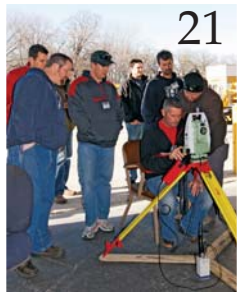
Vol. 40, No. 1

GOMACO® WORLD

The New Four-Track GP-2400 Slipform Paver

Vol. 40, No. 1

GOMACO WORLD®



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

GOMACO World is published by GOMACO Corporation to inform readers of applied construction technology utilizing GOMACO equipment as well as innovations and concerns in the construction industry throughout the world.

Address all communications to *GOMACO World* Editor. If you do not receive *GOMACO World*, and would like a complimentary subscription, please contact GOMACO Corporation, PO Box 151, Ida Grove, IA, 51445, USA, 712-364-3347 or e-mail bwonder@gomaco.com.

ASR American Systems Registrar

GOMACO Corporation's Quality Management System Is ISO 9001:2008 Certified By The American Systems Registrar.

Quality Policy: We Shall Meet Or Exceed Our Customers' Expectations.

ANAB ACCREDITED

Photo by Ken Kelly HW-011206 D14

J.D. Abrams' GOMACO 9500 placer helps their new GP-2400 paver increase slipforming production on a scab-on shoulder project on the Boulder Highway in El Paso, Texas.

A Versatile New Paver for Paving Specialists in Texas

J.D. Abrams LP started their company in 1966 in El Paso, Texas, specializing in canal work. Shortly thereafter, they entered into the highway market to become the heavy and highway contractor that they are today. The company's corporate office is located in Austin, with branch offices in Houston, Dallas, and El Paso. They have paved with GOMACO equipment since 1968, when the company purchased their first C-450 cylinder finisher machine.

At the end of last year, J.D. Abrams decided it was time to add another machine to their inventory. A machine capable of slipforming both side-mounted shoulder and barrier. They looked at the newest paver GOMACO had to offer, the four-track GP-2400.

"We had two opportunities in front of us," Brad Everett, Vice President of Operations for J.D. Abrams, said. "One was barrier wall and the other was side draft paving. With the GP-2400, we are able to take on both of those with one machine."

J.D. Abrams took delivery of their new GP-2400 earlier this year. It has been at work on the Border Highway in El Paso ever since slipforming 10 foot (3 m) wide sidemounted shoulder. The scab-on shoulder is 11 inches (279 mm) thick and slipformed over single-mat steel reinforcing.

The GP-2400 features the exclusive GOMACO G+ control system with the ability to pave in Normal, Transport Mode Right, or Transport Mode Left.

EG-041217 D12

"The continually-reinforced concrete is typical Texas Department of Transportation (TxDOT) paving," Everett said. "On this project, we have electrical boxes approximately every 300 feet (91.4 m), and we were concerned we would have to hand pour or form around those boxes. We figured out we could slipform right over those boxes with the GP-2400 so we're very, very pleased."

The shoulder also has a keyway slipformed into the outside edge to allow precast barrier wall to be placed and secured along the highway. The keyway is an attachment that is bolted onto the shoulder mold and forms the square keyway.

A GOMACO 9500 placer works in front of the GP-2400 paver. Trucks dump the approximately one inch (25 mm) slump TxDOT-approved concrete into the hopper on the 9500. The 9500's long placing conveyor places the concrete over the steel reinforcing and helps increase paving production on J.D. Abrams' projects.

Photo by Jim Dimig HW-121116 D2

Photo by Jim Dimig HW-121114 D10

Steer sensors on the paver trace the existing slab as the GP-2400 runs locked to grade slipforming the scab-on shoulder 11 inches (279 mm) thick and 10 feet (3 m) wide.

"The 9500 helps us put more concrete out there faster," Everett explained. "We always want to get the most production we can from our pavers, get more concrete down in a day, and the 9500 allows us to do that. It's a great machine for us."

Paving production typically averages 2000 cubic yards (1529 m^3) per day. Their best production has reached up to 20 feet (6.1 m) per minute.

The GP-2400 is not running on stringline for the scab-on shoulder. J.D. Abrams is using steer sensors that follow the edge of the existing slab and the paver slipforms locked to grade. A sensor with a spring-loaded plate is attached to the back, right side of the mold and traces the edge of the existing slab.

The GP-2400 features GOMACO's new proprietary G+ control system. J.D. Abrams' operator learned the new system quickly and is enjoying the system's easy operation. He also has an excellent view of the entire paving operation and the G+ controller from the operator's platform on top of the paver.

"We're very pleased with our GP-2400," Everett said. "Almost every job we're on has an application for it whether it's a barrier situation, a shoulder, or concrete adjacent to a retaining wall. It has a lot of applications for us and we're looking forward to giving it a lot more use."

The versatile design of the four-track GP-2400 allows it to be a unique multi-application paver. Side-mounted or barrier paving is accomplished by swinging the paver's legs to the outboard or transport position.

Photo by Jim Dimig HW-121115 D7

The shoulder is slipformed with a small square keyway in the outer edge. The keyway allows precast barrier wall to be placed and secured on the new highway.

Photo by Ken Kelly HW-011205 D10

A *14*-Day Bridge Building Challenge

Photo courtesy of Godbersen-Smith Construction Company CL-101128 D3

The new bridge deck was built on falsework in a corn field right next to the road, and it was finished with a GOMACO C-450 cylinder finisher, just like any other bridge deck.

It was a 14-day bridge-building challenge on a rural road in Iowa... a test project with many different facets and numerous challenges. A test where engineers didn't even know if the design configurations were possible in the severely limited timeframe. The project's success, or failure, would be watched by the entire construction industry and the contractor winning the project faced a $22,000 per day incentive/disincentive for completing on time or not.

The Keg Creek Bridge on U.S. Route 6 in Pottawattamie County, six miles (9.7 km) east of Council Bluffs, Iowa, was built in 1953. It was a three-span, concrete haunched girder bridge, 28 feet (8.5 m) wide and 180 feet (54.9 m) long. It was the perfect bridge for the second Strategic Highway Research Program (SHRP 2) accelerated bridge construction (ABC) project.

The purpose of the project was to create a "tool kit" containing standardized plans for modular components, erection concepts, construction specifications and other data that could be applied to other bridge projects. Design firm HNTB Corp. developed the erection concepts.

The ABC test project design called for the prefabrication of almost the entire project, including modular superstructure units with precast barriers and backwalls; precast suspended backwall to create a semi-integral abutment; precast concrete pier caps and columns; precast abutments and wingwalls; and precast concrete approach slabs. Only the bridge's drilled-shaft foundations would be cast in place.

It would also be the first bridge in the United States with a full, moment-resisting ultra-high performance concrete (UHPC) joint at the piers and durable, moment-resisting UHPC joints between deck panels. The UHPC developed for the project had to reach a compressive strength of 10,000 psi (69 MPa) in 48 hours for the connections and deck joints to aid the accelerated construction. The UHPC was tested by Iowa State University in Ames to ensure it met the strength requirement.

