Munilla Construction Management proves the value of machine controlled paving in the Love Field Modernization Program.

Love Field is a city-owned public airport that lies six miles northwest of Dallas, Texas. It was Dallas’s only major airport until 1974, when its status was somewhat eclipsed by the opening of the larger Dallas/Fort Worth International Airport.

But Love Field is still a major domestic hub for Southwest Airlines, Delta, and United. And it’s the site of one of the nation’s large ongoing construction projects, the more than $500 million Love Field Modernization Program, which will tear down all three original concourses, replacing them with a more efficient, centrally located, concourse. The LFMP will also add an expanded baggage claim area, a new ticketing wing, new lobby space, and will substantially expand airport concessions.
To serve the new concourse, several runways, taxiways and safety areas are being demolished and rebuilt. All of this work is being done while regular airport operations continue, and it’s all being done, of course, to meet the FAA’s extraordinarily tight tolerances for airport paving.

Florida-based Munilla Construction Management (MCM) has won several demolition and paving bids at Love Field, including a full pavement demolition and rebuild for airway apron improvements, four full taxiway removals, and additional runway and taxiway reconstructions. Total project fees are at $78 million, and MCM expects to win more bids. Nearly 400,000 square yards of concrete and asphalt are being removed and replaced. Ordinarily, a project like this would require a virtual football team of land surveyors and string line crews, working full time to meet the very exacting standards required for airport paving. But MCM chose Love Field as their first machine controlled paving project, and made a major investment in Leica Geosystems technology that has eliminated string lining from their paving workflow. It hasn’t been easy, but the decision has paid off; work is going well at Love Field, and MCM is ahead of schedule, with far fewer surveyor hours and no quality issues. In fact, the work at Love Field has become a proving ground for the use of this technology in tight tolerance projects.
Not Graded on a Curve

“From a surveying point of view, the FAA requires the tightest tolerances we’ve worked with,” explains Munilla Texas Operations Manager Luis Munilla, P.E. “Every layer of a paved surface, even the subgrade, has to pass a 16-foot straightedge test, with only three hundredths (.03 feet) of deviation allowed. Horizontal alignments are also tight. For example expansion seams, to avoid cracking, have to stay within one tenth (.1 feet) over 1,000 feet. So it’s still surveyor-intensive work, even though we’ve eliminated a lot of the staking and layout chores.”

In fact, reducing timelines with machine control was actually a secondary concern for MCM. Munilla says, “We really felt we needed this for the precision, especially since we had to achieve such high accuracies on each layer. Bottom line is, accuracy takes time.”

MCM has a licensed surveyor on staff, plus another surveyor and a party chief on site at all times. Their work began with eight control points handed off by airport management. MCM used Leica Geosystems total stations—a TS-15, and eight 1201s—to establish a control net of 30 points that governs all work. The points are used to set up prisms and backsights for pavers, trimmers, and graders, and also for control when doing quality assurance topographic surveys of paving layers. “They stay pretty busy,” says Munilla. “But we’re still saving an immense amount of time compared to conventional paving and string lining; our crews aren’t doing any staking or blue topping, and that eliminates a lot of hours.”

The accuracy of Leica Geosystems machine control solutions has enabled MCM to eliminate the straightedge testing of the subgrade, which has provided a substantial time savings.
All that timesaving is accomplished by a lot of machine controlled work;

Love Field is practically a showroom floor of heavy equipment that includes multiple machine controlled paving and grading systems.

**USED WITH**

- Guntert & Zimmerman paver (robotic total station)
- Caterpillar Asphalt Paver (robotic total station)
- Gomaco Trimmer (robotic total station)

- Caterpillar D6M Dozer (GPS)
- Caterpillar 140H Grader (GPS & robotic total station)
- Caterpillar 140M Grader (GPS & robotic total station)
And all this equipment is working in the midst of busy airport operations. Munilla says that highlights one of the major advantages of machine controlled paving. “It allows much more freedom when working. No string lines means greatly improved access; trucks can drive right in front of pavers, for example.” That’s especially important given the workflow of this project. MCM is demolishing and excavating existing runways and taxiways (typically 38 inches down to original subgrade), crushing and recycling concrete on site, and reusing the materials. All this hauling is made much easier, logistically, by avoiding long, truck blocking, string lines.

Machine control has also made one aspect of quality control go faster. Normally, airport officials require a dense topographic survey of each paving layer, and straightedge testing—multiply that by nearly 400,000 square yards, and the survey time really adds up. But one of those straightedge tests has been eliminated; “When we were able to demonstrate the accuracy of machine control, we were able to eliminate the straightedge testing of the subgrade,” Munilla explains. “That has really helped a lot.”

Worth the Investment

“We bid this, originally, as a conventional paving project, with no machine control,” Munilla says. “But then we decided it would be a great project for machine control, so we invested... a lot. And even though it’s working very well for us here, we don’t expect it to pay off on just this project. It will be more like two or three projects. But it’s the wave of the future, and we’re very excited about taking on highway paving projects with this equipment.”

In addition to the substantial upfront investment, Munilla says there have been other challenges. “Our initial days were difficult; this requires more knowledge and training, more skilled people generally, and some of our staff weren’t especially computer literate when we got started.”

To get up to speed, MCM worked directly with Leica Geosystems and with Texas-based supplier Geomatic Resources. They also contracted with a third party trainer, and attended paving school in 2014. “It’s all been good training, and we’re working very efficiently now,” Munilla says.
On the office side, MCM is using Leica Geo Office and Carlson Survey software to work with outsourced models suitable for machine control. “But, we recently invested in Carlson Civil Suite 2014 and AutoCAD 2014,” Munilla explains. “Going forward, we’ll be building our own grading and paving models, and capturing even more efficiencies in house.”

In the future, even big paving projects will likely seem relatively straightforward to Munilla Construction Management, compared to the high pressure, tight tolerance project they chose for a pilot. By committing to the “wave of the future” in a big way, the global firm has proven that machine control paving on huge, demanding projects is a promising path forward.

Learn more about machine control solutions or schedule a free consultation to discuss your needs

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