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Please visit our Web site at http://www.gomaco.com GOMACO World magazine at http://www.gomaco.com/gomacoworld GOMACO World Editor Kelly Krueger at kkrueger@gomaco.com

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Paving 100 miles (161 km) of Concrete Toll Road in Texas





One of the largest construction projects in the United States is currently underway just outside of Austin, Texas. SH-130 is the largest single highway project the Texas Department of Transportation (TxDOT) has ever built. It includes 49 miles (79 km) of new concrete tollway that will stretch from Interstate 35 north of Georgetown southward to US 183 southeast of Austin, passing through the counties of Williamson and Travis.

The project is not only unique because of its vast size and price tag of over \$1 billion, but also the manner in which it's being built. It's TxDOT's first "Comprehensive Development Agreement" (CDA), which is similar to a design-build project. With a CDA, the selected consortium is responsible for acquiring right of way, designing, constructing, maintaining and partially financing the project.

The consortium winning the project bid is called Lone Star Infrastructure (LSI) and is made up of three main partners: Fluor Enterprises, Inc., Balfour Beatty Construction and T.J. Lambrecht. They are on a five-year time table with a project completion date of December 2007.

The figures involved with the project are staggering: 40 million yd³ (30,582,194 m³) of dirt and 2.5 million tons of concrete. It also includes the construction of 122 bridge structures consisting of 350,000 ft² (32,515 m²) of steel and five million ft² (464,515 m²) of concrete. There will be four main toll plazas constructed with 30 exit/entrance ramp toll plazas along the length of the project.

The concrete pavement itself consists of almost

This map shows the entire scope of the project around Austin, Texas. LSI is at work on Segments 1-4, while Segments 5-6 are still in development.



100 miles (161 km) of roadway ranging from 40 to 64 feet (12.2 to 19.5 m) wide of which the majority will be 13 inches (330 mm) thick and paved over continuous steel reinforcing.

According to LSI, 95 percent of the SH 130 project is virgin right of way. However, the most unique aspect of the project is just the sheer size of it – 100 miles (161 km) of concrete paving that must be accomplished in a relatively short time frame.

TxDOT has also implemented the International Ride Index (IRI) to measure the smoothness of their new roadways. LSI needed a paver for the project that would meet the demands of the IRI while being durable enough to pave the entire project.

According to LSI, after devoting a great deal of time comparing various products to the necessary ride aspects of the SH 130 project, the GP-4000 was selected. Most notably, the GP-4000 was chosen because of the overall weight of the four-track machine and its ability to produce the best ride quality for life of the project.

LSI has two 12 yd³ (9.2 m³) central mix batch plants set up on site supplying concrete for both the new roadway and other concrete structures on the project. They're utilizing 15 to 20 dump trucks to carry 9.5 yd³ (7.3 m³) loads of concrete to the paving site. According to LSI, after devoting a great deal of time comparing various products to the necessary ride aspects of the SH 130 project, the GP-4000 was selected.

Since the majority of the project is being built on a grade with continuous steel reinforcing, the consortium also purchased a GOMACO 9500 placer. The trucks dump into the 9500 placer which sits along the haul road, off to the side of grade, and places the concrete over the steel.

The GP-4000 paver follows the placer paving at three different widths: 18, 22 or 24 feet (5.5, 6.7 or 7.3 m). The concrete mix design is a TxDOT standard 5.5 sack mix with an average slump of 1.5 to two inches (38 to 51 mm).

LSI is using 30 percent fly ash replacement for cement and adding retarder and air entrainment to help keep the concrete pliable. In addition, the consortium has a 95 degree F (35 degree C) maximum temperature specification so, as the temperatures increase this summer, they will add chilled water to the mix to keep it within the temperature spec.

The GP-4000 paver is equipped with an Auto-Float[®] to help finish and seal the surface of the slab. A GOMACO Smoothness Indicator[®] (GSI) is following behind the paver constantly monitoring the concrete slab while it's still in a workable state. The consortium is using the GSI to monitor all aspects of their paving operation to ensure no steps are unintentionally hurting their ride quality.

LSI has had great success in using the GSI. They have used it over finished pavement, directly behind the paver in front of the finishers, behind the finishers and behind the texture/ cure machine. All aspects of the paving and finishing effort have been analyzed to ensure overall positive results.

TxDOT's IRI specifications require an index reading of 65 to 75 for 100 percent pay. Anything from 75 to 95 carries a penalty and anything over 95 is considered a must grind or repair. Anything below a 65 is considered bonus pavement.

According to LSI, they have been successful at maintaining the mid to low 60s on the IRI.

LSI pays close attention to all the



The 9500 places concrete over the continuous steel reinforcing in front of the GP-4000 four-track paver.



 $R_{ideability}$ of the new concrete roadway is constantly being monitored by the GOMACO Smoothness Indicator (GSI).



IW-050525

Good ride is based on several factors, including keeping a continuous head of concrete in front of the paver. LSI is using either a 9500 placer or PS-2600 placer/spreader at various points on the project to keep concrete in front of the GP-4000 paver.

paving points, keeping a continuous head in front of the paver, training the crew properly, maintaining the paving plant itself, eliminating as many headers as possible and looking for long continuous runs. There is a lot of attention paid to check points that the paving crew must implement to ensure that the results are acceptable

A GOMACO T/C-600 texture/cure machine follows the GSI applying an astroturf drag finish, transverse tine and spray cure finish.

Average production per day is dependent on the concrete plants and the amount of concrete they're capable of producing. LSI tries to maintain an average of 2500 to 3000 yd² (2090 to

2508 m²) of concrete paving per day.