Letting the Project–

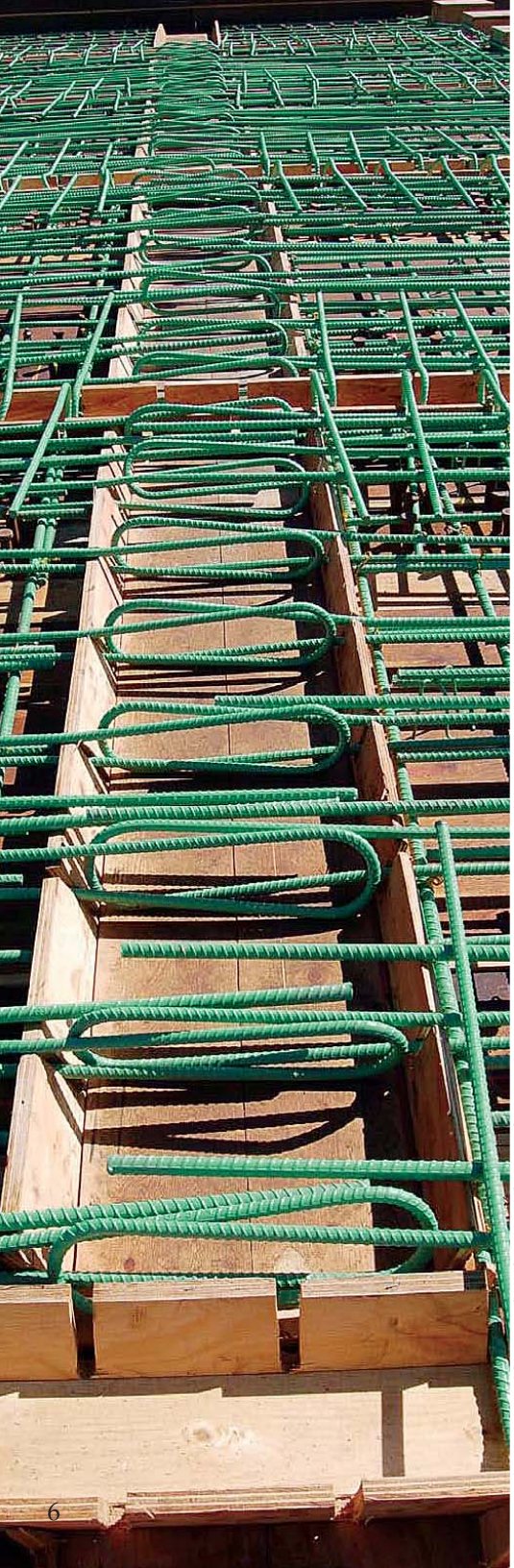
The Iowa Department of Transportation held a bid letting on the first of a kind project and had seven local contractors submit bids. Godbersen-Smith Construction Company in Ida Grove, Iowa, not only won the bid, but submitted the most unique proposal. Godbersen-Smith's plans didn't include using precast pieces. Instead, they would pre-build all of the pieces on site, build and pour the bridge deck like any other standard bridge deck, and then disassemble and move those pieces to build the new bridge structure.

"This project was envisioned that a precaster would supply the components of the bridge, and a contractor would buy those components and erect them," Kim Triggs, Vice President of Godbersen-Smith Construction, explained. "We looked at it in a different way. Our company builds bridges for a living, that's what we do. This was about 85 percent like every bridge we've ever built, except this bridge wouldn't be a monolithic construction.

"It would be 30 pre-built modules, 18 modules in the deck and 12 in the substructure. Our 15 percent variable

The new Keg Creek Bridge... it was constructed by Godbersen-Smith Construction Company in only 14 days as part of a SHRP 2 accelerated bridge construction (ABC) project.

Photo courtesy of HNTB Corp. CL-051209 D3



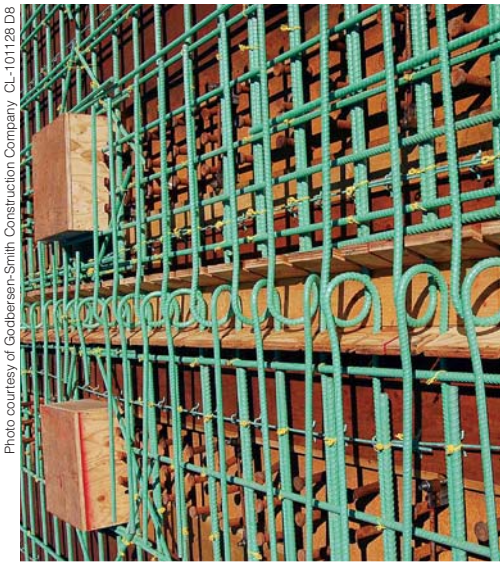


Photo courtesy of Godbersen-Smith Construction Company CL-101128 D8

The transverse (above) and longitudinal (left) joints featured intricate steel reinforcing.

The joints were encased in specially-built wooden boxes to keep concrete out during the deck pour.

Photo courtesy of Godbersen-Smith Construction Company CL-101128 D7

Photos by Kelly Krueger unless otherwise stated CL-101106 D19

was the joints, designing the longitudinal and transverse joints in the deck and then all of the construction joints for the different modules and substructure."

Building the Deck–

Godbersen-Smith Construction rented a section of land adjacent to the Keg Creek Bridge and began their pre-building process. The largest and most challenging aspect was the bridge deck, itself.

"We built falsework for the bridge deck," Triggs said. "We drove wood piling into the ground and we constructed a substructure to support the superstructure. Then, we could build the superstructure all in one piece, much like it was going to be in the final construction. This allowed us to take into account all of the differential deflections between the different components of the bridge, the steel beams, etc. Then we poured the deck exactly like every other bridge that gets poured traditionally."

Traditional except for the fact the deck is being built in the middle of a cornfield in 18 modules with carefully-designed intricate steel in the longitudinal and transverse joints. The joints are designed to be overlapping adjacent steel that would have longitudinal steel run through them during final assembly. The original design had the bars sitting right next to each other with very little tolerance. Godbersen-Smith's method of building the deck all at once ensured each bar was properly placed and tied with its adjacent bar, both while finishing the deck and then when each module was reassembled on the bridge pier.

Each of the joints had to be covered before the pour to keep them from filling with concrete. Each of the modules also had four built-in crane pick points that had to be covered. Godbersen-Smith devised wooden boxes with the sidewalls notched to allow room for the steel rebar. The notches were filled with spray foam before the pour to keep concrete from seeping into the joint from the openings.

Each of the inner bridge deck modules is 7.8 feet (2.4 m) wide and 70 feet (21.3 m) long. The outer modules include a cast-in place parapet wall and are 7.9 feet (2.4 m) wide. The modules combined create a new bridge deck 47.2 feet (14.4 m) wide, 210 feet (64 m) long, and 8.5 inches (216 mm) thick.

GOMACO C-450 Bridge Deck Finisher–

With the structure of the deck built, the joints aligned and sealed, it was time to finish the deck. Godbersen-Smith brought in their GOMACO C-450 bridge deck finisher and lifted it into place for the pour. Before concrete arrived, the entire deck went through a dry run with the C-450.

"We went with kind of an old school, single-drum C-450 and kept it nice and simple while the single-drum kept the profile and the weight of the machine down," Triggs said. "We considered other options for finishing the deck, like a screed, but we wanted the profiling ability of the traditional roller drum bridge deck finisher so we could hold our grade and maintain tolerances. We were very cognizant of the elevations of the longitudinal and transverse forms and the pick points. There were 76 pick points that were for all intents and purposes a 20 inch (508 mm) block out."

