

Glossary of Terms and Acronyms

Below is a list of terms and acronyms that you'll likely come across when working on a chip seal project.

Note that some specifications described in the following content may not be the same as the specifications followed by your agency. Always check with your State agency's standards and specifications when using these guidelines.

Glossary

- ❑ **Adhesion agents**—Substances that improve the degree of wetting of the aggregate by the binder, thus enhancing the adhesion between the binder and aggregate.
- ❑ **Aggregate**—A granular material usually crushed and screened to appropriate gradations, which is used as the cover stone in a surface treatment.
- ❑ **Asphalt binder**—Commonly referred to as asphalt cement, pure asphalt binders are graded based on viscosity and penetration.
- ❑ **Average least dimension (ALD)**—A metric that represents the expected chip seal thickness when the aggregate is oriented to lie on its flattest side.
- ❑ **Binder**—A bituminous material that provides a waterproof seal and also bonds the cover stone to the pavement.
- ❑ **Bleeding**—Upward movement of asphalt through the chip seal. Bleeding, also commonly referred to as flushing, can be identified by dark patches of asphalt forming on the surface, most commonly in wheel paths or intersections.
- ❑ **Blotter material**—See Chat.
- ❑ **Cape seal**—A chip seal followed by a slurry seal that fills the voids in the surface of the cover aggregate. The slurry seal increases aggregate retention and reduces tire noise.

- ❑ **Chat**—Fine aggregate used to spread on flushed/bleeding chip seals as an emergency repair measure to restore skid resistance.
- ❑ **Chip seal**—A bituminous surface treatment that can be a single, double, or triple application of bituminous binder and cover aggregate on an existing paved surface.
- ❑ **Chip spreader**—Also referred to as a spreader box or aggregate spreader, the machine that evenly applies the aggregate to the binder. Self-propelled spreaders with computerized rate controls are preferred.
- ❑ **Choke**—A layer of sand applied to the chip seal after the cover stone has been rolled but before opening to traffic. Choke produces a tighter chip seal because it fills surface voids.
- ❑ **Choke stone**—A layer of smaller size aggregate applied to the chip seal after the cover stone has been rolled but before opening to traffic. Choke stone fills the voids on the surface and “locks in” the cover stone against dislodgement that is the result of rolling in areas with traffic turning movements. Also called “sacrificial stone” or “scatter coat.”
- ❑ **Crumb rubber**—A modifier that can be blended into bitumen to enhance the elasticity and adhesion characteristics of the binder. Rubberized asphalt chip seals are successful at mitigating reflective cracking, improving aggregate retention, and reducing noise.
- ❑ **Cutback**—Asphalt cement that has been diluted with a solvent such as kerosene or naphtha. The use of cutbacks is becoming less common because of environmental and safety concerns.
- ❑ **Distributor**—An insulated tank with a circulating and heating system that is mounted on a truck and distributes binder through a spray bar at the rear. It is critical for the distributor to apply the binder at a constant rate and to the correct width. Distributors with computerized rate controls are desirable.
- ❑ **Double seal**—A seal characterized by two separate applications of both binder and aggregate. The design of a double-course seal requires the application rates for both layers of binder and aggregate to be determined as an integrated treatment. Multiple seals provide a quieter treatment.

- ❑ **Embedment**—A measured percentage of the portion of the aggregate enveloped by the binder. Embedment checks are a visual inspection of the chip seal construction, with typical recommendations of at least 70% embedment.
- ❑ **Emulsified binder**—A liquid mixture of asphalt binder, water, and an emulsifying agent. Emulsions are either anionic (negatively charged) or cationic (positively charged). Emulsions are not as sensitive to moisture, inherently contain antistripping agents, and require much lower application temperatures than do asphalt cements.
- ❑ **Emulsion break**—The point in time, shortly after the application of the emulsified binder, when the emulsifying agent and water evaporate from the asphalt cement, leaving behind the asphalt cement that bonds the aggregate particles to the binder. A “breaking” emulsion can be observed when the binder changes color from brown to black.
- ❑ **Flakiness**—A general description of the shape of aggregate. A flakiness index can be used to determine how cubical the aggregate used in a chip seal is. A lower flakiness index indicates a more cubical aggregate and better aggregate shape for a chip seal.
- ❑ **Flushing**—See Bleeding.
- ❑ **Fog seal**—An application of asphalt applied on top of a pavement surface. Fog seals are commonly used on oxidized pavements to provide resistance to water intrusion and raveling. Fog seals are also used on newly constructed chip seals to promote adhesion and enhance aggregate retention.
- ❑ **High float emulsions**—Emulsions that result in a thicker asphalt film and are believed to show less susceptibility to the defects associated with unclean and dusty aggregate. The thicker asphalt film characteristics result in high float emulsions preventing drain-off of the binder.