LSI points out that the most challenging aspect of the project is the sheer size of it and the coordination involved in every aspect. Some of those aspects include an in-house environmental firm to make sure nothing is done to pollute the area or harm the wildlife. They have a public information and outreach firm to deal with public relations. Design teams, engineering firms, consulting firms, right of way teams, utility relocation teams and bridge builders are at work on each section of the project. LSI is also in charge of their own quality assurance and quality control on the project and have a team that

continually monitors their progress and reports their findings to both LSI and TxDOT.

LSI is on track to complete the project by the December 2007 deadline with the GP-4000 paving the nearly 100 miles (161 km) of new toll road.

Editor's Note: Special thanks to Lone Star Infrastructure for letting us visit their job site and for all the time they gave us while we were there. Also, thank you to Bennett Closner and David Zuehlke with Closner Equipment Company, our GOMACO distributor in Austin, for helping coordinate the visit. Your help was greatly appreciated.



LSI's GOMACO paving train is shown below, from right, 9500 placer, GP-4000 paver, GSI, and a T/C-600 texture machine.





HW-050525 D26



CURB MACHINE #9



Greater Austin Development's Ninth GT-3600 Goes to Work in Austin, Texas

Greater Austin Development has been slipforming curb and gutter since 1993 when Bobby Finley, president of Greater Austin Development, bought his first GOMACO GT-3600 curb and gutter machine. Finley just recently purchased his ninth GT-3600, equipped with new features that his paving crew are enjoying.

This GT-3600 has the new digital G21 operating system that allows push-button steering control setup. It features Commander III style legs that are 15 percent larger in diameter than the previous legs. The legs are also equipped with "smart" cylinders. The cylinders, along with the G21 controller, allow the operator to teach the "smart" cylinders to set the desired degree of leg

"All-Track Steering just gives us so

much versatility," Finley said. "We save a lot of time and extra moves getting on and off stringline because of it."

rotation. This keeps the tracks from hitting any objects on minimum-clearance projects.

It also features the new two-speed track system. The majority of Greater Austin Development's projects are subdivisions that require moving the GT-3600 across the job site for different reasons. The travel speed on this new machine has doubled from the older style from 66 fpm (20 mpm) to 125 fpm (38 mpm).

CG-050536 D27

"All of our GT-3600s turn out really great curb, but this one is going to be different from the past eight because of the new improvements," Finley said. "The Commander III style legs, G21 controller, and faster travel speed are going to help us

job."

and spill curb, requiring a mold change on the project to switch from one type to the other. The mix design is also a city of Austin spec which contains some fly ash with a slump that averages between 1.5 to two inches (38 to 51 mm).

The GT-3600 trimmed and poured simultaneously on the project.

"The only time we don't do it that way is if we have to put steel in the curb, then we have to pretrim," Finley said. "We'll bring in one of our GT-3600s and we send it down the stringline pretrimming. Then, with a second GT-3600, we just sideshift the trimmer out of the way, lay out the rebar in 40 foot (12.2 m) pieces, and feed it into the machine as it slipforms."

move faster, and with better equipment, you're obviously going to get a better end product."

Riverside Meadows, a new subdivision in Austin, Texas, was one of the first projects for Greater Austin's new GT-3600. The subdivision had approximately 8000 feet (2438 m) of curb and gutter, with some large radii for cul-de-sacs and several water inlets in the path of the curb and gutter.

"This is a type of project that just doesn't happen anymore in the city of Austin," Finley explained. "The timing of the project hit perfectly and everything was ready at the same time. The project has lots of straight runs and, except for the water inlets, it's just a good, clean

The project called for the city of Austin's specified catch curb

9

Finley's crew has also mastered the art of water inlets and getting around them. As they approach an inlet, they meter the concrete to control the stopping point so when the mold reaches the inlet, they simply have to raise the mold hydraulically. The operator pulls off the stringline and uses the GT-3600's All Track-Steering and Reverse Steer to get it back on the stringline in three simple moves on the other side of the inlet. The mold is lowered back down and the operator takes off slipforming down the stringline again in no time at all.

"All-Track Steering just gives us so much versatility," Finley said. "We save a lot of time and extra moves getting on and off stringline because of it."

The new GT-3600 is working out well for Greater Austin Development. Finley says that his operator is enjoying the new machine with G21 operating system and equipped with a remote control for travel speed and manual steering control.

"That is a big deal and something my operator really likes," Finley said. "I asked immediately if we could retrofit our other machines to be able to do the same thing, but that is a benefit offered through the G21 control system."

Greater Austin Development specializes in all types of concrete work, from curb and gutter to detention dams

and small bridges. From the very beginning, their choice for curb and gutter slipforming machines has been the GOMACO GT-3600.

"I've had a relationship with GOMACO and Closner Equipment since 1993 when I bought my first GT-3600 from Frank Closner," Finley said. "Relationships, people and service are important to me and I've got a relationship with them that will be there forever."

Editor's Note: Thank you Bobby for your time showing us around your job site in Austin. It's interesting to watch a good curb and gutter crew in action.



The G21 controller is operator friendly and a hand-held remote allows the operator to control travel speed and manual steer.



Concrete slump will average between 1.5 to two inches (38 to 51 mm), depending on base material and temperature.



F inley bought his first GT-3600 in 1993. He just purchased his ninth GT-3600 this year.



The operator has a clear view of the conveyor, concrete truck and chute man.

This GT-3600 is equipped with the larger, Commander III style legs.



TWO Project Managers... TWO GOMACO Paving Trains... Only **ONE** Concrete Paving Award



E&B Paving is at work on two projects in the state of Indiana, the Borman Expressway by Gary (left) and Interstate 69 near Fort Wayne (right). They're using an older style and new style GOMACO paving trains and achieving excellent rideability in challenging conditions.

