



Cold-In-Place-Recycling **CIR Equipment**



COLD-IN-PLACE RECYCLE TRAILER

- 500 TPH (453 MTPH)
- KPI Model 50-488 Pugmill
- Telsmith Crusher Impactor 3048 HSI
- JCI 5142-24 "LP" Screen

RX-900 W/ CIR ADDITIVE SYSTEM



Roadtec — An Astec Industries Company

Roadtec, Inc. is proud to be a part of the family of companies that make up Astec Industries, Inc. Founded in 1972, Astec Industries has grown to become America's leading manufacturer of equipment for asphalt road building, aggregate processing, oil, gas and water well drilling and wood processing. Roadtec continues to be an industry leader together with Astec Industries, by applying Astec's model of creative thinking bolstered by a corporate culture renowned for putting customer service first.



THE ROADTEC DIFFERENCE: DELIVERING QUALITY AND INNOVATION WITH SUPERIOR CUSTOMER SERVICE

Dependability

Roadtec has been manufacturing innovative, heavy-highway equipment since 1981. We continue to grow and add new products, yet our personal connection to our customers and our ability to respond immediately to your needs is even stronger.

Customer Service

Our customers benefit from our strong focus on customer support after the sale. Field service technicians live in the regions where they work, and respond quickly. 24/7 parts support will get you the right parts fast, and at a fair price. Our product specialists will train your team on any newly purchased machine. We also offer industry-leading training at our state-of-the-art training facility and in the field.

Count on Roadtec Equipment

We don't build roads. We make the equipment so you can cost-effectively build and maintain the world's roads. With the Roadtec heavy-duty design, we are able to keep your machine working longer while lowering maintenance and operating costs. We make your operators more comfortable and confident with our user-friendly design and our customization for special projects.



A COST EFFECTIVE AND VIABLE SOLUTION FOR RECONSTRUCTING DAMAGED ROAD SURFACES

Cold-In-Place-Recycling: Cost-Effective & Environment-Friendly

Roadtec cold-in-place recycling (CIR) equipment makes it possible to repair damage to a roadway in one single pass, while reusing up to 100% of the existing material. Savings potential is tremendous, not only through re-use of material, but also through reduction of equipment requirements. CIR technology allows making of mix directly at the job site. No haul trucks are traveling back and forth to the asphalt plant; very little virgin material, if any, is used; and you can open the road to traffic very quickly.

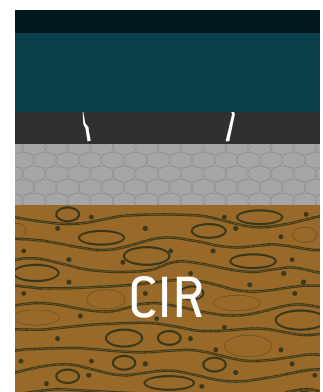
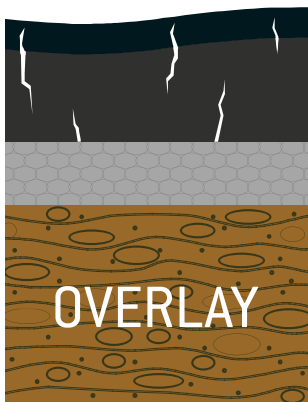
CIR is the Future of Road Rehabilitation

Roadtec has been developing and refining this technology over many years and offers a number of equipment configurations to help you meet your goals. The basic concept of CIR is to remove damaged layers, to process the removed material, and then place it and compact it to make the new structure. A new surface course can then be applied.



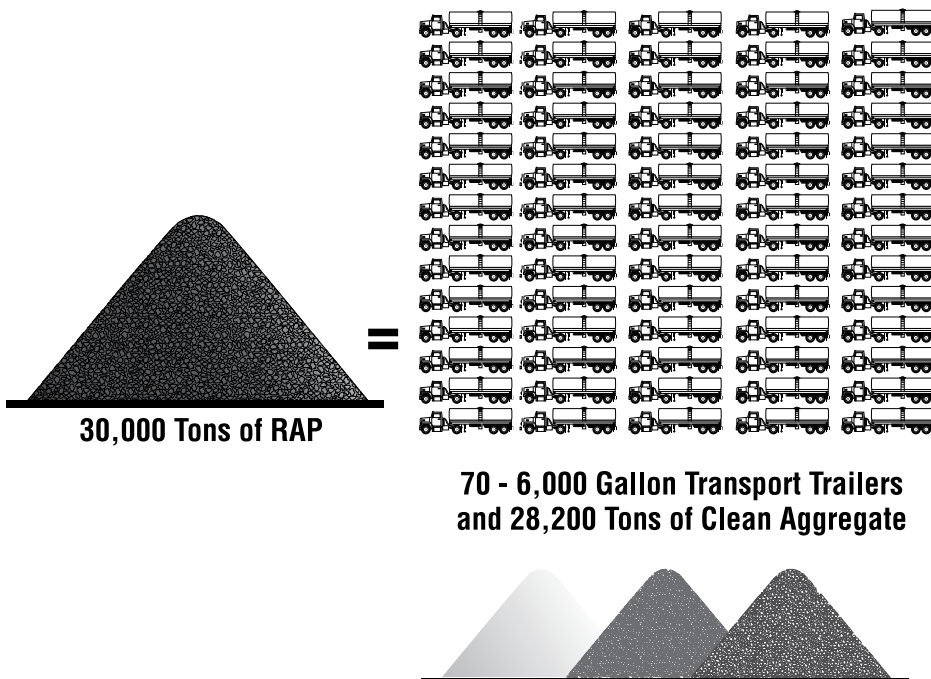
The Most Effective Crack Barrier

Temporary road repair methods such as applying a new overlay or milling the road improve ruts and cracks, but over time cracks will migrate through. CIR is more effective and long term. Since CIR has relatively high air void content it acts as a crack barrier, and cracks don't transfer through.