Concrete for the deck was a State of Iowa Class C high-performance mix. A pumper truck working on the ground

CL-101112 D3

A *GOMACO C-450 single-drum bridge deck machine finishes the eight inch (203 mm) thick Keg Creek bridge deck.*

CL-101109 D3

F*inishers had 14 edges the entire span of the bridge, plus 76 pick point boxes to hand finish around during the pour.*

CL-101108 D5

F*inishers use two Spanit® work bridges to lay wet burlap on the new bridge deck as part of the 168 hour wet cure process.*

next to the bridge falsework placed the high-performance concrete on the deck in front of the C-450. Twelve finishers working with hand floats finished all of the edges created by the joints.

"There were a lot of joints in this deck so it took a lot of hand finishing, but an edge, is an edge, is an edge," said Triggs. "We had 14 edges the entire length of the deck. Six joints, each with two sides to them, and then the two outside joints. If we were pouring these pieces one at a time in the yard, like a precaster would have done, we still would have had to hand float along those edges. We were just doing them all at the same time."

Average production on the bridge deck was approximately 50 cubic yards (38 m^3) per hour. The rate was kept low to accommodate the 12 finishers working behind the C-450, allowing them time to do the necessary handwork. Within 10 minutes of the C-450 making its finishing pass, the concrete deck had to be covered with wet burlap and kept wet for the next 168 hours. The wet cure keeps the temperature of the concrete down and helps minimize potential shrink cracking.

Once the deck reached cure, Godbersen-Smith started removing all of the plywood from the bottom of the deck, removed the wood boxes from the joints and pick points, high-pressure washed the joints to remove the foam, and in general prepared the deck to be moved piece by piece into place over Keg Creek.

Assembling a Jigsaw Puzzle–

Work continued on site as the bridge deck cured. The design called for the bridge piers to be constructed on 95 foot (29 m) deep drilled shafts, six feet (1.8 m) in diameter. They were located outside the footprint of the existing bridge so they could be built under traffic, before the 14-day closure began. Almost all of the concrete work was accomplished before the closure. Godbersen-Smith was also able to build their access roads, place their crane sets, and complete parts of the grading to help minimize the amount of work that had to be accomplished after the bridge closed. Finally, with everything in place, it was time to close the bridge and let the 14-day countdown begin.

First step... demolish the old bridge and haul away the rubble. Then, drive the abutment piling and set the columns. With all the pieces of the bridge sitting beside the creek, it was just a matter of choosing the right pre-built piece, setting it in place, and connecting the pieces together. By day five and six they were setting the abutments and abutment walls and putting the caps in place.

By the afternoon of day six, they were ready to start erecting the deck modules. Five cranes were working on site lifting and moving the modules.

The interior bridge modules weigh approximately 56 tons while the exterior modules with the preformed parapet wall weigh approximately 62 tons apiece. Two 80 ton cranes worked together to lift the modules from the falsework onto an expandable, four-axle trailer hooked up to an all-wheel drive Mack tractor.

CL-101137 D14

The 18 bridge deck modules took only 18 hours to set over the course of two days.

A tractor with expandable four-axle trailer carried the modules to the bridge site where cranes lifted the pieces into position.

CL-101138 D18

The modules were transported less than 300 feet (91.4 m) from the falsework to the bridge site where they were driven down into the creek's riverbed. Two 110 ton cranes worked from the riverbed, while a third 210 ton truck crane worked from the road, next to the bridge, to help set the end spans.

"We were able to set those 18 modules in 18 hours over the course of two days," Triggs said. "We had absolutely perfect weather for this, too. It hadn't rained in over two months, so we had nice, dry conditions to be moving these large pieces around on site. The tractor and trailer were able to drive right down to the river bottom and back out again just like we were driving through a parking lot."

Each deck module had four crane pick points for lifting the section.

CL-101130 D15

Cranes lift an outside deck module with the cast-in place parapet wall.

CL-101129 D18

Working with the Ultra-High Performance Concrete–

The ultra-high performance concrete was poured on day 11 and was one of the most challenging aspects of the project, simply because it was new and involved a learning curve. The UHPC was mixed on site in two one-half cubic yard (0.4 m^3) mobile mixers. Godbersen-Smith poured 24 cubic yards (18.3 m^3) of the UHPC in the transverse and longitudinal joints and it took them 10 hours to accomplish the pour.

The mix is very sensitive, very low moisture and extremely susceptible to warm temperatures. Mother Nature continued to be kind to Godbersen-Smith and provided a day with a high temperature of only 56 degrees F (13.3° C). If the UHPC itself reaches a temperature of 70 degrees F (21.1° C) or higher, it won't fluidize.

"It has no aggregate in it, but instead has steel fibers," Triggs explained. "The mix is very low moisture, too, and we weighed every pound of water that went into it. It's very touchy that way and for the exact amount of proportioning that it takes. Its advantage is it gains very, very high psi levels very quickly. We had breaks of over 14,000 psi (97 MPa) in 48 hours with the UHPC. In comparison, a typical bridge deck mix would have a design strength of 4000 psi (28 MPa) in 28 days."

Workers driving concrete

The deck is disassembled from its build location and the sections are transported to the final structure over Keg Creek, seen in the upper left of this photo.

CL-101130 D17

buggies transported seven cubic feet (0.2 m^3) of the UHPC from the portable mixer out onto the deck. They dumped their load into specially designed wood troughs. The bottom of the troughs were the same six inch (152 mm) width as the joint and wider across the top to be easily dumped into. They were also made to slide, so as the joint filled, the trough could be moved further along the bridge.

As the joints filled with UHPC, they were covered with plywood and a head pressure applied. They wanted the joint to have a slight overbuild, because as the air left the mixture it continued to settle, and they didn't want the joints to be lower than the surface of the concrete deck.

"It's a zero-air content product and that means there's settlement in it," Triggs said. "It's like no other concrete that you've ever been around. It has about a six inch (152 mm) slump and is constantly oozing. We had a 1.7 inch (43 mm) elevation change from the


CL-111101 D7

Two one-half cubic yard (0.4 m^3) mobile mixers mixed the ultra-high performance concrete for the bridge's joints.

piers to the abutments and it continued to ooze to the low point. We had a minimum of 22 people at the UHPC pour that day, and it was the toughest 24 cubic yards (18.3 m^3) of concrete that we've ever poured in our lives."

Grinding the Deck–

The original design of the project had always factored in grinding the deck after it was assembled. The precast pieces the designers had envisioned using, would need to be diamond ground to create the standard bridge deck profile. Godbersen-Smith's pre-built bridge deck would need grinding, as well, just not nearly as much as originally planned by project engineers.

"The way we poured it, like a traditional bridge deck, we had the crown and parabolic curve built into it, and we were also able to compensate for the anticipated deflections in the beams," Triggs explained. "The design was to grind up to 0.5 inch (13 mm) off the whole deck for the parabolic and vertical curve, from barrier wall to barrier wall and abutment to abutment, including the 20 foot (6.1 m) long reinforced concrete bridge approaches. On our deck, they only had to grind between 0.25 to 0.375 inch (6 to 10 mm) maximum off of it. It worked out really good and gave a very nice looking and riding surface."

Grinding took place on day 13, leaving only a few final details. On day 14, the final day of the 14 day completion schedule, the guardrail was installed, the paint lines put down and U.S. Route 6 was reopened to traffic.

"We knew going into this project that it was going to have a lot of visibility and would be a defining project for our industry," Triggs said. "We attacked this project from the very beginning, put in hundreds of man hours on design and brainstorming, and were determined to make it a success. Would we do another one? Absolutely. It was a challenge and it was very interesting. Godbersen-Smith builds bridges, it's what we do for a living."

