

# ASPHALT OVERLAY

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

A hot mix asphalt (HMA) overlay is a mixture of aggregate and asphalt binder that has been designed to optimize material proportions and performance. In general, HMA overlays are considered to be non-structural surface treatments. However, for lower volume roadways, they may generate a significant increase in structural capacity while also providing a smooth and aesthetically pleasing surface. Traditional dense-graded overlays are typically 1½” to 2” thick and contain aggregate sizes up to ½”.

**Selecting the Project:** Overlays can address a variety of distresses. For lower volume roadways, the added structure may be adequate to correct significant cracking or rutting. As with any other treatment, localized structural failures should be addressed prior to the overlay.



**CAUTION:** Although an overlay may provide some structure, the quality of the surface will depend on underlying pavement smoothness and subgrade integrity. Profile milling, leveling, or full-depth patching may help maximize durability.



**Materials:** 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 tender.

**Equipment:** Multiple **haul trucks** are needed to transport the mix to the site, and a **paver** with a hopper should be used to place the mix. A **material transfer device**, or “shuttle buggy” can help reduce segregation. In the paver, a **screw auger** and heavy **screed** ensure even mix placement so that the desired mat thickness is achieved after compaction. Multiple **rollers** are necessary for proper compaction. Primary compaction is applied by a **breakdown roller** (steel-wheeled vibratory roller), while finish rolling employs a steel-wheeled roller in **static mode**. A **pneumatic roller** may be used between breakdown and finish rolling to knead the surface and increase density.

**Construction:** Overlays should be placed during mild, dry conditions (minimum surface temperature of 40°F) with no visible moisture on the surface. The surface should be swept clean and a **tack coat** applied. Maintaining proper **mixing and compaction temperatures** is especially important, because asphalt mixtures are especially sensitive to temperature. **Compaction** is one of the most important factors in pavement performance, affecting stability and smoothness. A density gauge is helpful for determining a rolling pattern so that maximum density is achieved. Close attention should be devoted to obtaining density at longitudinal joints because tight joints will help prevent water intrusion. **Quality control/quality assurance testing** should be performed to ensure specifications are met.



**Do Not Stop the Paver!** Consistency is critical. Every time the paver stops, the screed must lunge to re-start, creating a bump in the road. Thus, the paver should travel at a consistent speed, based on plant speed and delivery rate. Make sure enough haul trucks are available to transport mix from the plant to the jobsite (and don’t forget to consider traffic!). A smooth process leads to a smooth road.

**Cost:**  
\$ \$9 - \$13 / sy  
 \$55,000 - \$90,000 / lane-mile

PAVEMENT LIFE EXTENSION GENERATED BY OVERLAY	LOWER TRAFFIC	HIGHER TRAFFIC
Asphalt surface – aged, fair condition	15 – 20 yrs	12 – 15 yrs
Asphalt surface – aged, poor condition	12 – 15 yrs	7 – 10 yrs
Chip seal – aged, fair condition	10 – 15 yrs	7 – 10 yrs