RECYCLED ASPHALT PAVEMENT SAVES YOU TIME AND RESOURCES



COST FACTORS

- Time
- Hauling
- Materials
- Labor
- Fuel
- Energy

ADDRESS ALL TYPES OF PAVEMENT DAMAGE ECONOMICALLY

Fix It Fast. Fix It Now.

CIR can repair all kinds of cracking including fatigue cracking block cracking, joint reflective cracking, longitudinal cracking, slippage cracking, and transverse (thermal) cracking. It also repairs bleeding of excess liquid asphalt, corrugation and shoving, patching, polished aggregate, potholes, raveling, rutting, and stripping. The root cause of the pavement failure should always be investigated to rule out base failure. Other determining factors include traffic volume and the loads the roadway should support. CIR has been used successfully high-volume roads, but may require a thicker overlay.

Effective Treatment

If a road has good structural strength, then CIR can be an effective treatment for all types of cracking, ruts and holes in the asphalt layer. It is not necessary to remove all of the existing asphalt. Usually the treatment is applied to a depth of 2 - 4 inches (5 - 10 cm). Only a thin overlay or chip seal is required as a wearing course for most projects.

When is CIR the Best Way to Go?

If there's no damage to the base, you can consider CIR. All types of surface cracking and distress can be fixed. Grade and slope of the pavement can be improved if the depth of treatment is sufficient. Ride quality will also be improved. CIR is much more economical than mill-and-fill. Generally, CIR costs 50% less than the same thickness of hot mix and provides 80% the strength.





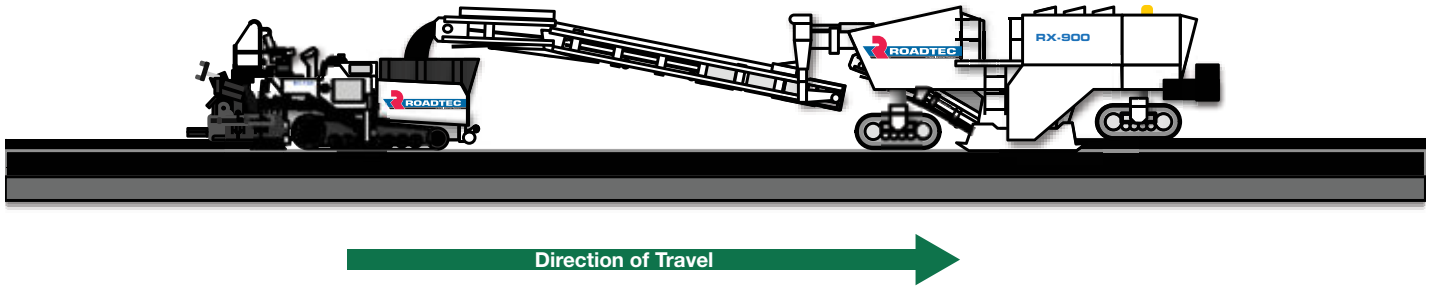
THE POWERFUL AND HEAVY-DUTY RX-900 CIR IS THE MACHINE TO OWN FOR COLD-IN-PLACE RECYCLING OF ASPHALT

The RX-900 CIR is Heavy Duty & User Friendly

The Roadtec RX-900 CIR unit is used for cold-in-place recycling of asphalt surfaces at depths up to 14" (356 mm) and widths between 7' 2" (2.2 m) and 12' 6" (3.8 m). The RX-900 CIR is a modified asphalt milling machine equipped for bidirectional operation with an additive system mounted to the rear of the machine. The machine can also be used for traditional milling at depths up to 14" (356 mm). Like all Roadtec milling machines, this model features a 120° front load out conveyor swing. For the CIR application, the machine is used in reverse, and the conveyor transfers the recycled asphalt mix directly to a paver. The recycled material can also be left in a windrow behind the machine. A push bar assembly is mounted to the RX-900 CIR unit in order to pull an emulsion or liquid asphalt tanker while in operation.

SPECIAL APPLICATIONS AND OPTIONS FOR HANDLING MATERIAL

The CIR package includes the asphalt pump, blending computer, cutter housing spray bar and towing/pushing hardware installed at the rear of the machine.



