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Canal Construction
Equipment

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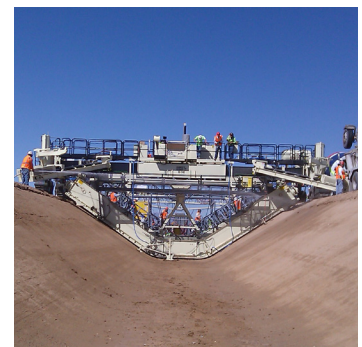
S1500

Multi-Lane Slipform Paver



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INTRODUCTION



Since 1983 when Guntert & Zimmerman's (G&Z) first four-track mainline slipform paver was introduced, the S1500 model has undergone continuous improvements. G&Z strives for perfection in its products so end users gain a distinct productive advantage in today's extremely competitive paving market. The S1500 paver is designed to be the paver of choice for high quality concrete multi-lane paving even under the strictest profilograph requirements. The S1500 can pave widths from 16.5 ft. (5.5 m)* to 52.5 ft. (16 m). The S1500 paver can be ordered with a wide array of optional attachments to meet your needs and to provide you with a competitive edge.

Recent improvements to the S1500 design center around the main frame structure / pan system to dramatically improve ease of transportation, width change, and changing of crown locations (the S1500 can be equipped with up to three crown points). The S1500 features a double telescopic tractor frame with the largest telescopic range in the industry, along with a separate robust paving kit common to all G&Z paver

models. The S1500 also features a Caterpillar C9 ACERT 350 hp (261 kW) or optional Caterpillar C13 ACERT 440 hp (330 kW) engine that incorporates the latest, state-of-the-art electronic and hydraulic circuitries and controls, as well as the latest vibration, heat and noise reduction technologies for the paver's power unit. Improvements in operator visibility, paver maneuverability, troubleshooting and ease of operation have also been made.



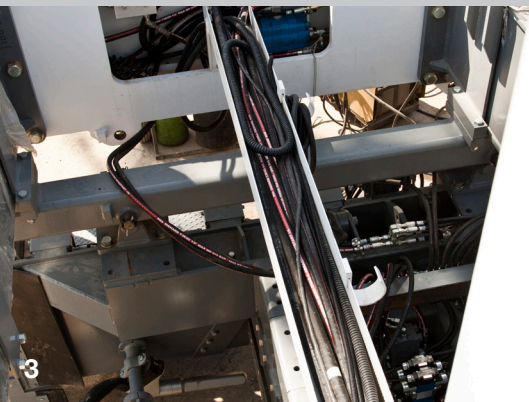
*Narrower paving widths are possible. Consult with the G&Z factory.

TELESCOPIC TRACTOR FRAME



Deep section, fabricated, tube type construction of the double telescopic tractor frame design allows paving widths from 18 ft. (5.5 m) to 42 ft. (12.8 m). The machine telescopes 12 ft. (3.6 m) on either side of the 18 ft. center module for a total telescopic ability of 24 ft. (7.3 m) With the addition of optional bolt-in frame sections, the total possible paving width is 52.5 ft. (16 m).

Width changes can be accomplished with only a small crane because the bolsters do not need to be removed and the paving kit remains on the machine. Each side of the S1500 tractor center module is provided with a "Power Chain" which contains your hose and electrical cords running from the center module to the bolsters. This system allows the tractor frame to telescope without the need to disconnect hoses or electrical cables. The front access walkway is also telescopic within a limited range.



USER-FRIENDLY CONTROLS



The centralized Operator Control Desk allows the S1500 operator to easily monitor and remotely control all paver functions. All controls (24V DC) are intuitively located and marked on the control desk and include manual and automatic elevation and steering controls as well as a monitoring screen for controls set-up, monitoring and paver self-diagnostics. All machine functions are processed through a dependable Programmable Logic Controller (PLC) and Networked Microcontroller System which processes the S1500 elevation and steering controls either in reference to "stringline" or "stringless" input. The control desk is vibration isolated. A platform is provided next to the control desk which allows the operator exceptional

90 DEGREE STEERING



90 Degree Steering Mode allows the four crawler tracks to be turned perpendicular to the paving direction with a flip of a switch. The operator is provided with limited steering range in this mode. 90 Degree Steering reduces the size of hand pours, dramatically increases on site paver maneuverability and helps speed width change and self-loading for transport.



JACKING COLUMNS



visibility of the paver's concrete spreading operation. The control desk includes a lock out / power switch locate inside the control desk, an aluminum cover for weather and vandal protection and an emergency stop.

