

# Longitudinal Joint Best Practices

## Planning and Design Phase



- Evaluate traffic control for possibility of echelon paving to reduce cold joints.
- For mill and fill projects, consider milling and filling one lane at a time to avoid unconfined edges.
- Consider cut-back or milled-back joints to eliminate low density area.
- Consider the notched wedge joint when lift thicknesses are between 1.5 – 3 inches.
- Offset longitudinal joints between lifts by at least 6 inches.
- Ensure lift thickness of at 4x NMAAS for coarse mixes, or 3x NMAAS for fine mixes.
- Pay for tack coat as separate pay item to ensure sufficient application.
- Treat cold face for improved durability: good - emulsified tack, better - asphalt, best - joint adhesive.
- Consider warm-mix asphalt (WMA) for late-season paving and as compaction aid.
- Select less permeable surface mixes by using smallest appropriate NMAAS mix.
- Discuss joint-related topics in pre-paving meeting.
- Evaluate top-down joint enrichment methods post-construction, such as RPE, others.
- Consider bottom-up sealing techniques (LJS / VRAM).



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## Placement and Compaction



- Balance paving operations (paver speed, # of trucks, rolling train, plant) to ensure no interruptions.
- Extend augers and tunnels within 12-18 inches of the end gate for fresh flow of mix to gate.
- Synchronize paver and auger speed for uniform head of material across entire width of paver.
- Use a joint matcher on hot side to ensure correct thickness of mat to consistently match cold side.
- Never starve hot-side of joint (and thus no compaction) to avoid bridging of roller across cold side.
- Target 1-inch overlap when closing a butt or notched wedge joint (½-inch for milled/cutback edge).
- Avoid excessive luting/raking, and do not rake across (removing) roll down material.
- Utilize a string line for first-pass straightness.
- Avoid mix segregation. Use MTVs.
- Keep vibratory screed on all the time and set end gate flush with surface.
- Apply an ample and uniform tack coat.
- Compact unconfined edge with 1st pass of vibratory roller being 6 inches over edge, or alternatively 6 inches from edge with 2<sup>nd</sup> pass extending over edge.
- Compact confined edge with 1st pass of vibratory 6 in. from edge, then 2<sup>nd</sup> pass 4-6 in. onto cold mat.



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## Specifications



- When implementing new joint specifications, be sure to: collaborate with industry, include training, establish baselines, make incremental changes, and have robust evaluation plan.
- Ensure requirements are clear regarding joint placement, testing, acceptance, quality control, etc.
- Require minimum joint density with regular QA testing. Good starting point is 2% lower than the required mat density, and at least 90% TMD at joint.
- Ensure consistency in density testing locations around the joint. Location (hot side, cold side, distance from the joint) matters!
- For density analysis, use 6-inch cores. Consider the specified location to be centered on visible joint or centered over middle of wedge for notched wedge joints. This approximates 50/50 split between the two mats (lots) to average Rice values.
- Consider incentives/disincentives for joint density.
- Include longitudinal joint testing as part of contractor's QC program.
- Require constructing a completed longitudinal joint as part of test strip.
- Allow use of infrared joint heaters and other innovative techniques.