Two projects in the state of Indiana will be among the competitors for the state's top concrete paving award for 2005. E&B Paving, Inc., is in charge of the concrete paving on two interstate projects and has two of its project managers in friendly competition against each other to bring home the top award. The projects feature both new and older GOMACO equipment.

A new PS-2600 placer/spreader, new GHP-2800 paver and T/C-600 texture/cure machine is at work on the Interstate 80/94 Borman Expressway by Gary, Indiana. On any typical day, the Borman Expressway carries 160,000 vehicles to and from the Indiana-Illinois state line.

The Indiana Department of Transportation has designed the new highway to handle that traffic volume plus more for the next 20 years. The 4.7 miles (7.6 km) of Interstate will be eight lanes wide, four lanes of traffic in each direction, with "This new equipment is working very well for us," Dave Korba, equipment superintendent for E&B Paving, said. "The new placer/spreader has a faster belt speed and handles the concrete, even if it's a dry load. "We like the dual-telescoping feature of our new

"We like the dual-telescoping feature of our new GHP-2800 paver and the quietness of the machine is just amazing. Production has been good and the smoothness of the slab is very acceptable."

The state of Indiana uses the two-tenths blanking band to measure the smoothness of their new concrete roadways. The new GHP-2800 is achieving excellent ride.

"We have been doing very well with achieving the incentive pay on this project," Mark Hayden, concrete paving superintendent for E&B Paving, said. "On the mainline that we've paved so far this year, we've gotten 97 percent of the incentive."

A T/C-600 texture/cure machine follows behind the paver applying a burlap drag, transverse tine and spray cure.

The shoulders and ramps are paved with the company's four-track Commander III. The 14 foot (4.3 m) shoulder on the project is minimum-clearance paving. One side is scabbed onto the new road while the other side runs next to the barrier wall separating the project from live traffic.

E&B decided the easiest way to tackle the minimumclearance challenge would be to side-mount a 14 foot

12 or 14 foot (3.7 or 4.3 m) wide shoulders.

Baskets are hand-placed on grade every 12 feet (3.7 m) and concrete paving can begin. E&B's new PS-2600 placer/spreader leads the paving train. A central mix concrete batch plant is located on the east end of the project. Nine end-dump trucks carry the concrete from the batch plant to the placer/spreader.

The new, two-track GHP-2800 paver follows the PS-2600 slipforming the new roadway 24 feet (7.3 m) wide and 15 inches (381 mm) deep. The Commander III with V2 mold is at work slipforming ramps, shoulders and single lanes at different widths on the projects.



(4.3 m) mold to their Commander III. By side-mounting the mold, they could still keep a 16 foot (4.9 m) paving mold and kit underneath the machine and not have to switch out molds for the two different applications.

"We've seen other contractors do this before and we decided to try it," Dave Korba said. "We lock the Commander III to grade on one side and we're running slope on the other for the minimum-clearance work. It lets us keep the kit underneath the machine while minimumclearance paving, and we've had really good luck with it."

Entrance or exit ramps to the new Borman Expressway are slipformed 13 inches (330 mm) thick and 16 feet (4.9 m) wide. The Commander III offers three options for E&B for ramp work. It can be set up in minimumclearance mode, they can use the V2 hydraulicallyadjustable dual mold system, or the standard 16 foot (4.9 m) paving mold to complete the work.

E&B is also at work mainline paving 4.5 miles (7.3 km) of I-69 near Fort Wayne, Indiana, with their PS-2600 placer/spreader, GP-2600 paver and T/C-600 texture/cure machine. They also have one of GOMACO's first V2

molds. An RTP-500 places concrete in front of the Commander III with V2 mold for shoulder and ramp work.

Mike Korba, project manager/paving superintendent, for E&B's Fort Wayne project, and his crew are facing some serious challenges. They're rebuilding the new interstate from the center out so their job site is

Direction of Travel

E&B saves time on the project by side-mounting a 14 foot (4.3 m) mold to their Commander III for minimum-clearance paving, while keeping their 16 foot (4.9 m) paving mold and kit underneath the paver. They swing the legs outboard and operate in the transport mode. When they're ready to pave wider widths, they simply remove the side-mounted mold, swing the legs forward again and resume paving. surrounded on both sides by three lanes of live traffic carrying over 100,000 vehicles per day. The state has allowed them only two entrances/exits on their north and southbound lanes. All construction traffic into and out of the project must use those four entrances/exits.

Concrete delivery and haul routes have to be carefully planned so the trucks can access the placer/spreader and

have room to turn around and leave again to head back to the batch plant.

Space inside the project area is so critical, E&B is using a modified concrete mix design to allow a faster curing time. They've taken the fly ash out of their mix and are using straight cement to speed up the curing time. Maturity probes are used to monitor the curing rate of the



new concrete. In approximately 60 hours time, they can have truck traffic running on the newly slipformed concrete lanes and create some much needed space for maneuvering equipment and haul routes.

"On a project like this, you have to love your job," Mike Korba said. "I like the challenges, overseeing it all and taking pride in the project as I watch it being built."

An on-site batch plant produces the concrete mix and slump averages 1.5 inches (38 mm). It's transported to the job site by 11 end-dump trucks carrying 11 yd³ (8.4 m³) loads. The trucks dump into a PS-2600 placer/spreader which is followed by a GP-2600 paver.

The GP-2600 is paving 26 feet (7.9 m) wide while producing a very unique crown for drainage purposes. The 12 foot (3.7 m) lane has a two percent crown while the 14 foot (4.3 m) lane has a four percent crown.

"Most people wouldn't do this in a single pour," Mike Korba said. "I knew we could do it with the GP-2600. We also have a section of roadway with a 5.4 inch

"With our new V2 mold, I can gain or lose two feet (0.6 m) of paving width in minutes with our operator or ground man simply pushing a button," Dave Korba explained.

