

# CHIP SEAL VARIATIONS

*A chip seal with an additional process or characteristic to make specific improvements for a given purpose.*

Variations on the traditional chip seal allow for greater customization of the maintenance treatment. Several types are available, including the double/triple chip seal, mass crack treatment (also called a “scrub” seal), sand seal, and sandwich seal. These seals are not structural in nature and will not correct significant structural failures; however, they are an excellent choice for correcting surface distresses and may provide some structure for low-volume roadways. They also prevent further moisture damage and provide a safety advantage of increasing skid resistance.

**Double/Triple Chip Seal:** This type of chip seal is simply the application of multiple chip seal layers applied as a single maintenance treatment. While a chip seal is typically not considered a structural solution, multiple layers can provide some structure for lower volume roads, and provide longer service life than a comparable single chip seal. In most cases, the surface layer is composed of a smaller aggregate size. This allows the particles in the wearing course to “seat” snugly within the underlying layer, providing a smoother and quieter driving surface.

**Mass Crack Treatment (Scrub Seal):** A scrub seal is an effective treatment for treating roadways with widespread cracking. In this process, the distributor truck is followed by a broom assembly, which pushes (or “scrubs”) the binder into the cracks. This fills the cracks while leaving additional binder on the surface for seating the chips, all in a single pass. Best results are achieved when the cracks have been thoroughly cleaned and brooms are properly adjusted for roadway cross-slope. Proper design is important for determining how much binder is necessary for filling cracks and accommodating the chips. Though non-structural, the crack-sealing feature of this treatment can effectively preserve the existing structure.



**Sand Seal:** A sand seal is much like a traditional chip seal, but uses fine aggregate in place of standard chips. This type of seal provides a thinner wearing course, and is most appropriate on very low volume roadways. Natural sands should be used with caution due to safety concerns regarding skid resistance.



**Sandwich Seal:** This type of seal utilizes a layer of large cover aggregate, then binder, which is then covered by a smaller surface aggregate. Sandwich seals increase skid resistance, and are especially effective on pavements exhibiting flushing or bleeding because the cover aggregate helps separate the new layer from existing distress.

**Selecting a Treatment:** So how do you know which chip seal variation is right for your project? Remember that chip seals are generally not considered to be a structural treatment, and should not be used to correct structural failures. However, these treatments can provide structure for low-volume roadways. Where cracking is prevalent, consider a scrub seal. Where more structure is needed (i.e., increased traffic levels), consider a multi-layer seal. For any type of chip seal, high quality materials and good construction practices are the key to maximizing performance and extending service life.



The cost of a multi-layer chip seal is roughly the chip seal cost multiplied by the number of layers. Adjustments may be necessary for material cost and availability, and savings may be generated by decreased mobilization and traffic control needs. Scrub seals are slightly more expensive than standard chip seals due to the one-time cost of the broom assembly and the additional binder required to fill cracks. However, these costs are quickly offset by the additional benefits generated.



## Asphalt Surface Treatment Options

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