The computerized Crown Control system may be installed as an option on the S1500 paver and can be used for up to three profile breaks. This feature can be installed on the S1500 with or without a Compact Dowel Bar Inserter (CDBI) for smooth transitions in and out of crown.



G&Z's precision built, square-to-round style jacking column design with built-in replaceable bronze wearing parts that prevent sticking allow for the most positive steering control in the industry. This design also offers years of precise, maintenance free use.

Male steadments (legs) are provided with hard 370/420 Brinell wear strips on all four sides. The square tube is machined flat and square for a precision fit.

The optional "double pan handle" steering cylinder mounting arrangement allows rapid steering cylinder re-pinning with Swing Leg angle change and allows 90 Degree steering at those new angles.

COUNTER ROTATION



The S1500 is equipped with counter-rotation capability where the operator can quickly re-orientate the S1500 crawlers into the counter-rotate position and rotate the machine 360 degrees within the machine's overall width. Counter-Rotation is just one of the pre-programmed steering modes available with the S1500 controls, along with crab and coordinated steer, front and rear only steer.



GRADE & STEERING CONTROL



Electronic, no contact type, moisture proof, and proportional Sauer Danfoss (SD) steering and elevation sensors, as well as G&Z's own proprietary software version of the system provides precise steering and elevation accuracy and self-diagnostic capability.

Front and rear tracks can be manually or automatically steered by both pivoting the tracks with steering cylinders and by varying the speed of the crawler tracks on one side of the machine in relationship to the other using the Ackermann Steering feature to provide the machine with exceptional automatic steering capability. This dual system of steering offers the paver operator tremendous flexibility for maneuvering in tight confines.

The S1500 is provided with columns with graduated scale vertical and lateral fine adjustment in relationship to a stringline.



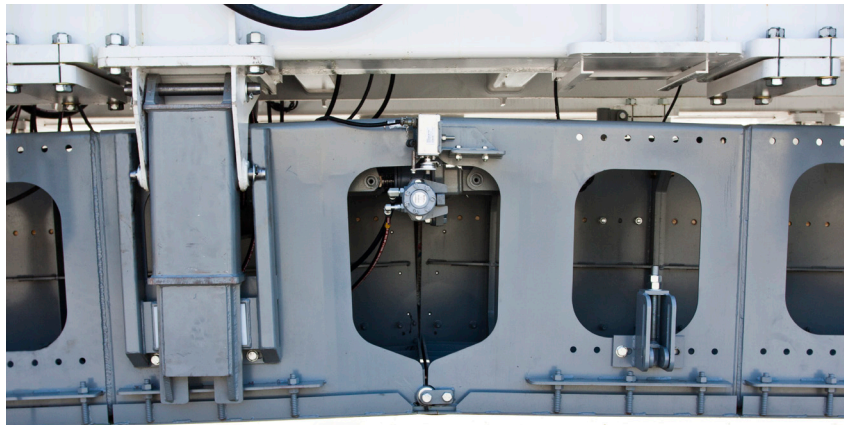
PAVING KIT



G&Z's Paving Kit includes a deep section, latticework frame that is rigid enough to handle the S1500 design width and achieve excellent smoothness results on projects with strict smoothness requirements. It can be provided with up to three crowning sections. The ends of each paving kit section are manufactured with thick plate bolting connections that are milled square and flat. The bolt holes are precision drilled on a mill to ensure sections can be interchanged and easily lined up. The Paving Kit design requires fewer bolts per section allowing for rapid paving width changes. As an option, the Paving Kit can be provided with bolt-on pan skins so if worn or damaged in the future, the pan skins can be quickly repaired or replaced at minimum cost.

When supplied with intermediate kit hangers, The Paving Kit can be mounted in multiple locations under the S1500 Tractor independent of the bolster location and can be quickly and easily mounted or removed from the tractor. Each paving kit truss section is provided with a front and rear tool bar bolt strip so bolt-on items may be relocated easily in small increments.

CROWN SECTION



The optional Paving Kit Crowning Section is provided with a hydraulic motor driven, dual screw jack system that holds the crown position without drift. A digital readout of the crown angle is provided at the operator console. Computerized Crown / Transition Control system is also available as an option.



