

Depending on the Iron

A Texas county relies on its motor graders—year ‘round.

Imagine completely rebuilding a two-lane dirt road from Indianapolis, IN, to Albany, NY. That’s what county crews do, over an eight- to ten-year period, in Deaf Smith County, TX. This county of wide open spaces in the Texas panhandle has 776 miles of dirt roads that connect its farms and ranches and lead to towns like Hereford to the south, Amarillo to the east, and the state of New Mexico to the west.

The county has some asphalt-paved roads, a few miles of caliche-surfaced roads, and some roads are surfaced with recycled asphalt. But the vast majority are dirt roads with ditches on both sides and a crown in the center. (Caliche resembles fine-grained sand that packs tightly in dry conditions.)

There are four precincts in the county, and each one has a road foreman who manages between 113 and 272 miles of dirt roads. They need rebuilding because the wind and rain beat them down, leaving almost no ditches for drainage. To

gravel the roads would be prohibitively expensive, because there is no local source of gravel. So every time it rains, the ranchers’ four-wheel-drive vehicles create large ruts in the roads. When they have dried somewhat, the county’s motor grader operators must spring into action and level out the ruts, a process known as dragging.

“We drag all of the dirt roads five to ten times a year, depending on the weather,” says Bobby Hammock, road foreman for Precinct 3, which maintains 223 miles of dirt roads. “And in our precinct we shoot for rebuilding about 20 to 25 miles of roads per year.” What’s more, winter brings snows to Deaf Smith County, and the snow must be plowed off the roads.

All of which explains why the county requires some serious iron—in the form of nine Volvo (www.volvo.com) motor graders—to maintain and rebuild its roads. Hammock’s precinct crews operate two Volvo G940 graders. “Our motor graders need to have sufficient

power and traction to move the amount of earth we move,” says Hammock. “And my guys move a lot of dirt. When they’re building up a road, they move moldboards that are plumb full.”

State Contract

The county bought the nine Volvo G940 graders last summer. To make the purchase, the county first sold five Volvo G720B graders and four other graders. The county had bought its first five Volvo machines in 2004; both purchases were made through the use of a low-bid contract won by Volvo with the Texas Department of Transportation (TxDOT).

To a man, all four precinct foremen give their 900 Series Volvo motor graders higher ratings than the previous model. “Compared to the 720, this G940 is unbelievable,” says Ronnie Gilter, road foreman for Precinct 4. “The cab has more glass and much better visibility,” he noted in a comment echoed by other foremen. “And this one articulates better and has a much tighter turning radius.”

Volvo designed the G940 to distribute 30 percent of its weight to the front axle and 70 percent to the rear axles. “They got the front-to-back weight ratio right,” says Hammock. “That balance lets us increase our speed. We can drag two to three miles per hour faster than with other manufacturers’ graders—without bouncing. Bouncing causes bumps, and nothing irritates our constituents more than bumpy roads.

“If you can drag two to three miles per hour faster in a ten-hour day, and multiply that by two or three machines, then you’re covering a lot more ground,” says Hammock. “We can drag at six to seven miles per hour, and we probably average 40 lane miles per day. It also takes some time to fix mud holes and work on intersections.”



Graders make multiple passes to move dirt from both ditches up onto the road, losing the roll as it reaches the center.

Automatic Transmissions

A major change in Volvo's 900 Series motor graders is in the transmission. Deaf Smith County bought eight-speed transmissions, and they can shift automatically—just like a car—up from fourth to eighth gear, and back down again. "The transmission is a really big deal," says Kenneth Bass, road foreman for Precinct 2. "The automatic shifting is great for plowing snow, which we can do in the higher gears. The more we run the Volvos the better we like them."

Another plus for the 900 Series is its ability to change directions quickly between forward and reverse. "If you're working in a little short area, you can be moving forward, then just slam it into reverse and it'll go into reverse on command, without using the brake or the engine pedal," Bass says. "That's useful if you're filling a pothole and using the front wheel to compact it."

The 900 Series also has a feature that closely resembles cruise control on automobiles. An operator dragging a road can set the engine speed on cruise control. When the grader hits a tough spot, the operator can hit the brake or engine pedal, apply engine speed manually, and then hit resume to return to the original engine speed.

Building Roads

One day last spring, two grader operators, Jess Whitehead and Jason Brumley, cut new ditches and built up a section of dirt road in Precinct 3. One G940 first made a deep V-cut to start rebuilding the in-slope at one side of the road. The second G940 followed behind, pulling the roll of dirt halfway across the road. With the next pass, a grader pushed the roll to the opposite shoulder and established it.

Then one grader cuts the bottom of the ditch flat on one side. With cyclical passes, the graders move dirt from both ditches up onto the road and lose the roll as it reaches the center. With each new lift across the road, a pneumatic-tired roller pulled by a farm tractor compacts the dirt. Usually road building is done in the winter, because the roadside vegetation is dead and the moisture content is often conducive to earthmov-

ing and compaction.

"It's a well-balanced machine and I like the power," says G940 operator Whitehead. "In snow the automatic transmission works great. You don't have to upshift or downshift the grader."

In a comment that agrees with others, Brumley says he likes the comfort of the G940, as well as its power and visibility. Working together, Brumley and Whitehead say they can rebuild one mile of two-lane road per day.

In Precinct 1, road foreman Rick Bordayo says he will use two G940 graders to work to rebuild some 30 miles of roads between January and May of this year. He likes the short turning radius on the G940, and its visibility and operator comfort. As well, he appreciates the ability of the cooling fan to reverse itself and blow dust and debris away from the cooling vents in the rear of the machine.

Partners with Dealer

The county's roads foremen rely on their Volvo dealer, Associated Supply Co. Inc. (ASCO) Amarillo, for service and upgrades on their motor graders. An illustration comes from Hammock, who recalls when the county received a huge snowstorm last January. He had dispatched the graders to plow it early on a Sunday morning. At about 6:00 a.m. Brumley's hydraulic press-



Bobby Hammock is road foreman for Precinct 3, and is responsible for maintaining 223 miles of dirt roads. The precinct also rebuilds about 20 to 25 miles of roads annually.

sure dropped low and a warning sounded off. A hydraulic fitting had come off the motor grader.

Immediately, Hammock called Paul Schwertner, ASCO's chief Volvo mechanic. Schwertner cleared the snow from his truck, drove several miles to the dealer's shop, picked up a part, and drove 75 miles on snow-packed roads to reach the distressed motor grader. By 10:30 a.m. Schwertner had the grader up and running.

"A lot of people wouldn't have taken my call," says Hammock. "Paul knew it was me calling, and he knew I wasn't calling to say hello at 6:30 a.m. on a Sunday. Thanks to Paul, our people were able to drive on cleared roads much sooner than if we had done the job short one machine," says Hammock. **GE**



Nine motor graders are used in Deaf Smith County, TX, to remove large ruts from dirt roads and re-establish ditches after they have been beaten down by wind and rain.