

THE NEW ASPHALT ABSOLUTELY!

Rubblization and Overlay in Faribault County

By Matt Shinnars, Antigo Construction, Inc., and
Jill M. Thomas, P.E., MAPA Associate Director

County State Aid Highway (CSAH) 16, east of Blue Earth, is one of the most heavily traveled roads in Faribault County. This road provides access to a large grain elevator and other businesses in Blue Earth. The last major maintenance on this segment was in the early 1980's and subsequently was in need of reconstruction. The old, narrow concrete pavement had been overlaid several times but the joints and cracks in the concrete continued to reflect through the asphalt. In 2004 Faribault County decided to reconstruct the roadway section and bring the road up to current standards. Concrete rubblization was chosen to minimize reflective cracks. The width of the paved Mn/DOT turnback roadway was increased from 20 feet to 26 feet and the grade was corrected in two areas to meet vertical alignment standards. The grade correction areas were 2,600 linear feet in length.

Ulland Brothers, Inc., Albert Lea, was awarded this 8-mile long project and subcontracted with Antigo Construction, Inc. for the concrete rubblization. The first step was to mill off the 6-inches of existing asphalt overlay. Antigo then rubblized the existing 9"-7"-9" concrete pavement (pcc) with one of their MHB Badger Breakers[®]. Antigo followed with a Z-grid vibratory roller over the rubblized concrete to further crush the surface particles and seat the rubblized layer of concrete. Over 80,000 square yards of concrete was rubblized in 7 days.



Rubblizing the deteriorated pcc on CSAH 16 prior to overlay.

The roadway was then widened by 3 feet on each side using a 9-inch thick layer of crushed concrete adjacent to the existing concrete. Edge drains were installed outside the widenings. New centerline culverts were installed and the grade was corrected in two areas. The base was now ready for the asphalt pavement overlay. Ulland Brothers paved 6-inches of asphalt pavement in 2 lifts. "This summer (2005) we plan to place 1-1/2" of LVWE45030B mix," stated John McDonald, Faribault County Engineer. The project will require over 55,000 tons of asphalt pavement.

The Faribault County project highlights some of the advantages of the concrete rubblization and overlay process. The rubblized layer serves as a composite flexible base design and excellent drainable base for the new asphalt pavement. Breaking the concrete into small yet still tightly interlocked particles through the process of rubblization, greatly reduces thermal and load-induced movement of the concrete slabs. The resulting layer is similar to a crushed aggregate layer but typically offers greater support due to the interlocking of the particles. The speed of the process keeps road closures to a minimum and the cost is significantly less than total reconstruction. In essence, the process recycles the deteriorated pcc in-place. No right of way needed to be acquired in the rubblized portions of the project. In addition, traffic was able to use the road throughout most of the project. All of the existing materials (asphalt, concrete, aggregate shoulders) are recycled thereby reducing cost and minimizing truck movements, and helping to conserve nonrenewable resources.

What was once a rough-riding road with significant maintenance expenses has become a smooth-riding, low-maintenance, safe road. The wide-spread success of concrete rubblization and asphalt overlay across the United States suggests that this option should be seriously considered whenever a concrete pavement is in need of rehabilitation.



CSAH 16 prior to final 1½-inch wear course.

More information is available on the MAPA web site, www.asphaltisbest.com, along with reference to MAPA's Asphalt Paving Design Guide.

Asphalt is the best choice for pavements – Absolutely!