PAVING AND THE PERMAFROST

TEXADA PAVING

THREE AIRPORTS

A new Mauldin paver, owned by Texada Paving, Ltd., was able to help keep a vital lifelink open in Canada's Northwest Territories. A vexing atmospheric condition, Global Warming, had caused damage at three local airports. It disrupted takeoffs and landings at airports in Yellowknife and Hay River and damaged an apron at the Ft. Simpson airport. The asphalt paving company used its new 1750-C to effect repairs. The paver was equipped with factory optional Ramsey Grad-Line grade and slope automatics, and two optional 18" bolt-on screed extensions.

Bill Chapple said " the airports are their lifeline to the outside world. We have gold and diamond mines in the area, and oil exploration is an important activity. Almost all freight and passengers coming into the territory by air, come here first."

"Anybody or anything going up north of the Arctic Circle, for example, comes into Yellowknife. It is the capital city of Canada's Northwest Territories and the transportation hub. Our airport is essential to our commerce and economy," continued the Department of Transportation Project Manager.

Over the years the permafrost, which is about 3m (10') below ground level, has been gradually warming. It is not an ice rich area to begin with, probably only about -.5°C (31°F). This has allowed melting which, in turn, has caused the runways to settle in specific areas up to 6 inches.

"Everything about the Mauldin paver is well balanced. The machine is really sturdy and operates very efficiently. We wanted a paver with a screed that operates like those on a highway class paver. This screed does just that!"

This is a different damage than the annual freeze-thaw cycles, which also disrupts runway use. In the past, the Department of Transportation had been authorizing only asphalt overlays of about 5cm (2") to 15cm (6") in thickness to repair the runway settling. In 2002, however, the DOT made the decision to effect a more permanent repair.

Three contractors were directly involved in the repairs at the Yellowknife Airport, the fifth busiest airport in Canada. These include the general contractor Two-Way Enterprises of Yellowknife, South Slave Paving, Ltd. from Hay River, and Texada Paving, Ltd.

Texada Paving, Ltd. is headquartered in Peace River, Alberta. Their sphere of operations, however, covers two distinct areas. The first is in the south where they have a paving season that lasts from mid-May to the middle of October. The second area is in the north, and more specifically, the Northwest Territories. Here the short paving season runs only from mid-June to the end of September and, even then, is highly dependent on the weather.

"It was the screed that sold us on the Mauldin 1750-C. We had been looking for a paver in that weight class. One that had a combination of overall light weight with a heavy-duty screed. We looked at several pavers, but hadn't found one that could do the job we needed until we found the Mauldin. When we go up north to do a public works (government) job, residents and business owners often ask us to pave parking lots and driveways while we are there. We needed a machine that could do both types of work, and still be light enough to transport long distances quickly, because we can't afford to leave any jobs behind. That's our income," said Gary Parenteau.

"Everything about the Mauldin paver is well balanced. The machine is really sturdy and operates very efficiently. We wanted a paver with a screed that operates like those on a highway class paver. This screed does just that!" continued the owner and founder of Texada Paving, Ltd.

Runway 09-27, the main 1525m (5000ft)-crosswind runway at Yellowknife, had a 200m (650') long section that required two areas of immediate redemption. These were 40m & 100m each. They had to be excavated down one meter (39") below the permafrost or 4m below the surface.

Once the general contractor, Two- Way Enterprises, Ltd. of Yellowknife, did this, they then began the backfill. A 15cm (6") layer of sand was put back and covered with a 10cm (4") layer of rigid thermal cellular insulation. Another sand layer was covered by a 2m layer of -6" blasted rock. Then a couple of feet of -2" material was placed. Finally, a foot of -3/4" stone filled the area. Then on top of that, two 2" thick layers of asphalt was laid.

They put down 1700 tons of #150-200 Penetration asphalt that South Slave Asphalt manufactured in an Allmix portable asphalt plant, which had been erected in a nearby quarry. According to Bill Chapple, in the Northwest Territories, that's considered pretty hard. Down south, that's considered pretty soft. Each patch area was given a single, variable depth course of asphalt that ranged from 5cm (2") to 15cm (6") deep. This was followed by a final 5cm (2") surface course that covered a major width of the 150' wide runway. The 1750-C was fitted with two bolt-on screed extensions enabling it to pull both 4m (14') and 5m (16') passes. There was no requirement for grade and slope electronics on the base course, and most of the passes were laid 16' wide.

It was a different matter altogether for the surface course asphalt. Texada pulled this course 14 feet wide using the Mauldin paver with its screed and extensions pulled in to a 14' width to overlap the joints in the base course to reduce seepage. The DOT mandated the use of a stringline system and stationing to put this down. Stations were set at 7.5m (25') intervals and the elevations were transit set by an engineering firm hired by the NWTDOT. Texada used factory optional Ramsey Grad-Line grade and slope automatics (automatic sonic screed controls for both sides or 'dual grade' model HS300 Sonic Level Control), to regulate the paving depths from the stringline.

"One of the features we liked about the new Mauldin paver was that it easily maintained a full head of material when it was run out to its maximum width with the two extensions. This is possible by having the standard auger The logistics of just getting the paver trucked to the job are staggering. The final 98km (60 miles) of road into Yellowknife is apparently a stretch of gravel highway, still under construction. It was so rough that, reportedly, the paver strained the strength of the cables and chains used to hold the paver to the transporter. They also had to run during the day or face the prospect of hitting a buffalo or bison at night along the 80 mile long Mackenzie Bison Sanctuary.

"Hitting a big, dark, thousand to fifteen hundred pound animal with a truck at speed at night is like running into a well built concrete outhouse," commented Parenteau.

"Most of the roads up here are paved but you wouldn't want to be drinking a beer while you are driving down them, it would knock your teeth out. The frost heaves and the permafrost melt do the same things to the roads as they do to airport runways and there are a lot more miles of roads than runways," he continued.

"South Slave Paving, Ltd. had worked for us several years ago and it is my recollection that the paver they used failed to put down a mat that had the smoothness to meet DOT specifications. When traversing it at 35km to 40km there was a noticeable rippling effect. This was not the case with the new (Mauldin 1750-C) paver. In fact, I would have to say that, in my opinion, it has done an A-1 job," concluded DOT Project Manager Bill Chapple.

CALDER BROTHERS CORPORATION
48 Donkle Road
Greenville SC 29609
864-244-4800 phone
864-244-5007 fax
WWW.4AMAULDIN.COM