Challenge Met–

Typically, the Keg Creek project would have involved a road closure and traffic interruption of four to six months. With the ABC approach, that timeframe was cut down to only 14 days. Godbersen-Smith proved the "tool kit" could be a success and other accelerated bridge construction projects are being let this season.

Concrete buggies carried seven cubic foot (0.2 m^3) loads of the UHPC from the portable batch plant out onto the deck. It took only 24 cubic yards (18.3 m^3) of the UHPC to fill the deck's joints.


CL-111103 D14

The sensitive UHPC mix design is very low moisture, contains steel fiber instead of aggregate, and is very sensitive to temperature.


CL-111104 D8

A New Commander III Paves the Way in Uruguay

Photos by Larry Watson CG-021202 D10

Colier S.A. is slipforming the Route 55 extension project with their GOMACO Commander III four-track paver close to the city of Conchillas in Uruguay.

Traffic has increased in the Punta Pereira area in the country of Uruguay because of a new cellulose paste plant. Route 55 was already a heavily traveled road because of tourism, so government officials have taken action to create safer driving conditions for everyone in the area. To help ease traffic congestion, while creating a new access route to the plant, they are extending Route 55 by approximately 12 kilometers (7.5 mi) and building a new two lane concrete roadway 7.3 meters (24 ft) wide. Punta Pereira is located in the southwestern part of the country, close to the city of Conchillas.

Colier S.A., a contractor based out of Montevideo, Uruguay, won the Extension of Route 55: Section 21 - Free Zone Punta Pereira contract to build the new concrete road. They needed a slipform paver for the project and carefully researched brands, models and the versatility of paving applications.

"Our company evaluated the various options of slipform pavers that were in the international market and we opted for the GOMACO Commander III because of its technical benefits, and our relationship with the local representative, Bromberg Y Cia S.A.," explained Julio Fernández, Civil Engineer for Colier. "We wanted to be able to achieve the required smoothness for the project, and also wanted a paver with versatility to be able to handle other types of work."

The Commander III is slipforming the road in two paving passes, 3.65 meters (12 ft) wide and 230 millimeters (9.1 in) thick.

CG-021201 D12

Colier purchased a GOMACO Commander III with a four-track paving option for ultimate versatility. The Commander III will allow them to slipform curb and gutter, barrier and other applications, while the four-track option gives them the ability to pave roadways and flat slabs.

Colier's Commander III features the GOMACO G22 control system, which is capable of operating in several languages. Colier's languages of choice are Spanish and English.

For this Punta Pereira project, they are slipforming the new concrete road in two paving passes, each 3.65 meters (12 ft) wide. Depth of the new roadway is 230 millimeters (9.1 in). Sidebar inserters on the four-track Commander III insert bars 12 millimeters (0.5 in) in diameter and 800 millimeters (31.5 in) long every 750 millimeters (29.5 in) into the side of the new roadway.

Paving production for the first-time concrete slipformers is averaging

"Our company evaluated the various options of slipform pavers that were in the international market and we opted for the GOMACO Commander III because of its technical benefits..." explained Julio Fernández, Civil Engineer for Colier.

60 cubic meters (78.5 yd^3) of concrete per hour on each of the lanes.

Finishing work behind the paver is kept to a minimum. A wet burlap drag is attached to the rear of the Commander III and applies the drag finish directly behind the paver. Transverse joints are cut into the slab every 4.5 meters (14.8 ft).

"The Commander III is an excellent machine and we are convinced that we made a good decision," Fernández said. "The structure and design of the machine are just some of the things we like about it. The abilities of the G22 controller and its software make it very user-friendly for the operator. Without a doubt, the Commander III has met our expectations."

Work on the project began in September 2011 and the new roadway is expected to open to traffic by January 2013. So far, Colier hasn't had the opportunity to use their Commander III in three-track paving mode, but they hope to have the opportunity soon.

CG-021202 D6

Colier's paving project will help ease traffic congestion associated with a new cellulose paste plant in the country of Uruguay.

CG-021203 D6

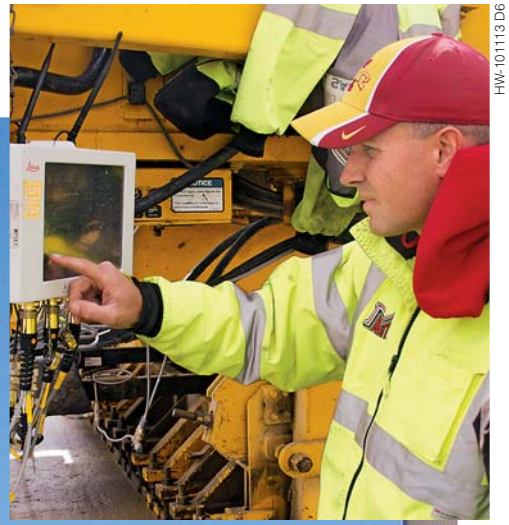
The Commander III slipforms the second lane of roadway scabbed onto the first lane.

CG-021201 D13

The final finish to the new roadway is a wet burlap drag. A spray bar mounted to the attachment keeps the burlap continuously wet.

Stringline? 3D Paving Only for this Project Mar

nager



HW-101113 D6

Total stations track the GOMACO GHP-2800 paver as Tim Tometich, Project Manager/Estimator for Manatt's Inc. (above), checks the 3D computer on the paver.

Photos by Kelly Krueger unless otherwise stated HW-101102 D10

Photo by Kim Stevenson HW-101123 D17

A safety wedge was temporally put into place to keep drivers from losing control in case they accidentally drove onto the new lane.

GOMACO equipment has operated with 3D controls on projects all around the world for the past 13 years. It has gained acceptance in the concrete paving industry and more and more contractors are throwing out their stringline kits in favor of 3D. Tim Tometich, a Project Manager/Estimator for Manatt's Inc., has never paved with stringline. All of his projects have utilized 3D and he offers a unique insight to stringless paving.

"I have actually not paved or managed a project with stringline, and I do not think I'd want to," Tometich said. "There are so many advantages to using a 3D system, for example, the labor you save on setting the stringline and then you don't have that stringline in the way; a lot of times you can save on concrete and actually provide a better product; you can grade and trim the subbase more accurately; and you're able to create a better riding road.

"Other advantages that I see include being able to execute changes much faster by getting the 3D model and implementing it into the system right away. You can check the model before you start paving or trimming, or even grading for that matter, and you can find mistakes a little sooner and potentially save having to shut down a crew because you were able to find the mistake early on. Then you can find a solution and be ahead of the game.

"It's definitely a technology that's going to be the thing of the future. You're going to have some growing pains to start with. And it's hard to not be able to see that stringline, see the grade, and see where you're at, but you do have the tools with the 3D system to check grade and so forth. It's just a little different way of thinking, because you don't have a hub and you don't have the level to check. You do have the GPS rover or the total station rover. It gives you more information than what you had before with stringline, even though you can't see it by driving up and looking at it. Like I said before, it's just a little bit of a different way of thinking."

Manatt's utilized their 3D technology on the company's first half-width concrete overlay project last fall paving 18 miles (29 km) of U.S. 18 near West Union, Iowa. The project was unique in the State of Iowa and was designed as a test project for the Iowa Department of Transportation (IDOT).

