










COMMON MAINTENANCE PROBLEMS IN PAVEMENTS – CAUSES AND TREATMENTS

ASPHALT PAVEMENTS	SYMPTOM	CAUSES	TREATMENTS
	Transverse Cracks	Temperature changes Shrinkage of asphalt with age Reflection of joints in underlying concrete pavement	-Do nothing -Crack sealing -Chip seal -Thin overlay
		Block Cracks	Shrinkage of soil cement base Aging of asphalt surface Frost action
	Longitudinal Cracks – Parallel to centerline Along construction joints (commonly along centerline or lane lines)	Inadequate bonding Reflection of joints in sub layers	-Crack seal to slow deterioration -Strengthen with overlay



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	<p>Longitudinal Cracks – In wheel path</p>	<p>Heavy loads</p>	<ul style="list-style-type: none"> -Crack seal to slow deterioration -Strengthen with overlay -Reconstruction
	<p>Severe cracking in wheel path - Alligator (fatigue) cracking</p>	<ul style="list-style-type: none"> Insufficient thickness Base weakened by saturation 	<ul style="list-style-type: none"> -Crack seal to slow deterioration -Full depth asphalt patching -Total reconstruction -Improve drainage
	<p>Edge cracking – longitudinal or crescent shaped, usually within one foot of roadway edge</p>	<ul style="list-style-type: none"> Weakened sub-base at edge Heavy loads Poor pavement edge support Poor shoulder drainage 	<ul style="list-style-type: none"> -Fill and seal cracks to slow deterioration -Strengthen with overlay or reconstruction -Widen Lane -Stabilize shoulders




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	<p><i>Rutting</i></p>	<ul style="list-style-type: none"> Improper density of asphalt Improper compaction Weak subgrade 	<ul style="list-style-type: none"> -Asphalt leveling -Microsurfacing -Mill and fill -Base reconstruction & asphalt overlay
	<p><i>Corrugations (Shoving)</i></p>	<ul style="list-style-type: none"> Heavy truck traffic coming to a stop, shoving pavement in waves Unstable asphalt mix or weak subgrade 	<ul style="list-style-type: none"> -Mill and fill -Reconstruction
	<p><i>Debonding</i> – separation of layers</p>	<ul style="list-style-type: none"> Improper compaction of upper layer Poor tack coat Insufficient layer thickness 	<ul style="list-style-type: none"> -Partial depth patch -Partial depth patch with overlay -Mill and overlay

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	<p>Raveling – loss of fine aggregate in surface layer</p>	<p>Improper compaction</p> <p>Lack of density in mix</p> <p>Uneven mixture due to improper handling during placement</p> <p>Poor quality control of gradation</p> <p>Clay, other impurities in gravel</p> <p>Aging pavement, binders oxidized</p>	<p>-Seal coat</p> <p>-Chip sealing</p> <p>-Microsurfacing</p> <p>-Thin overlay</p> <p>-Mill and fill for treating advanced raveling</p>
			<p>Pothole</p>

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	<p>Bleeding (Flushing) – Presence of free asphalt in the pavement surface</p>	<ul style="list-style-type: none"> High asphalt cement content Improper asphalt cement type Improper compaction High truck counts Insufficient cooling before opening to traffic 	<ul style="list-style-type: none"> -Sanding -Spot overlay -Microsurfacing -Milling and overlay
	<p>Utility Cuts – Potential problems:</p>	<ul style="list-style-type: none"> Failure to match pavement cross section Improper compaction Raveling of adjacent oxidized pavement 	<ul style="list-style-type: none"> -Inspection of utility work to ensure proper compaction -Asphalt leveling -Removal and replacement by full depth asphalt patching
	<p>Drainage Related Edge Cracking due to Saturated Base</p>	<ul style="list-style-type: none"> Subsurface drainage problems Base failure Washouts 	<ul style="list-style-type: none"> -Full depth asphalt patching -Base Reconstruction

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Oxidation

Aging of asphalt cement

- Partial depth patch
- Seal coat
- Mill & overlay
- Base Reconstruction



Dessoriation Cracking

- Shrinking soils
- Drought conditions
- Overhanging trees

- Seal cracks
- Asphalt leveling
- Base reconstruction