

Guntert & Zimmerman

Construction Profiles

Fall 2010

New Equipment

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SPACEPORT AMERICA

Airport Paving



New Mexico's weather and wide-open spaces have been ideal for the aerospace industry since Robert Goddard, the Father of Modern Rocketry, began conducting research in Roswell in the 1930s. He was later followed by Wernher von Braun in the 1940s and NASA in the 1980s.

By the early 1990s, a group of like-minded individuals called, the Southwest Space Task Force, felt the impetus to take New Mexico's space industry to the next level: commercial space and reusable launch vehicles. Based

on years of study, they zeroed in on 27 square-miles (70 km²) of state-owned land, 156 miles (258 km) south of Albuquerque as a location for an inland spaceport.

The result of these efforts was the birth of Spaceport America. Spaceport America (formerly named Southwest Regional Spaceport) is the "first purpose-built commercial spaceport" in the world, although initial construction is not yet complete. As of October 2009, eight suborbital missions have been launched from the port. The spaceport

has attracted four aerospace mavericks — including Virgin Galactic.

Virgin Galactic will establish its headquarters and operate its space flights from Spaceport America. Spaceport America will provide cutting edge facilities and a wonderful location for fledgling astronauts to realize their dreams. Virgin Galactic has managed to reduce drastically the price of getting to space and over time will reduce it still further. The starting price for flights is US \$200,000 with refundable deposits starting from



US \$20,000. If you're ready, willing, and looking to spend the money, space is now the open final frontier.

The runway and taxiways on the Spaceport are being paved by David Montoya Construction, Inc. (DMCI) based in Alameda, New Mexico. DMCI has nearly 30 years experience in the concrete industry and specializes in heavy / highway construction. DMCI utilizes the latest technology and state-of-the-art equipment to produce high quality project results. Under the leadership of David

Montoya, owner & president, DMCI has a workforce of 120 employees and has been recognized by Hispanic Business Magazine for consecutive years as one of the Top 500 Hispanic owned businesses in the United States.

The Spaceport Construction Project is where the future becomes reality. To compliment the futuristic design of the terminal, DMCI is paving the runway with the latest in concrete paving technology. Employing a full Guntert & Zimmerman (G&Z) Paving Train and G&Z 12 cyd (9.2 m³) Mobile Concrete Plant (MCP), Montoya has set out to lay down a quality product on this high profile project. G&Z's dedication to innovation has made it the most trusted name in the market. Their innovative and productive machines have been proven on job sites across the globe to produce high quality, smooth pavements.

DMCI's entire paving spread is being controlled without stringline. DMCI is using Leica Geosystems' PaveSmart 3D (LMGS-S) Machine Control System to control steering and elevation on its S850 Slipform Paver using total stations for maximum precision and smoothness. The G&Z PS1200 Placer Spreader's elevation and steering control is GPS-controlled. Starting from the project slab design data, the machine's position, elevation and heading is measured in real-time by total station(s) and transmitted to the Leica Machine Computer (MPC). Precision machine-mounted slope sensors provide mainfall, draft, and cross-slope for the slipform's paving kit. Position, elevation, draft, and slope corrections required to keep the machine precisely on-line and on-grade are sent to the G&Z Control System, typically allowing paving accuracy of $\pm 3\text{mm}$, and steer within $\pm 10\text{mm}$.

When complete, the runway will be 10,000 ft (3,048 m) long and 200 ft (70 m) wide. DMCI is paving the runway in six 33.3 ft (10.1 m) passes. Runway construction began with DMCI using the G&Z S850 to place 6 in (152 mm) of soil-cement base completely

stringless. The soil cement layer is followed by a 4 in (101 mm) asphalt layer placed by other means that serves as a separation layer. The final concrete slab being slipformed is 14 in (355 mm) thick.

Starting with the concrete batching operation, the G&Z Mobile Concrete Batch Plant is a study in precision. Designed to produce superior concrete uniformity, the MCP Plant features accurate material weighing, pre-blending, and aggressive mixing by the plants 12 cyd (9.2 m³) twin shaft compulsory mixer. The result is a superior and highly uniform mix. DMCI is using the G&Z PS1200 Placer Spreader to accurately spread and strike off the concrete over welded dowel basket assemblies that are secured to the subgrade. The PS1200's stout design can receive the large, low slump concrete loads into its 64

in (162.5 cm) wide roll-in/roll-out belt and spread it rapidly. At peak, the PS1200 was receiving and spreading just over 400 cubic yards (305.8 cubic meters) per hour. Its solid placer strike-off has the ability to push