"This is a pilot project that was in competition with the asphalt industry," Tometich said. "It was trying to compete with

Photo by Kim Stevenson HW-101120 D12

The existing asphalt surface was milled to make it more uniform in depth and steel bars were put in place to tie-on a new concrete shoulder.

HW-101109 D11

basically leaving the traffic open at all times using flaggers and pilot cars, building the project half-width at a time using stringless technology. The DOT wanted to keep traffic open throughout the duration of the project."

Manatt's brought in their GOMACO four-track GHP-2800 paver with two paver-mounted GSI® (GOMACO Smoothness Indicator) units, and a GOMACO T/C-600 texture/cure machine for the project. Paving passes were 16 feet (4.9 m) wide, which included a 12 foot (3.7 m) driving lane and a new four foot (1.2 m) shoulder.

The existing U.S. 18 was only 24 feet (7.3 m) wide so the project required excavating shoulders on both sides for a new roadway 32 feet (9.8 m) wide with a two percent crown. The existing asphalt roadway had to be milled to create a more uniform surface. Specifications originally called for a 0.5 inch (13 mm) surface milling. Manatt's approached the DOT and asked for a change.

"We offered a value engineering proposal to the DOT to save on concrete," Tometich said. "The idea was to profile mill the existing surface to match the new design profile closer and not overrun on concrete because of the wheel rutting and existing inconsistencies in the slab. We were given a range of zero to 1.5 inches (0 to 38 mm) of milling depth parameter. With this latitude in milling depth, we were able to save the DOT hundreds of thousands of dollars in concrete overages. Since they'd be saving concrete by profile milling, they added an extra 0.5 inch (13 mm) to the thickness of the new overlay creating a 4.5 inch (114 mm) thick unbonded concrete overlay."

The project was divided into 3.5 mile (5.6 km) paving sections, with the single-lane traffic controlled by stop lights, flag men, and pilot cars. The surface was milled, swept, and cleaned to prepare for the unbonded concrete overlay. The final step before concrete paving could begin was tacking on #5 steel rebar, six feet (1.8 m) long and placed on 30 inch (762 mm) centers, to the existing road to tie on the new eight inch (203 mm) thick shoulders.

The concrete was a state of Iowa quality management concrete (QM-C) mix design with fly ash added. Slump averaged 1.5 inches (38 mm). Trucks dumped the concrete directly on grade in front of the paver. The GHP-2800 was slipforming 16 feet (4.9 m) wide with two different pavement depths, 4.5 inches (114 mm) for the roadway and eight inches (203 mm) for the shoulder.

Manatt's used four total stations for the 3D paving. Typically, one worker is in charge of moving them as part of the leap-frogging process. On this half-width paving project, two people were needed for leap frogging to keep ahead of the paver's high-production rate.

"The total stations typically need to be less than 300 feet (91.4 m) away from the paver," Tometich explained. "When we set up a stringless job, we'll have the surveyor go out and set control points 500 feet (152.4 m) apart on each side of the road. Technically, they're staggered so you'll find a control point every 250 feet (76.2 m) on one side of the road or the other. We set up our total stations on those points. For the most part, we try to stay within that range to keep the accuracy that we're trying to achieve."

Paving accuracy is monitored by two paver-mounted GSI units on the back of the GHP-2800. The crew can monitor their paving results instantly on the GSI's screen and make any necessary adjustments on-the-go. Iowa uses the zero-blanking band for their rideability specification. Profile indexes on roadways with speeds greater than 45 miles per hour (72.4 km/hr) require a measurement of 26.1 to 40 inches per mile (411 to 630 mm/km) for full pay. Anything under 26 inches per mile (410 mm/km) earns incentive pay.

"Our smoothness averaged 18 to 19 inches per mile (284 to 300 mm/km),

with some days as low as 13 inches per mile (205 mm/km)," Tometich said. "The GSI is extremely helpful and I don't know how I'd go back to not using it. It gives us up-to-date information allowing us to make adjustments on the fly and really helped our overall smoothness. We earned 94 percent of the smoothness incentive offered on the project because of it."

A safety wedge was a unique requirement that had to be built into the project. Since live traffic was always running next to the first paved lane, IDOT wanted a safety wedge in place in case a vehicle should accidentally drop off or climb onto the new surface. The wedge eliminated the 4.5 inch (114 mm) drop off between the existing lane and the new surface. The requirement did present a challenge to Manatt's and how they would accomplish it as part of the slipforming application. They created a form box, attached it to the back of the paver, and used a skid loader to dump concrete from in front of the paver into the box. A vibrator placed inside the box vibrated the concrete before it was placed on top of a bond-breaking engineering fabric. The safety wedge stayed in place until it was time to pave the second lane. Then, Manatt's came through with a blade, scraped it off, and loaded it into trucks to be hauled away.

The concrete curing rate was monitored by maturity method sensors placed into the edge of the new pavement. Those measurements determined when live traffic could be placed on the new lane.

"With a QM-C mix, we take time and temperature readings through a wire in the slab to determine maturity," Tometich said. "From those measurements, we created a maturity curve that gave us the knowledge to know when the concrete was at the specified strength. Because we were paving in the fall with temperatures dropping fairly rapidly, we were looking at about 48 hours before we could have traffic on that lane. If we had paved it in the summer months, we could have had traffic on there in about 24 hours."

A T/C-600 texture/cure machine followed the paver. It applied a transverse tine to the 12 foot (3.7 m) driving lane and white spray cure. Wheels attached to the sensors on the T/C machine allow steering and grade to be referenced off the new slab during the texture/cure process on the stringless project.

Paving production averaged approximately 8000 feet (2438 m) per day.

"For a project that's never been done before in the state of Iowa, I think it went really well and this will be a viable option for other projects," Tometich said. "This was the first half-width overlay we've done with stringless technology. It went well and we were able to achieve very, very good smoothness on the entire project."

HW-101106 D17

Paver-mounted GSI units provide instant rideability results and helped Manatt's achieve 94 percent of the smoothness incentive offered on the project. The GSI is GOMACO's proprietary non-contact profiler capable of providing instant smoothness results on projects.

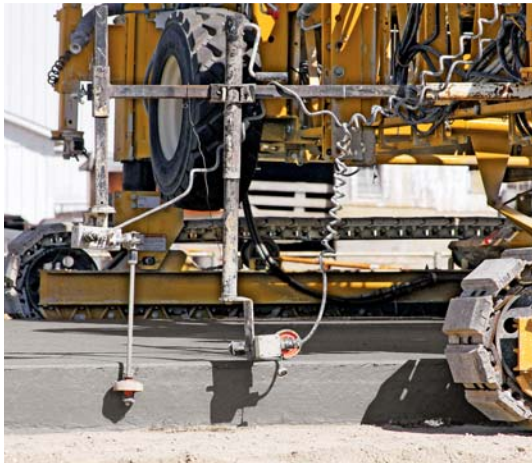
Single-lane traffic was maintained at all times on the project and was controlled with stop lights, flaggers, and pilot cars.


HW-101111 D15

Manatt's attached a steel box to the back of the paver to form the safety wedge requirement of the project.


HW-101112 D19

Wheels attached to the sensors on the texture/cure machine allow steering and grade control off the new slab.


HW-101104 D15

Quality Pavement at Hartsfield-Jackson Atlanta International Airport

The new Maynard H. Jackson Jr. International Terminal at Hartsfield-Jackson Atlanta International Airport just opened for business. The new 1.2 million square foot (111,484 m²) terminal features 12 gates, eight security checkpoints, separate levels for arrivals and departures, as well as a 178,000 square yard (148,831 m²) concrete apron for the international airplanes to park when arriving at the new gates.

