



Act 51 Definitions

247.660c Definitions.

Sec. 10c.

(l) "**Preservation**" means an activity undertaken to preserve the integrity of the existing roadway system. Preservation does not include new construction of highways, roads, streets, or bridges, a project that increases the capacity of a highway facility to accommodate that part of traffic having neither an origin nor destination within the local area, widening of a lane width or more, or adding turn lanes of more than 1/2 mile in length. Preservation includes, but is not limited to, 1 or more of the following:

(i) **Maintenance.**

(ii) **Capital preventive treatments.**

(iii) Safety projects.

(iv) Reconstruction.

(v) Resurfacing.

(vi) Restoration.

(vii) Rehabilitation.

(viii) Widening of less than the width of 1 lane.

(ix) Adding auxiliary weaving, climbing, or speed change lanes.

(x) Modernizing intersections.

(xi) Adding auxiliary turning lanes of 1/2 mile or less.

(xii) Installing traffic signs in new locations, installing signal devices in new locations, and replacing existing signal devices.

(m) "**Maintenance**" means routine maintenance or preventive maintenance, or both. Maintenance does not include capital preventive treatments, resurfacing, reconstruction, restoration, rehabilitation, safety projects, widening of less than 1 lane width, adding auxiliary turn lanes of 1/2 mile or less, adding auxiliary weaving, climbing, or speed-change lanes, modernizing intersections, or the upgrading of aggregate surface roads to hard surface roads. Maintenance of state trunk line highways does not include streetlighting except for freeway lighting for traffic safety purposes.

(n) "**Routine maintenance**" means actions performed on a regular or controllable basis or in response to uncontrollable events upon a highway, road, street, or bridge. Routine maintenance includes, but is not limited to, 1 or more of the following:

(i) Snow and ice removal.

(ii) Pothole patching.

(iii) Unplugging drain facilities.

(iv) Replacing damaged sign and pavement markings.

(v) Replacing damaged guardrails.

(vi) Repairing storm damage.

(vii) Repair or operation of traffic signs and signal systems.

(viii) Emergency environmental cleanup.

- (ix) Emergency repairs.
- (x) Emergency management of road closures that result from uncontrollable events.
- (xi) Cleaning streets and associated drainage.
- (xii) Mowing roadside.
- (xiii) Control of roadside brush and vegetation.
- (xiv) Cleaning roadside.
- (xv) Repairing lighting.
- (xvi) Grading.

(o) **"Preventive maintenance"** means a planned strategy of cost-effective treatments to an existing roadway system and its appurtenances that preserve assets by retarding deterioration and maintaining functional condition without significantly increasing structural capacity. Preventive maintenance includes, but is not limited to, 1 or more of the following:

- (i) Pavement crack sealing.
- (ii) Micro surfacing.
- (iii) Chip sealing.
- (iv) Concrete joint resealing.
- (v) Concrete joint repair.
- (vi) Filling shallow pavement cracks.
- (vii) Patching concrete.
- (viii) Shoulder resurfacing.
- (ix) Concrete diamond grinding.
- (x) Dowel bar retrofit.
- (xi) Bituminous overlays of 1-1/2 inches or less in thickness.
- (xii) Restoration of drainage.
- (xiii) Bridge crack sealing.
- (xiv) Bridge joint repair.
- (xv) Bridge seismic retrofit.
- (xvi) Bridge scour countermeasures.
- (xvii) Bridge painting.
- (xviii) Pollution prevention.
- (xix) New treatments as they may be developed.

(q) **"Capital preventive treatments"** means any preventive maintenance category project on state trunk line highways that qualifies under the department's capital preventive maintenance program.

- **The items listed under the definition of preventive maintenance in section O above are capital preventive treatments.**
- **The list of preventive maintenance treatments approved by MDOT for use in federal aid projects follows,** Appendix D-1 of the MDOT Local Agency Programs Guidelines for Geometrics on Local Agency Projects.