Bidirectional Operation

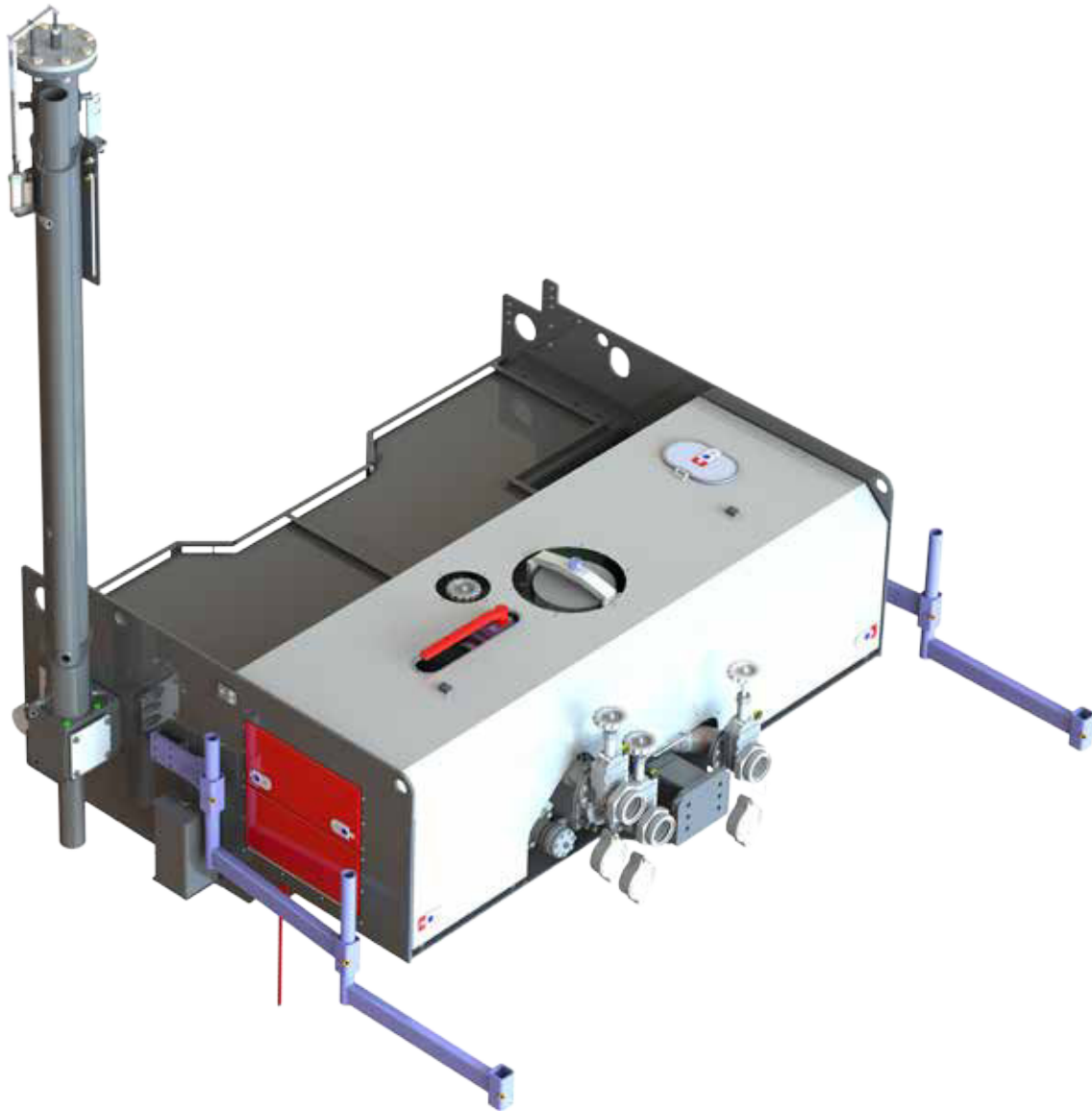
The RX-900 CIR can be operated in either traditional forward direction or in reverse. While operating in reverse, the cutter drum is down cutting, which provides better sizing of the aggregate before blending with the selected additive.

Choices in Handling Material

Whether you're adding emulsion, foamed asphalt, or simply pulverizing, you'll want to spread the material in the cut to be compacted for the new surface. With Roadtec cold planers you can:

- Feed the material into a paver via the secondary conveyor.
- Temporarily remove the secondary conveyor and allow the primary conveyor to deposit the material into a windrow.
- Turn both conveyors off and adjust the height of the rear mold board, letting material exit out the back of the cutter housing. A chute can be installed at the rear mold board to form the windrow.





THE RX-900 CIR SKID MOUNTED ADDITIVE PACKAGE ALLOWS FOR ACCURATE INJECTION, MIXING, BLENDING OF BINDERS

CIR Additive System

The system is used to transfer, measure, and inject either emulsion or foamed asphalt bitumen to the cutter housing of the milling machine. The additive is then thoroughly blended with the milled material and transferred for paving. The additive system flow capacity is 130 gallons/minute. The system includes an automated flush system, electric spray valve system, and a temperature compensated gear meter for increased accuracy on additive injection.

Additive Spray Bar

Additive spray bar equipped with electronic spray valves with switches to verify each valve is open. This configuration is more convenient to troubleshoot the spray circuit.



Additive Control Computer

The computer and controls on the CIR package are located in one easy to operate panel. You can control and meter up to three additives which could include asphalt (either in emulsion or foam), water, and a slurry if needed. There are also controls for the automated flush system to flush the entire additive system with a release agent to ensure proper daily operation. The operator must input values for width, depth, and unit weight of the material in place. The computer measures the speed of the machine and adjusts the additive flowrates as necessary.

Solvent/Release Agent Tank

An onboard release agent tank with drain allows you to easily flush the additive system at the end of a shift so all transfer lines and spray nozzles are conditioned for another work day. The solvent tank is in place to circulate fluid through the system and remove residue created by the CIR process.

Optional Foam System

The foam system includes asphalt pump, diesel burner, hot oil heat system, auto flush system, blending computer, asphalt meter, water meter, piping, heated foam spray bar, and tow hitch. It can be also used to inject emulsion with proper cleaning.



A LARGE PLATFORM WITH INTUITIVE CONTROLS AND OPERATOR FRIENDLY ENGINEERING MAKES THE RX-900 CIR EASY TO USE

Safe & Functional Platform

The operator platform is conveniently accessed from the right or the left side. Two control stations allow machine operation from either side.

