



Preservation: Huge air bags make tender tires that travel smoothly and preserve super-sensitive Alaskan tundra.

Giant vehicle tiptoes through the tundra

The challenge of hauling great loads across sensitive terrain for hundreds of miles has induced Bechtel Corp., San Francisco, to design its own soft shoe solution. Bechtel-Rolligon, a 20-ton construction vehicle uses eight partially inflated roller-like wheels, or air bags. The bags, made by Rolligon Corp., Houston, have a 54-in. dia, a 68-in. face, and a 1/2-in. wall. Pressure varies from 2 to 6 psi depending on loading and terrain.

Built by FMC in San Jose, the Rolligon uses its air bags to spread vehicular weight over a large area with little deformation to the ground beneath. This is especially critical in Alaska where delicate summer tundra can be ripped apart, melting the earth and causing massive mud pockets. Currently the unit is the only one Alaska's state officials will permit to traverse the vast open reaches.

Power is transmitted to the bags by friction contact with eight 17-in.-dia, 50-in.-wide, vulcanized rubber rollers mounted between the bags and the vehicle bed. These, in turn, are driven by a 280-hp diesel engine feeding through differentials. Top speed for Rolligon is 25 mph. It also climbs 60% grades, turns in a 45-ft radius, and travels 225 mi without refueling.

The unit is about 16 ft wide, 11 ft high, 33 ft long, and weighs nearly 26,000 lb. Its roomy cab holds six people plus a host of control instrumentation, including mechanism for inflating or deflating the air bags.

Bechtel is reticent about cost, but has commissioned six Rolligons to date. On a recent shakedown run, a company crew traveled 686 mi across open Alaska country in 17 days and amid temperatures that dropped as low as 70 deg below zero. Three of the vehicles made the trip, each carrying an average payload of 10 tons.