Asphalt Pavement Maintenance

Rules of Thumb	
CRACK SEALING	• for linear cracks only (not for alligator cracking) • clean cracks with forced air (hot lance?) • don't over-fill the crack with sealant; avoid surface smears • sweep up excess sanding
PATCHING	• dig out 1-foot beyond the visible cracking • don't rockt the jackhammer • dig out at least 1½ times the thickness of the failed AC • use hot mix (AC) for permanent patches • roll at least 3 passes while mix is above 180°F
FOG SEALS	• CAUTION! Don't over apply; use 2 light shots? • consider "rejuvinating" fog seals on low traffic roads
CHIP SEALS	• don't use on bleeding or rutted pavements • pre-fog seal any new patches • use clean chips (Caltrans spec) • wait for warm weather (>70°F) • spread chips immediately behind emulsion spray • roll slowly (walking speed) with rubber roller • consider a final fog seal over the chips (i.e., "flush coat")
SLURRY SEALS	• wait for warm weather (>60°F) • verify contractor's mix design • consider rolling in high stress areas • for parking lots, use special Sealcoat products
THIN OVERLAYS	• pre-level rutted areas • specify 1½" minimum thickness • roll while mix is hot (>180°F); minimum 3 passes • consider open-graded AC for higher speed roads

Summary of Surface Rehabilitation Techniques

CONSTRUCTION TYPE	DESCRIPTION (THICKNESS)	USES
1. Thin Seals		
Fog Seal	Diluted emulsion	Renews and enriches oxidized surface; seals minor cracks; prevents raveling; provides shoulders delineation.
Sand Seal	Emulsion with sand cover (2 – 5 mm)	Same as fog seal, except that it does not provide the same level of delineation. Provides surface friction.
Slurry Seal	Mineral filler, well-graded fine aggregate, emulsion (3 – 9.5 mm)	Same as fog seal. Also seals, fills minor irregularities. Improves surface friction with proper aggregate.
Micro-Surfacing	Mixture of polymer modified emulsion, fine aggregate, and addititives. (6.3 – 12.5 mm)	Provides minor leveling; fills non-plastic ruts; restores surface friction. Also used to improve flushed surfaces.
2. Chip Seal Coats		
Single and Multiple Chip Seal Applications	Asphalt with aggregate cover (6.35 – 12.5 mm)	Seals against entrance of moisture and air; seals low intensity fatigue and block cracks; renews weathered surfaces; improves surface friction.
Sandwich Seal	Double aggregate layers with one layer of asphalt (6.39 – 19 mm)	Same as single application chip seal. Provides increased life which is typically the same as a double chip seal. Seals flushed surfaces.
Cape Seal	Single chip seal topped by a finer slurry seal	Provides a denser surface with no loose chips. Improves surface friction and provides longer life.
Rubberized Chip Seal	Chip seal with rubber-asphalt	Provides better crack sealing due to its flexibility. Can be used either as a SAM or SAMI.
European Chip Seal Systems	Polymer modified emulsions Pre-coated chips are often used (6.35 – 19 mm)	Same as U.S. systems, but provide longer life because of modified binders. Pre-coated chips reduce tire noise and reduce / prevent windshield damage.
3. Thin HMA Overlays		
OGFCs	AC mix with high proportions of single-sized aggregate. (19 – 25 mm)	Reduces potential for hydroplaning and improves visitiblity by reducing tire spray. Reduces tire noise and improves surface friction.
European OGFCs (porous asphalts)	Usually modified binders with lower asphalt content, coarse aggregate, and more air voids. Fibers are often used. (15 – 30 mm)	Same as U.S. systems. Thicker layers provide higher draining cpacity and reduced tire noise over a longer period. Fibers and polymers prevent binder runoff / or increase durability and aging resistance.
Stone Mastic Asphalt (European)	A gap-graded, densley compacted hot mix with additives. (25 – 40 mm)	Provides rut resistance surface. Also provides high wear resistance, slow aging, and good low temperature performance.
European Plant Mixed Thin Overlays	Gap-graded thin mixes with modified binders. (15 – 25 mm)	Provide surface friction, low noise surfaces.