

T² MINNESOTA TECHNOLOGY TRANSFER PROGRAM

Technology Exchange Newsletter

October - December 1998 : Volume 6, No. 4

A Newsletter of the

Minnesota Technology Transfer (T²) Program, Local Technical Assistance Program (LTAP)

Bon Jour! NovaChip European Technology Introduced to Minnesota

A European paving process, NovaChip®, was demonstrated to Minnesota maintenance personnel during Mn/DOT's Smooth Pavement Repair Information Demo Day. *[See above for more about this demo.]* Initially developed in France and used widely throughout Europe since the late 1980s, the advanced NovaChip system is a paving process that places a thin, coarse aggregate hot mix over a special asphalt membrane.

How the Process Works

Although appearing similar to traditional American paving processes, the NovaChip process includes a noticeably larger paver that includes a tank for NovaBond, a polymer-modified emulsion used as a membrane. As the paver travels, it applies the NovaBond membrane immediately before an ultrathin lift of hot-mix asphalt. The NovaChip process accomplishes several important design elements:

Picture at right: With the NovaChip paver, work zones can be re-opened in under an hour.



Strong bond between the old and new material. The NovaBond is placed almost simultaneously with the hot-mix asphalt, allowing a much thicker application than a typical tack coat.

Special membrane prevents moisture intrusion. The thicker polymer-modified Novabond membrane seals the entire pavement surface, including low- to medium-severity cracks, preventing water from entering the pavement structure.

Integral membrane allows for ultrathin surface. During the single-pass process, the heat from the hot mix wicks the emulsion-based NovaBond up into the hot-mix material, creating the strong bond and allowing an ultrathin hot-mix wearing surface layer.

Durable hot-mix asphalt surfacing has no loose chips. Because the NovaChip wearing surface is a hot-mix asphalt, there are no loose chips. The high-quality aggregate used for NovaChip is skid and wear resistant. Additionally, the thin, open mix is designed to allow water to escape, reducing hydroplaning and backspray.

Significant reduction in user delays. The NovaChip machine applies the thin hot-mix such that compaction is not a main concern. Rolling is necessary only to orient the mix into the NovaBond. The result is a short, quickly moving work zone. The road can be re-opened to traffic in less than an hour. Additionally, the NovaChip system is designed to last up to 10 years, reducing future user delays.

Where Is It Applicable



Preventive maintenance treatments should be selected based on pavement condition and traffic volumes. The NovaChip system is designed to preserve structurally sound pavements exhibiting low-severity cracks, low- to medium-severity wheel rutting, and raveling.

According to Mike Marti of Koch Materials Company, "NovaChip combines the strength of a hot mix with the flexibility of a thin maintenance treatment. The NovaChip system was designed to incorporate the best aspects of thin overlays and chip seals while eliminating the concerns of loose stones, tracking, delamination, and user delays."

Results

Numerous pavements have been rehabilitated using the NovaChip system throughout the United States and are being evaluated by DOTs, research centers, and universities. Locally Mn/DOT and Iowa State University are evaluating the NovaChip system on two independent projects.

*[For information on the NovaChip process contact Roger Olson of Mn/DOT, 651-779-5517, or Mike Marti of Koch Materials Company, 651-480-3834; e-mail **Error! Bookmark not defined.**]*