(137 mm) super-elevation. We weren't sure we could do it, but with stringline and the computerized power transition adjuster (PTA), we accomplished the crowns and superelevation without any problems."

The design of the project doesn't allow for many long paving runs. It's short and choppy with a lot of fill in work. Despite all of it, Korba and his crew are achieving good rideability and earning a 90 percent ride bonus.

Achieving good ride in such challenging conditions is based on several factors.

"We're lucky to have the paving

machinery that we have to work with," Mike Korba said. "You also have to have an excellent stringline crew, good engineers, seasoned help and a good solid track line for the equipment to run on. E&B, as a company, is also very good about listening to employees and any new ideas they may have to improve operations."

The Commander III with the V2 paving mold is at work slipforming the southbound shoulder. The V2 is GOMACO's new hydraulically adjustable dual mold that can be used for paving various widths. On-the-go paving of tapered slabs is now possible on all GOMACO pavers.

"With our new V2 mold, I can gain or lose two feet (0.6 m) of paving width in minutes with our operator or ground man simply pushing a button," Dave Korba explained.

The magic behind the V2 is the dual mold system that can be hydraulically moved and controlled by the operator or a ground man. It is possible to extend the mold on the right side without changing the track line of the paver. The left-hand



A new PS-2600 placer/spreader leads the GOMACO paving train on the project in Gary, Indiana.



The RTP-500 runs on the new pavement, off to the side of the 14 grade, placing concrete in front of the Commander III.



The Fort Wayne roadway requires a two percent crown in the 12 foot (3.7 m) lane, while the 14 foot (4.3 m) lane has a four percent crown.



Finishers work behind the Commander III digging out electrical boxes in the pavement that are every 250 feet (76 m).

side is adjustable with the telescoping framework of the Commander III.

A spreader plow on the front of the paver distributes the concrete across the paving width. It also telescopes and automatically makes the same width changes as the Commander III's framework. The plow has both lateral travel and vertical control that can be controlled manually or set on automatic. Proximity switches on both the left and right-hand side of the plow's framework set the distance the plow travels across the rail. The right side is equipped with two proximity switches for the different width changes. When a change is made, the operator simply has to reference the outside switch or second proximity switch. As the left-hand side telescopes in and out, that switch simply moves with the framework when the width change is made.

An RTP-500 rubber-tracked placer is feeding concrete in front of the paver which is slipforming 14 feet (4.3 m) wide. Every 250 feet (76 m) the Commander III has to pave over an electrical box set on grade. The boxes have to be set within "On the mainline that we've paved so far this year, we've gotten 97 percent of the incentive. The paver is doing really well," Hayden said.

0.125 inch (3 mm) tolerance and E&B has to be careful that nothing on the Commander III disturbs or catches on the boxes to bring it out of alignment. So far, they've had complete success. Finishers simply go back and remove the excess concrete off the top of the box lid and finish around the edges with hand trowels.

This portion of the project doesn't require any on-the-go width changes with the V2 mold. They tested that feature out already last year on the Gary project when specifications required the pavement to expand from 12 to 14 feet (3.6 m to 4.3 m) and then back down to 12 feet (3.6 m) again.

"It really saved us a lot of time and

all the transitions went very smooth," Dave Korba said. "We went in and out with the right-hand side while paving on-the-go. After the project was completed, we profilographed the pavement and we felt it did a really good job."

Once the Commander III with V2 mold has completed its work on the Gary and Fort Wayne projects, it'll be moved to a rest area project on I-74 near Batesville, Indiana. The project specifications there call for several width changes... a perfect scenario for the V2.

E&B's work on the Borman Expressway is scheduled for completion in October and Interstate I-69 is scheduled for completion by September 2005. Both project managers are confident they'll beat those dates.

Editor's Note: Thank you to the entire crew at E&B Paving for allowing us to visit both your projects and seeing your quality work first hand. Best of luck to both Mike Korba and Mark Hayden on your quest for quality.



The new GHP-2800 is paving 24 feet (7.3 m) wide, 15 inches (381 mm) deep on the project in Gary.



The Commander III with the V2 dual mold system allows E&B to make a two foot (0.6 m) width change in a matter of minutes.



The two-track GHP-2800 paver is helping E&B earn 97 percent bonus incentive on their new mainline paving.



The new Borman Expressway is being built for a life expectancy of 25 years, carrying over 160,000 vehicles per day. 15

CONCRETE STRENGTHENS HOMELAND SECURITY



Poppoff Inc. slipformed a new top cap over existing barrier wall to help strengthen security around a nuclear facility in Richland, Washington.

Mike Poppoff, president of Poppoff Inc., decided in 2001 that he wanted to be more competitive in the construction of dairies. Up to that point, everything they did was handformed and his company just wasn't staying competitive. He needed a concrete slipform paver.

"We just fully realized that if we wanted to play in that market, we had to get mechanized," Poppoff explained. "We went to the World of Concrete show in 2001, looked at all the pavers, and it boiled down to the GOMACO GT-6300."

Now, they're able to slipform all of the concrete slabs and curbs for the wash and feed alleys and even put grooves in the slab behind the mold. The grooves provide traction for the cattle and keep them from slipping on the concrete surface.

"Instead of taking 60 days to complete our portion of the dairy work on projects, we do it in just ten," Poppoff said.

Just recently, the company had a chance to try their hand at slipforming something totally unique. The Energy Northwest Hanford Nuclear Facility near Richland, Washington, needed some additional security measures taken to make it comply with the new Homeland Security laws. The plant had existing, preformed, Jersey-style barrier walls that surrounded the facility. Two barriers run side by side, ranging from six to seven feet (1.8 to 2.1 m) apart, and the gap between the two was filled with three inch (76 mm) round rock.