The runways, taxiways, and aprons on the Spaceport are being paved by David Montoya Construction, Inc.

material back to the paver if necessary. Following behind the PS1200, G&Z's S850 Slipform Paver is creating the final formed slab. The S850 is a versatile slipform paver with a host of productivity features that make the contractor more efficient. Its heavy tractor frame and rigid latticework paving kit produce high quality, smooth slabs not to mention the superior non-slumping edges. As part of the G&Z S850 paver, Montoya also purchased G&Z's New TeleEnds: Telescopic Paving Kit End Sections that allow the contractor to perform width changes in under 2 hours. The New TeleEnds give the contractor 6 feet (1.8 m) of quick width change capability without sacrificing smoothness.

Following behind the S850 is G&Z's TC1500 Texture Cure (TC) Machine. The TC frame is made up of heavy duty latticework construction resulting in a very rigid frame. The G&Z TC1500 does not need Leica control guidance because it takes its grade

reference from the slab surface using ultrasonic sensors and alignment using a reference off the side of the slab using a modified standard steering sensor.

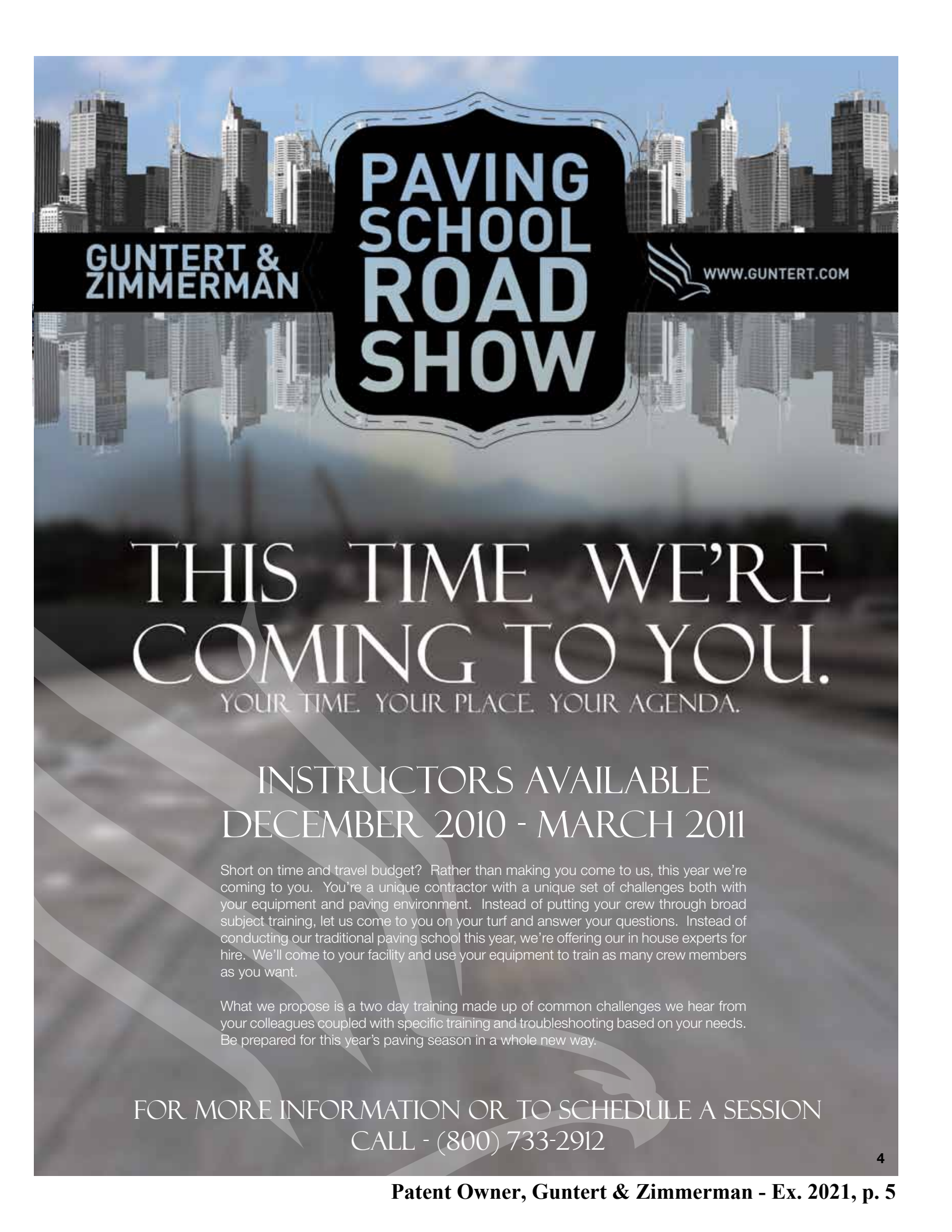
The optional 90 degree steering feature on the TC1500 allows the track orientation on each side of the machine to be controlled by turning a switch. The TC1500 tracks can turn from working position to 90 degree in under 15 seconds. The 90 degree steering feature does not require hoses to be switched, tracks to be lifted off the ground, or mechanical tie rods to be disconnected. The steering capability of the TC1500 in 90 degree mode