Controls

Simplified controls allow for easy operation of the machine from either side of the platform. With multifunction joysticks and accessible controls, operating the machine is much easier. The controls are designed to be operated with one hand to allow for truck signaling.



Bi-Directional Controls

A removable and repositionable control box, mounted on the back of the operator's platform, provides the ability to easily operate the machine in reverse.

Operator Seats & Canopy

Operator seats and a hydraulically folding canopy are optional items for the RX-900. Foldable seats placed at each side of the operator platform add increased comfort while maintaining a spacious work area.



THE ROADTEC TRAIN: PROVEN COST SAVINGS & EFFICIENCY

Advantages of the Roadtec Train Concept

As government agencies recognize the proven cost savings of CIR technology they are adopting the technology and creating CIR specifications for road builders to meet. With its on-board screen, crusher, weigh bridge, and computerized metering of additives, the RT-500 cold recycler gives contractors unprecedented control of the characteristics of the modified recycled asphalt product they produce. The Roadtec recycling train is capable of processing 500 tons of material per hour. Conveyors are outfitted with cleated belts for maximum production. A water spray system prevents dust buildup on rollers, and the conveyors are covered for safety and to prevent roll-off.

The RT-500: Screening & Crushing

The RT-500's JCI brand double deck screen receives the reclaimed material from the RX-900 conveyor. Any oversized material goes through a Telsmith 3048 impact crusher and back to the screen via a two-conveyor return circuit.

Mixing & Blending

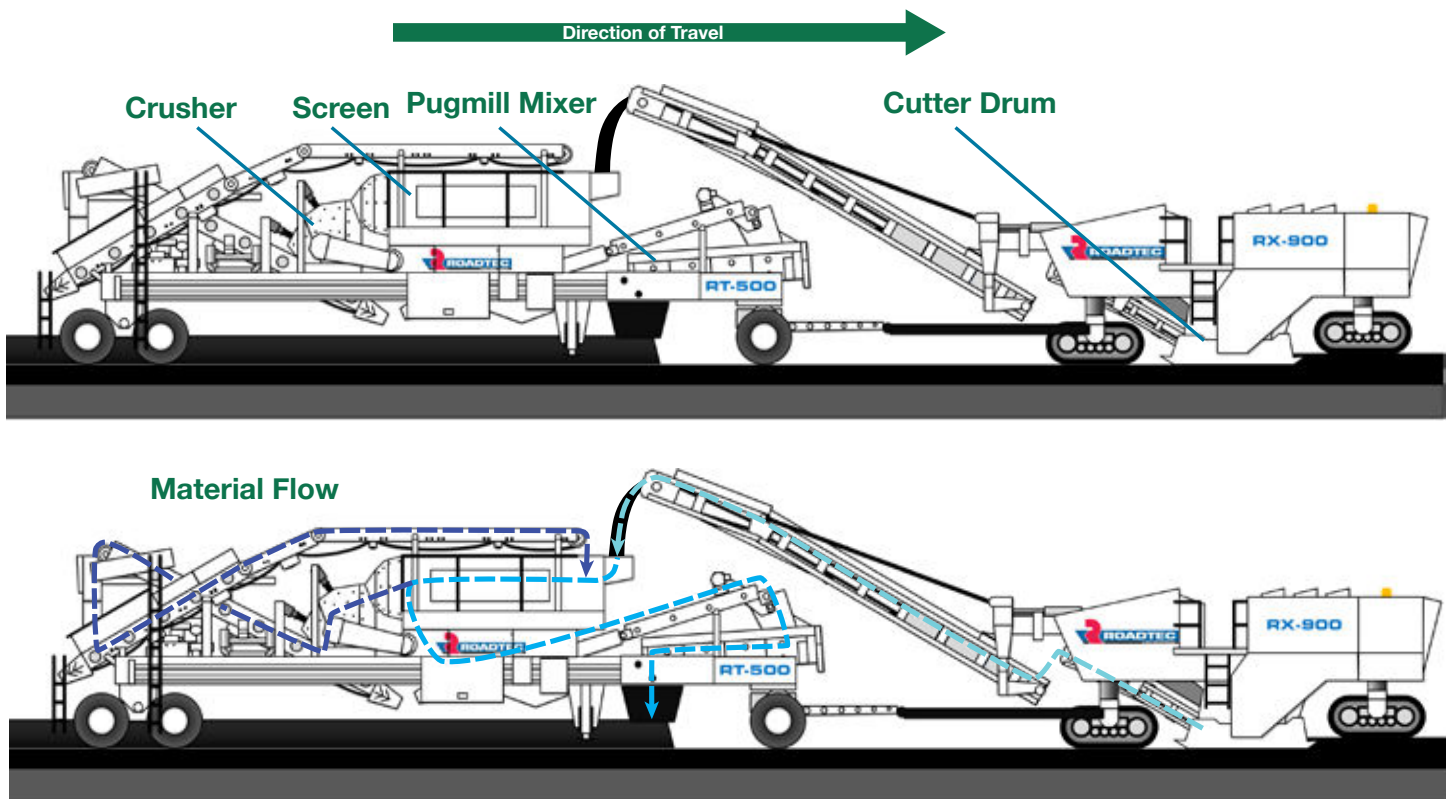
Material that passes the screen drops onto a weigh belt. The belt's electronic scale, accurate to +/- 1%, communicates with the blending computer, which in turn adjusts the flow of additives that go into the JCI/KPI Model 52 pugmill mixer. This twin shaft mixer has a capacity of 500 tons per hour. After a thorough mixing in the pugmill the material is discharged in a windrow onto the roadway or conveyed directly into a paver. The whole RT-500 system is run by electric motors powered by a Caterpillar C-9 generator set.