Appendix D-1: Approved Preventive Maintenance Treatments

Fix Type	Life Extension (in years) *	Life Extension (in years)	Life Extension (in years)	PASER Rating	ADA Required (Yes/No)
	Flexible	Composite	Rigid		
HMA Crack Treatment	1-3	1-3	N/A	6-7	N
Overband Crack Filling	1-2	1-2	N/A	6-7	N
One Course Non-Structural HMA Overlay	5-7	4-7	N/A	4-5****	Y
Mill and One Course Non-Structural HMA Overlay	5-7	4-7	N/A	3-5	Y
Single Course Chip Seal	3-6	N/A	N/A	5-7 ¹	N
Double Chip Seal	4-7	3-6	N/A	5-7 ¹	Y
Single Course Micro-Surface	3-5	**	N/A	5-6	Y
Multiple Course Micro-Surface	4-6	**	N/A	4-6****	Y
Ultra-Thin HMA Overlay	3-6	3-6	N/A	4-6****	Y
Paver Placed Surface Seal	4-6	**	N/A	5-7	Y
Full Depth Concrete Repair	N/A	N/A	3-10	4-5 ***	N ²
Concrete Joint Resealing	N/A	N/A	1-3	5-8	N
Concrete Spall Repair	N/A	N/A	1-3	5-7	N
Concrete Crack Sealing	N/A	N/A	1-3	4-7	N
Diamond Grinding	N/A	N/A	3-5	4-6	N
Dowel Bar Retrofit	N/A	N/A	2-3	3-5 ***	N
Longitudinal HMA Wedge/Scratch Coat with Surface Treatment	3-7	N/A	N/A	3-5****	Y
Flexible Patching	**	**	N/A	N/A	N
Mastic Joint Repair	1-3	1-3	N/A	4-7	N
Cape Seal	4-7	4-7	N/A	4-7	Y
Flexible Interlayer "A"	4-7	4-7	N/A	4-7	Y
Flexible Interlayer "B" (SAMI)	4-7	4-7	N/A	3-7	Y
Flexible Interlayer "C"	4-7	4-7	N/A	3-7	Y
Fiber Reinforced Flexible Membrane	4-7	4-7	N/A	3-7	N
Fog Seal	**	**	N/A	7-10	N
GSB 88	**	**	N/A	7-10	N
Mastic Surface Treatment	**	**	N/A	7-10	N
Scrub Seal	**	**	N/A	4-8	N

- * The time range is the expected life extending benefit given to the pavement, not the anticipated longevity of the treatment.
- ** Data is not available to quantify the life extension.
- *** The concrete slabs must be in fair to good condition.
- **** Can be used on a pavement with a PASER rating equal to three when the sole reason for rating is rutting or severe raveling of the surface asphalt layer.

¹ For PASER ratings of four or below; providing structural soundness exists, and that additional pre-treatment will be required; for example, wedging, bar seals, spot double chip seals, injection spray patching or other pre-treatments.

² Full depth concrete repair or replacement that exceeds 50% of the paved area of any road intersection (defined as spring point to spring point) will require ADA compliance at that intersection.

Appendix D-2:

Definitions of Preventive Maintenance Treatments

HMA Crack Treatment and Overband Crack Filling

This is a generalized treatment category including crack sealing, crack filling, and crack repair. This crack seal treatment is used on all types of cracks. It involves using a hot air lance or compressed air to blow out the debris in the crack, then filling with a sealant. This class of treatments is intended to seal the cracks from water infiltration and incompressible material entering the pavement system.

Non Structural HMA Overlays:

Non-structural overlays are considered to have an application thickness of 1.5 inches or less of hot mix asphalt HMA material; however, in certain cases the use of 2 inch overlays may be approved. Pre-approved cases include the use of 2 inch overlays for crown correction, the use of superpave mixes that require 2 inch lifts, the use of a scratch course prior to a 1.5 inch overlay in areas where there is a concern with crack sealing materials, and where it is necessary to mill 2 inches to address distress (such as rutting). Use of 2 inch overlays is still the exception to the rule and the use of 2 inches of HMA in the preventive maintenance program for any reason other than the pre-approved reasons listed above will require approval from the MDOT Local Agency Staff Engineer, the MDOT Local Agency Engineer, and the Development Services Division Administrator. Approval will be on a case by case basis. Preventive maintenance projects should not be applied to a roadway that has a significant level of distress that should be addressed by a 3R or reconstruction type project.