allows the contractor to maneuver around a tight radius turn to avoid obstacles easily.

With a scheduled completion date of early 2011, Spaceport America is on track to be a site for innovation and superior construction.

G&Z is proud to have partnered with DMCI in such a remarkable and defining project.





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New S600 Multi-Purpose Slipform Paver

G&Z has never been a company that focused on a market price point or matching what a competitor's equipment could do. G&Z has always focused on the customer's needs and coming up with innovative solutions for those needs that are of real value. Contractor productivity has always been a big focus at G&Z and the new S600 paver takes contractor productivity to a new level so the contractor has more actual paving time during the day.

The S600 design focuses on taking contractor's non-mainline paving operations such as shoulders, ramps, lane addition, city streets and secondary roads to a whole new level of efficiency without sacrificing pavement smoothness. The S600 offers a full complement of innovative ideas to dramatically reduce the time consumed by paver mobilization, maneuvering and width

change. It is real a game changer when you can roll onto a job site with your paver, unload, pave all day (including several width changes and pour locations), load up and still get home for dinner.

The G&Z S600 Multi-Purpose Slipform Paver is designed with the mobility of a small paver without sacrificing the same performance advantages contractors have come to expect from G&Z's large and mid-size pavers. The S600 is designed around a traditional slipform paver tractor making it ideal for highway and airport paving projects. Utilizing G&Z's time tested and rugged paving kit, the S600 is capable of achieving excellent smoothness numbers on IRI and zero band specification projects. The paving kit, front tie bar inserters and many of the other optional attachments on the S600 are interchangeable with other G&Z paver models, giving the contractor a

more versatile fleet of paving equipment. The S600 features a double telescopic tractor frame, access walkway, and hose hinges for a nominal working range of 8'-0" to 22'-0" (2.44 m to 6.7 m) with up to 7'-0" (2.13 m) of telescopic ability per side - the widest range in the industry. With the use of bolt-in tractor frame extensions, the S600 tractor can extend up to 22'-0" (6.7 m) with a dowel bar inserter (DBI) with hydraulic vibrators or 26'-0" (8 m) with electric vibrators and 29'-5" (9 m) without a DBI.

The Multi-Purpose S600 is also designed to excel in alternate applications including: barrier wall, offset paving, zero / minimum clearance paving and canal paving. The versatility of the S600 tractor allows the contractor to quickly switch between applications and paving widths. The end bolsters are designed with universal bolting

patterns offering a wide range of three and four track tractor configurations with or without swing legs. The S600 is the narrowest profile machine on the market. In standard paving mode, from edge of pavement to widest point on the paver is only 2' (610 mm) with sensor support arms removed.

The Multi-Purpose S600 is also designed to excel in alternate applications including: barrier wall, offset paving, zero / minimum clearance paving and canal paving.

The optional and patented TeleEnds: Telescopic Paving Kit End Sections provide the contractor the ability to perform paving kit width changes rapidly, without the use of cranes, and with only a one or two-person crew. Each TeleEnd gives the contractor 3' (915mm) per side (or 6' [1.83m] for both sides) of quick width change capability. A width change which could typically take a three to four person crew 6 to 10 hours can now be performed by a one or two person crew in less than two hours. For a width change involving a single spacer less than one hour.

The S600 is equipped with G&Z's new and patented AccuSteer: Slew Drive Track Control. The AccuSteer slew drives are mounted on top of the track yokes and are used to steer the tracks in lieu of steering cylinders. The AccuSteer drives are powered with hourglass worm technology to give long life, high accuracy and extremely high maneuverability. The hourglass worm engages multiple teeth on the pitch line of the ring gear from the hourglass thread. This engagement gives enormous strength and power to the gearbox. The AccuSteer system allows the operator to independently rotate the tracks almost a full circle, providing exceptional maneuverability on site and rapid swing leg relocation for paving and transport without the need to re-pin steering cylinders.

