

## From Tracie Leix, Local Agency Program Engineer

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*This advisory is superseded by any subsequent revisions to the references listed in this index.*

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### ROAD CROSS SLOPES AND PARABOLIC CROWNS - CLARIFICATION

The goal of this document is to provide helpful guidance for Local Agency staff and consultants who are designing projects that will be utilizing federal or state funding. This document does not provide any new information that cannot be found in other MDOT guidelines but does attempt to add clarity to some common issues.

Per FHWA directive, the replacement or use of **parabolic crowns is not allowed** under any condition, **nor will any design exceptions or variances be granted**. The following defines what is allowed and what shall be shown in the project documents. This is applicable to standard road cross-sections. It does not apply to bridges, or to roadway superelevation or transition sections

When creating plans or a log for a project, if the existing cross-section shows a variable cross slope, it must be documented in writing whether the cross slope is parabolic or not. A note on the plan/log sheet is recommended.

On 3R projects that include resurfacing pavement, cross-slopes should be restored to new construction standards regardless of depth. Cross slopes shall have a set grade between 1.5 and 2.0 percent. A cross slope of up to 3.0 percent may be used if supported by AASHTO requirements based on roadway classification. Cross slope differences between lanes are allowed, but the difference shall not exceed 1.0 percent unless there is a crown.

If the roadway contains a crown, it shall be located at a lane line or in the center of the road cross-section unless infeasible due to existing curb line elevations. If located at the center of a lane, the slope on each side of the crown shall be equal and shall not exceed 3.0 percent.

Design exceptions and design variances for cross slopes greater than 3.0 percent will not be considered unless the road has three or more lanes in one direction; or if the existing slope cannot be corrected to meet current standards due to existing curb line elevations.

On proposed cross-sections, the cross slope for **each lane** must be clearly identified. It is recommended that the cross slope be a set slope and not a range of slopes. If conditions require a range to be used, the range must be accompanied by the following:

1. A table showing the proposed road slopes (or range of slopes) and station ranges in which each occurs.
2. A plan/log note stating that the contractor shall maintain a straight-line slope (state allowable range within the above standards) to match the existing curb elevation, and under no circumstances shall the cross slope be parabolic.

Please contact your LAP staff engineer with any questions. You may also contact Ryan Doyle at [DoyleR3@Michigan.gov](mailto:DoyleR3@Michigan.gov).