THIN ASPHALT OVERLAY

A thin layer of hot mix asphalt placed over an existing surface.

Thin hot mix asphalt (HMA) overlays are much like traditional dense-graded overlays, but contain smaller aggregates and can be placed in lifts as thin as ¾". Thin overlays are sometimes referred to as 4.75mm mixes because the largest aggregate particles are about ¼" (~4.75mm). Because compaction is optimized when the lift thickness is 3 to 5 times the largest aggregate contained in the mix, smaller aggregates mean thinner lifts, which results in reduced material needs and lower costs. Thin asphalt overlays offer an attractive and affordable paving option when subgrade support is adequate and distresses are limited to the surface layer.

Selecting the Project: Although designed with the same attention to material quality, thin overlays do not provide as much structural support as traditional overlays, and should not be used to correct structural deficiencies. Significant cracking and uneven areas (such as utility cuts with sinking patches) will often reflect through a thin overlay. Prior to the overlay, inspect the existing pavement surface to determine which areas may need additional repairs before the overlay is placed.

CAUTION: *Due to their reduced thickness, thin overlays are not able to bridge areas of significant distress. Thus, surface quality will depend greatly on underlying pavement smoothness and subgrade integrity. Milling, leveling, or full-depth patching may help maximize the smoothness.*

Materials & Equipment: High quality **crushed aggregates** and **performance-graded asphalt binders** should be used to develop an optimal job mix formula. Natural sands should be minimized, as they can cause a mix to be prone to rutting. Thin asphalt overlays require the same equipment as traditional overlay projects. However, depending on the mix and rolling pattern, compaction may be achieved with fewer rollers.

Construction: Thin overlays should be placed during mild, dry conditions, with a minimum surface temperature of 40°F. A tack coat should be applied after sweeping the surface, with the mix placed immediately after the tack "breaks". Compaction is critical for smoothness and performance, and rollers should operate as closely as possible to the paver. Thinner lifts may cool more quickly, shortening the compaction temperature window. Some thin mixes exhibit very little "roll-down", or additional compaction by the rollers, which can make it difficult to accurately determine placement rates unless a test strip is placed.

Cost:
$6 - $9 / sy

$35,000 - $60,000 / lane-mile

Because the lift thickness is about half that of a traditional overlay, a ton of mix will cover approximately twice as much area. Thus, it is reasonable to assume that the cost per mile would be half. However, material costs often increase due to the higher cost of quality crushed fine aggregates, and the greater binder content required to coat the increased surface area of smaller aggregates. Labor costs may also increase due to the additional handwork required for a given tonnage.

PAVEMENT LIFE EXTENSION GENERATED BY THIN OVERLAY	LOWER TRAFFIC	HIGHER TRAFFIC
Asphalt surface – aged, fair condition	9 – 12 yrs	8 – 10 yrs
Asphalt surface – aged, poor condition	7 – 10 yrs	5 – 8 yrs
Chip seal – aged, fair condition	7 – 10 yrs	3 – 7 yrs