- ❑ **Hunger factor**—Kearby chip seal design terminology to describe the existing surface’s potential to absorb binder and thereby require an adjustment in the design binder application rate. This ensures that either sufficient binder is applied to achieve desired embedment when the surface is oxidized or that too much binder is not applied if the surface is flushed.
- ❑ **Geotextile seal**—Geotextile-reinforced seals are used over cracked and weak surfaces. They provide a waterproofing membrane that not only seals the underlying moisture-sensitive base material from water infiltration, but also aids in retarding reflective cracking.
- ❑ **Glass fiber chip seal**—A chip seal that entails blowing glass fibers onto an application of a binder, with the aggregate being spread quickly after this application. Characteristics of this seal are similar to a geotextile-reinforced seal.
- ❑ **Inverted seal**—An Australian term for a seal that is used to correct flushing or bleeding pavement surfaces.
- ❑ **Ionic compatibility**—Different types of aggregate are better suited to certain binders as a result of electrostatic charges. For sufficient adhesion, the binder and aggregate must have opposite charges.
- ❑ **Lightweight aggregate**—A synthetic granular material that can be used to replace natural aggregates as the cover stone for a surface treatment. These materials have a low specific gravity and do not have the same potential for windshield and vehicle damage.
- ❑ **Lump-sum contract**—A contract whereby the contractor is required to furnish a single sum for the cost of completing the scope of work described in the plans and specifications. The contractor assumes the risk that in the event actual quantities exceed the contractor-estimated quantities the contractor is not paid extra.
- ❑ **Modified binder**—Binder modifiers that include polymers, latex, rubber crumb, and antistripping agents. Modifiers have proven successful at enhancing flexibility, minimizing bleeding, increasing aggregate retention, and extending the service life of chip seals.

- ❑ **Otta seal**—A Norwegian term, adopted in many places including parts of Africa and the United States, that describes a low-traffic volume graded aggregate surface treatment.
- ❑ **Pavement preservation**—The sum of all activities undertaken to provide and maintain serviceable roadways. This includes corrective maintenance and preventive maintenance, as well as minor rehabilitation projects.
- ❑ **Pneumatic roller**—Pneumatic rollers have inflated tires that provide the required forces to properly orient the cover aggregate. Also referred to as a rubber-tired roller.
- ❑ **Pocked**—A condition in which the surface of the chip seal has lost aggregate in numerous localized areas.
- ❑ **Polymer-modified binders (PMBs)**—Polymer modification of binders reduces the binder’s temperature susceptibility, provides increased adhesion characteristics, and increases the overall flexibility of the chip seal. Common polymers used are latex and crumb rubber.
- ❑ **Precoated aggregate**—Aggregate precoated with asphalt cement to improve the adhesion of the aggregate to the binder on dusty or dirty aggregate.
- ❑ **Prespraying**—Australian terminology for shooting a preparation coat of binder outside and between the wheel paths to adjust the surface texture of the previous chip seal to a uniform transverse depth.
- ❑ **Preventive maintenance (PM)**—A planned strategy of cost-effective treatments that preserves and maintains or improves a roadway system without substantially increasing structural capacity.
- ❑ **Racked-in seal**—A surface treatment where the first course, which has a larger nominal size aggregate, is locked in with a light application of smaller aggregate. This is particularly useful for increasing aggregate retention during the curing process.

