



Get It Right The First Time!

Wheel Load

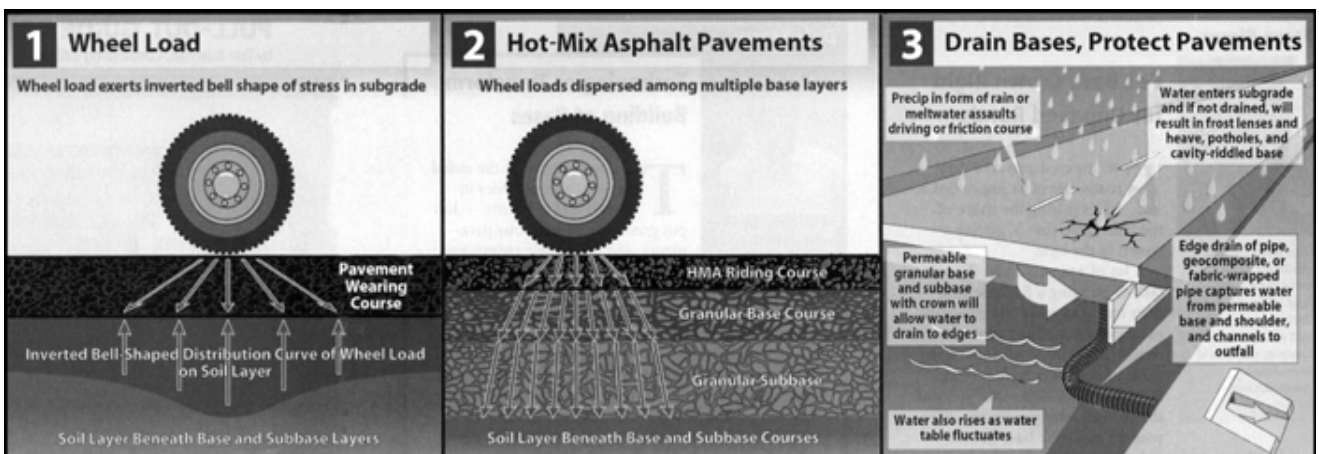
A roadway's base, subbase and underlying soil are structural elements of a pavement. Along with the top riding course or level, they spread wheel loads out over an area of subgrade or soil bed. A pavement's base is the support layer right beneath the trafficked course and always is of greater strength than the underlying soil layer. The wheel load pressure to the soil is a lot less than the pressure at the surface and is distributed as an inverted bell curve.

Hot-mix Asphalt (HMA) Pavements

Hot mix asphalt or flexible pavements are made up of a premium HMA friction or driving course — perhaps above a less critical leveling or base HMA layer — above a granular base course and subbase, all of which rest on a soil subgrade. The layers must be thick enough to prevent permanent deformation and also to forestall alligator cracking caused by fatigue of the layers under stress.

Drain Bases, Protect Pavements

A functioning base has to do more than support the driving course above. It has to drain water quickly from the pavement structure. A granular base with pokey drainage times and often near saturation will impair the function and lifespan of the pavement. Its drain ability is a function of the material's permeability, the physical geometry of the roadway and the material composition. Edge drains beneath the shoulder but along the pavement base do the trick.



Base load bearing capacity

The area of load transfer, shown by the angles below, and the constant distribution of pressure across the subbase and subgrade depend on the type and shape of granular materials or aggregate, including size, grading, angularity and compression resistance, and whether it is bound or unbound. A high compaction density improves aggregate interlock and load transfer. Bituminous and cementitious binders improve load bearing capacity.

Stabilize granular bases

Base stabilization or recycling of existing pavement is a similar process and often can involve the same machine. In the mixing chamber, the granular base is mixed and knitted together by an emulsion of asphalt and water, hydraulically by dry cement or lime with water added cement or lime slurry. Another option is the new process of foamed asphalt in which cold water and hot penetration-grade asphalt combine with air in the mixing chamber, resulting in a spreading foam.

Base trimming

For many years motor graders were used for final subgrade preparation because most contractors had graders, and they would be operated by an individual with experience in cutting fine grade. But the advent of portland cement concrete pavement smoothness specs – and penalties and bonuses – has resulted in more sophisticated single-pass trimmer/placers, some guided by global positioning system satellites supplementing string lines.

