Fact Sheet

Extending Pavement Life and Other Benefits of Reduced Tire Pressure:
A Multi-Partner Cooperative Program

PROBLEM

Most damage to low-volume roads in seasonal frost areas occurs from truck traffic during spring thaw and during wet conditions. Unless load restrictions are imposed, gravel-surfaced and unsurfaced roads require extensive grading, and asphalt-surfaced roads require major construction.

CONVENTIONAL SOLUTION

Although properly placed load restrictions eliminate the damage caused by trucks during spring thaw, companies whose livelihood depends on trucking can suffer major losses while waiting for seasonal restrictions to be lifted. Furthermore, a recent survey showed that most states place and remove load restrictions somewhat subjectively. Consequently, damage can still occur when restrictions are placed too late or removed prematurely. Even when restrictions are placed properly, snowplows, fuel and garbage trucks, and other restriction-exempt vehicles cause appreciable damage.

ALTERNATE SOLUTION

For over a decade, the USDA Forest Service has recognized and shown that significant benefits are derived from using reduced tire pressures on gravel and non-surfaced roads.

- Reduces aggregate design thickness by up to 50%
- Can use lower quality surfacing material
- Decreases truck maintenance—30% fewer repairs
- Heals rutted roads
- Extends haul season (shorter load restriction period)
- Reduces maintenance and grading costs
- Reduces driver injury (smoother ride)
- Reduces sediment up to 84%
- Heals rutted roads
- Saves on tire wear and puncture; 25–28% increase in original tread life
- Increases traction
- Can be extended to farm vehicle embargo exemption permits (e.g., South Dakota, Iowa, Minnesota)

Sixteen federal, state, and provincial agencies in combination with private companies throughout the U.S. and Canada joined efforts and are sponsoring a similar program to evaluate benefits on asphalt-surfaced roads. The project is being conducted at the U.S. Army Cold Regions Research and Engineering Laboratory (CRREL), Engineer Research and Development Center (ERDC). Not only has reduced tire pressure been shown to reduce damage, but there appears to be a threshold tire pressure under which virtually no damage occurs, even if trucking continues through spring thaw. The program comprised both computer simulations and full-scale trafficking using a heavy vehicle simulator on instrumented pavement test sections in CRREL's accelerated geotesting facility. Results have been promising, but limited.

Expanded testing is scheduled to begin by summer 2000, provided adequate funding is secured. Please contact us if interested in participating, or for further information (project Web site: http://www.crrel.usace.army.mil/vtp).

POINT OF CONTACT

Maureen A. Kestler
Telephone: 603-646-4215
Fax: 603-646-4640
E-mail: mkestler@crrel.usace.army.mil

February 2000

US Army Corps of Engineers®
Cold Regions Research & Engineering Laboratory

CRREL, 72 Lyme Road, Hanover, NH 03755-1290