

# HOW TO PLACE AN ULTRA-THIN LIFT

From *AsphaltPro* Staff

There's no room for error when the asphalt lift is  $\frac{3}{4}$ -inch (or less) thick. That mat cools quickly, giving the rolling team precious little time to press out the voids. Let's take a look at why an agency would put you in that position and how to execute the job optimally.

First, it's a pavement condition call. An agency might request an ultra-thin lift for a pavement that has a pavement condition index (PCI) of 70 or greater, according to the Pavement Preservation & Recycling Alliance (PPRA) website. This means pavements with minor friction loss or low-severity cracking are candidates for the preservation practice.

Jon Young, the executive director of the Hawaii Asphalt Paving Industry (HAPI) pointed out that "agencies can extend the life of pavements that are in good to fair condition, decreasing life-cycle costs, improving ride, and decreasing roadway noise" with an ultra-thin asphalt overlay. When the agency assigns this treatment, the contractor is working to protect a surface from oxidation, to maintain grade and slope, and/or to address minor distresses, among other things.

There's not a lot of room to play with.

## STEP 1.

### Clean the Surface

Begin with cleaning. If the surface you plan to overlay is coated with dirt, dust, leaves, rocky material or other detritus, the tack or asphalt mix will stick to those undesirable particles.

When those particles are swept away by brooms, snow plows, vehicle tires or what have you, the desirable material—your pricy product—goes with them. This is nothing new to paving contractors. Be sure you include surface prep in your bid and your work.



When you consider how close vehicle traffic will be to the old, existing pavement once the ultra thin overlay is in place, you can understand the importance of the tack coat for the long term success of the ultra thin lift. Make sure you give that bond its best chance for success as well.

*Photo courtesy Process Heating Company*

84 TO 100	GOOD
71 TO 85	SATISFACTORY
56 TO 70	FAIR
41 TO 55	POOR
26 TO 40	VERY POOR
11 TO 25	SERIOUS
0 TO 10	FAILED

### Standard Pavement Condition Index™ Rating Scale

Source information courtesy International Slurry Surfacing Association

## STEP 2.

### Tack Properly

Once your project is complete, drivers will be braking and turning on a new pavement surface that is within half an inch of the existing/old pavement surface. Those shear forces will "want" to move and tear your ultra-thin overlay. That means your tack coat is vital to your project's success.

Check out the article "[Why You Need to Tack before Paving](#)" at TheAsphaltPro.com for in-depth best practices.

PPRA also offers good ideas from member companies at its website. A few of its pages are devoted to proper tack—or bond—coats to ensure monolithic structures are built to perfection. For example, when it's time to spray tack:

**Step 1.** Clean the pavement.

**Step 2.** Maintain the emulsion at proper temperature.

**Step 3.** Determine the residual asphalt content required for the project.

**Step 4.** Calculate the application rate.

**Step 5.** Set the spray bar height to achieve the triple overlap of spray.

**Step 6.** Ensure all nozzles are the correct, same size.

**Step 7.** Set all spray nozzles at the same angle.

**Step 8.** Ensure all nozzles are clean and functioning properly.

**Step 9.** Ensure the tack wagon is calibrated.

**Step 10.** Double-check that you get a uniform application of the tack coat.

**Step 11.** Prevent tracking and pickup of the emulsion.

### Best Tack Handling

- For long-term storage, store emulsion in vertical tanks.
- Store at a temperature between 50 and 180°F.
- Don't allow the emulsion to freeze or to exceed a temperature of 212°F. Don't load elevated-temperature material.
- Protect pumps, valves and lines from freezing.
- Don't allow emulsion to free-fall into a vessel when loading; bottom-loading is preferred.
- Circulate material every two weeks while heating.
- Don't mix anionic and cationic emulsions.
- When diluting, add warm water to the emulsion; check with the manufacturer for guidance.
- Always wear proper PPE to safely handle the emulsion, even though asphalt emulsions are nonhazardous materials and do not require placards.

Source: PPRA's [www.roadresource.org](http://www.roadresource.org)

#### QUICK TIP FOR SUCCESS!

When placing a thin overlay, make sure all the ground laborers know better than to cast material across the mat. There's no room to work in segregated material.

## STEP 3.

### Pave It

Your next step is to pave. Consider carefully how you'll deliver asphalt mix to the hopper. Using a spray paver might be your best bet because you can spray the tack immediately prior to the mix going down with no chance for tracking or pickup from any equipment. If you don't have a spray paver on hand, consider your project parameters and internal traffic control to allow the haul truck to travel adjacent to the paving lane. If you're able to offset a material transfer vehicle, you can avoid tracking and pickup of tack while giving your crew some best material delivery practices.

