

Bid Specifications for the Layton D550 Super-Paver or Equal

[The Information enclosed within brackets is for justification and not necessarily part of the specification.
With Layton's policy of continually improving products, specs are subject to change without notice]

1. Tow Type Asphalt Paver

- a. **The towed-type Paver shall be constructed by using high quality components, steel, and manufacturing processes.** *[Reliability and dependability minimize maintenance and costly downtime]*
- b. **The quality of manufacture and dependability of parts and service provided by the manufacturer shall be consideration in then award of this bid.** *[The useful life, operational costs, and maintenance expense, are key factors in determining the true life cycle of the Paver]*
- c. **The Paver shall be capable of laying asphalt from a minimum depth, being determined by the largest size aggregate in the mix, to a maximum of 6" depth.** *[The flexibility of paving depths provides maximum Paver utilization on multiple applications]*
- d. **The Paver shall be capable of paving from 8' to 12' wide and be able to vary width while paving.** *[The variable width allows for various applications and permits paving close to obstructions and around obstacles, which reduces hand labor]*
- e. **The Paver's production capacity shall be a minimum paving speed of 100 feet per minute while laying 2" depth of 300 degree asphaltic concrete at a 12 foot width.** *[This Production capability assures effective use of both men and machines]*

2. Hopper

- a. **The Paver shall have a 3-ton storage hopper.** *[This capacity allows for a sufficient inventory of asphalt or base rock between the truck and the pavement to assure a smooth distribution of material]*
- b. **The Hopper shall be of such a design to allow it to flex.** *[This allows an operator to pave up to 5" deep on one side while paving 0" on the opposite side]*
- c. **The hopper shall be equipped with a shut-off gate operated by a hydraulic cylinder capable of closing the Shut-Off gate with a full hopper of material.** *[There are many times when it is necessary to shut off the flow of asphalt when the Hopper is still full. This feature provides the ability to stop one pass, pick up and move to another location. This makes the tow paver very maneuverable.]*

- d. **The Shut-Off Gate in “Open” position shall have a minimum opening of 12 ½”.** *[This is an increase of 4” over the Model H500B. This opening allows for the smooth flow of material through the paver without restriction by the Auger Shaft and increases productivity. This additional width decreases the chance of material being compacted against the Auger; consequently, bridging and preventing the flow of material to the screed, which could cause skips or voids in the finished mat.]*
- e. **The Shut-Off Gate shall be a coordinated; two piece clamshell design with a minimum ¾” overlap when closed.** *[This type of shut-off decreases the asphalt “dribble” and shuts off the asphalt flow faster because less force is required for closing.]*
- f. **The front of the hopper shall be equipped with 4 Bump Rolls; 2 on each side.** *[These Bump Rolls are for the truck tires to run against while backing up.]*
Each Bump Roll shall have 2 Heavy Duty sealed Ball Bearings (Bronze Bushings are not acceptable).
- g. **The Hopper shall be of sufficient strength to support the total weight of the paver and a full load of asphalt.** *[The D550 Hopper is designed and engineered for this purpose.]*
- h. **The Hopper Wings shall have Handles.** *[This allows the operator to raise and lower the side wings for easier access to material in the hopper.]*
- i. **The Hopper shall be supported on pneumatic rubber tires that are walking-beam mounted to an adjustable undercarriage frame that provides four different height settings.** *[This feature provides the ability to lay deeper lifts of asphalt or base rock.]*

3. Undercarriage

- a. **The Rubber-Tired Undercarriage shall be designed as follows: Two sets of dual tandem pneumatic rubber tires (8 tires), 5.30 x 6 six-ply, mounted in line; two tires in front, and two directly behind, on each side.** *[This allows the operator maximum efficient grade and depth control of the paver.]*
- b. **Each set of tires will be walking-beam mounted with the distance between pivot point and trailing edge of the screed a minimum of 61 ¾”.** *[This allows the paver gradability to compensate for slight deviations in the sub-base, without operator correction. This measurement increases the distance between the truck and the Hopper Back, which minimizes the*

accidental spillage of asphalt over the back of the truck onto the engine compartment.]