- ❑ **Raveling**—Commonly referred to as shelling, it is the loss of aggregate from the surface treatment. Low binder application rates, inadequate rolling, cool weather construction, and incompatible binder and aggregate types are common factors that lead to raveling.
- ❑ **Reseal**—A term used in New Zealand to describe a process for recycling chip seals, in which construction methods are designed to minimize the bleeding and flushing characteristic of sealing over an existing seal. Sandwich seals and water blasting are two construction methods used by a reseal.
- ❑ **Rock land**—The length over which one truck’s load of aggregate is spread when released at the design aggregate application rate.
- ❑ **Sacrificial stone**—See Choke stone.
- ❑ **Sand patch**—A test for determining texture depth of a pavement surface (refer to ASTM E 965). Also known as the sand circle test.
- ❑ **Sand seal**—An application of a binder followed by a sand cover aggregate.
- ❑ **Sandwich seal**—A two-course surface treatment where aggregate is spread on an existing binder rich surface, before the application of a single-course surface treatment.
- ❑ **Scatter coat**—See Choke stone.
- ❑ **Seal coat**—A bituminous surface treatment that is a single application of bituminous binder and cover aggregate on an existing paved surface. A seal coat is essentially a single-course chip seal.
- ❑ **Shelling**—See Raveling.
- ❑ **Shot**—The distance that a distributor sprays binder from start to finish.
- ❑ **Slurry seal**—A mixture of graded aggregate and binder applied with a squeegee or broom device. Slurry seals are commonly used for mass crack filling or on pavements with highly oxidized surfaces that are raveling.

- ❑ **Spray bar**—A series of spray nozzles at the rear of the distributor that serve to spray a fan-shaped pattern of binder directly on the road surface. Typically, a double- or triple-lap spray pattern is desirable. It is critical for the spray bar to be properly adjusted and at the correct height.
- ❑ **Sprayed seal**—Australian term, essentially synonymous with a chip seal, that refers to the application of a bituminous binder and cover aggregate on various surfaces.
- ❑ **Steel roller**—Steel rollers provide a rolling energy necessary for some surface treatments such as those with rubber crumb modifiers. Care must be taken to ensure that aggregate is not being crushed or degraded by the steel roller. Also referred to as a flat-wheeled roller.
- ❑ **Streaking**—An aesthetic and construction defect caused by nonuniform application of binder across the lane width. Streaking leads to a considerable shortening of the life expectancy of a chip seal.
- ❑ **Stripping**—Separation of the binder from the aggregate. See Raveling.
- ❑ **Surface dressing**—Term used in the United Kingdom, essentially synonymous with a chip seal, to describe the application of binder and aggregate as a means of maintenance on flexible pavements.
- ❑ **Surface enrichment**—A light application of a bituminous material, without the use of a cover aggregate, to an existing chip sealed surface to increase the binder content of the seal. Essentially the same as a fog seal, surface enrichment can assist with aggregate retention on seals with insufficient binder.
- ❑ **Surface texture**—The macroscopic and microscopic characteristics of the pavement surface. Surface texture depth is a metric that influences material application rates, design life, skid resistance, and road noise.
- ❑ **Surface treatment**—A surface treatment, commonly referred to as a bituminous surface treatment or asphalt surface treatment is an application of asphalt binder and cover aggregate on a prepared gravel or crushed stone base.

- ❑ **Texturizing**—An Australian/New Zealand practice whereby excess binder is removed before chip sealing to allow a constant rate of binder to be shot during binder application operations.
- ❑ **Unit-price contract**—A construction contract whereby the contractor furnishes unit prices (i.e., dollars per pay unit) for each pay item in the contract, and the contract is awarded to the lowest bidder computed by multiplying the contractor-furnished unit price with the engineer’s estimated quantity for each pay item and extending that to a total bid price. The contractor is then paid its unit price for the actual quantities even if they exceed the engineer’s estimated quantities.
- ❑ **Variable spray bar**—A spray bar whose purpose is to put more binder outside the wheel paths to combat raveling outside the wheel paths and bleeding within the wheel-paths.
- ❑ **Void**—The space between the aggregate particles after they have been spread on the road’s surface that is filled with binder.
- ❑ **Wheel paths**—The longitudinal areas of a pavement’s surface where the greatest proportion of vehicle tires track. Wheel paths are particularly sensitive due to bleeding and flushing when application rates are not strictly adhered to, or when flaky or elongated aggregate has been used.
- ❑ **Whip-off**—McLeod’s definition for aggregate loss due to traffic dislodging the aggregate during and shortly after construction.