

Overlays and Asphaltic Surfaces

WisDOT/WAPA Asphalt Pavement
Project Manager Training

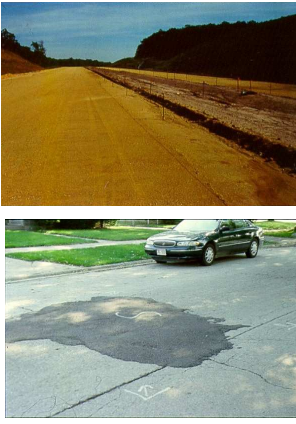
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Overlay Applications

- Repair of existing surface
- Milling
- Rubblization

Base Conditions

- Mixtures to be placed only on "prepared, firm and compacted base, foundation layer or existing pavement"
- Before placement, fill potholes, sags and depressions; alter crown; other corrections




Subgrade

- Look for areas of soft or yielding soil
 - Identify by proof rolling
 - Rework, stabilize or EBS problem areas
- Check longitudinal grade and cross slopes
 - A good blade operator can shape the base to within:
 - 1 inch per 100 ft. of grade
 - ¼" of the cross slope per lane of pavement

Base Course


- The base course must be shaped and compacted to the proper transverse slope and to a smooth, true profile.
 - Check compaction by proof rolling
 - Check for sags or mounds between red tops
 - Correct any deficiencies

Existing PCC Pavement



- What's the Project scope?
 - Base patching
 - Broken pavement pieces that rock or move under normal traffic loads should be removed and the pavement patched
 - All surplus crack and joint sealing material should be removed and all protruding joint materials (fillers and sealers) should be removed down to at least the existing pavement surface.
 - Crack & Seat
 - Specific specification
 - Rubblization
 - Specific specification

Existing HMA Pavement



- What's the Project scope
 - Base patching
 - Remove and replace failed areas
 - Leveling Layer
 - Grade and cross slope corrections
 - Feather thickness correction with milling
 - Max. thickness 3" & Min. thickness 1 1/2"
 - Milling
 - Specific specification

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Difficult patch to construct and compact.

Use common sense!

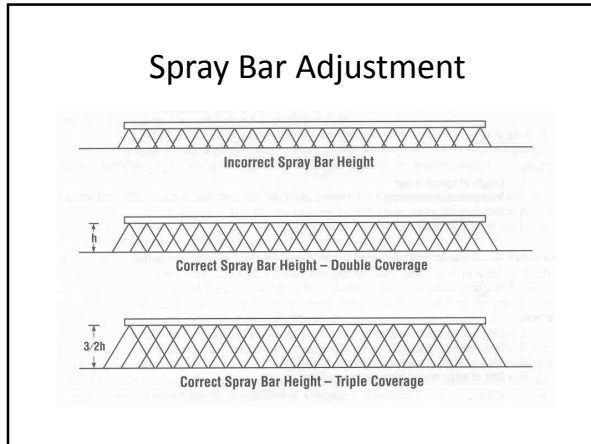
Tack Coat

- Help bond new layer to old.
- Too little → slippage of top layer over lower
- Too much → bleeding
- Clean and dry surface
- Spray emulsion from distributor truck
- Allow emulsion to break before paving

Tack Coats

- MS-2, SS-1, SS-1h, CSS-1 or CSS-1h emulsion
- May dilute by mixing with equal amount of potable water
- Air temperature $\geq 36F$
- Emulsion temperature between 68 and 158F
- Typical application rates (after dilution):
 - 0.025 gal/SY on new surfaces and specs
(455.3.2.1(2))
 - 0.033 gal/SY on old surfaces





Milling

- Removes old/distressed pavement
- Eliminates costly shoulder work
- Maintains drainage features, overhead clearance
- Corrects slope, elevation, etc.



Milling

- Full-Depth
 - Remove existing asphalt layer(s) without incorporating or damaging underlying layers
- Partial-Depth
 - Remove top part of existing asphalt layers
 - Uniform, planar milled surface
 - Mill to grade and slope required
 - Do not damage underlying pavement
 - Self-propelled milling machine with grade, slope and depth controls



Milling Operation

- Control dust and loose particles
- Maintain traffic during construction (unless road is closed)
- Do not leave longitudinal drop-off 2 in or more in depth during non-working hours
- Grade shoulders to drain at end of day



Rubblization

Slab Fracturing

- Crack and Seat – break concrete pavement into pieces 4 to 8 square feet in area (340)
 - Reduces slab length and expansion/contraction
- Rubblizing – destroys the slabs, turning them into a strong, high quality aggregate base (335)
 - Reflection cracking occurs at joints, and rubblizing removes the joints.

Rubblization

- Self-contained, self-propelled breakers – resonant breaker or multi-head breaker
- Saw full depth joints, sever load transfer
- Break concrete into pieces ≤ 12 inches
- 75% of particles with max dimension
 - ≤ 9 in. in bottom of slab
 - ≤ 3 in. in top of slab
 - ≤ 2 in. at surface
- Visual determination from test holes

Rubblization

- Do not damage (or repair) adjacent pavement
- Do not damage pipes, manholes, etc.
 - Mark utilities before rubblizing, reduce breaking energy or remove concrete and backfill over
- Remove exposed reinforcing steel
- Remove loose patching material, joint filler, etc.
- Fill holes and depressions and compact

Compaction

- Compact with two passes of vibratory steel roller (10 ton or heavier) at 6 ft/sec or slower
- If no intermediate base layer will be placed, roll surface with
 - One pass of pneumatic roller
 - One pass with vibratory steel roller immediately before paving



Asphaltic Surface (465)



- Used when QMP provisions are not required
- Pavement, islands, curb, rumble strip, patching, detours, temporary construction
- Mix design is required for Surface, Surface Detours and Surface Patching items
 - Meet requirements for E-0.3, E-1 or E-3 except QMP requirements

Asphalt Surface – Other Applications

- Surface Driveways and Field Entrances, Surface Temporary, Safety Islands, Curb, Flumes, Shoulder Rumble Strip, Intersection Rumble Strip
 - Mix design not required
 - Coarse and fine aggregates with AC (except Curb requires PG64-22)
 - Uniformly mixed and coated
 - RAP may be used

Asphaltic Surface - Construction

- Use machine placement, if practical
- Compact using ordinary methods (450.3.2.6) except:
 - Islands as engineer directs
 - Flumes using compactors, tampers or rollers
 - Curb with curb laying machine, forms or hand shaping (small quantities)

Asphaltic Surface - Construction

- Ordinary compaction
 - Compact until “no further appreciable consolidation is visible”
 - Use two or more rollers for more than 165 tons of mix per hour
- Surface, Detours and Temporary – check with straightedge
 - No variation greater than ¼ in. in 10 ft
 - Remove and replace or correct as directed

Rumble Strips

- Construct by milling asphaltic surface shoulder
- Rotary head milling machine
- Sweep or vacuum debris before opening to traffic