Archer Western won the contract to slipform the terminal's new concrete apron, replace the existing Taxiway D, as well as other utilities and embankment work. They brought in one of their GOMACO paving trains, a PS-2600 placer/spreader, a two-track GHP-2800 paver, and a T/C-600 texture/cure machine. A GSI® (GOMACO Smoothness Indicator) machine, as required for all concrete paving projects at the Hartsfield-Jackson Atlanta International Airport, follows the paving train. A GOMACO 9500 placer was also used for hand pours on the apron.


HW-041205 D5

The sun goes down at Hartsfield-Jackson Atlanta International Airport as Archer Western slipforms another 25 foot (7.6 m) wide paving pass for the airport's new apron.

The design of the apron dictated short paving runs, which limited daily slipform production. A 0.5 percent fall, to keep water from ponding on the apron, was also a difficult aspect of the project.

"Maintaining the 0.5 percent fall and keeping water from ponding on the new apron was one of the more difficult challenges," Justin Cooper, Assistant Project Manager for Archer Western, said. "That is super flat and not a lot of room to play with. With the GSI, we were able to check the overall smoothness constantly and make sure our setup was right on."

The new apron was slipformed on top of a nine inch (229 mm) thick soil-cement subbase. The concrete for the project was produced on site by a mobile batch plant. It was a standard P501 concrete with a low slump of 0.75 inch (19 mm). Approximately 15 trucks hauled 10 cubic yard (7.6 m³) loads of concrete to the GOMACO paving train.

"We used the PS-2600 on the project for the ride quality it gives us," Cooper said. "We had good ride numbers using this really stiff mix. The PS-2600 really helped out and provided the initial knockdown of the concrete, which helped provide a nice smooth finish behind the GHP-2800 paver."

The GOMACO two-track GHP-2800 slipformed the apron in paving passes 25 feet (7.6 m) wide and 20 inches (508 mm) thick. Dowel baskets were placed on grade every 25 feet (7.6 m), with some areas of welded wire reinforcing depending on the shape of the slab.

"We had very little finishing work behind the paver and found the more we worked with the slab, the worse the numbers typically were," Cooper said.

The construction of the new terminal building was happening at the same time the apron was being slipformed and created some job-site congestion and limited paving production.

HW-041205 D2

The GOMACO two-track GHP-2800 paver slipformed the new apron 20 inches (508 mm) thick with some areas having 25 inch (635 mm) thickened edges.

Photos courtesy of Archer Western HW-041205 D7

"The straightedging to adjacent lanes was important to ensure ponding water would not be held on the relatively flat apron."

Archer Western's daily paving production was limited by the layout of the project. The GOMACO 9500 placer was used in several areas for hand pours around embankment utilities, fuel pits, underdrains, and other various utilities. They also had to work around other contractors who were building the new terminal. Average slipform paving production was 1500 cubic yards (1147 m^3) per day. Their best production day reached 2000 cubic yards (1529 m^3).

"The way the project was set up, the lanes weren't long enough to have a really good day," Cooper explained. "We did have some 1800 and 1900 cubic yard (1376 and 1453 m^3) days, but mostly we could only go as far as the lanes would take us."

Finishing work behind the paver was kept to a minimum. They applied a burlap drag by hand and then used the GOMACO T/C-600 texture/cure machine to apply a white spray cure.

All of the new pavement was profiled by Archer Western's GSI machine. The airport specification states that as soon as the concrete has hardened sufficiently, and within 24 hours of placement, the contractor will test the pavement surface. The GSI is set up as a California profilograph. The roughness index value cannot exceed 10 inches per mile (158 mm/km) for each 500 linear foot (152.4 m) section based on a two-tenths blanking band.

Seven GSI units were mounted on the GSI machine, as required by the airport's specification. The individual GSI units trace a line 12 inches (305 mm), four feet (1.2 m), and eight feet (2.4 m) off the joint line on each side, and also along the centerline of each 25 foot (7.6 m) wide paving pass.

The airport also requires Archer Western to use a 16 foot (4.9 m) rolling straightedge to check the new pavement. Surface deviations exceeding 0.25 inch (6 mm) in 16 feet (4.9 m) in any direction require correction. Any deviation over 0.5 inch (13 mm) must be removed and replaced.

"On road projects we just run the sensors in the wheel paths, but since this is an airport project, the GSI is checking the entire width of the slab with seven sensors," Cooper said. "We have 20 inch (508 mm) thick concrete edges, some up to 25 inches (635 mm) for thickened edges and they had to be constantly monitored. That was pretty challenging, but we were able to achieve the necessary smoothness."

The new terminal just opened to rave reviews from airport personnel and travelers. Archer Western was able to overcome some tough challenges and deliver an exceptionally smooth and flat apron at the Hartsfield-Jackson Atlanta International Airport.

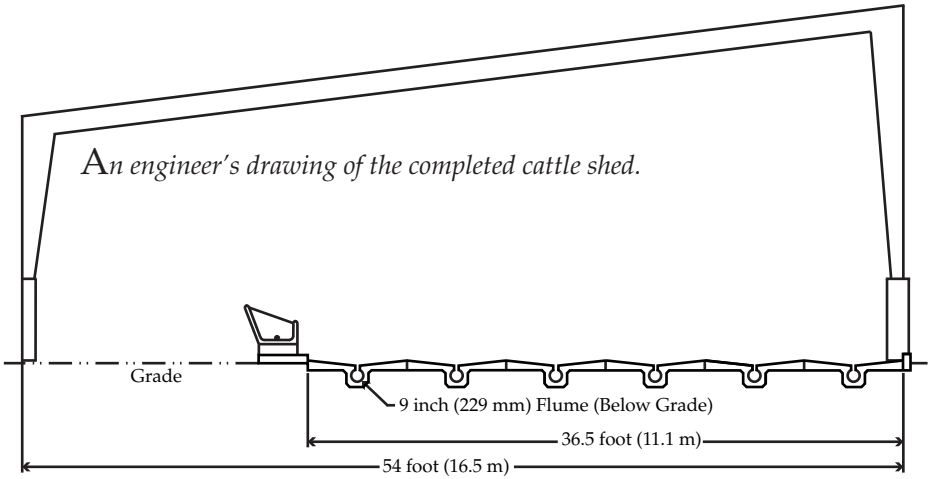
"It was definitely challenging, to say the least," Cooper said. "We completed on time and delivered the project within spec. The airport in Atlanta is big on concrete paving and they make sure that we deliver the highest quality paving in the country at the airport." GOMACO

HW-041205 D9

HW-041205 D1

Atlanta's new international apron features 178,000 square yards (148,831 m^2) of new concrete.

A Unique Slipforming Application in an Iowa Cattle Yard



An engineer's drawing of the completed cattle shed.

CG-111103 D14

The cattle shed floor features six separate flumes, each one with a nine inch (229 mm) diameter slot drain in the six foot (1.8 m) wide profile. Dormark used their three-track Commander III to slipform the unique application.

