



Kansas LTAP Fact Sheet

A Service of The University of Kansas Transportation Center for Road & Bridge Agencies

Using Rock Reclamation Blades

By Michael Spickelmier and Doug Smith

The challenges faced by road and bridge crews in Northeast Kansas in 2008, as well as throughout the state, were significant to say the least. During the first week of January, an unseasonably warm week resulted in an early thaw that turned our gravel roads into mud. The crews were reporting a softening of roads not seen for over 20 years. This was all happening as diesel fuel prices were rapidly marching toward record highs above \$4.00 per gallon.

The solution was to start hauling rock immediately to take care of the most serious problems. This operation was successful, but at a high cost to the budget. Nearly 20 percent of the annual rock budget was spent during the first two weeks of the year, with 70 percent of the budget exhausted by the end of March. This combined with soaring fuel costs, meant we were not going to be able to haul much rock in the fall to prepare the roads for the winter. We estimate that the cost of rock need for the fall could have been around \$75,000.

A few years prior, we purchased two sets of “tiger-teeth” blades for use on the gravel surface roads. Our initial tests were mixed, due in part to inexperience with the system and unrefined techniques. However, we did find that these blades were very effective in scarifying a smooth ice surface on a gravel road during the



winter, and we eventually acquired sets for each grader in the fleet. It was at this time that Leavenworth County Road & Bridge Superintendent Doug Smith modified operations and re-visited the use of rock reclamation blades for their designed purpose.

The majority of the graders were equipped with the “tiger-teeth” in the fall, but this time with excellent results. The blades brought the larger diameter rock to the surface; in effect rejuvenating the aggregate surface of the gravel roads.

Here are some of the results we came up with:

- Leavenworth County has had a significant amount of fines in the road rock used over the last few years. The teeth pulled the larger rock to the

surface, leaving the fines in place and not damaging the crust.

- The “tiger-teeth” should be the only part of the blade that comes into contact with the road. Too much depth will result in damage to the road crust, worsening the condition of the road.

- A combination of ESCO® Bucyrus Blades and CAT® GraderBit System blades were used on the roads. Both were effective, yet the ESCO Blades have a lower purchase price and lower repair cost for broken teeth, albeit a higher tooth failure rate.

- This will most likely not be part of our annual gravel road maintenance plan, but will be implemented on a periodic basis. Overuse may reduce the road base depth and damage the crust.

Michael Spickelmier is county engineer for Leavenworth County, Kansas, and Doug Smith is the county's road and bridge superintendent. ■

Reprinted from the Spring 2009 issue of the *Kansas LTAP Newsletter*, a publication of the Kansas Local Technical Assistance Program (LTAP) at the Kansas University Transportation Center.