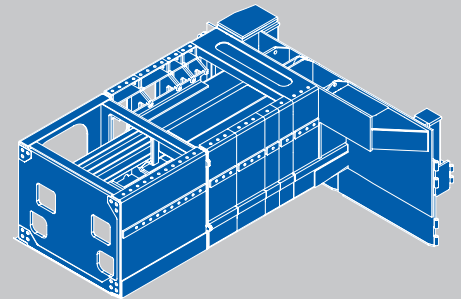
SPLIT GUILLOTINE SIDEFORMS



As an option, the standard Guillotine Sideforms with 0-18 in. (0 - 457 mm) of hydraulic adjustment can be supplied "split" where the front and rear portions of the Guillotine Sideforms operate independently. The rear portion can be winged out as much as 15 degrees with powerful hydraulic cylinders to allow the sideforms to clear and back over the previously poured slab. This feature also allows easy access to the edge overbuild device for cleaning and speeds up morning starts. The sideform open / close cylinders are powerful enough to close the sideform against plastic concrete. Split Guillotine sideforms also make it easier and practical to pave into or away from a previously poured slab such as a bridge deck or taxiway. The paving kit terminal end sections are also provided with removable shim packs for fine (minor) width adjustments to yield the specified slab width reducing concrete losses.

TELEENDS

TELESCOPIC PAVING KIT END SECTIONS



The optional and patented G&Z 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. 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.

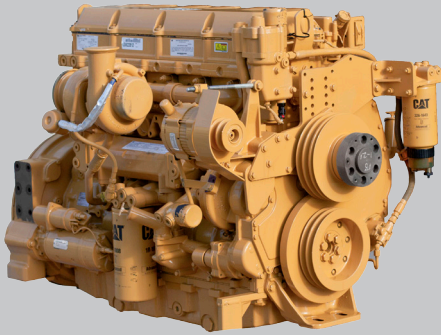
Quick Width Change Capability:

TeleEnd — 3 ft. (915 mm) per side

TeleEndXL — nom. 4 ft. (1,250 mm) per side



CATERPILLAR C9 // C13

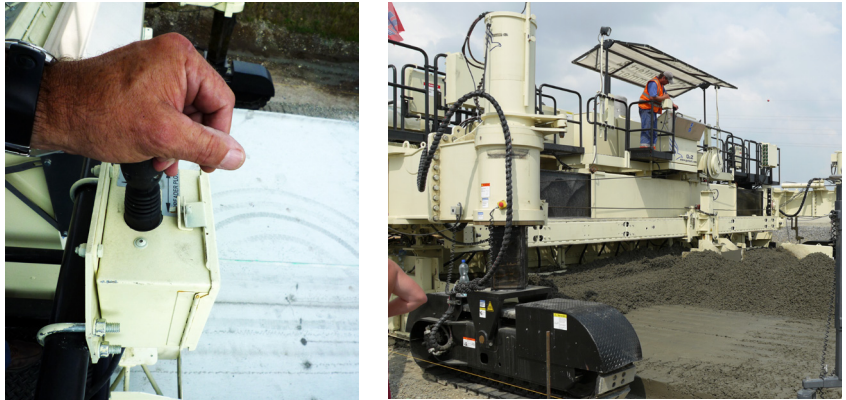


The fuel efficient Caterpillar C9 ACERT US Federal Tier 3 / European Stage IIIA six-cylinder Diesel Engine is ready to take on your toughest paving project. The C9 provides all of the performance, reliability, durability and long maintenance intervals that you would expect from a Caterpillar engine. Caterpillar Electronic Control Module manages all engine components for a completely integrated system.

The Caterpillar C13 ACERT US Federal Tier 3 / European Stage IIIA Diesel Engine is available as an option. This allows the S1500 to have enough power to attach a G&Z Compact Dowel Bar Inserter without the need of a separate pumping unit.

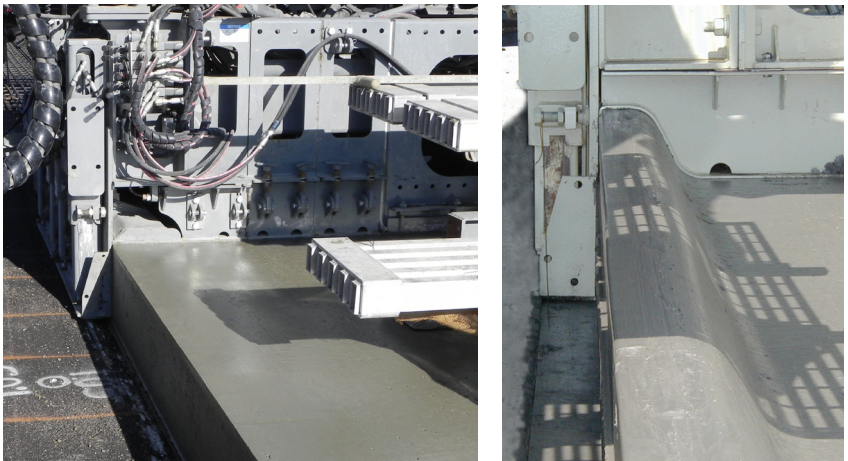
The C9/C13 engine radiator and integral heat exchanger are provided with a computer controlled, variable speed, hydraulic motor driven fan which evacuates heat from the enclosure. To further reduce noise and vibration on the operator, the engine with pump drive box are vibration isolated from the power unit module and the power unit module is vibration isolated from the tractor frame center module.