The new engineering regulations to make the existing barrier meet the criteria would include digging out six inches (152 mm) of the existing rock. Once that was done, a 20 inch (508 mm) thick by six feet (1.8 m) wide concrete cap would be formed over the top. All of the concrete work had to be completed within a very demanding time frame and project engineers weren't confident that one contractor alone would be able to accomplish the project in time.

Poppoff Inc. and two other contractors were awarded the contract to cap a total of 21,500 feet (6553 m) of the barrier. Poppoff would be the only one of the three to slipform it.

"We went into this project with a lot of unknowns," Poppoff said. "How would we get the GT-6300 on top of the existing barrier? How would we get concrete to it once it was up there? Did we have enough travel in the legs to reach that high? And finally, the height of all of the barriers varied. Would the machine be able to react quickly enough to those variances?"

To begin with, they took all four legs off their GT-6300 and rebolted them to the highest mounting setting. A crane was brought in and the GT-6300 was lifted over the existing barrier so it straddled the two walls. The concrete placing problem was solved by bringing in a Telebelt[®], a placer with a telescopic belt conveyor. Poppoff felt it would be the best solution to handle the two inch (51 mm) slump, 4000 psi (27 MPa) concrete mix.

With most of their challenges solved, all that was left to do before starting the project was pass security checks and take special classes to allow them to work around a nuclear facility.

"The security was incredible," Poppoff said. "It was interesting because the security people liked to come and watch the machine work, but it was rather intimidating to see someone standing there with an automatic weapon."

The project's tight deadline was always a constant concern, too. Poppoff knew that to complete the project in time, they needed to average 1200 feet (366 m) per day. Their project also increased within the first week when they ended up with a portion that had been previously awarded to a handforming contractor.

"We knew we had to average 600 yd³ (459 m³) a day and we needed to get the concrete up to the top of the mold at 46 inches (1168 mm) high and some times up to 60 inches (1524 mm) in order for it to feed properly. The Telebelt[®] worked well for us there," Poppoff said. "We exceeded our goal and ended up averaging just under 1300 feet (396 m) per day with a best day's production of 1640 feet (500 m). It went very, very fast."

Production was high and the GT-6300 was performing well in the challenging condition. Not only was the top of the mold 46 inches (1168 mm) high, the ground around the existing barrier that the tracks traveled on varied over 12 inches (305 mm). The barrier, itself, was old, and the height from one section to the next could vary up to three inches (76 mm).

Stringline for steering was set up on one side of the paver and Poppoff sensored off the top of the wall at the four corners of the machine to try to counteract the elevation changes.



The old barrier wall varied in height from one section to the next so the GT-6300 was used to blend the differences smoothly.

"That's how the barrier went and it was a challenge to make sure we blended those inaccuracies of what the existing barriers were," Poppoff explained. "We didn't know how the machine would react, but it met those quick changes in elevation and reacted very well."

The top cap was floated and then broomed for finishing work. Control joints were cut every 40 feet (12.2 m). Also, when the barriers were seven feet (2.1 m) apart, a six inch (152 mm) piece was left on both sides and finishers sloped those areas for drainage. As an extra touch on the entire top cap, Poppoff added an 0.375 inch (10 mm) crown to keep water from standing on it.

This project was something completely new for Poppoff and his crew and they went into it facing a large amount of obstacles. Poppoff credits his crew and his GT-6300 for its success.

"This was a totally different kind of paving from our normal dairy work," Poppoff said. "The challenge was how much everything varied and if the GT-6300 would react quickly enough to blend those changes. It performed very, very well, and we didn't have a problem with the machine at all."

Poppoff and his crew slipformed two of the three portions of the project, which was 14,000 feet (4267 m) of the top cap in 11 days, finishing the project ahead of schedule.



A six inch (152 mm) piece was sometimes left over when the distance between the two walls was greater than six feet (1.8 m).



A Telebelt® placer was brought in to feed concrete to the GT-6300. Production averaged just under 1300 feet (396 m) per day.

New Innovations to GOMACO Equipment Translate to Time Savings for Our Contractors

New Hook-And-Go Mold Mount System and Other GT-3600 Features...



The new mount system has no pins or latches. Operators simply drive the GT-3600 up to the mold and hook the mount to a special attachment plate on the mold. The operator hydraulically lifts the mold and goes back to slipforming the project... just hook and go. All new GT-3600 molds will be built for the new system and existing molds can easily be retrofitted in the field.

It will soon have contractors asking each other, "How quick can you connect?"

Other new improvements to the GT-3600 include legs that have increased in diameter by 15 percent. The 36 inch (914 mm) stroke legs with the larger diameter have the same strength and durability of the Commander III legs. The optional track motors provide a smooth, slow, uninterrupted crawl while paving and the travel speed has nearly doubled, from 66 to 125 fpm (20 to 38 mpm). The GT-3600 is also available with newly redesigned sensor arms and mounts that are more durable, lighter weight and easier to maneuver.

New V2 Hydraulically Adjustable Paving Mold

The new V2 is a dual mold system that is hydraulically adjustable for paving at different widths. The V2 makes width changes fast and simple and will even make on-the-go width changes for tapered slabs.

The configuration of the front and rear molds dictates the minimum and maximum paving widths and the amount of total width variation. The molds have dual power transition adjusters (PTAs) for crown height adjustments. It is also available with a curb profile on one or both sides for municipal paving.

The V2 mold system includes a spreader plow with hydraulic vertical movement to control the head of concrete in front of the mold. The plow framework telescopes to quickly and easily accommodate the width change. Proximity switches on the plow framework set the length of travel and these switches can be easily moved to change the plow's settings. The horizontal and vertical movement of the plow can be operated manually or set on automatic.



