IGGA
International Grooving & Grinding Association
Your Pavement Preservation Resource® since 1972

the next generation concrete surfaces (NGCS)

NGCS Valuable Alternative to Noise Walls

NGCS reduces noise, improves safety and ensures smoothness.

IN 2019, THE MINNESOTA DEPARTMENT OF TRANSPORTATION (MNDOT) announced a project to reconstruct and expand both directions of I-94 between TH25 in Monticello and TH24 in Clearwater, approximately 35 miles northwest of Minneapolis. The prime contractor for this design-build project was HcPCi, a joint venture between Hoffman Construction and PCiRoads, who are primarily grading and concrete paving contractors respectively.

This $104 million dollar project called for approximately 14 miles of roadway to be reconstructed and for construction of an additional general-purpose lane in each direction, taking the roadway from four to six lanes, and included mainline segments of both asphalt and concrete.

Primarily, the project called for expanding the roadway to the inside including a concrete median barrier. Locke Lake is a small lake adjacent to I-94, with about 2.6 miles of shoreline which is substantially developed with numerous single-family residences.

HcPCi submitted an Alternative Technical Concept (ATC) to MnDOT, suggesting a change to the agency's design. The ATC proposed maintaining the existing median width as opposed to constructing a concrete median barrier. The newly proposed layout widened the roadway to the outside, closer to the lakefront than what would have resulted from the initial MnDOT design. MnDOT is required to analyze noise impacts in various scenarios, and this location met MnDOT's criteria for noise mitigation. The standard mitigation technique requires the construction of expensive noise walls. However, the geography of the site and the proximity of the lake to the roadway made the construction of noise walls exceedingly difficult. In response to this challenge, HcPCi provided data showing that using next generation concrete surface (NGCS) would provide noise reduction meeting MnDOT's mitigation requirements.

NGCS, a hybrid texture that resembles a combination of diamond grinding and longitudinal grooving, is the quietest non-porous concrete pavement surface available. Furthermore, it creates a smooth surface (enhancing rideability and pavement durability) and improves safety by reducing hydroplaning. Additionally, MnDOT maintenance personnel have reported that NGCS also reduces the amount of salt required during snow and ice operations compared to traditional surfaces.

In 2022, the I-94 expansion project was completed with NGCS installed on the approximately 1/3-mile of roadway that was close to the lake, a more economical solution than expensive noise walls. MnDOT even expanded the scope of the project and installed NGCS in the westbound lanes of this stretch, as well.

"Achieving success without noise walls represents a change in 'business-as-usual,'" said Matt Zeller, executive director, Concrete Paving Association of Minnesota (CPAM). "Earlier applications of NGCS in Duluth, Minnesota demonstrated that the surface also enhances safety, so NGCS offers many advantages. NGCS provides a very smooth surface and has even been noted to hold salt better in the wintertime, reducing the overall use of salt and therefore providing an environmental benefit."

» TEAM MEMBERS

- PCi Roads
- Concrete Paving Association of Minnesota

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ABOUT IGGA
The International Grooving & Grinding Association (IGGA) is a non-profit trade association founded in 1972 by a group of dedicated industry professionals committed to the development of the diamond grinding and grooving process for surfaces constructed with Portland cement concrete and asphalt. In 1995, the IGGA joined in affiliation with the American Concrete Pavement Association (ACPA) to form what is now referred to as the Concrete Pavement Preservation Partnership (IGGA/ACPA CP3). The IGGA/ACPA CP3 now serves as the lead industry representative and technical resource in the development and marketing of optimized pavement surfaces, concrete pavement restoration and pavement preservation around the world.