SPREADER PLOW



The powerful G&Z Spreader Plow System, in conjunction with the provided metering gate, can move more concrete faster than a spreader auger system. The use of a spreader plow system eliminates the need for sideform mounted auger gearboxes and center hanger bearings associated with augers which impede the flow of fresh concrete into the corners of the liquification hopper and across the front of the machine. The plow system costs only a fraction of what an auger system costs to operate because there are virtually no wearing parts running in the concrete. The spreader plow system offers easy width changes. The spreader plow track sections are held together by two line-up pins and held together by just four bolts.

EDGE OVERBUILD / INTEGRAL CURB



The terminal pan sections on the Paving Kit are provided with edge overbuild adjustment to help compensate for edge slump. The terminal pans can be substituted with other optional integral curb and gutter mold cross sections.

TRAILING FINISHING PAN



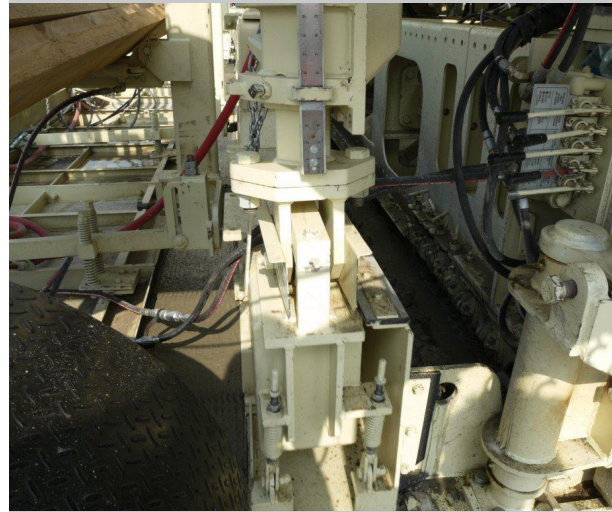
As an option, the S1500 can be fitted with G&Z's proven trailing finishing pan system. Mounted off the rear of the Paving Kit under the optional rear telescopic access walkway, the 48 in. (1.2 m) wide trailing finishing pan with fixed edger pans provides a proven method of finishing pavement surface and edges and ensures that the product coming out the back of the paver is of the highest quality and smoothness. The trailing finishing pan along with the rear walkway can be hinged up for easy transport.

FINAL FINISHER



The optional Final Finisher (FF) with supports is an effective finishing device with a longitudinal, magnesium surface finishing ski, that floats on the concrete surface. The longitudinal ski oscillates fore and aft while traveling transversely back and forth across the slab. Transverse travel and longitudinal stroke speed are hydraulically adjustable. The FF is optionally available with a PLC controlled hydraulic valving system that slows the ski down as it approaches the slab edge and cushions the change of direction. The PLC also allows the ski to stop at different locations on each pass across the slab. The support arms of the FF are optionally available with hydraulic lifting cylinders to lift the FF ski out of harm's way when not paving.

OSCILLATING CORRECTING BEAM



The Oscillating Correcting Beam (OCB) is a concrete finishing device that is available on the S1500. When a Dowel Bar Inserter is used, an OCB is required. The OCB oscillates back and forth by a hydraulic motor driven pitman arm and is set at the same grade as the trailing edge of the paving pan. The OCB is supported by two "zero clearance" rollers whose height is manually adjustable. The attack angle of the OCB is also adjustable. The OCB has bolt-on, replaceable sole plates and nose pieces and is supplied with replaceable edge overbuild devices. In general, trailing sideforms are required when an OCB is used. The trailing sideform depth is adjusted for different concrete thicknesses, are easily removed and can be opened and closed for morning starts.