The V2 mold was developed to adapt to virtually any paver operating in the field today. For GOMACO pavers featuring the proprietary G21 digital control system, programmable width changes are being developed, along with other new and exciting possibilities for the V2. (Please turn to page 11 for an article featuring the new V2 mold at work in Indiana.)

T/C-600 Texture/Cure Machine: High-Speed Production with Low-Speed Power



GOMACO's texture/cure machines provide versatility. The T/C-600 and T/C-400 will texture and cure and can be equipped with a polywrap roll or a burlap/astroturf drag. The new low-range power on the T/C-600 provides tractive effort around and over job-site obstacles and ease in negotiating inclines during loading. The low-range speed provides up to 66 fpm (20 mpm). The new optional high travel speed of 176 fpm (54 mpm) is the fastest in the industry.

The T/C-400 and T/C-600 frames permit width adjustments from 24 to 56 feet (7.3 to 17.1 m). Electronic-over-hydraulic forward and reverse steering and grade control is sensored off the same stringline as the paver. This allows ease in operation and accuracy in texturing and curing of the slab. Carriage speed is variable up to 186 fpm (56.7 mpm). The texturing assembly travels transversely across the width of the slab, and longitudinal texturing is available when project specifications require it.

GOMACO's Unique Front-Mounted, Two-Track Trimmer Design

More Trimming Power – The new single-drive, hydrostatic motor increases trimmerhead power by 24 percent with 23 percent more trimmerhead speed for high production. One drive instead of two is more cost effective with lower maintenance cost.

Asset Utilization – The versatility of the 9500 comes directly from the front-mounted design. This allows changing the same machine from a grade trimmer to a shoulder trimmer

grade trimmer to a shoulder trimmer or to a concrete placer.

Quick Transport Readiness – The trimmerhead or concrete hopper is easily detached and the machine simply backs off. No extra equipment is needed at the location to remove it.

It Loads Itself – Its hydraulic pickup arms load the trimmerhead onto the trailer, so additional heavy-lifting equipment is not needed at that location.

Low PSI – The large track surface contact area and the twotrack design provide a high tractive effort and low ground pressure on the trimmed grade.

More Power and Minimum Side Clearance – Our state-of-the-art, hydrostatic, direct drive motor in the trimmerhead is mounted internally to allow side-clearance requirements of only inches/millimeters.

Less Maintenance Time – Easy access to the front-mounted trimmer allows quick inspection of the trimmerhead or the replacement of teeth.

Does Not Leave the End of the Pass Untrimmed – Only the front-mounted trimmer allows for trimming to the end of each pass or within inches of front obstacles.

Improved Conveyor System – The conveyor system now offers more throughput than ever before. The conveyor system

GSI[®] Earns Top Honors

The GOMACO Smoothness Indicator[®] (GSI) has recently been honored for its innovative design and advances to the concrete industry.

Equipment World magazine in Tuscaloosa, Alabama, named the GSI one of six new products to receive their annual Innovations award. For a product to be chosen for the award, it can't just be an upgrade or new combination of existing technology, it has to be a new product introduced for the first time to the market.

"The GSI pavement profiler is the very hallmark of an *Equipment World* Innovations Award winner: A breakthrough product unlike anything else on the market today that offers contractors an immediate and measurable boost in productivity," Jack Roberts, *Equipment World* senior editor, said.

The GSI has also earned an Innovation Award from the Southeast Concrete Alliance Network (SCAN). SCAN's Innovation Awards are given for any area that advances the knowledge and practice in concrete pavements and the innovation must have been applied in a project and prove that it has value or will become standard for future projects.



is now a closed loop direct drive hydrostatic system. This new system design provides more power to the belts and five percent more belt speed.

Visibility Means Safety – The operator has a full view of the trimmerhead or concrete hopper because it is directly in front of the operator's platform.

Flow Requirements are Automatic when Interchanging

or Upgrading Trimmerheads – The G21 recognizes what trimmerhead drive system it is plugged into and automatically sets the required flow to the drive motor.

Maneuverability Between Stringlines – A 360-degree turn in the machine's own length is possible because of the twotrack design. A wide turning radius is not demanded like it is with three-track trimmers. This maneuverability is necessary in most job-site conditions.

G21 makes Steering Control Safe and Simple – The G21 makes it possible for the two tracks to steer in perfect proportion by coordinating the oil flow for manual steering with the dial, automatic steering with stringline, or interfaced with 3-D control. The G21 also coordinates the flow for safe counter rotation of the track system.

Cost Savings on Hydraulic Filters – The G21 monitors all of the hydraulic filters. A warning indication light on the controller alerts the operator to check the diagnostics display when a filter needs attention. The display indicates which of the eight circuit filters requires maintenance, and you only need to replace the filter that has been diagnosed with a problem. The early filter-diagnostics warning provides an alert for cost-savings preventive maintenance and could eliminate costly hydraulic problems down the road.



Equipment World magazine honored the GOMACO GSI with a 2005 Innovations Award. The award was presented at CONEXPO-CON/AGG 2005, above, from left: Gary Godbersen, GOMACO's president and CEO; Dan Tidwell, Equipment World publisher; Mark Brenner, R&D controls design engineer; and Kevin Klein, R&D manager.

Stop Unexpected Trimming Problems Tips to Create Your Own Detailed Maintenance Program

by Dennis Clausen, Director of Training

There's more to trimmer maintenance than checking oil levels, greasing a few grease fittings and filling the machine with fuel.



Check your Emergency Stop buttons

From a safety standpoint, perhaps one of the most important items to check on a daily basis is the operation of the Emergency Stop (E-Stop) system. It is important to make certain that depressing any E-Stop button on the machine will stop all systems. If depressing a button fails to stop the various systems, the problem should be corrected before operating the machine.