Set up your head of material for best delivery to the screed. Paver OEMs and industry consultants suggest setting the augers at a height and distance from the back of the paver that confines the material while rotating it under the screed. You don't want to push and shove the material, causing larger stones to separate from the pile and segregate off to the side.

Instead, Consultant John Ball of Top Quality Paving & Training, Manchester, New Hampshire, reminds you to set the augers so the head of material rises to the midpoint of the augers consistently across the width of the auger chamber.

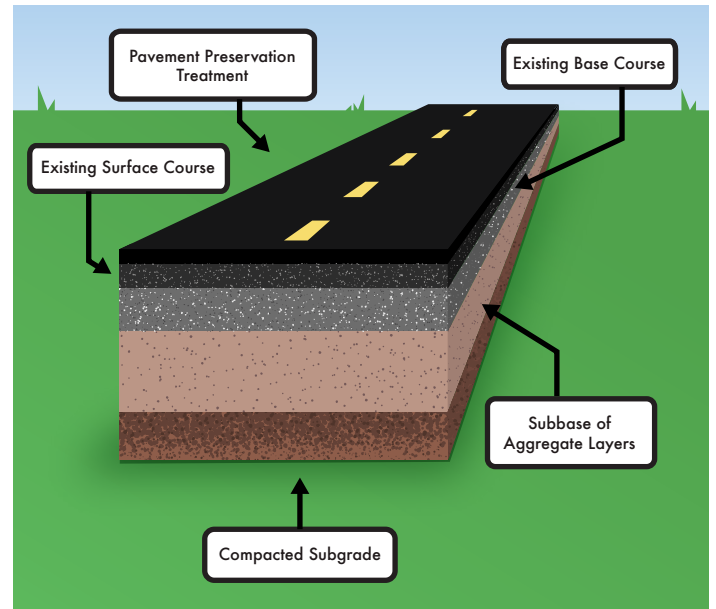
The screed or paver operator will kneel down and measure the augers before paving. You want the bottom of the auger blade curl to be 2 inches greater than the lift you'll pave. Check out the Training department from the December 2019 issue, titled "[How to Set the Augers](#)" at [TheAsphaltPro.com](#) for a primer on how to set the auger height and speed.

#### Math Time

- For a 2-inch lift, set the augers so the bottom curve of the blade is 4 inches from the ground.
- To pave an ultra-thin lift of 1/2-inch, the auger should be set so the curve of the blade is 2.5 inches from the ground.



Set the augers so the head of material rises to the midpoint of the augers consistently across the width of the auger chamber. *Photo courtesy John Ball of Top Quality Paving & Training*



#### Flexible Pavement System

The treatment course for this pavement example, with a pavement condition index (PCI) of 70 or greater, is the ultra-thin lift of 1/2-inch of hot-mix asphalt (HMA), which does not add structural integrity, but provides a layer of protection from the elements.

If the auger physically cannot be lowered to that height from the ground, this isn't the end of the world. You'll watch the head of material carefully while you pave, according to the team from Roadtec Inc., Chattanooga.

"Get it down as close as possible...within an inch or two. They will carry a slightly higher head of material but head of material will just have to be managed more accurately. It requires a slightly different tow point setting but all of this is within range. You get as close as you can. You will carry more material than is ideal, but as long as the head of material is uniform height and consistently moving under the screed, it will be okay."

A slightly different tow point setting should offer the screed excellent tow point control, according to Ball. "You will move the tow point cylinder down from center to maybe 2, to give the screed a little more down-pressure," Ball suggested. You'll just run it a little tighter, he advised.

#### QUICK TIP FOR SUCCESS!

Make sure the screed is heated all the way across before you begin to pave a thin overlay—that includes extensions!

## STEP 4.

### Compact with Care

When it's time to roll the mat, you have another change to consider. Ball reminds you, you're not really "compacting" when you've got a lift that's 3/4-inch or less; you're sealing. If you set the steel wheel breakdown roller at 3,000 vibrations per minute and start pounding away, you'll break rocks and ruin the project.

Instead, Ball advises you roll the ultra-thin lift in static mode.

Follow that with the steel wheel roller in static mode to remove the lines and get final density. Make sure your roller operators are watching temperature closely. The ultra-thin lift will lose temperature more quickly than a conventional mat of 1 1/2 or 2 inches. That makes a difference in time to get compaction. **AP**