- c. **Each set of Rubber Tires shall be mounted in such a manner as to follow directly in the track of the dump truck tires.** *[This allows greater stability and operator control of the Paver while paving in soft or irregular base conditions. Wide track design will minimize problems created by spillage between the truck and paver, which is most common in the center area of the front of the paver. Spillage between the tires does not affect screed control.]*
- d. **Each Tire shall be independently mounted to a walking beam on stub axles, with no external frame work outside the tires.** *[This will reduce the asphalt build-up around the tires; reducing tire wear and making it easier for clean up. Also, it makes it easier to service or change a tire.]*
- e. **The Rubber-Tired Undercarriage shall be designed and constructed in such a manner as to allow the paver to be towed safely and legally at normal traffic speeds, up to 55 mph, while using the optional Tow Bar.**

4. Screed

- a. **The screed shall be designed and constructed to allow the flexibility needed to maintain independent depth control from left to right.**
- b. **The Screed shall be equipped with a bolt-on, reversible Screed Plate.**
- c. **The Screed Plate shall be 3/16” thick and made of a material with a minimum rated 360 Brinell hardness.**
- d. **The Screed Plate shall be heat-treated and abrasion-resistant steel with a tensile strength rated 190,000 P.S.I.** *[The Screed Plate material is extremely important to assure extended life; the screed plate is the main wear item on the Paver.]*

5. Crown and Invert

- a. **The Screed shall be equipped with a Crown and Invert device which can be operated by one ratchet, controlling both the leading and trailing edge adjustment simultaneously.** *[With both the leading and trailing edge crowning or inverting equally and simultaneously, you are assured the screed will maintain proper weight distribution on the trailing edge of the screed.]*
- b. **The screed shall be capable of a crown or inverted crown of up to 3”.**

- c. **The Crown and Invert device shall be mounted on universal joints in such a manner as not to restrict the screed flexibility needed for independent depth control from left to right.**
- d. **The Crown/Invert Assembly shall have a cover of nonskid material which can be used as a step when hooking or unhooking the Screed Hoist.**

6. Screed Hoist

- a. **The Paver shall be equipped with a single hydraulically operated Screed Hoist mechanism, with two cylinders powered by both engine-driven hydraulic systems, which allows the screed to be raised with a full hopper of material. *[The reliability of operations is enhanced with this specification because either one of two separate systems can operate the Screed Hoist.]***

7. Engine-driven Hydraulic System

- a. **The Paver shall be equipped with two 8 ½ horsepower Engines, (one on each side) each of which shall be responsible for powering all hydraulic functions on its respective side. *[Having an Engine on each side distributes the weight uniformly and provides a better quality mat.]***
- b. **The Engines shall be a vertical shaft type. *[Vertical shaft engines transmit less vibration down through the screed than the horizontal shaft types. This will result in better finished mat and cause less settling of the screed into the mat each time the paver is stopped.]***
- c. **Each Vertical shaft Engine shall have three hydraulic pumps. These pumps shall provide hydraulic oil to the auger motor, screed depth control motor, and the screed extension motor. One pump on both Engines shall also charge the high pressure system which provides power for the hitch arms, shut-off gate, and screed hoist. *[These separate sets of hydraulic pumps assure a dependable and efficient use of each Engine.]***
- d. **The Hydraulic Pumps shall provide cross-over oil for limited operation of the entire system with either engine shut off.**
- e. **The Engines shall be equipped with and electric starter, alternator, hand recoil starter, and cast iron cylinder liner. *[The engines can be started manually if necessary. The alternators also keep the battery charged for future starting.]***

8. Fuel System

- a. **The Fuel System shall be propane only – and not gasoline.** *[Gasoline shall not be used since spillage down into the screed area could ignite when the heaters are being used. Gasoline spilled onto the mat will destroy the asphalt. Propane provides a safer, cleaner environment and also increases the engine life.]*
- b. **There shall be separate 5-gallon tanks for each engine.** *[This minimizes the remote chance that both engines would run out of fuel at the same time.]*
- c. **The Fuel System (two 5-gallon propane tanks) used for fueling the engines shall also be connected so the optional screed heater can use the same tanks.** *[This provides the D550 with one common fuel system.]*
- d. **Both tanks shall be easily accessible and easy to replace.**
- e. **There shall be an Excess Flow Check valve installed directly into the Propane Tank.** *[This is a safety consideration.]*

9. Controls (High Pressure)- Hitch Arms, Shut-Off Gate, and Screed Hoist.

- a. **The Hitch Arms, Shut-Off Gate, and Screed Hoist, shall each be controlled by a separate 3-position, positive lock center, rotary valve. This bank of 3-valves shall be mounted in a vertical position at the left hand operators station.** *[The controls are conveniently mounted for activation by the primary operator; on the left side of the paver where communication with the truck drive is necessary.]*

10. Controls (Low Pressure)-Auger, Depth, and Width

- a. **Each side of the Paver shall be equipped with a single control lever (joy stick) which shall electrically activate the hydraulic valves that power the screed depth control motors, screed extension motors, and auger motors.** *[This control is natural and easy to learn; one man can operate either side of the Paver without any confusion.]* **Operation of the joy stick shall be as follows:**

