



Illinois Department of Transportation

Memorandum

To: Studies and Plans Squads PPM 40-12
From: James M. Sullivan Revised: Tim Brandenburg
Subject: Shoulder Treatments for Multiple Overlays
Date: September 15, 1998 Revision Date: December 11, 2006

PLAN PREPARATION MEMORANDUM 40-12

BACKGROUND

This memorandum supplements Chapters 44, 47, 50 & 53 of the BDE Manual in providing uniformity of District preference concerning shoulder treatments for multiple overlays on Interstates and Multilane Highways.

The profile raising caused by overlays on our Interstate and other Multilane Highways causes problems in matching the stabilized or aggregate shoulders into the existing foreslopes. The use of typical shoulder wedges leads to reduced usable shoulder widths or steepened cross slopes.

PROCEDURE

We have several sources of information and guidance regarding these shoulders. BDE Chapter 53-4.05(e) instructs us that "...shoulder cross slope may be increased from 4% to a maximum of 6% except where adjacent to superelevated pavements...". This has the effect of reducing the thickness at the outside edge thus mitigating profile buildup. Also, where the existing stabilized shoulder width meets the criteria for new construction, BDE Chapter 53-4.05(e) allows us to reduce the top width of the stabilized shoulder an amount equal to the resurfacing thickness at its edge, "...the top width of the resurfacing may be reduced at the rate of 1 inch for each 1 inch of resurfacing thickness.". This also aids the matching of the foreslopes.

Highway Standard 482011 shows a slope of up to 6% on full thickness aggregate shoulders. The 9% maximum slope is shown only for aggregate wedges. BDE Chapter 44 establishes Design Criteria for Rural and Urban Freeways at 10 ft. outside shoulders with 10 ft. paved. On the inside shoulders, a total width of 8 ft. with 6 ft. to 8 ft. paved is required.

Comparing this information to existing conditions on our Interstates leads to the following applications:

Typically our outside shoulders are 10 ft. or wider, and include a 2 ft. earth or aggregate wedge as part of the total shoulder width. As far as shoulder widths, we can meet the Design Criteria intent of BDE Chapter 44 by resurfacing these existing stabilized shoulders at a slope of 6%. A nominal 2 ft. earth wedge at a 1:4 cross slope should then cover the original unpaved shoulder area, converting it to part of the foreslope, and minimizing the work needed to complete the cross section.

For 8 ft. median shoulders with 6 ft. or 4 ft. paved and 2 ft. or 4 ft. aggregate, the paved shoulder should be resurfaced at 6%, and the aggregate shoulders should be topped with new aggregate sloping also at 6%. Embankment will be needed to match the foreslopes. If the existing foreslopes are 1:6, a 1:4 wedge will match in about 6 ft. If the existing foreslopes are 1:4, a steeper wedge will be needed. A 1:3 wedge would match in about 3 ft., but we should use a minimum width of 5 ft. for constructability and to better match the foreslope. District CADD Detail; "48203AAA - Shoulder Treatments for Multiple Overlays" has been created for use by Studies and Plans Squads when resurfacing interstates and multilane highways.

A discussion of the applicable "Shoulder Treatments for Multiple Overlays" should be held at the Scoping Field Check. Other variables such as project scope, schedule and budget will play an important role in determining the final project scope and actual treatment for shoulders.