NoLine

STRINGLESS PAVING PREPARATION KIT



The S1500 features G&Z's NoLine: Stringless Paving Preparation Kit. NoLine integrates the use of stringless technology and "direct connects" into the S1500 controls and provides telescopic mounts for the two 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.

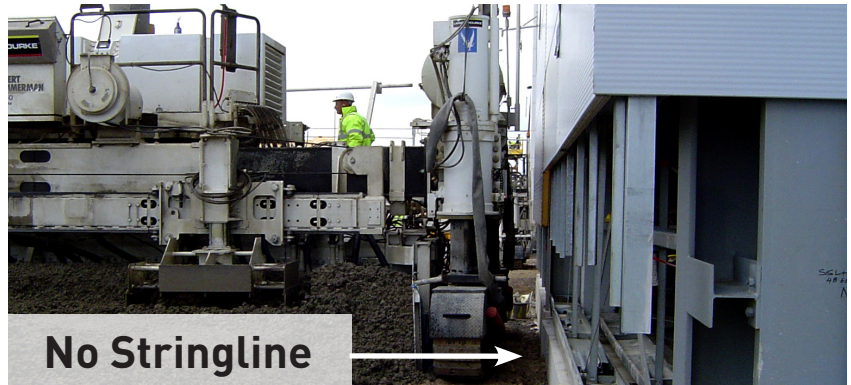


OPERATOR SAFETY AND VISIBILITY



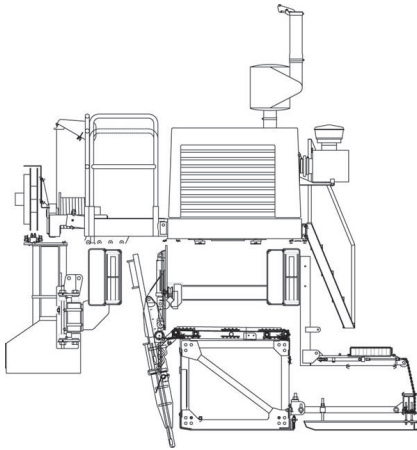
The S1500 features superb operator visibility. The operator can easily see all around the machine including under foot into the concrete liquification hopper. A telescopic front access walkway offers not only safe access but excellent visibility for the operator. The Operator Control Desk is centrally located on the tractor center module to optimize visibility as well. The S1500 is provided with emergency stops on all four corners of the machine with magnetic holders to allow them to be relocated.

TRIPLE CROSS SLOPE CONTROL



As an option, the S1500 can be supplied with G&Z's patented Triple Cross Slope Control System which allows the paver steering and elevation to be controlled with reference to a single stringline located on one side of the paver or without stringline if the paver can take its grade and steering reference off an accurately placed slab. The Cross Slope System also includes automatic "slope transition adjustment" over a pre-programmed distance. The G&Z Triple Cross Slope Control System has been used successfully at widths up to 26 ft. (8 m) depending on the smoothness specification. As a part of the Triple Cross Slope Control System, the contractor gains the Anti-Torsion Control feature which protects the tractor frame from undesirable torsion potentially introduced into the frame when walking over uneven ground. The cross slope sensors located on each bolster maintain the bolsters in the same plane by activating the four S1500 hydraulic jacking columns.

TIE BAR INSERTERS



The Front Tie Bar Inserter (FTBI) is arranged to mount to a tool bar either off the center module of the tractor frame or directly to the front of the frame / slipform pan and inserts the tie bar between the nose of the slipform pan and the tip of the vibrator to its specified depth. The FTBI is provided with a chain feeder magazine and is fed from the rear walkway of the machine.

The Rear Tie Bar Inserter (RTBI) is mounted off a tool bar located on the back of the tractor frame immediately behind the rear of the slipform pan and vibrates the tie bar into the plastic concrete. The RTBI pivots as it inserts the tie bar to reduce the insertion forks disturbance of the plastic concrete. When using the RTBI, the optional Oscillating Correcting Beam must be used to help insure the proper finishing of the concrete slab surface where the bars were inserted. When equipped with an optional chain feeder, up to three TBIs can be fed at the same time by one person.