1. **Lift the joy stick straight up and the screed moves up. Push the joy stick down and the screed goes down.**
2. **Move the joy stick outward and the screed extension moves out. Move the joystick inward and the screed extension moves in.**

- 3. Twist the joy stick to the left and the left auger flight operates. Twist the joystick to the right and the right auger flight operates.**
- b. Any combination of depth, width, and auger shall be available and can be operated at one time. For example: down and left activates the down depth and left extension; by twisting the handle at the same time, the left auger is activated. *[This feature makes the operator very proficient; consequently, more productive.]***
- c. The angle of the joy stick fixture shall be adjustable for easy and comfortable access. *[This fixture can be easily adjusted for comfort and better visibility.]***
- d. A Horn shall be provided for signaling between paver operators, and between operator and truck driver. There shall be a push button horn switch on each joy stick control handle. *[This allows the operator to signal the truck driver from either side of the Paver.]***
- e. Each side of the Paver shall have electric toggle switches which will activate power to the opposite side screed extension “in” and “out” control, and to the screed depth “up” and “down” control. *[This feature makes the D550 a one-man operation, if necessary. Not only can one man operate the hitch arms, screed hoist, shut-off gate, left depth, left extension, left and right auger from the primary left position, but he can also operate the right depth and right extension at full speed.]***
- f. There shall be a Depth Indicator Guage on both sides of each depth screw. *[This provides visibility from either side of the Paver.]***

11. Augers

- a. The Paver shall be equipped with two independently enclosed, chain-driven Augers; which, as a unit are pivot-mounted from rear gate linkage and powered by hydraulic motors. The Drive Chains shall be double row #50 Roller Chain. *[This Auger drive is a proven design for long life and minimum maintenance. This provides for better movement at low hopper levels of material and also eliminates the possibility of bridging the material over the throat when the gate is closed.]***
- b. Each Auger shall be independently controlled by and electric rotary switch located in both joy sticks. *[Both Augers can be controlled from either side of the Paver.]***

- c. **Auger Flights shall be abrasive-resistant Cast Chrome Alloy Iron with a thickness of 3/8", be a minimum of 20" long, and shall be 9" in diameter with a 9" pitch.** *[The Model D550 has Augers that do not need hard surfacing. The Chrome Alloy has a minimum life of four times that of hard-faced steel.]*
- d. **The Augers shall have coordinated diameter and RPM to provide sufficient movement of material to the sides of the Hopper to feed the Extensions.** *[The Augers on the Model D550 turn at 100 RPM and, with a 9" diameter auger flight, each auger is capable of moving 1988 cubic feet of material per hour.]*
- e. **The Auger Chain Housing shall be fabricated with sufficient strength and endurance to also serve as a Tailgate Stop.** *[The Tailgate Stop is necessary to stop the tailgate of a truck when it swings open. This helps keep the asphalt flowing directly into the hopper.]*
- f. **Hydraulic Motors shall be mounted in a protective position, away from heat of the asphalt or Screed Heaters.**
- g. **The Auger unit in operating position (gate open) shall be mounted in line with the center of the Hopper side port openings.** *[This allows for movement of asphalt directly into the screed extensions.]*
- h. **The Augers shall be mounted so the maximum height of the lowest portion of the Auger Flight is 6" above the bottom of the Screed, which will provide material movement even when the Hopper is nearly empty.** *[Asphalt will flow normally without Augers when the Hopper is full. It is when the Hopper is nearly empty that the Augers are really needed. If they are not positioned deep enough, there is no need for them.]*
- i. **The Auger Flights shall be mounted on a high quality 2 1/2" diameter alloy steel shaft supported by two bearings at a point 21" from the end of the Auger Flight.** *[This type of mounting eliminates the need for an outboard bearing (hanger bearing) which would be a restriction to material flow and also take more horsepower. This design provides longer life and better reliability.]*
- j. **The addition of the Augers and Auger Drive Mechanism shall not decrease the tow-ability of the Paver, using the optional Tow Bar.** *[The D550 is easily towable with the same concept used on the Models F525 and H500B. The Augers and Auger Drive do not restrict the application of the Tow Bar design.]*