The S600 is also available with G&Z's new and patented SmartLeg: Swing Leg System takes on the fly track line adjustments to the next level. Working in tandem with the

AccuSteer system, The SmartLeg System allows the operator to adjust the swing leg angle on the fly while automatically keeping the track straight ahead. This offers a high level of flexibility for the contractor to maneuver around track line obstacles (e.g. fire hydrants, airport runway lights, etc.) on the fly and without stopping to make a mechanical swing leg adjustment.

With the new SmartLeg System, the process for transforming the S600 into the transport or side barrier wall position can be automated. This simple process dramatically saves time over other conventional four track slipform pavers. Using the combination of the 90 degree steering mode and the SmartLeg feature, the four swing bolsters and crawler tracks are automatically walked into the outboard, transport position in approx. 30 minutes. In this transport configuration, the S600 can easily walk and steer onto a standard 8' (2.5 m) wide trailer. There is no switching of hoses required on the crawler tracks.

The new and patented VariWidth: Tractor Frame Width Change System, working together with the AccuSteer system, allows quick telescopic tractor width changes with the use of rollers and a hydraulic clamping puck system eliminating all clamping bolts. The S600 extension tubes are held in place while in operation with an automatic hydraulic clamping puck system. When the tractor frame width needs to be changed, the operator simply has to flip a switch to release the hydraulic pucks from one side of the machine and walk the machine in or out using the 90° steering mode. The tractor frame extension tubes slide in and out of the center module with the help of rollers. All of the hydraulic hoses and electrical cables between the power unit and the end bolsters are contained in G&Z's hose management hinge system which eliminates the requirement to change hoses for width changes. With no bolts to loosen, hoses to change, or supports to be added under the tractor, the VariWidth System is a huge time saver. Tractor width changes can be accomplished in a matter of minutes.

The S600 features superb operator visibility and ease of operation. The operator can



easily see all around the machine including under foot into the concrete liquification hopper. The S600's power unit enclosure and cooling system has been designed to minimize the paver operator's exposure to noise, heat, and vibration. The Operator Console is easily relocated anywhere along the operator platform hand railing to optimize visibility and to meet operator preference. The S600 is provided with emergency stops on all four corners of the machine with magnetic holders to allow them to be relocated.

G&Z's Next Generation Plus 1 Operator Control System incorporates user friendly operator features and state of the art networked controllers allowing extensive monitoring and diagnostic capability including remote diagnostics. The Operator Console features intuitively organized switches which are labeled with standard ISO symbols making this a durable, easy to use, multi-lingual user interface.

The S600 features G&Z's NoLine: Stringless Paving Preparation Kit. NoLine integrates the use of stringless technology directly into the S600 Operator Console and provides telescopic mounts for the total station prisms. Stringless paving technology is gaining wide spread market acceptance. As the bidding table gets more competitive, the need for innovative solutions to reduce job site costs is increasing. With the use of stringless technology, the contractor saves money on surveying, stake driving, and string set up making them more competitive in the market.

G&Z has always been a proponent for the use of a spreader plow over an auger on its paving equipment. A spreader plow safely moves more concrete, faster with less operating expense than an auger. The S600

features a spreader plow system that allows for easier width changes. Spreader track sections are aligned together by a dual pin connection and held together with a single bolt. Each spreader car track section is light enough where it can be handled by one person without the assistance of a crane.

As an option, the S600 can be fitted with G&Z's proven trailing finishing pan and/or final finisher. Mounted off the rear of the paver under the rear walkway, the trailing finishing pan provides a proven method of finishing pavement surface and edges and ensuring that the product coming out the back of the paver is of the highest quality and smoothness.

The S600 is available with G&Z's market leading Compact Dowel Bar Inserter (CDBI). The patented CDBI is a single, self-supporting module that mounts quickly on the rear of the S600. G&Z is the worldwide leader in DBI technology. The highly productive, mobile, reliable, and user friendly G&Z CDBI is designed to insert dowel bars accurately, make width changes and transport easily, and help achieve smooth rides. G&Z is also currently developing a new narrow profile DBI for the S600.

G&Z's S600 is backed by a world class parts and service support. The G&Z dedicated service staff is knowledgeable about the various construction disciplines where the equipment is used. Rapid response to a customer's parts needs is facilitated by G&Z's readily available stock of parts and our location in central California. There are four major international airports within 1.5 hours of the factory, allowing counter-to-counter airfreight service. Same day service is possible, depending on the time of the call.

For expanded information regarding the S600, visit www.S600Paver.com.