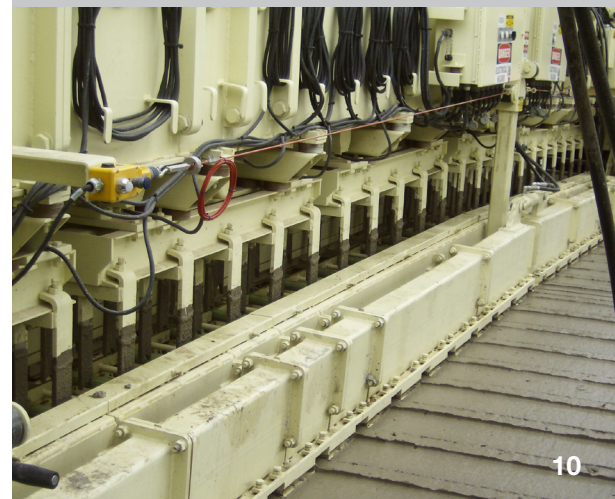
OTHER AVAILABLE OPTIONS

- AC or DC Night Lighting Systems
- Rear Telescopic Aluminum Walkway - Folds up for Transport
- Electric Poker Vibration Systems in lieu of Hydraulic Vibration
- Hydraulic Vibrator Computerized Monitoring System
- High Pressure Wash-Down System
- Canal Paving Kit
- Side Tie Bar Inserter (STBI)
- Dry Lean Base Equipment

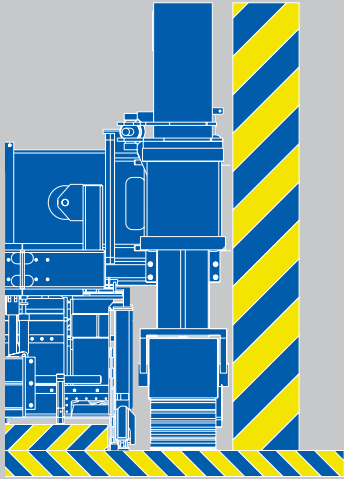
COMPACT DOWEL BAR INSERTER



G&Z is the worldwide leader in DBI technology. The S1500 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 S1500. The highly productive, mobile, and reliable G&Z CDBI is designed to insert dowel bars accurately on the transverse contraction joint, make width changes and transport easily, and achieve smooth rides. G&Z's optional and patented CDBI self loading system eliminates the need for a crane for loading on a trailer. The transport width of the CDBI module is less than 12 ft. (3.5 m). The CDBI can be ordered with several options including an OCB spreader plow and a high production insertion for option (4 forks per bar).



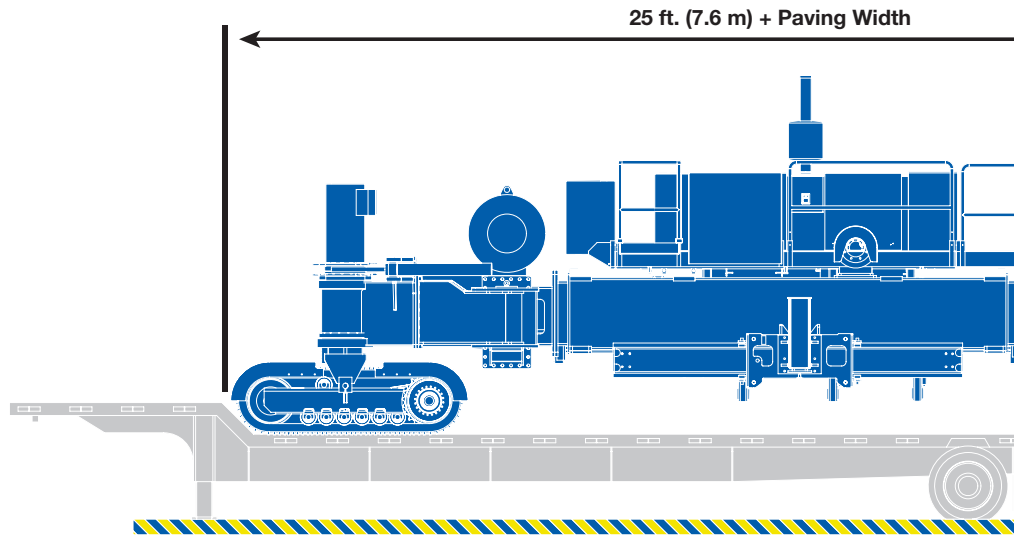
NARROW PROFILE 2'-2" (666 MM) FROM EDGE OF PAVEMENT TO WIDEST POINT ON THE PAVER.