Longitudinal HMA Wedge/Scratch Coat with Surface Treatment:

Longitudinal HMA wedge/scratch coat with surface treatment consists of a paver-placed HMA material to correct the cross section of the roadway often done on lower volume roads in combination with a chip seal, but can also be used in combination with a micro-surface, ultra-thin overlay, and conventional overlay. This is not to be used in small isolated areas such as a pothole repair. This is to be used for the majority of the length of the project (using engineering judgment) so that the proper increase in ride quality can be achieved.

Chip Seal

A chip seal is the application of an asphalt emulsion with a cover aggregate. A chip seal will seal and/or retard the oxidation of an existing pavement surface, improve skid resistance of the pavement surface; seal fine surface cracks in the pavement, thus reducing the intrusion of water into the pavement structure; and retard the raveling of aggregate from a weathered pavement surface. Chip seals may be constructed using a single or multiple layers of asphalt emulsion and aggregate cover. Chip seals may be applied in conjunction with crack sealing.

Micro-Surface

Micro-surfacing is a mixture of polymer modified asphalt emulsion, mineral aggregate, mineral filler, water, and other additives placed on a paved surface. A single course micro-surfacing will retard oxidation and improve skid resistance in the pavement surface. A multiple course micro-surfacing is used to correct certain pavement surface deficiencies including severe rutting, minor surface profile irregularities, polished aggregate or low skid resistance and light to moderate raveling. Micro-surfacing is typically used on flexible or composite pavements and can perform under all traffic volumes.

Ultra-Thin HMA Overlay

Ultra-Thin HMA Overlay is a dense graded bituminous mixture limited to an application rate of 72lbs/syd, and a maximum average thickness of 0.75 inches which is applied to retard oxidation and improve skid resistance in the pavement surface.

Full Depth Concrete Repair

The work consists of complete removal and replacement of the concrete pavement at the deteriorated joint or open crack. The new concrete repair should include load transfer (dowel bars), pavement reinforcement if the pavement is a joint reinforce concrete pavement, contraction and/or expansion joints with joint seals. Repairs adjacent to ADA ramps will be reviewed on a case by case basis to determine if the fix is an “alteration” or “maintenance” with regard to ADA compliance.

Concrete Joint Resealing

The purpose of resealing the concrete pavement joints is to prevent water and incompressibles from entering the pavement structure, thus slowing the rate of deterioration of the concrete pavement. Concrete joint resealing includes the removal of the existing joint seals and resealing the transverse and longitudinal joint with preformed neoprene, silicones, or low-modulus hot-poured rubber.

Concrete Spall Repair

Spall repair is done to remove distress from the pavement and to increase the life of the repair versus typical reactive methods that use temporary asphaltic filler or cover materials. The work repairs spalled concrete by removing all unsound concrete, cleaning the area, and placing a filler material consisting of a fast-set mortar or a rapid setting polymer concrete. Spalling may occur along transverse or longitudinal joints or cracks, or be located somewhere on the pavement surface. Filler materials are typically pre-packaged and are placed according to recommendations from the supplier.

Concrete Crack Sealing

The purpose of sealing the cracks in the concrete pavement is to reduce the water and incompressible from entering the pavement structure and thus slowing the deterioration rate of the pavement. This treatment is can be used in conjunction with other treatments of rigid pavements such as joint resealing and minor spall repair and /or full depth concrete joint repair.

Diamond Grinding

Diamond grinding is used to restore the surface longitudinal profile and crown of a concrete pavement that provides an improved ride quality. Benefits from diamond grinding include the removal of joint and crack faults, the removal of wheel ruts caused by tire wear, the restoration of transverse drainage, and the improvement of skid resistance. Often other repairs should be performed prior to diamond grinding.