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While the New S600 Multi-Purpose Slipform Paver won't fit into your pocket like a multi-tool, its breadth of features and configurations make it the most versatile tool in any paving fleet. The S600 sets a new standard for rapid maneuverability and paver reconfiguration giving the contractor significantly more paving time during a day. It is engineered by Guntert's world class team to excel in airport and mainline paving, barrier wall, offset and zero / minimum clearance paving, and canal lining.

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MORE THAN MEETS THE EYE:

Canal Equipment or Highway Equipment?

The Gila River Indian Community is an Indian reservation in the U.S. state of Arizona, lying adjacent to the south side of Phoenix within the Phoenix Metropolitan Area. It was established in 1859, and formally established by Congress in 1939. The Community is home for members of both the Akimel O'odham (Pima) and the Pee-Posh (Maricopa) tribes.

The reservation has a land area of 583.75 sq mi (1,511.902 km²) and a 2000 Census population of 11,257. It is made up of seven districts along the Gila River and its largest communities are Sacaton, Komatke, Santan, and Blackwater. Tribal administrative offices and departments are located in Sacaton. The Community operates its own telecom company, electric utility, industrial park and healthcare clinic, and publishes a monthly newspaper.

The Gila River Indian Community received American Recovery and Reinvestment Act Funding to complete the Pima Maricopa Irrigation Project which is an extensive system of irrigation canals of varying widths and lengths. The project is being bid out in different sections. Granite Construction's Arizona and El Centro Divisions teamed up to bid the 2nd phase of the project. The 2nd

phase consisted of a 7 mile stretch of canal consisting of two sections.

The Granite Joint Venture secured the bid and broke ground in August of 2009. In searching for an equipment solution, Granite came to Guntert & Zimmerman (G&Z). Guntert & Zimmerman has been providing mechanized canal construction equipment solutions



to contractors since 1947. Contractors worldwide depend on G&Z to tackle complex canal equipment challenges. G&Z's in house canal construction experts work with contractors around the world during the design or bidding stages of a project to advise on feasibility of the proposed canal design and to suggest changes to better lend the canal design to mechanization. G&Z's worldwide experience, multi-disciplined engineering staff and factory flexibility ensures the highest quality custom machinery.

This breadth of experience and previous relationships with Granite Construction gave G&Z the edge on this project. The challenge with the Pima Maricopa Irrigation Project was that this stretch of canal was not substantially long enough to warrant the purchase of a new dedicated canal equipment spread. G&Z was tasked to design equipment that could easily reconfigure for highway and airport paving. G&Z set out to design canal equipment based around their S1500 Slipform Paver and TC1500 Texture Cure Machine models. G&Z also provided a specialized Combination Transverse Joint Insertion / Finishing Jumbo for inserting and finishing over the top of the U.S. Bureau

of Reclamation specified preformed PVC cruciform shaped water stop / crack inducer.

The S1500 Slipform Paver is G&Z's largest slipform paver model featuring its widest width capability. G&Z engineers designed a dual side feeding conveyor system, canal mold and concrete shuttle belt / auger distribution system, and longitudinal water stop inserter system. These add-on features essentially took the S1500 tractor with little modification and converted it into a canal machine. When Granite is ready to pave a highway or airport in the future, all that is necessary to ready the machine for flat concrete paving is to remove the machine's canal mold / auger assembly and add a highway / airport paving kit.

The four track, TC1500 Texture Cure Machine design was modified to include wide front and rear finishing walkways suspended from the bottom of the truss. The cure spray bar with hood was mounted off the rear walkway. With the TC1500's 90 degree steering feature and the walkways with spray hood arranged to be folded up underneath machine truss frame, the TC1500 could quickly maneuver around obstructions in the canal.

The G&Z Canal Equipment was designed for mobility. The Pima Maricopa Irrigation Project included several canal structures requiring the machines to be moved from one canal section to another. "The G&Z equipment is easy to move. The liner's canal mold drops easily and the cure rig folds up making both pieces of equipment easy to drive and set up in the next section of canal," praises Arturo Vergara, Project Engineer. Structure jumps can be the most time consuming process in a canal paving schedule. With the provided solutions, the G&Z canal equipment made it a breeze. Vergara also states, "The G&Z equipment was an excellent solution. The equipment had many steering options and features. The operator had many different controllable settings to ensure a premium result both on the cure rig and paver."

This innovation in design can be adapted to any of G&Z's slipform pavers. The ability for the contractor to quickly maneuver and easily reconfigure the equipment from canal to highway paving opens the bidding market for contractors trying to find more work in a struggling economy. The Pima Maricopa Irrigation Project will be finished in December 2010.





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