The RX-900 Cold Planer Provides the Material and the Power

The Roadtec 950 horsepower RX-900 cold planer is the recycling train's sole source of propulsion. It tows the RT-500 cold recycler as well as any additive tankers connected the train. Even the replenishing tankers that hook to the train to pump off their product are pushed or pulled by the powerful RX-900. Replenishing tankers are attached to the train just long enough to pump off their products and then go to a staging area where they are refilled to return to the train.



A Roadtec recycling train consists of tanker trucks, an RX-700 cold planer, the RT-500 cold recycler, pavers and compaction rollers. Treated material is fed either directly into a paver or discharged into a windrow.





ON-SITE MATERIAL RECYCLING AND MIXING PROVIDES EXCELLENT CONTROL OVER THE RECYCLED PRODUCT

Sorting Recycled Material by Size

After the RX-900 cold planer has milled up the damaged, old pavement layer, it feeds this material into the entry chute of the RT-500. From there the reclaimed material moves onto the double deck screen. The screen is a 5' x 14' (152 cm x 427 cm) low profile flat screen with fully adjustable amplitude and frequency, and can handle all kinds of materials. Thanks to rubber springs and mounting donuts, operation is smooth and quiet. Material of proper size is allowed to pass through and any oversize material will be routed to the HSI Crusher and then recirculated to the top deck of the screen. All reclaimed material ends up in the twin shaft pugmill mixer.

Crusher Processes Oversized Material

Expect maximum wear life from the 3048 HSI Crusher with its heavy-duty main shaft and bearings. Four rows of massive hammer bars are part of the patented hammer and wedge design used in the crusher. Thick AR400 liners serve as wear protection in the crusher. There's a hydraulic access door for easy maintenance. The shaft and rotor assembly can be removed without press fits or keys, making the shaft easy to remove from the rotor.

SORTING AND SIZING RECYCLED MATERIALS

1. Sort: The JCI-KPI double deck screen separates reclaimed material by size.
2. Size: The heavy-duty HSI Crusher reduces oversize material to the proper size.

1



2



Making the New Mix

Material passing the screen moves on to the 48" (138 cm) diameter twin shaft pugmill mixer. The distance from paddle tip to the wall of the mixing chamber is adjustable, and paddle tips can be rotated up to 90° for longer dwell times in the mixer. Select from six paddle positions. Paddles are heavy duty and clad with wear resistant ni-hard. The pugmill mixer thoroughly mixes the sized material with emulsion and other additives. The finished mix is either discharged into a windrow or conveyed straight into the paver hopper.

Precise Metering of Additives

The computer-controlled additive system meters up to three additives. These are usually emulsion or foamed liquid asphalt cement, slurry and water. After you've entered your desired percentage of additives depending upon the mix formula, the computer adds the correct amount of liquid to the aggregate in the pugmill mixer. Data flows from the extremely accurate ($\pm 1\%$) belt scale (located between the screen and the pugmill mixer) to the emulsion metering system, assuring that the amount of additives is correct for the amount of aggregate at all times. Spray and return valve operation is also fully computer-controlled.

FEATURES AND OPTIONS DESIGNED FOR VERSITILITY



Accurate Reporting

The RT-500 computer will log all production data at desired intervals. The data then can be downloaded for a complete history report, which includes rates of all materials used, date, time, distance (or station), and speed. Data can be shown in either metric or English units.

Integral System Purge

The emulsion system includes strainers and a positive clean-out feature for easy flushing. A solvent tank is attached to the machine and allows easy clean up at the end of the workday. Emulsion residue is removed from all hoses and spray nozzles by simply circulating the cleaning fluid through the system.

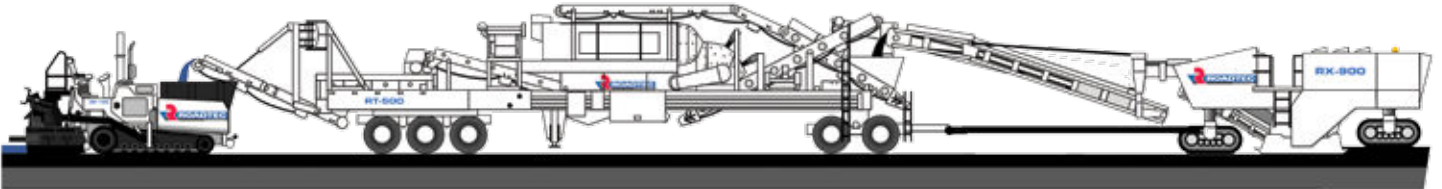
Choose Paver-Loading or Windrow Equipment

Depending upon your needs, you can select the RT-500 with various options, including a choice between paver-loading and windrow models. The capacity of both machines is the same, yet shipping dimensions and weight are lower with the dual axle windrow version.