Dowel Bar Retrofit

A dowel bar retrofit treatment restores the effective load transfer at faulted joints and cracks, significantly reduces the recurrence of faulting, and increases the structural capacity of the pavement. Dowel bar retrofit is an operation in which slots are cut into the concrete pavement across faulted joints and cracks, and dowel bars are placed in the slots to restore the load transfer. The work consists of five operations:

- cutting the slots
- preparing the slots
- placing the dowel bars
- backfilling the slots
- opening the pavement to traffic

Paver Placed Surface Seal

A special paver places a polymer modified asphalt emulsion followed immediately by a gap-graded, ultra-thin HMA surface course. A paver placed surface seal is a non-structural HMA overlay in combination with a bonding/sealing polymer modified asphalt emulsion. It assists in sealing the existing pavement surface to reduce the intrusion of water into the pavement structure; improve friction; slow the rate of pavement deterioration; correct minor pavement surface deficiencies; and improve the ride, noise, and skid qualities of the pavement.

Flexible Patching

Flexible patching is a process that can be used for repairing alligator cracking, cupped joints, and compound cracking. Flexible patching can be used on asphalt or concrete surfaces. Cracks are cleaned and dried using compressed air or a heat lance. This ensures that sealant properly adheres to the pavement. The sealant is applied through a wand or gravity and is hand squeegeed to ensure proper coverage of the affected area. An approximately 1/8 inch base of sealant is ideal to hold the cover material in place. In some cases an aggregate cover material is placed on top of the sealant with other products to assist the aggregate as part of the mix. This improves not only the durability of the treatment, but also makes for a smoother riding surface. Allow for the flexible patching to fully cure before opening to traffic.

Mastic Joint Repair

Mastic Joint Repair involves removing old expansion joint material in concrete roadways and applying a mastic joint between the slabs. Depending on the product used, it may need to be sanded prior to traffic resuming.

Fog Seal

Fog Seal is the process of using a pressure distributor to apply an asphalt emulsion typically over a chip sealed road. The distributor is required to have a computerized application rate. This will ensure that the fog seal is applied properly to coat the void areas of the chip seal. This will help with stone retention in a chip seal as well as keep the water from getting underneath the chip seal. Fog Seal is also an effective method to provide asphalt binders with UV protection and the degradation caused by UV exposure. Alternatively, Fog Seal may be a candidate for protecting shoulder pavements or other HMA pavements (i.e. non-chip seal surface treatments) as long as skid resistance is not diminished or creates a safety hazard as a result of the fog seal application. Traffic should be kept off the freshly applied fog seal until it has fully cured.

GSB-88

GSB-88 is a process that is applied similarly to that of a fog seal. GSB-88 is used early in the life cycle of a road. Product is best used on roads that have little deterioration occurring. The product has gilsonite mixed into the product which is a naturally made asphalt. The asphaltenes, maltenes, and light oils penetrate the existing asphalt and introduce gilsonite to the pavement. This helps rejuvenate the asphalt characteristics that were initially lost due to UV rays, oxidization, and other natural elements. The gilsonite sets in pores and actually holds the asphalt fines in the asphalt matrix. GSB-88 is sprayed with a computerized distributor. The distributor may also have a sand spreading mechanism on the back to spread sand to help with traction and also decrease cure times. Traffic should be kept off the product until it has had time to fully cure.

Mastic Surface Treatment:

This process seeks to improve micro-texture on a variety of Asphalt Surfaces or by locking down loose aggregate and eliminating dust associated with Chip Seal Surfaces. It is a mixture of polymer modified asphalt emulsion, quality “fine” aggregate, dark color enhancers, recycled materials and catalysts. This treatment is designed to protect your investment from UV damage, maintain frictional characteristics, minimize the costs of future maintenance treatments and return the roadways to traffic more quickly.

