

# Wisconsin DOT Specification Development Case Study

**NITROcrete provided a win-win solution for paving: lower temperature specs with attainable high production concrete cooling.**

## JOB

WisDOT wanted to impose a lower temperature specification for various concrete road work bid items. Numerous studies have shown that lower concrete temperatures lead to increased durability and higher long-term concrete strengths. The temperature of the concrete mixture affects the hardening rate of the cement paste. Lower temperatures result in a more controlled, uniform, and thorough chemical reaction, which lead to a higher strength and more durable concrete product.

**Nitrocrete's unique combination of innovation, automation & cooling performance is leading to improvements in the concrete specification development stage.**

## CHALLENGE

Practical limitations with cooling concrete have restricted the design engineer's ability to require lower concrete temperatures. The concrete for road work applications is characterized by mixes that contain a relatively small amount of water coupled with extremely high production rates in which dump trucks are often used in lieu of concrete mixer trucks.

The two main options used for cooling concrete, chilled water and ice, are not effective for this application. The small amount of water in the mix limits the chiller's cooling capabilities to only a 2 – 3°F (1.11-1.67°C) drop. Alternatively, ice cannot be added as there is no mixing mechanism in the dump truck and the time consuming process would also lead to an unacceptable level of production loss.

## SOLUTION

After meeting with NITROcrete staff and learning about the system, both the concrete contractors and WisDOT were enthusiastic about the new technology. It enabled WisDOT to impose the concrete temperature specification that was desired from an engineering standpoint, and provided the contractors and producers with a practical solution in meeting the concrete temperature specification.

**Take Charge of Your Concrete.**

**www.nitrocrete.com  
1-866-PEAK-NITRO**