

long-lived concrete pavement

TH 210 in Minn. Achieves a 69-Year Service Life—With More Years to Come

With Only 3
Maintenance Cycles
and No Traffic
Detours, TH 210
Represents Value to
Taxpayers



A COMMON ISSUE FOR DOTs TODAY IS WHAT TO DO WITH WORN CONCRETE PAVEMENTS that have provided decades of service to the traveling public. The cost of reconstruction can be quite overwhelming, especially with increasing pressure to remediate the maximum number of lane miles. Is it possible to bring 50-year-old pavement back to its original glory? If Trunk Highway 210 (TH 210), west of Brainerd, Minn. is any indication, the answer is a resounding “yes!”

The section consists of a 9-7-9 thickness design, meaning it is 9 inches thick at the pavement edges and 7 inches thick at the pavement center line. The center longitudinal joint was tied, while the 15-foot transverse joints were undowelled. It is noted that the pavement was cured over seven days of wet curing which surely helped prevent slab curling and shrinkage cracking.

Throughout the pavement’s life it has experienced three maintenance efforts:

- 1. 1974 (21 years in service): joint resealing was performed.** This relatively light construction effort keeps water and debris from getting into joints in locations where the original sealer has deteriorated. Joint resealing will help prevent premature joint spalling.
- 2. 1991 (38 years in service): pavement was rejuvenated using partial-depth repairs, full-depth repairs and diamond grinding.** Partial- and full-depth repairs remove major blemishes such as potholes and significant slab cracking from roadways. Diamond grinding improves ride-quality and friction, bringing the pavement back to its original surface quality.
- 3. 2013 (60 years in service): pavement was repaired with more partial- and full-depth repairs as well as dowel bar retrofit, then finished with a diamond-ground surface texture.** Dowel bar retrofit (DBR) is an innovative technique used to add dowel bars to undowelled pavements, helping reduce slab faulting. This project installed bars in all undowelled transverse joints. Diamond grinding is often paired with DBR to remove any existing faulting, improve ride quality and reduce dynamic loading.





Most of the original seven miles of concrete are still in service today, which marks 69 years of continuous service without a marked detour for the traffic. Very few roadways nationally can lay claim to having provided 69+ years of continuous service. Many people would also assume that a long-life pavement such as TH 210 is nearing the end of life, but not so with this road; the International Roughness Index (IRI) in 2022 was measured at a 70 (in/mile). With continued concrete rehabilitation activities, this pavement shows great potential to hit 100+ years of serving the travelling public. In laymen's terms, an incredible investment was made on behalf of the taxpayers of Minnesota.



There are a few key takeaways. First is that pre-emptive maintenance, often referred to as pavement preservation, is necessary to maximize the life of a pavement. Fixing minor issues before they become major is important in optimizing the life cycle cost of pavements. Pavement reconstruction can be costly and DOTs should strive to prevent the need for them with early intervention. Second is that smooth pavements stay smooth longer, so implementing techniques like dowel bar retrofit, diamond grinding and joint resealing early in the pavement's life will reduce dynamic loads and greatly increase the amount of time a pavement remains serviceable at a high level for minimum cost.

For more information, **contact the IGGA** with any and all questions on concrete pavement preservation and repair!



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.