When equipped with G&Z narrow profile D3 size crawler tracks with 16 in. (400 mm) wide grousers, the S1500 has the narrowest profile of any multi-lane paver available on the market. In the standard paving configuration, the distance from edge of pavement to the widest point on the tractor is only 26.25 in. (666 mm) with the sensor support arms removed. When equipped with the larger D4 size crawler tracks, this distance is 27.375 in. (694 mm). This narrow profile design provides contractors with solutions to difficult site paving challenges such as paving through tunnels or between bridge columns where only limited room is available for trackline.

TRANSPORTING THE S1500

With the S1500 Swing Legs, the process for transforming the S1500 from paving configuration into the transport configuration can be done without major disassembly. With the Swing Legs swung out board and the tractor frame telescoped to its narrowest position, the S1500's overall load length can be reduced to approximately 42 ft. (12.86 m) with minimal disassembly. In this transport configuration, the G&Z paving kit is typically dropped for



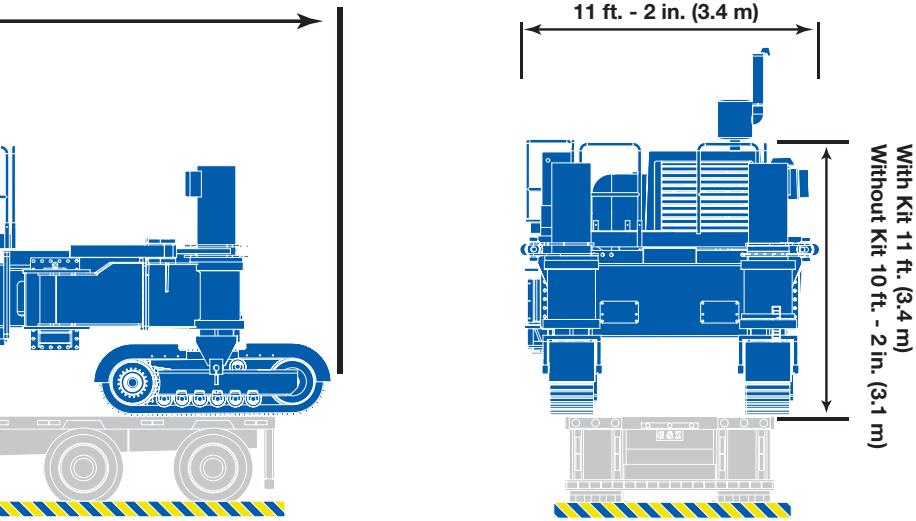
TWO LAYER PAVING

G&Z has the ideal, economic solution to meet your two layer paving needs to achieve a high quality end product at high production rates while reducing construction costs. The bottom layer is placed by a S1500 paver equipped with a Compact Dowel Bar Inserter (CDBI), tie bar inserters and a back pass conveyor to convey the high quality top layer concrete in front of a second, independent top layer S1500 paver. The top layer S1500 paver is available with an assortment of optional finishing devices such as an Oscillating Correcting Beam, Trailing Finishing Pan and/or a Final Finisher. If paving single lift pavement in the future, the parts from the first and





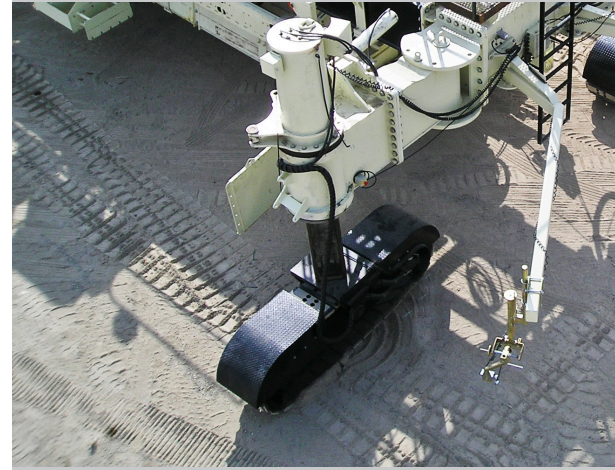
transport to reduce the load weight due to trailer weight limitations. With a special trailer capable of hauling long, heavy loads, the paving kit may be left attached. The S1500 can easily walk and steer onto a standard 8 ft. (2.5 m) wide trailer with a transport width of under 12 ft. (3.5 m). There is no switching of hoses required on the crawler tracks and the crawlers are automatically kept parallel for steering.



second layer S1500 paver can be combined to make up one single layer paver with a DBI. The G&Z S1500 paver with its double telescopic tractor frame, is the ideal paving platform for full width two layer paving up to 50 ft. (15.25 m) because of the tractor's wide telescopic range of 24 ft. (7.31 m) and other assorted rapid width change and self-loading transport options and productivity features such as 90 Degree Steering. When equipped with G&Z TeleEnd: Telescopic Paving Kit End Sections, for width changes of less than 8 ft. (2.5 m) with the TeleEndXL the S1500 can be changed in a matter of a few hours.