Another important safety item to check daily is the conveyor lift/swing alarm system. Make certain that when the conveyor is raised or lowered, or swung left or right, that the warning alarm sounds. If the alarm does not sound, correct the malfunction before operating the machine. Also make certain that the backup alarm sounds whenever the



Check for worn trimmer teeth

travel system is in the reverse mode.

Another important item to check is the condition of the trimmer teeth and their relationship to the trimmer moldboard. Any teeth that are worn or damaged must be replaced before the tooth holder is damaged. The trimmerwheel should be adjusted so that the teeth are cutting the grade 0.25 to 0.375 in. (6 to 10 mm) below the moldboard.



Change hydraulic filters

Hydraulic filter changes should be made at the intervals listed in the maintenance portion of the owner's manual. Changing the filters at the proper intervals will keep the oil clean and the systems working at peak performance. On newer machines, additional filters have been added for the conveyor pumps. Make certain when replacing filters, that the old seal ring is removed with the filter. It is recommended to have a sample of the hydraulic oil analyzed to determine if it needs replacing. Always make certain to dispose of the filters and oil according to local regulations.

Check the level of the gear lube in the various gear boxes on the machine. If the level is low, fill the gearbox to the proper level with EP-90 gear lube. If hydraulic oil is present in the gearbox, it indicates that the seal on the motor or pump(s) may have failed. It will be necessary to replace or repair the failed component. The oil in the gear boxes should be changed after the first 50



Check the level of the gear lube

to 100 hours on a new machine and then annually after that. Always make certain to dispose of the oil according to local regulations.

Air filter maintenance is of utmost importance to maintaining a healthy engine. If the air filter is clogged, fuel economy will suffer, along with a loss of power. When replacing the air filter, don't overlook the safety element. If there is any indication that the main filter element has been damaged, the safety element may need to be replaced as well.

Check all of the connections between the air filter and the engine to make certain that they are tight. Make certain that none of the hoses or tubing are rubbing against any obstacle that could create a hole for dirt to enter the system.

Check the condition of the various hydraulic systems. The best method used to check the condition of the various hydraulic systems is by



Maintain the air filters



connecting a flow meter into the circuit. By using a flow meter, the condition of the pump can be checked in addition to checking the

pressure relief adjustments. With the flow meter connected to the system, run the engine at maximum speed (hydraulic oil should be warm). Activate the system and note the flow on the meter with no pressure restriction. Gradually close the valve on the flow meter to increase the pressure in the system.

Continue to increase the pressure until the pressure gauge is at approximately 80 percent of the relief pressure setting. Note the flow on the meter. It should be at least 90 percent of the no pressure flow. If the flow drops lower than 90 percent, the pump is defective and should be repaired or replaced. If the flow is 90 percent or greater, the pump is in usable condition.

If the pump flow is good, continue to close the valve on the flow meter until the pressure relief valve for the system opens. Note the pressure reading on the appropriate gauge. If the pressure is incorrect, turn the pressure relief valve adjustment screw in or out as necessary.

EXAMPLE: If the pressure relief valve is set at 2150 psi (148 bar) and the no pressure flow is 22 gpm (83.3 lpm), increase the pressure to 1720 psi (118 bar) (2150 psi x 80 percent; 148 bar x 80 percent). The flow should be at least 19.8 gpm (75 lpm) (22 gpm x 90 percent; 83.3 lpm x 90 percent).

The electrical systems should be thoroughly checked to eliminate any problems. Visually inspect the frame wiring and repair or replace any that is damaged. Inspect the bulkhead connectors and plugs for moisture or corrosion and clean using a contact cleaner. No one wants to experience unexpected problems and a detailed maintenance schedule will help to assure that most of those problems will not occur. – Dennis Clausen

Connect the sensors and place the control system in automatic. Move the grade sensor wands and notice if the machine moves up and down with the sensor. Slowly start the machine moving in the forward direction. Move the steering sensor wand and notice if the machine turns left and right. If the grade or steering system will not respond as described, then there is a fault in the system.



Check the electrical systems

If the machine will not travel in a straight line when the steering sensor, or manual steer knob, is in the center position, it may be necessary to adjust the pump stroke controller or the EDC drive from the control system. Re-adjust the slope sensor following the instructions in the owner/operator manual. Check the operation of the conveyor controls. It may be necessary to adjust the HAC cards on earlier machines, or the threshold settings on current machine. Make certain that the battery cables and posts are clean and tight and that the battery is fully charged (heart of electrical system).

It is also recommended to check the condition of mechanical components such as bearings, chains and belts. Check the condition of the various bearings and bushings on the machine and replace them as necessary. Check the condition of the belts on the front of the engine and replace any that are damaged. Make



Check the condition of mechanical components

certain that the belts are properly tensioned.

Check the conveyor belt and replace or repair it as necessary. Run the conveyor belt and make certain that it is properly tensioned and trained. Check and repair the belt cleaners as required. Check and repair or replace any components on the tracks that are damaged or worn. Check all drive chains and sprockets for wear and tension the chain as required.

Check for any oil leaks and repair them. Clean the machine of all concrete, oil and dirt. Replace any decals that are worn or damaged beyond recognition. If the machine has an excessive amount of concrete build-up, or is faded or rusty, it may be necessary to clean (sand blast) the machine and repaint it.

Note: If any of the machine systems require adjustment, refer to the appropriate machine owner/operator's manual for complete instructions. There are several other maintenance items that need to be preformed in addition to those listed here.

Performing timely maintenance will help eliminate unexpected problems from rearing their ugly heads at the most inopportune times (such as in the middle of trimming). No one wants to experience unexpected problems and a detailed maintenance schedule will help to assure that most of those problems will not occur.

Preparing for the Future...

