



U.S. Department of Transportation
Federal Highway Administration

MCTC
MOBILE CONCRETE
TECHNOLOGY CENTER

MCTC FINDINGS

SAW CUTTING FOR CONCRETE PAVING

WHY SAW CUT?

- Heat from the cement hydration raises the temperature of concrete.
- Concrete shrinks with cooling/drying.
- Cracking results when internal stresses develop.
- Sawing relieves stresses by creating a plane of weakness where a crack will form.
- Straight, neat cut eases sealing and maintenance activities and enhances aesthetics.

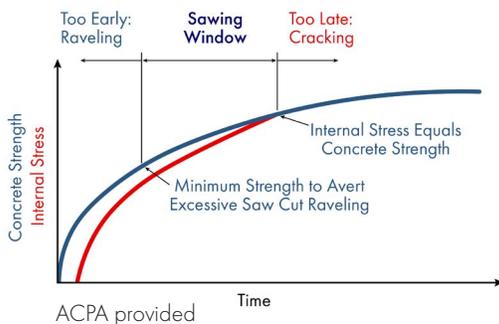
Sawing ensures that cracks are formed in the specified location where load transfer dowels are placed.

WHEN TO SAW CUT (SAWING WINDOW)?

Too Early -- Raveling

Too Late -- Potential for random cracking

FHWA's HIPERPAV® software can be used to predict sawing window.



DIFFERENT METHODS OF SAW CUTTING

Conventional Saw Cutting

- Can either be dry cutting with diamond blades or wet cutting.
- Joint depth is typically one third the thickness of pavement to facilitate cracking.

Early Entry Saw Cutting

- Smaller and lighter than a conventional walk-behind saw.
- Utilizes an upcut design.
- Allows sawing to begin within an hour or two of paving.
- Depth of cut is approximately 1 inch for transverse joints (can vary) and T/3 for longitudinal joints.
- Can begin early in the hydration process, before internal stresses develop.
- Eliminates dust because moisture is still present during sawing.
- For day paving, often allows sawing to be completed by early evening.

Field Inspection Alert:

If early entry sawing is not done at the appropriate time, then there can be a risk of not activating the joint at the appropriate place. If dust starts coming from that sawing, conventional saw cutting should be utilized.

Variable Width Saw Cut



CONSTRUCTION TIPS

- The saw cut becomes:
 - Shallower as the blade wears.
 - Narrower as the blade wears.
- Blade wear can be critical when compression seals are used to seal joints.
- Quality control personnel should check saw blades for wear prior to each construction shift.
- Joint must be placed near the center of the dowel bars.
- Common practice is to ensure at least 6 inches of dowel embedment.
- Carefully follow a chalk mark or other delineator method identifying center of dowel bars.

Conventional Saw



Early-entry Saw



Imperfect Alignment of Saw Cut



Images FHWA provided

LINK TO LITERATURE [TechBrief: Early-Entry Sawing of Portland Cement Concrete Pavements FHWA-HIF-07-031 \(dot.gov\)](#)

FHWA-HIF-23-041

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