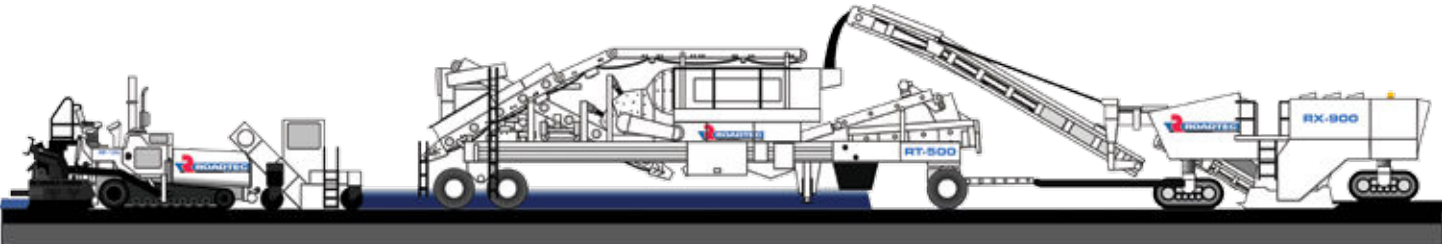




Conveyor discharges directly into the paver



Windrow discharge uses a windrow pick-up machine to load the paver



SPECIFICATIONS

RX-900 W/ CIR ADDITIVE SYSTEM

CIR ADDITIVE SYSTEM

- 130 gpm product flow
- 200 gallon surge tank (optional)
- Temperature compensated gear meter
- Electric spray valve system
- Integrated pump/Meter Package
- Automated flush system
- Asphalt density measurement (optional)
- Electric/Hot-Oil heat system on the foamed asphalt system
- Guardian® compatible
- Foam water injection system monitors water flow at each nozzle
- Can be removed for conventional milling
- Tanker to tanker transfer system capable of totalizing

RX-900 W/ RT-500 CIR TRAILER

500 TPH (453 MTPH) COLD IN PLACE RECYCLE TRAILER

- Single trailer unit - high portability
- Designed to be pulled by RX-900 milling machine or to be used in as a stationary mixing plant
- Tow dolly for use during operation
- Capacity = 500 tons per hour (453 metric tons per hour)
- Hydraulic powered landing gear for stationary applications
- Electric switch gear with lighted and sealed buttons, circuit breakers, overload protection, master stop, and interlocks
- Optional voltages, hertz, emission standards, 225kW to 320 kW
- Wide spread axles for stability and flotation with spring brakes
- Axle is raised in center on windrow unit to clear windrow

CONVEYORS

- Cleated belts for maximum production
- Skirted for safety and to prevent roll-off
- Lagged head pulleys for non-slip traction
- Water sprays to prevent RAP dust build-up on rollers
- Underscreen conveyor tilts up to improve access

KPI MODEL 50-488 PUGMILL

- 48" (.91M) diameter twin shaft mixers x 6'-0" (1.82m) or 8'-0"
- Paddle tips arranged in a 45° spiral around each log to promote aggressive mixing
- Paddle tips are adjustable ¾" (19mm) to 2" (51mm) from paddle tip to chamber wall
- Paddle tips can be rotated 90° to increase retention time in mixing chamber
- Long life paddles, extra wear plates on inlet and discharge
- Drop out bottom for ease of clean-out & paddle tip maintenance
- Curved bottom for minimal dead weight
- Ni-Hard Paddles with 6 positions to increase retention, improve mixing, & increase life

TELSMITH CRUSHER IMPACTOR 3048 HSI

- 4 Rows of massive hammer bars
- 200 Tons per hour crushing
- Patented hammer and wedge design provides 4 wear surfaces for maximum life
- Hammer Bars are 28% Chrome Iron Alloy
- Precision machined surfaces provide 100% backing for hammers
- Spring return on moveable aprons to eliminate shear bolts for tramp iron relief
- 1" thick AR400 liners
- Hydraulic access door for easy maintenance
- 150 hp (112 kW) electric motor drive