12. Heavy Duty Hitch Arms (Standard on the D550)

- a. **The Paver shall be equipped with Hydraulically Operated Hitch Arms (hookup arms) that insert rim rollers into the truck wheels.**
- b. **These Hitch Arms shall be Heavy Duty made of Alloy Steel.** *[This gives added strength necessary because of the additional weight.]*
- c. **These Hitch Arms shall have Side rollers that roll against the side face of the tires.** *[This eliminates rubbing on the sides of the truck tires and increases the life of the Hitch Arms and the Tires]*
- d. **These Hitch Arms shall have roller bearings in the rim rolls and roller thrust bearings in the side rolls.** *[This feature provides longer life for the Hitch Arms.]*
- e. **The Hitch Arms shall be manufactured in such a manner that the arm can be disassembled for maintenance and bearing replacement, as required.** *[Since there is a lot of movement and contact in this area, maintenance should be made easy.]*

13. Adjustable Hitch Arms (Optional in lieu of Heavy Duty Arms)

- a. **The Adjustable Hitch arms can be adjusted in 3” increments; from standard to a maximum additional length of 6”, 9”, or 15 ¾”.** (Please specify your preference.)
- b. **The Adjustable Hitch Arms shall be designed in a way as to allow trucks to hook up to the Paver, dump, and pave without the removal of any low hanging, truck mounted hitches or towing devices.**
- c. **The Adjustable Hitch Arm shall be made of Alloy Steel.** *[This increases the strength of the Hitch Arms.]*
- d. **The Adjustable Hitch Arms shall have bronze bushings in the Rim Rolls and Side Rollers.**
- e. **The Hitch Arm shall be manufactured in such a manner that the arm can be disassembled for maintenance and bushing replacement, as required.**
- f. **The Rim Roll and Side Roll shall adjust together, as an assembly.** *[This will insure proper positioning of the side to the truck tire.]*

14. Screed Heater (Optional)

- a. **The Paver shall be equipped with a Screed Heater fueled by propane.** *[This provides a better quality mat when first starting paving operation.]*
- b. **The Heated Screed shall have two Burners externally mounted and that swings away for lighting.** *[This feature is for safety]*
- c. **The Burners shall be placed in such a fashion that igniting takes place outside of the Screed.** *[This reduces the possibility of combustion of explosive gases within the Screed compartment itself.]*
- d. **The heated gases shall be fed through a heat conductor into two separate pipes which will allow both the leading and trailing edge of the Screed to be heated evenly.** *[This assures even distribution of heat.]*
- e. **The Screed Heat system shall be connected to both 5-gallon Propane Tanks that also fuel the engines.** *[This provides a common source of fuel for heater and engines.]*
- f. **The Propane Tank shall be equipped with an adjustable Pressure Regulator and with a Pressure Gauge.** *[This allows the operator to monitor and control the pressure to the heater. The Screed Heater saves about 8-10 minutes per start up by the pre-heating. With these savings, the Screed Heater will soon pay for itself.]*

15. Ditch Plates (Optional)

- a. **The paver shall be equipped with a set of Plates which can be affixed to the Screed Extensions in such a fashion as to restrict the flow of material and allow the paver to pave areas less than 8' in width...to a minimum 2'.** *[This feature makes ditch or trench paving profitable.]*
- b. **These plates shall be affixed in such a manner as to allow variable width adjustment while on the move.** *[A Paver with Ditch Plates consistently lays 3-4 times the material in the same time on a job requiring asphalt pavement less than 8' wide.]*
- c. **Installation of the Ditch Plates shall not restrict or reduce the use of the Shut-Off Gate.**

16. Joint-Matching Extension Plates, 1' Each Side. (Optional)

- a. **The Paver shall be equipped with Joint-Matching Extension Plates.** *[This feature performs like an iron between adjacent mats and minimizes hand work and will provide 10' of screeded surface.]*

- b. **This accessory consists of two plates, each 1' wide, which are attached (one on each side) to the Screed Frame, each mounted with two bolts.** *[This allows quick installation and removal of the Plates.]*
- c. **These Plates shall also be designed in such a manner as to allow vertical adjustment to compensate for Screed wear and alignment.** *[This is to insure an even quality joint.]*
- d. **These Joint-Matching Extension Plates shall be equipped with a heating device with externally-igniting burners that eliminate the possibility of the combustion of explosive gases which could accumulate within the Joint-Matching Extension Plate itself.** *[This makes the Screed and Extension Plates an even temperature and consequently results in a better quality job. Joint-Matching Extension Plates reduce the need of raking a seam (or joint) between two asphalt paving passes. This allows the Paver to move along without the delay of waiting for the raker to catch up. This increased paving speed allows faster emptying of the dump truck which reduces truck waiting time and expense. The Joint-Matching Extension Plates could possibly eliminate the need for one laborer on the job. The raker would have time to do some of the laborer's duties.]*

