

Proper drainage keeps road surface hard.

2 Build on a firm foundation

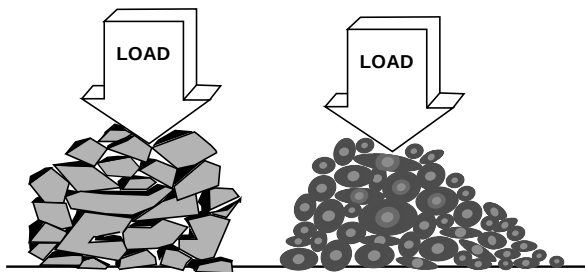
A road is only as good as its foundation. A highway wears out from the top down but falls apart from the bottom. The road base must carry the entire structure and the traffic that uses it.

To make a firm foundation you may need to stabilize the roadbed with chemical stabilizers, large stone called *breaker run*, or geotextile fabric. When you run into conditions where you suspect that the native soil is unstable, work with an engineer to investigate the situation and design an appropriate solution.

3 Use the best materials

With all road materials you “pay now or pay later.” Inferior materials may require extensive maintenance throughout the road’s life. They may also force you to replace the road prematurely.

Crushed aggregate is the best material for the base course. The sharp angles of the crushed material interlock when they are compacted. This supports the pavement and traffic by transmitting the load from particle to particle. By contrast, rounded particles act like ball bearings, moving under loads.



Angular particles are more stable than rounded particles.

Asphalt and concrete pavement materials must be of the highest quality, designed for the conditions, obtained from established firms, and tested to ensure it meets specifications.

4 Compact all layers

In general, the more densely a material is compacted, the stronger it is. Compaction also shrinks or eliminates open spaces (voids) between particles. This means that less water can enter the structure. Water in soil can weaken the structure or lead to frost heaves. This is especially important for unsurfaced (gravel) roads. Use gravel which has a mix of sizes (well-graded aggregate) so smaller particles can fill the voids between larger ones. Good compaction of asphalt pavement lengthens its life.

5 Design for traffic loads and volumes

Design for the highest anticipated load the road will carry. A road that has been designed only for cars will not stand up to trucks. One truck with 9 tons on a single rear axle does as much damage to a road as nearly 10,000 cars.

Rural roads may carry log trucks, milk trucks, fire department pumper trucks, or construction equipment. If you don’t know what specific loads the road will carry, a good rule of thumb is to design for the largest piece of highway maintenance equipment that will be used on the road.

A well-constructed and maintained asphalt road should last 20 years without major repairs or reconstruction. In designing a road, use traffic counts that project numbers and sizes of vehicles 20 years into the future. These are only projections, at best, but they will allow you to plan for traffic loadings through a road’s life.