Fiber Reinforced Flexible Membrane Surface Treatment

This treatment is a crack inhibiting, waterproofing and sealing membrane. Fiberized Reinforced Surface treatment can be utilized to address two distinct distress application needs. Type A is applied as a superior wearing course for stand-alone surface treatment applications. This process consists of a combination of polymer-modified asphalt emulsion, chopped fiberglass strands and quality crushed aggregate. The benefit of the fiberglass is the superior tensile strength which absorbs and bridges pavement distresses, as well as helping to reduce

reflective cracking.

Cape Seal

A Cape seal is a two layered surface treatment in which the first layer is comprised of a chip seal followed by a second layer of Micro surface. Alternately, some situations may require or allow for reversal of the first and second layers. A cape seal helps to retard reflective cracking by combining a rather flexible seal to the original pavement, provide a hard frictional riding surface, and to repair minor pavement profile deficiencies. It can be a cost effective method for treatment of ‘higher’ stressed pavement surfaces that would not be possible with a single surface of chip seal or micro surface treatment alone. It can be used on gravel surfaces to construct a paved roadway but is typically used on flexible or composite pavements and can perform under all traffic volumes.

Flexible Interlayers

Similar to Cape Seal philosophy several pavement preservation tools are used as flexible interlayers under new hot mix paving layer(s). Flexible interlayers are frequently used with mill and fill applications to help retard or redirect vertical reflective cracking horizontally to increase the service life of the new pavement and/or to defer requirement for crack sealing.

Flexible Interlayer “A” (Single Chip Seal)

A single layer of chip seal using commonly approved asphalt emulsion, polymer modified or non-polymer modified, can be placed under a Micro Surfacing or Hot Mix Asphalt surface. This treatment is a crack inhibiting, waterproofing and sealing membrane. The single chip seal application helps extend the life of the subsequent overlay by delaying reflective cracking or “bottom up” cracking by dissipating crack propagation energy and deflecting most of the “top down” pavement strain from vehicle loading. It is typically used on highly distressed milled or unmilled surfaces and can perform under all traffic volumes. It may not perform as well as Flexible Interlayer “B” (SAMI) dependent on the polymer concentration in the emulsion.

Flexible Interlayer “B” (SAMI (Stress Absorbing Membrane Interlayer))

A combination of highly polymerized asphalt emulsion and quality crushed aggregate. Installed much like a Chip Seal. This treatment is a crack inhibiting, waterproofing and sealing membrane. An excellent bonding agent that acts as a flexible waterproofing membrane installed prior to either a Micro Surfacing or Hot Mix Asphalt. **SAMI** helps extend the life of the subsequent overlay by delaying reflective cracking or “bottom up” cracking by dissipating crack propagation energy and deflecting most of the “top down” pavement strain from vehicle loading. It is typically used on highly distressed milled or unmilled surfaces and can perform under all traffic volumes.

Flexible Interlayer “C” (Fiber Reinforced Flexible Membrane Interlayer)

This treatment is a crack inhibiting, waterproofing and sealing membrane. **Fiberized Type B** is a Stress Absorbing Membrane Interlayer (SAMI) used to reduce reflective cracking in pavement system overlays. This process consists of a combination of polymer-modified asphalt emulsion, chopped fiberglass strands and quality crushed aggregate. The benefit of the

fiberglass is the superior tensile strength which absorbs and bridges pavement distresses, as well as helping to reduce reflective cracking better than Flexible Interlayers A or B.

Scrub Seal

Scrub Seal is the application of a chip surface placed over polymer modified asphalt rejuvenating emulsion surface sealer. The asphalt emulsion surface sealer is a polymer modified rejuvenating emulsion that is scrubbed with a scrub broom device immediately following application of the emulsion by a distributor. The scrub broom is used to force emulsion sealer into the existing surface and to distribute the rejuvenating emulsion sealer over variable road surface contours. Immediately after scrubbing the polymer modified asphalt rejuvenating emulsion it is covered with a surface aggregate.

Longitudinal Joint Repair

A process in which severely opened HMA or concrete joints are sealed by a chosen pre-treatment and/or then covered with a small width micro surfacing treatment to maintain a smooth ride quality while sealing the opened longitudinal joint and preventing further damage to the longitudinal joint from traffic and weather.