Gary L. Godbersen, President and CEO of GOMACO Corporation, has announced the appointment of Kent Godbersen as the new Vice President of Worldwide Sales and Marketing, effective July 1, 2005. The appointment is the result of Carl Carper retiring after completing 32 years of service to the company.

Kent worked in various departments within the company, including field service. In 1991 he was named the Midwest District Manager and has been responsible for the sales of equipment in Illinois, Indiana, Iowa, eastern Kansas, Missouri and Ohio. He serves as Vice President on the Board of Directors for Godbersen-Smith Construction Company, and was active on the Executive Committee and Board of Directors of the American Concrete Pavement Association.

Carper has spent the past 47 years working in the concrete construction industry. He started out in 1958 as General Sales Manager for Shovel Supply Company, a construction equipment manufacturer and distributor in Dallas, Texas. It was there his association with GOMACO began, when he started distributing their products. Carper moved to Ida Grove, Iowa, in 1973 to become the company's Sales Manager. In 1979. he was named Vice President of Sales and Marketing, and was responsible for sales throughout the United States and Canada. He was named Vice President of Worldwide Sales and Marketing in 1987 and has been influential in establishing a network of distributors that currently sell GOMACO paving equipment worldwide.

Carl and I have traveled the world together over the past 30 years and I will miss his counsel, support and professionalism in representing GOMACO and the construction industry. He has always been intent on serving our customers' needs and passionate about the customer being right," Gary Godbersen said. "You can be sure of that mission staying the same for GOMACO. We wish Carl and his wife, Jan, a long and happy retirement. We also look forward to a fresh perspective on worldwide sales and marketing as Kent assumes these responsibilities."

Kent's territory will be divided between two other district managers. Brad Barkema is GOMACO's North Central District Manager, and he will add northern Illinois, Indiana

and Ohio to his territory. Len Rettinger is GOMACO's Northeast District Manager, and he will add Iowa, Southern Illinois and Missouri to his territory.

"The Midwest territory is very important to us and that is why we have assigned Brad and Len to provide a smooth transition in the management of



Carl Carper



Brad Barkema

Len Rettinger

this area," Gary Godbersen said. "They are seasoned veterans who will take care of our customers and relationships that have been established through the years. Both are professionals with extensive knowledge in concrete paving and experience in working with the needs of paving contractors."

Goodbye to Two Good Friends...

Jim Petersen, 60, a member of the GOMACO family for over 21 years, passed away unexpectedly May 20, 2005. He traveled the world as a field service representative in the Service Department for GOMACO. Jim also helped teach at GOMACO University during the winter months, and always enjoyed meeting and talking with the students.

"Jim had a great working relationship with the customers and distributors," Dennis Ernst, Service

Department Supervisor, said. "He was excellent at machine setup and training both new and seasoned customers. Jim's greatest asset was he never forgot a name once he met someone. Jim was, and always will be, a great friend and loyal employee who will truly be missed by everyone who knew him."



Joseph Mollard, 75, passed away on Monday, July 11, 2005, after bravely fighting pancreatic cancer for almost a year. He had worked at GOMACO for 14 years as the Managing Director of the Caribbean, Mexican and Latin American regions. He was instrumental in establishing the distributor network in this region.

He worked for more than 50 years in the construction equipment industry, both in Argentina and in the United States.

"Joe was a hard worker and respected by all who knew him. He had good relationships with his distributors and expected a lot out of them. Joe did an excellent job in finding them and having them represent GOMACO," said Bryan Schwartzkopf, Director of International Sales.







Paddy McGee uses their GT-3200 to slipform a stand-up curb profile in Wexford. Ireland.



GOMACO held an annual technical session in May in Purwakarta, Indonesia. Attending the conference were, from left, Paul Mc Larnon, GOMACO Australia Sales Manager; Dhanny Handoko, PT Bintang Raya (GOMACO distributor) Executive Director; Tim Nash, GOMACO International Regional Manager Asia-Pacific; Carl Carper, GOMACO Vice President Worldwide Sales and Marketing (now retired); Charles Winburn, Commercial Attache from the United States Embassy; Budi Handoko, PT Bintang Raya CEO; Kalung Riang, Commercial Specialist from the United States Embassy; and Dennis Clausen, GOMACO University Director of Training.



Guangdong Changda uses their GP-4000 paver with In-The-Pan Dowel Bar Inserter (IDBI) to mainline pave in the Guangdong province of China.





Interbeton by of the Netherlands finishes a fill-in section of canal on the Odaw River near Accra, Ghana. They are reshaping and relining a 1.7 mile (2.75 km) section of the canal



with an SL-450. The bottom width is 42.7 feet (13 m) with a

top width of 75.5 feet (23 m). The slope is 1:1.

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Salls Brothers Construction use their new SL-450 with trimmer attachment in Rio Rancho, New Mexico. They were trimming approximately 2.5 to three inches (64 to 76 mm) of sandy soil. The canal will have a shotcrete finish.



Coboce Ltda. slipforms a concrete roadway with their new GP-2600 near Cochabamba, Bolivia.





California Canal

Baldi Brothers, based out of Beaumont, California, recently completed work on an irrigation canal at the Twentynine Palms Marine Corp Base in Twentynine Palms, California. The base is the world's largest marine corp base and features several specialized training facilities.

Baldi brought in their GOMACO GP-4000 four-track paver to both trim and pave the project. The profile of the canal is 24.5 feet (7.5 m) wide and 36 inches (914 mm) deep and runs through part of the Mojave desert.

A T/C-600 texture/cure machine followed behind the paver applying a spray cure.

The project went smoothly for Baldi Brothers and they completed their work well ahead of the scheduled deadline.



Baldi Brothers' GP-4000 paver was equipped with a chain-type trimmer to trim the final profile of the canal. They trimmed and poured simultaneously with their GP-4000 and achieved excellent production results.



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