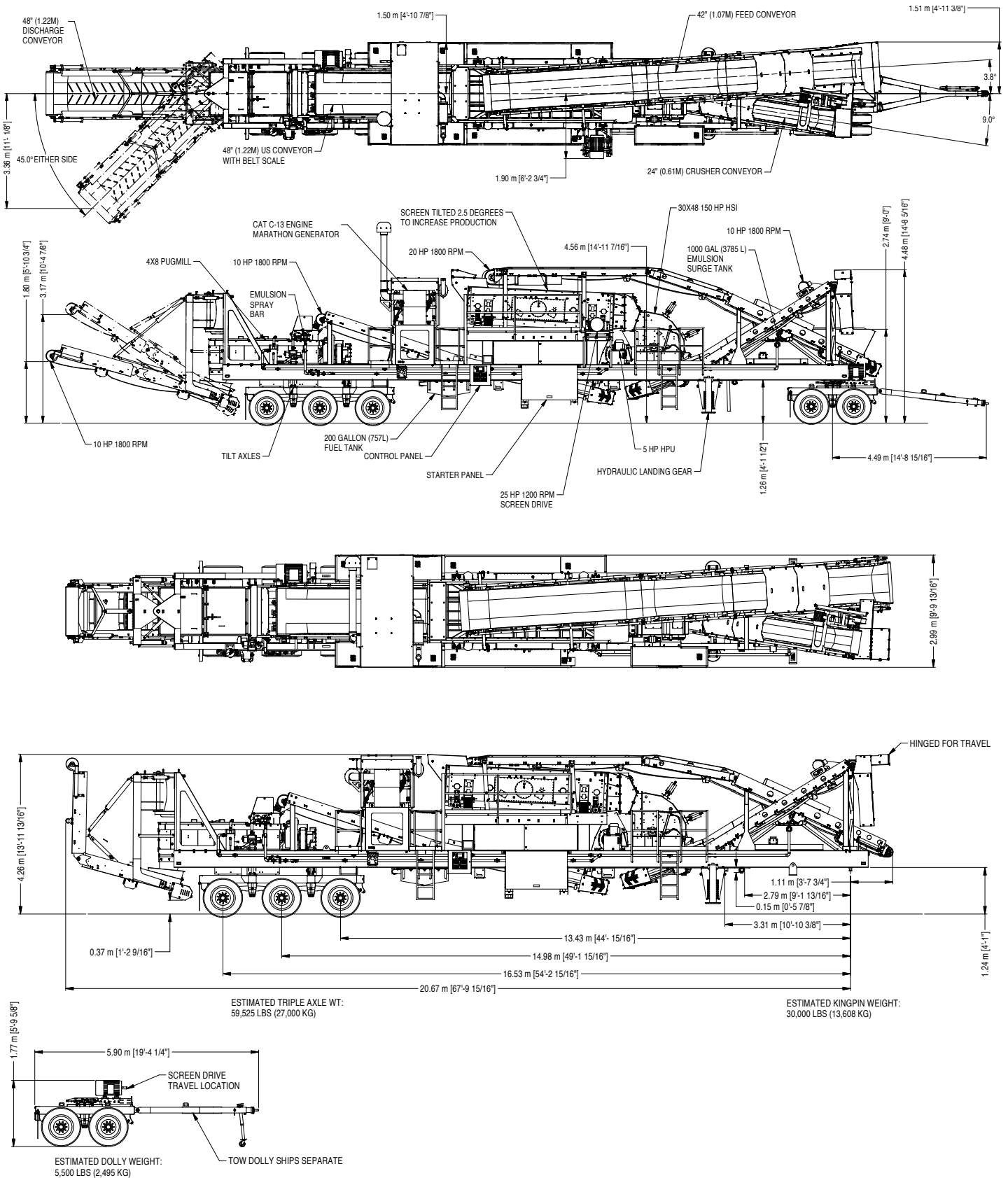
JCI 5142-24 "LP" SCREEN

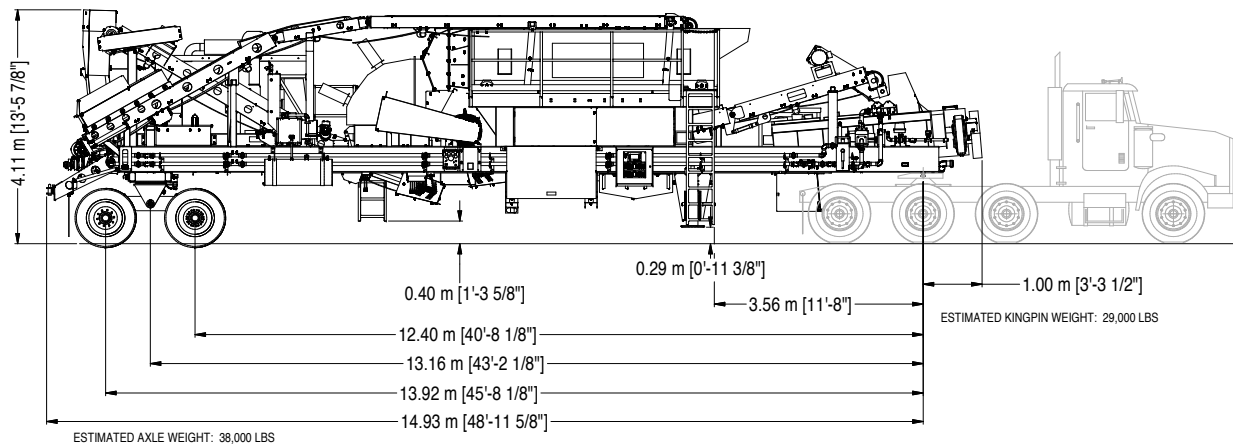
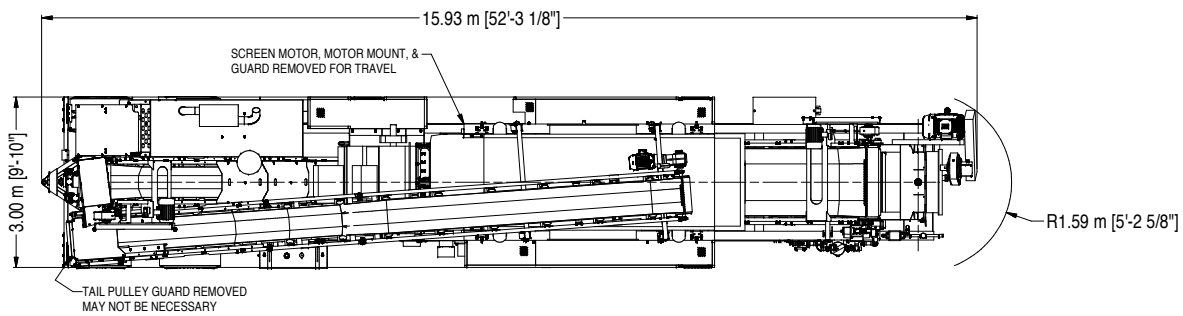
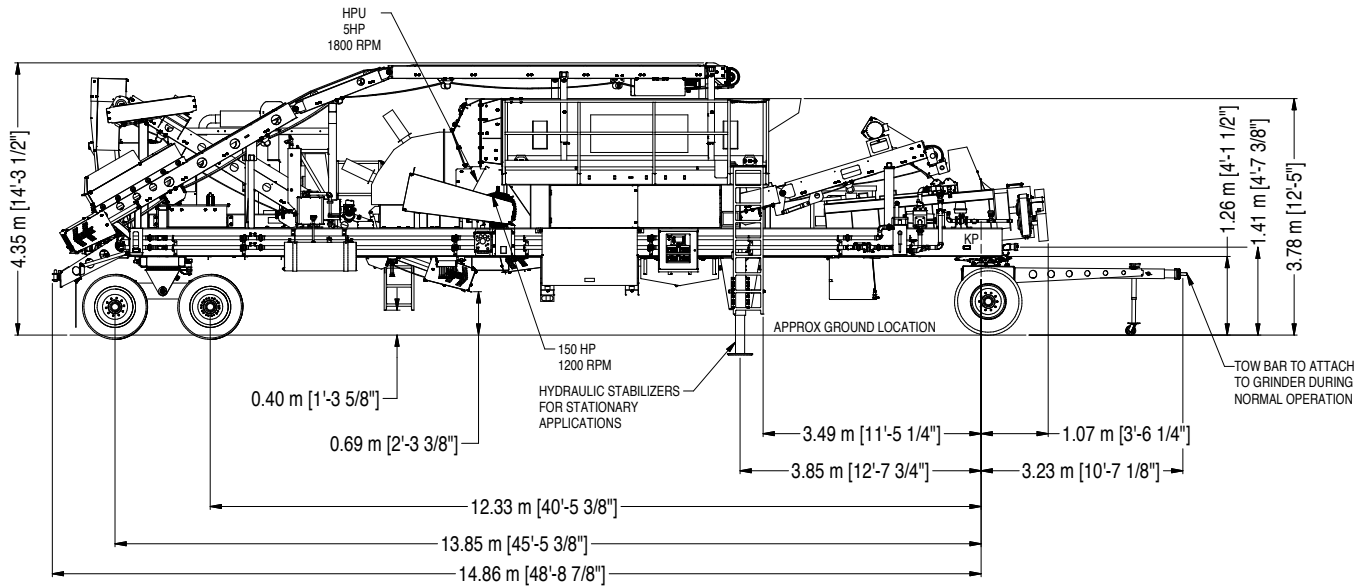
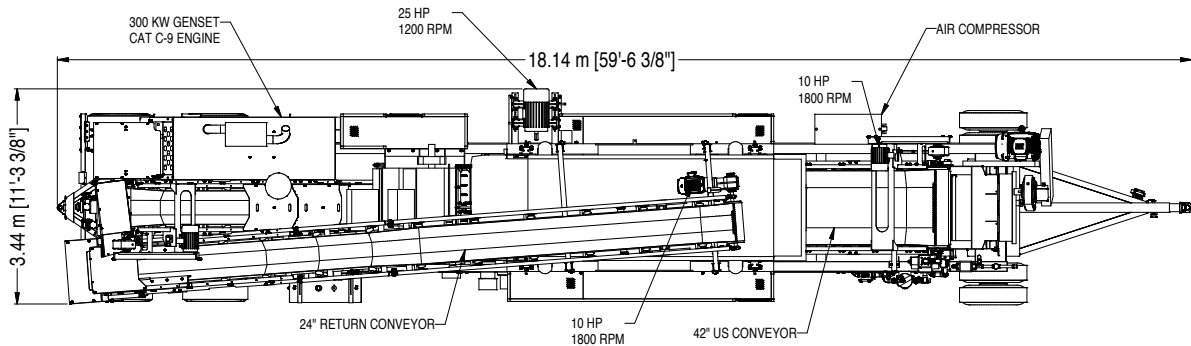
- 5' x 14' double deck "Low Profile" flat screen
- Screen is fully adjustable in amplitude and frequency (maximum stroke = ¾" or 19.0mm, frequency = 675-875 RPM's)
- Triple shaft vibrating mechanism provides less plugging and blinding
- Huck-bolted construction coupled with triple shaft design spreads the shaft force out over a wider area, and provides reduced basket stress and maximum service life of frame
- Heavy Duty Feeder box
- Rubber springs or mounting donuts for smooth and quiet operation
- 25 hp (19kW) electric motor with belt tensioner
- Allows for maximum production with varying types of material

ADDITIVE CONTROL SYSTEM

- Ability to control up to three additives – water, asphalt (emulsion or expanded) and slurry
- Automated flush system with onboard solvent tank - automatically flushes entire additive system with solvent and returns to solvent tank
- Hydraulic variable drive positive displacement asphalt pump with reversing capability and suction strainer
- Positive displacement flow meter
- Full circulating system to guarantee flow to spray bar when needed
- Automatic computer controlled hydraulic spray/return valve operation
- Computer is directly connected to belt scale load cells and belt speed sensor
- Fully automatic belt scale calibration using test weights or materials
- Desired proportions of each product are entered as a percentage of RAP by weight
- Computer automatically adjusts the flow rates of each product to get the desired percentage based on belt scale rate
- Display of forward speed and totalization of distance processed
- Beginning station can be entered to allow for current station number to print on the production report.
- Computer will calculate the theoretical production rate based on speed, width, depth, and density of uncut pavement - can be used in place of belt scale if desired
- Alarm horn will sound if flow rate of any product cannot be controlled to the desired percentage, and also if the product valves do not move to “spray” positions when needed
- Computer logs all production data at desired intervals - data then can be downloaded for a complete history report including date, time, RAP total weight, RAP production rate, additive total weights, average additive rates, additive percentages of RAP, distance (or station), and speed. All parameter descriptions and values can be downloaded for a back-up of calibration data and set-up information
- System will work in either metric or English units

SPECIFICATIONS







ROADTEC.COM

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