17. Joint-Matching Extension Plates, 2' Each Side. (Optional)

- a. **The Paver shall be equipped with Joint-Matching Extension Plates.**
- b. **The accessory consist of two Plates, each 2' wide, and are to be attached (one on each side) to the Screed Frame, each mounted with two bolts and an adjustable, diagonal strut which will support the additional widths.** *[This feature performs like an iron between adjacent mats and minimizes hand work, and will provide 12' of screeded surface.]*
- c. **These Plates shall be designed in such a manner as to allow vertical adjustment to compensate for Screed wear and alignment.** *[This is to insure an even quality joint.]*
- d. **These Joint-Matching Extension Plates shall be equipped with a heating device with externally-igniting burners that eliminate the possibility of the combustion of explosive gases which could accumulate within the Joint-Matching Extension Plate itself.**

18. Tow Bar (Optional)

- a. **The Paver shall be equipped with a Tow Bar designed and constructed in such a manner as to allow rapid hookup and safety for towing the paver from job to job.** *[Fast hookup saves time and money.]*

When a Paver is transported on the back of a dump truck some payload of material must be reduced to stay within legal load limits. By towing the paver with a Tow Bar this loss is minimized; savings are substantial over a period of time. By towing the paver with a pickup it arrives at the job earlier and is ready to go when the dump trucks arrive, thereby reducing the waiting time and expense. Also, there is no loss of payload with the dump trucks.]

- b. **The Tow Bar shall be equipped with stop, turn, and tail lights of such design as to meet all state highway regulations.** *[Safe and legal operation is a must.]*
- c. **The Tow Bar shall come equipped with both a Pintle Eye and a 2” Ball hitch.** *[This provides flexibility and adaptability to different types of vehicles.]*

19. Automatic Grade Control (Optional Single Side)

- a. **The Paver shall be equipped with an Automatic Grade Control System for control of one (either) side of the Paver. This system shall maintain a positive relationship between the surface of the mat being laid and pre-determined reference point.**
- b. **Permanent wiring shall be installed on both sides to allow rapid and simple set up on either side of the Paver.**
- c. **The controller shall be mounted to the screed extension end plate using a 65# pull magnet.**
- d. **The Automatic Grade Control shall include the following:**
 - 1 each Controller and Mount Assembly.**
 - 1 each Short Ski.**
 - 1 each Break-away String Line Follower.**
 - 1 each Traveling String Line (7’ Long) which clamps to the screed extension end plate.**
 - 1 each Relay Assembly.**
 - 1 each Remote Set Point (for making compensating adjustments)**
 - 2 each Wiring Harness with disconnect switch (one installed on each side of the paver.)**

20. Automatic Grade Control (Optional Dual)

- a. **The paver shall be equipped with an Automatic Grade Control System for independent control of both sides of the Paver. This system shall maintain a positive relationship between the surface of the mat being laid and the pre-determined reference points.**
- b. **Permanent wiring shall be installed on both sides of the paver which will allow rapid and simple set up on either side of the Paver.**
- c. **The Controllers shall each mount to the Screed Extension end plates using a 65# pull magnet.**
- d. **The Automatic Grade Control shall include the following:**
 - 2 each Controller and Mount Assembly**
 - 2 each Short Ski.**
 - 2 each Break-away String Line Follower.**
 - 2 each Traveling String Line (7' Long) which clamps to the screed extension end plate.**
 - 2 each Relay Assembly.**
 - 2 each Remote Set Point (for making compensating adjustments).**
 - 2 each Wiring Harness with disconnect switch (one installed on each side of the Paver).**

21. Standard Equipment

- a. **The Paver shall be equipped with a 12" Catwalk, Screed Covers, 3 Gate Hooks, Hinged Spill Plate, and a Crown and Invert Gauge.**

22. Parts and Service

- a. **Local Parts and Service availability shall be a major consideration in the award of this bid. *[This will minimize expensive downtime.]***

23. Warranty

- a. **The Paver shall carry a Warranty of twelve (12) months from date of purchase by the original purchaser. The Warranty shall cover all defective parts and workmanship (including engines), with the exception of certain wear items such as tires, battery, filters, hydraulic oil, etc. (For more detailed information, ask for a copy of the written warranty.) *[This Warranty demonstrates our faith in the Quality and Reliability of the LAYTON paver.]***
- b. **The Sales Company Warranty alone shall be unacceptable.**

24. Brochure

- a. **The unit being quoted must be a current production model (no Proto-Type), and a brochure describing all specified features must be included with bid.**