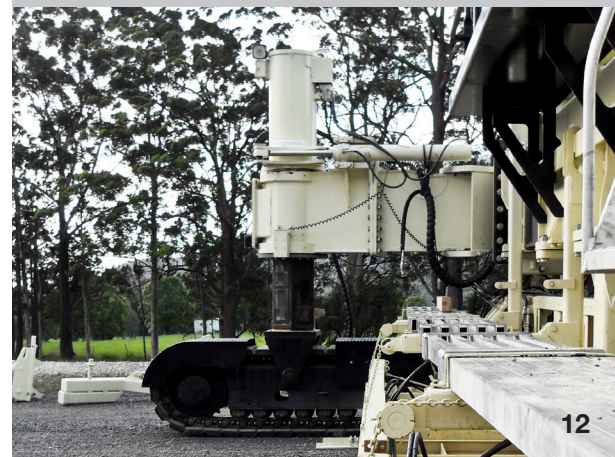


SWING LEGS



G&Z's innovative swing leg / bolster design features a simple positioning pin connection which eliminates the need for multiple turnbuckles to keep the Jacking Columns (leg barrels) vertical and the crawler tracks properly positioned. As an option, hydraulic cylinders may be added to quickly relocate the swing legs into the inboard position for walking across narrow bridges or to pave around obstructions in the trackline. If repining is required the process is simple and can be accomplished in a matter of a few minutes.

The Jacking Columns are designed to ensure that the steering cylinders can be quickly repinned into another position when the swing leg angle is changed significantly. As an option, the jacking columns can be provided with longer stroke steering cylinders and a "double pan handle" steering arm design to allow 90 degree steering mode in all swing leg positions. The Jacking Columns (leg barrels) are provided with a bolted connection to allow additional bolster spacers to match special jobsite needs.





INTERSTATE 25

CASTLE ROCK CONST.
WELLINGTON, COLORADO U.S.A.

Project:

Concrete whitetopping over asphalt road. 38 ft. (11.58 m) wide / 12 to 20 in. (305 mm to 508 mm) thick. Non-skewed transverse joints, random centers. 1.25 in. diameter x 18 in. (32 mm x 457 mm) dowels on transverse joints

Equipment:

S1500 Paver with Dowel Bar Inserter (DBI)



STAVBA D1

DSH
BRNO, CZECH REPUBLIC

Project:

Concrete Two Layer Construction paved at 10.75 m (35.2 ft.) wide with 250 mm (9.8 in.) thick lower layer with dowels on transverse contraction joints and tie bars on longitudinal joint with top layer 75 mm (2.9 in.) thick with high quality aggregate (max. 8 mm dia.) later exposed during the finishing / curing operation

Equipment:

S1500 Paver with Oscillating Correcting Beam, and TeleEnd: Telescopic End Sections.

S1500 APPLICATIONS...



+ INTERSTATE 25
+ PIMA MARICOPA IRRIGATION PROJECT

STAVBA D1 +



PIMA MARICOPA

GRANITE CONSTRUCTION

PHOENIX, ARIZONA U.S.A.

Project:

7 mi. (11.2 km) stretch of concrete lined canal, 10 ft. (3.05 m) bottom width, approx. 10 ft. (3.05 m) deep, 1.5 : 1 Slope.

Equipment:

S1500 Paver with Canal Paving Kit, Water Stop Inserter Jumbo, TC1500 Finishing Bridge with Canal Curing Kit



PACIFIC HIGHWAY

THIESS PTY LTD.

NEW SOUTH WALES, AUSTRALIA

Project:

Base concrete is unreinforced plain concrete with sawn skewed transverse joints at 4.2 m (13.8 ft.) spacing. Single sawn blade longitudinal joint. Subbase paved at 150 mm thick x 10.1 m wide (5.9 in. x 33.1 ft.). Base paved at 150 mm thick x 8.0 m wide (5.9 in. x 26.2 ft.). Pavement texture design for low noise transverse tining. Total length of project is 32.7 km (20.3 mi.) of dual carriageway with concrete shoulders

Equipment:

S1500 Paver, PS1200 Placer Spreader, & TC1500 Texture Cure Machine

...AROUND THE WORLD

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