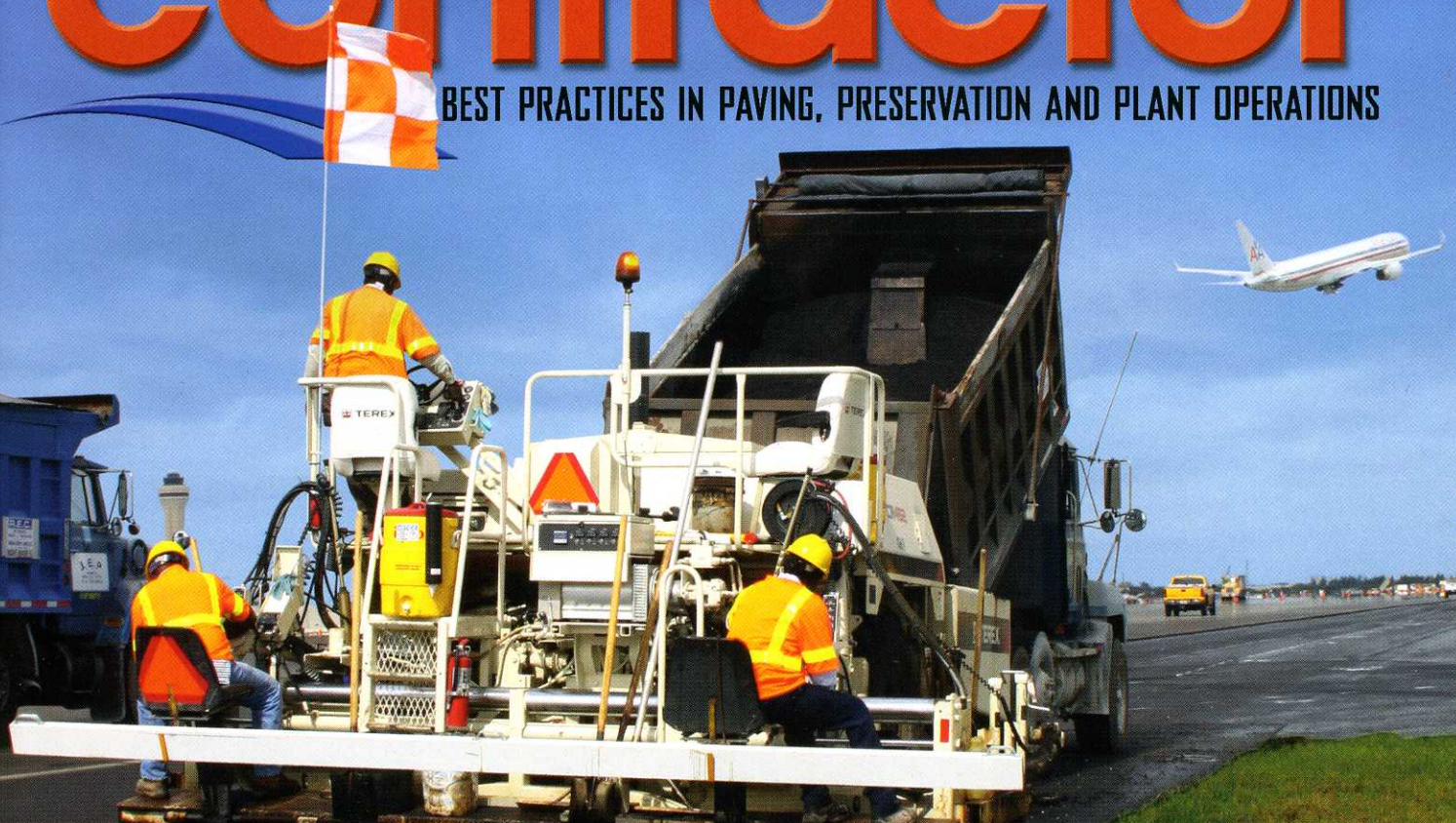


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BEST PRACTICES IN PAVING, PRESERVATION AND PLANT OPERATIONS



Paving Innovations:
**Runway Congestion
Makes for Challenging
Paving Project** page 14

Pavement Preservation:
**Midstate Reclamation
Stabilizes 'Fat Clay'**
page 36

Pavement Preservation:
**Minnesota County Attacks
Thermal Cracking with
Warm Mix**
page 44

Plant Matters:
**Opening a New Asphalt Plant
During an Economic Downturn**
page 58

Minnesota county attacks thermal cracking with warm mix

A Minnesota county is using warm mix asphalt to fight destructive asphalt thermal or low-temperature cracking caused by fierce winter weather

To fight thermal cracking, Crow Wing county hopes to use a warm mix asphalt (WMA) additive to get from a lower-cost PG 58-28 binder the same cold weather performance of the more expensive polymer modified PG 58-34 binder specified in Minnesota for newly constructed low-volume bituminous roadways.

But it also hopes to use the WMA additive to improve binder durability by reducing the premature or "artificial" aging to binder caused by exposure to the scorching heat of the asphalt plant burner.

Crow Wing County is in the second year of testing warm mix asphalt to ameliorate thermal cracking and improve binder durability. Following a test project in late 2008, testing in 2009 included placement of two layers of bituminous mix containing a warm mix additive, and 30% reclaimed asphalt pavement (RAP), on County Road 2.

"One of the hoped-for benefits of warm mix asphalt is greater durability over time," says Wayne Dosh, senior engineering technician, Crow Wing County Highway Department. "One of the issues we struggle with in Minnesota is thermal cracking. It's usually the biggest killer of our roads. One of the ways to get around it is by using 'softer' grades of binder. The performance-

grade binders used are based on our ambient temperature extremes, and that kind of spread usually implies polymer modified asphalt. By using a warm mix additive we hope to be able to get the same performance with non-modified oil as with a modified."

But premature aging of binder also is an issue that the county hopes to minimize with warm mix.

"Heat contributes to premature or artificial aging of the binder, which breaks down the oils," Dosh says. "This gets even worse as the mix ages in-place over time. One of the benefits we're hoping for (from the warm mix additive) is to be able to use cheaper binder – PG 58-28, that doesn't require a polymer modifier – with the added



At plant, warm mix ranges from 225 to 235 deg F, compared to 280 deg F or more for conventional hot mix asphalt.