Photos courtesy of Russ Vetter CG-111102 D13

Slot drain is typically a European slipform application and not very common in the United States. It's even more uncommon in the cattle yards of the Midwest. It has been done, though, and just recently in Akron, Iowa, where Dormark Construction Company slipformed a flush flume floor with their GOMACO three-track Commander III for a cattle confinement. The flume featured a nine inch (229 mm) diameter slot drain set inside a six foot (1.8 m) wide floor profile. Six individual flumes slipformed side by side formed the 36.5 foot (11.1 m) wide final floor profile for the cattle shed. The flume, with the slot drain in the top, allows the cattle manure to collect in the drain where it is flushed into a lagoon.

Dormark was originally planning to slipform the profile over an inflatable tube to create the round drain. After a visit to GOMACO headquarters in Ida Grove, Iowa, that plan changed. Russ Vetter, Project Manager for Dormark, had the opportunity to meet with Wayne Saywell, a service technician from GOMACO International Ltd. in Witney, England. They discussed the project and Saywell convinced Vetter to reconsider his plan and use a mold that pulled a torpedo-style blockout to form the opening on-the-go while the profile was being slipformed, eliminating the inflatable tube.

"Another contractor originally did this type of floor in 1974 using a GOMACO and an inflatable tube," Vetter explained. "Wayne convinced me to use the torpedo-style slipforming and I can't thank him enough. I was absolutely astounded by how fast and how well this project slipformed."

Dormark modified an existing sidewalk mold to create the unique profile. Concrete for the project was brought to site by a local supplier using ready-mix trucks. The mix design was a state of Iowa 4000 psi (27.6 MPa) modified C4 concrete with red granite rock and fiber mesh. Slump averaged 1.5 inches (38 mm).

"We would pour one 1000 foot (305 m) run in six to seven hours with the Commander III," Vetter said. "As soon as we were done pouring, we'd start up our GOMACO GT-6000 and trim the next run. The next day, an excavator would dig out the trench for the flume. Then, we'd be back in again slipforming another 1000 foot (305 m) long run, so on average we were making a pour every other day."

Behind the mold, cure-sprayed pieces of Styrofoam were inserted into the opening of the slot drain to help keep the opening from filling in. The Styrofoam was later removed and reused on the next paving run. Chamfered steel blades were welded to the back of the mold to create longitudinal grooves in the floor's profile, and workers behind the Commander III used hand floats to add a crossing groove into the new profile. The grooves improve traction for the cattle as they walk across the floor.

"Since we completed the project, I've been showing the pictures to everyone and the first thing they ask me is, 'How did you do that?'" Vetter said. "It worked great and I consider the project a great succes. I'd like to thank everyone at GOMACO because this project wouldn't have been possible without their help."

So far, Dormark's flush flume floor is a one-of-a-kind project for the company, but they wouldn't rule out slipforming another. They have the equipment, knowledge, and now the experience to slipform it again.

GT-3600 Slipforms Floors for Russian Cattle Barns

Photos courtesy of Soyuzspecstroy Ltd. CG-041201 D3

Soyuzspecstroy Ltd. is using their GT-3600 to slipform floors for cattle barns in the city of Voronezh, Russia.

CG-041201 D5

Thirteen blockouts across the width of the sectional sidewalk mold create the grooves in the cattle flooring that allows cattle's hooves to maintain traction and helps avoid falls.

CG-041201 D6

White spray cure is applied by hand to the newly slipformed cattle barn floor.

Russian contractor Soyuzspecstroy Ltd. is using their GOMACO GT-3600 to slipform flooring in cattle barns in Voronezh, a city approximately 805 kilometers (500 mi) south of Moscow, Russia. The new flooring is slipformed in passes 1.74 meters (5.7 ft) wide and 200 millimeters (7.9 in) thick.

Soyuzspecstroy modified their GOMACO-built sectional sidewalk mold to slipform the barn application. The floor required longitudinal grooving to help give cattle traction as they walk across the floor. Thirteen blockouts were attached to the back of the mold to form the grooves. Each groove is 20 millimeters (0.8 in) wide at the top and the bottom, and 20 millimeters (0.8 in) deep. They are spaced on centers 140 millimeters (5.5 in) apart.

The GT-3600 is slipforming the new cattle barn flooring on a black geotextile fabric with steel reinforcing placed on top of it. The concrete is a standard slipform mix design with a slump averaging 40 millimeters (1.6 in). Curing compound is hand-sprayed onto the new floor behind the GT-3600.

Soyuzspecstroy says that their GT-3600 with G22 controller operating in the Russian language is performing well slipforming this unique application, and they are happy with the performance of their GOMACO machine.

A "Stringless" Solution on a Variable Barrier Project

Becco Contractors Inc. had approximately 26,000 feet (7925 m) of barrier wall to slipform on U.S. Highway 169 in Tulsa, Oklahoma. Approximately 12,000 feet (3658 m) of that wall was variable, with height differences ranging from 42 to 60 inches (1067 to 1524 mm) on the outside wall. The company has slipformed almost one-half million feet (152,400 m) of barrier wall with their GOMACO machines on different projects around the state, but this was their first time slipforming variable barrier.

The profiles of wall on the project included a 42 inch (1067 mm) tall safety barrier with continuous #5 rebar fed through the front of the barrier mold. The second profile was a variable height safety barrier slipformed over a continuous cage of steel reinforcing. Both walls were nine inches (229 mm) wide across the top and 24 inches (610 mm) wide on the bottom.

The wall was slipformed on a new asphalt surface, within tight working conditions, and surrounded by live traffic. Setting stringline and keeping it in place proved to be difficult. Their solution was to create their own "stringless" system for their GOMACO Commander III utilizing three independent grade averaging ski systems. According to Becco Contractors, this is how their unique "stringless" system worked.

"Two skis were used to operate the mold. They were the length of the mold and attached directly to the left and right sides of the mold framework. They averaged the exact profile of the asphalt grade, specifically in and out of a superelevation and maintaining those elevations. The third averaging ski was built in two parts, with one attached to the left, rear leg barrel extending 10 feet (3 m) back. The other attached to the left, front leg barrel and extended 10 feet (3 m) forward.

Photos courtesy of Becco Contractors CG-121005 D8

Becco slipformed 12,000 feet (3658 m) of single-sided variable barrier wall as part of a project on Highway 169 in Tulsa.

"They were connected with a common stringline and averaged a 50 foot (15.2 m) length. The left-side machine control sensors traced this line, which controlled the top of the wall. The frame-mounted cross slope sensor kept the top of the wall level. The steering sensors traced off square tubing that was laid on grade and aligned with a pre-painted control line."

Their "stringless" innovation worked well. Barrier slipforming production averaged between 900 to 1200 feet (274 to 366 m) per day, depending on wall design. Their largest production day reached 3300 feet (1006 m).

The concrete was a fly ash mix with standard 57 stone. Slump averaged between 0.25 to 0.5 inches (6 to 13 mm). Ready-mix trucks carrying 10 cubic yard (7.6 m^3) loads supplied the concrete to the Commander III. On average, the trucks emptied their load in 12 minutes onto the Commander III's conveyor belt.

Becco Contractors averaged between 900 to 1200 feet (274 to 366 m) of barrier production per day. Their best day's production reached 3300 feet (1006 m).

CG-121003 D2

Grade skis on the left side of the mold control the 42 to 60 inch (1067 to 1524 m) height variation for the single-sided variable barrier wall.

CG-121005 D9

Becco Contractors equipped their Commander III with grade averaging skis to control the paver and the height and level of the barrier wall.

