \$120,00 on average and require dedicated staff and scheduled maintenance.

<https://azdot.gov/news/adot-prepares-winter-season-snowplow-simulators>

Heavy Equipment Inspection Checklists Available

- TXLTAP -

Excavator (Backhoe, Telescoping, Articulating) Equipment Inspection Checklist

Date			Section/Location		
Equipment ID Number			Mileage/Hours		
Power Off					
WALKAROUND	General Condition		LAMPS	Head / Dimmer	
	Leaks (Fluid / Air)			Parking	
UNDER HOOD	Oil Level		Turn Signals		
	If Automatic Transmission Fluid		Four Way		
	Coolant / Radiator		Stop Lamps		
	Brake Fluid Level and Cap		Tail Lamps		
	Power Steering Fluid		Marker Lamps		
	Belts		Reverse Lamp / Alarm		
	Fuel Filter (water separator)		License Lamp		
	Air Filter and Indicator		Strobe / Beacon		
	Hoses		Reflectors		
	Leaks		Work Lights		
	Exhaust System		CAB	1st Aid Kit	
	Hood Latches			Fire Extinguisher	
	Wiring Condition & Secure			Seat Belts	
	Cable Condition			Wind Shield & Windows	
Mountings / Hold Down		Wipers/Washer			
Cover Secured		Horn			
BATTERIES		Mirrors			
TIRES		Brakes			
		Loose Items			
		Instrument panel			
TRACKS		Back Up Alarm / Light			
		Meter: Hour / Odometer			
HYDRAULICS		Park / Emergency Brake			
		Joy Sticks			
		Rollover Protection System			
SERVICE		BOOM			
		Functions OK			
STRUCTURE		Rollers / Adjustments			
		Boom Support			
MARKINGS		Lubrication			
		BUCKET			
		Cutting Edge			
		Articulated Joints			
		Bucket Attachment Link Pins			
		Boom / Bucket Attachment			
		AIR BRAKES	YES <input type="checkbox"/> NO <input type="checkbox"/>		
			Air Pressure buzzer & lamp		
			Tank / Drain		
FUNCTIONAL TEST			Air Test / Brake On/Off		
			Slack Adjuster		
			Glad-hands / hoses		
Comments					
V = Condition safe to operate X = Discrepancy found (X) = Discrepancy repaired					



Equipment Inspection Checklists Available at txltap.org:

- Aerial Bucket Truck Crane
- Asphalt MNT Unit Truck and Trailer
- Boom Truck
- Motor Grader
- Dozer
- Forklift
- Excavator (Backhoe, Telescoping, Articulating)
- Light, Medium, Heavy Dump Truck
- Loader
- Roller Steel Wheel and Pneumatic
- Skid Steer
- Street Sweeper and Rotary Broom
- Trailer Towed Equipment

Operator's Printed Name and Signature



UNIVERSITY OF
TEXAS
ARLINGTON

Supervisor's Signature of Release

**DIVISION FOR
ENTERPRISE
DEVELOPMENT**

Ed. May 2019



Focus on Training: County Roads for Commissioners

This 16-hour course is an introduction for newly elected County Commissioners, County Judges, Road and Bridge Administrators/Superintendents, County Engineers and precinct foremen/supervisors on all aspects of maintaining roads in their jurisdiction to meet state regulations within their allocated budgets.

Topics covered include:

- Understanding and following TMUTCD as it pertains to county and municipal roads
- Different types of roadway maintenance
- How to plan and prioritize work tasks
- Proper maintenance of equipment assets to prolong lifespan, decrease downtime, and increase productivity
- How partnering can increase productivity
- Right of way issues in the counties
- How to plan for impacts on county roads caused by sub-divisions
- How to maintain gravel/dirt roads in the counties

Instructor Spotlight

JACK PETTYJOHN



Jack's first job was with Brown & Root's heavy equipment department, responsible for the maintenance and deployment of the equipment to include the hydraulic crane fleet. He then went to work for TEEX as an instructor, program manager, then Business Development Manager for the Engineering, Utilities and Public Works Institute. He spent his time developing, teaching and managing programs around the state. Jack also helped found and develop the first OSHA Training Institute in Mesquite. He joined UT Arlington in 2009, where he helped develop and deliver a variety of training programs, overseeing the heavy equipment and construction safety training programs. Jack helped create the LTAP video training programs and teaches the equipment and safety courses for LTAP, TxDOT and our private sector clients.

"The instructor was awesome!"

"Instructor was very knowledgeable...very well done!"

"Great course, awesome instructor!"

"Jack was very informative, and class was interesting."

"This was the best bucket truck class I've had."

Upcoming Conferences and Events

Visit Our Exhibit and Meet Our Team:

February 4-6, 2024: Texas APWA Public Workshop & Equipment Rodeo

February 20-22, 2024: V.G. Young Institute Schools for County Commissioners Court





INSTRUCTORS WANTED

Are you looking for your next
adventure in the great state
of Texas?



TxLTAP IS LOOKING FOR EXPERTS IN:

Email Your Resume and
Letter of Interest to:
TxLTAP@uta.edu



- ✓ Work Zone
- ✓ Infrastructure
- ✓ Safety
- ✓ Heavy Equipment
- ✓ Management
- ✓ Flagging
- ✓ Environmental
- ✓ Electrical



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