CG-121005 D1

New 3D Stringless and IDBI Classes Part of Successful 2012 GOMACO University Season

GOMACO University in Ida Grove, Iowa, experienced a very successful 2012 school season that attracted students from across the United States, Canada, South America, Europe and Asia. Overall, the number of registered students attending classes at GOMACO University in 2012 doubled from last year.

Part of the reason for the successful season was the addition of 3D stringless paving classes to the University's curriculum. GOMACO equipment has been using 3D stringless paving technology on projects around the world since its inception 13 years ago. In 2011, GOMACO created its own in-house department for 3D controls. The 3D classes, offered for the first time this year, were part of GOMACO's continuing effort to promote 3D paving and to educate end users about the system. The classes were taught by GOMACO's 3D paving specialists at our 3D headquarters in Ida Grove. Five 3D classes had to be scheduled to accommodate the number of students interested in attending.

A new dowel bar insertion (IDBI) class was also added to the 2012 GOMACO University schedule this year to help educate contractors on GOMACO's system of inserting transverse dowel bars in pavements on-the-go. GOMACO's Research and Development department custom-built an IDBI trainer for the class. The new IDBI trainer simulates the entire IDBI paving process and has a front pan and the entire dowel bar inserter section. It has been designed so owners of both the older GOMACO IDBI units, as well as the current independent IDBI attachments, can train on this one unit. Half of the machine has the older-style IDBI hardware, and one half of the machine has the current-style IDBI hardware. The trainer allows hands-on learning of every aspect of an IDBI system, including the G+ controller with touch screen. It also gave students the chance to learn about the very latest software upgrades to the system.

"It was a really good year at GOMACO University and we were happy to see the number of registered students increase so much from last year," Dennis Clausen, GOMACO University's Director of Training, said. "We hope the students learn as much from us each year as we learn from them. It was good to have them all visit our hometown of Ida Grove, Iowa, and we look forward to seeing them back again next year."

The two-track and four-track pavers classs were the most attended classes this year, followed by the 3D stringless sessions.

GOMACO University's class schedule ran from January through March this year. Each week focused on a specific piece of GOMACO equipment, and the three-day or four-day class covered everything from machine set-up to troubleshooting in both classroom lectures and actual hands-on shop time.

Each student is asked to review

Students gather around the new IDBI trainer in the shop at the Paving Center and learn the finer points of inserting transverse dowel bars in the pavement.

CV-041214 D6

GOMACO University combines classroom learning with hands-on machine experience. Below, students in the University classroom learn about the four-track Commander III.

CV-041205 D2

their class and express any comments or concerns that they may have. Below are just a few of the positive statements our students had to say about their University experience.

Commander III:
- Well instructed and went into full detail.
- Excellent in showing illustrations to be learned in classroom.

GT-3600:
- Very detailed with a lot of one-on-one time.
- Rod (Schneider, GOMACO University Training Coordinator) does a great job. He knows the GOMACO better than anyone and it's a pleasure to learn some of what he knows.

GT-6300:
- Reviewed subjects in-depth, much more comfortable with the machine now.

IDBI:
- Comfortable, many opportunities for learning through photos posted and miscellaneous presentations.

Two-Track and Four-Track Pavers:
- Explained very well so you can understand. Covers a lot of subjects in a short amount of time.
- Very smart. Instructor knows everything about the topic. Answered every question and kept the class involved.
- Dennis (Clausen, GOMACO University Director of Training) knows a vast amount of information on pavers, which helps with our end product.
- Very good speaker, very intelligent on GOMACO products. Learned a lot.
- Really good class, applies real-world applications. Excellent instructors.

3D Stringless:
- Very knowledgeable. Explained scenarios well. Willing to discuss our individual problems.
- Like the way the instructor made sure everyone understood before he moved on to new material.
- I'd never question the instructor's knowledge on the GOMACO and Leica 3D.
- Kevin (Ackley, GOMACO 3D Support Specialist) did a great job with a diverse class.
- Hands-on training is always the best training.

Trimmers:
- This being my third year here, second time with trimmer class. I found it to be one of the most informative classes. I was able to understand it a lot better.

Please check the GOMACO University web site this fall at www.gomaco.com/university to see the new 2013 class schedule.

Students learn the skills necessary to set up a total station in the 3D Stringless class.

CV-041203 D8

The Paving Center's classroom is where students learn about the larger equipment.

CV-041208 D5

Hands-on learning takes place in the shop. Students below work out a problem on one of the University's trainers, GUS II.

CV-041205 D12

Oyu Tologoi LLC, a contractor from Mongolia, sent representatives from their company to learn about their new GP-2400 paver.

CV-041219 D1

University instructor Rod Schneider presents a student with his graduation certificate at the Thursday night ceremony.

CV-041212 D2

CG-041222 D3

A *Commander III four-track owned by B Nord Pavi srl is at work slipforming on the Palermo Airport on the island of Sicily, Italy.*

CG-021222 D6

Stroydorexport Company slipforms curb and gutter with their three-track Commander III in Kemerovo Oblast, Russia.

CG-031203 D4

CVV in Concepción, Chile, slipforms a new roadway half-width. Their three-track Commander III is equipped with a five meter (16 ft) paving package.

HW-051201 D3

Maga Naguma Road Construction Equipment Company slipforms an access road to the new Hambantota International Airport in Mattala, Sri Lanka.

HW-021205 D11

GOMACO GP-2600 two-track pavers slipform side-by-side on an airbase project in Afghanistan. The pavers are followed by two T/C-600 texture/cure machines.

GOMACO®

around the world

CG-041221 D2

J.K. Williams Plant Pty. Ltd. slipforms three meter (9.8 ft) wide and 150 millimeter (5.9 in) thick sidewalk with their three-track Commander III on a test project in Sydney, Australia.

CG-101112 D16

Two four-track Commander IIIs with V2 molds are at work on a new road project near Guayaquil, Ecuador. Cuerpo de Ingenieros del Ejercito (Army Corp of Engineers) is building the project.

GOMACO CORPORATION
POST OFFICE BOX 151
IDA GROVE IA USA 51445

www.gomaco.com

ADDRESS SERVICE REQUESTED

PRINTED IN USA

GP-2400 Slipforms a Project to Help Alleviate Traffic Congestion in the Philippines

HW-041201 D7

C.M. Pancho Construction Company slipforms a new traffic lane for the Plaridel Bypass Road project in the Philippines.

Photos by Jason Zhu HW-041201 D9

The GP-2400's slipform paving passes are 3.5 meters (11.5 ft) wide and 300 millimeters (11.8 in) thick.

C.M. Pancho Construction Company, based out of Quezon City, Philippines, recently purchased a new GOMACO GP-2400 two-track paver. They had previously owned a GOMACO GT-6300 and were ready to upgrade to a new machine in 2012.

They put their new GP-2400 to work immediately on the Plaridel Bypass Road project near the town of Bustos, Philippines. The project involves building a new six kilometer (3.7 mi) long, two-lane highway. In areas, the highway reaches up to four lanes wide.

The GP-2400 is slipforming the new roadway in paving passes 3.5 meters (11.5 ft) wide and 300 millimeters (11.8 in) thick. The paver is equipped with a left-hand sidebar inserter. It is inserting 16 millimeter (0.6 in) diameter bars that are 600 millimeters (23.6 in) long every 600 millimeters (23.6 in).

The new roadway is part of the country's Department of Public Works and Highways' plan to improve mobility and promote development. The new bypass will also help ease serious traffic congestion in the Bulacan province and improve accessibility to schools, hospitals, and markets for the people living in the province.