

3-1-96

FILE 500.1

Montana Department of Transportation Engineering Division <b>MANAGEMENT MEMO</b>	Management Memo Number:	96-01
	Date Issued:	3/1/96
	Date Effective:	3/1/96
Subject: Shoulder Rumble Strip Policy		

To: All Offices

From: Gary A. Gilmore, P.E. *Gary A. Gilmore*  
 Administrator-Engineering Division

INTRODUCTION

The following establishes a policy for the use of rumble strips on roadway shoulders. It was developed from a draft policy circulated to the public and throughout the Montana Department of Transportation. Information was also solicited from other western states. This policy gives consideration to comments from MDT staff, including those from the December 13, 1995 District Administrators meeting, and from the public.

INFORMATION

Run-off-the road accidents by sleepy or inattentive drivers have been a concern of highway engineers for a long time. Research done in other states and Montana indicates that the number of m-off-the-road accidents can be reduced substantially through the use of rumble strips on the shoulders. Eoweever, drivers must share highway shoulders with bicyclists who cannot operate k-here there are rumble strips. Also, rumble strips should not unduly complicate maintenance operations or reduce pavement life.

Shoulders outside of rumble strips will generally be swept as needed, considering bicycle usage and other maintenance activities.

The policy does not preclude the use of rumble strips in travel lanes to alert drivers. Deviation from the policy must be approved by the Preconstruction Engineer.

POLICY

Method of Installation

Concrete - In new concrete shoulders, the rumble strips shall be formed in using a continuous corrugated pattern 300 to C00 mm (12" to 16") wide. The corrugations shall be on 114 mm (4 1/2") centers, with a 25 mm (1") radius, and 25 mm (1") depth. The rumble strips shall be placed 150 mm (6") outside the shoulder stripe.

On existing concrete shoulders, the rumble strip installation method shall be determined on a case-by-case basis.

Asphalt - Rumble strips shall be milled into asphalt shoulders. Milled in rumble strips shall be 300 to 400 mm (12" to 16") wide, and 13 mm to 19 mm (1/2" to 3/4") deep. The radius of

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the milling head shall be a maximum of 300 mm (12"). The rumble strips shall be on 300 mm (12") centers, placed 150 mm (6") outside the shoulder stripe.

Location and Design

Interstate

Rumble strips shall be provided on the right and left shoulders of all Interstate new construction, reconstruction, and overlay projects unless there is a specific reason not to do so (documented in Scope of Work Report).

At exit ramps rumble strips shall end 30 meters (100') upstream of the ramp taper, and begin again at the gore nose left off-ramp shoulder stripe.

At entry ramps rumble strips shall end at the gore nose, and begin again at the ramp taper.

National Highway Routes and Primary Routes

On segments of National Highway or Primary routes which are within designated city or urban limits, engineering judgement should be used on a case-by-case basis to determine if rumble strip installation is appropriate.

Rumble strips shall be discontinued across the full width of all public and private (residential and commercial) road approaches.

Rumble strips shall be continued along the full length, including tapers, of mailbox turnouts, scenic turnouts, historic marker turnouts, etc.

Shoulder width > 1.2 m (4 feet)

Rumble strips will be provided on the shoulders of all National Highway and Primary new construction, reconstruction, and overlay projects, subject to the restrictions within urban and city limits. Justification to not provide rumble strips on 1.2. to 1.8 m (4 to 6 ft) shoulders shall be documented in the Scope of Work Report. Justification will be based in part on corridor continuity, approach density, bicycle usage, and accident history.

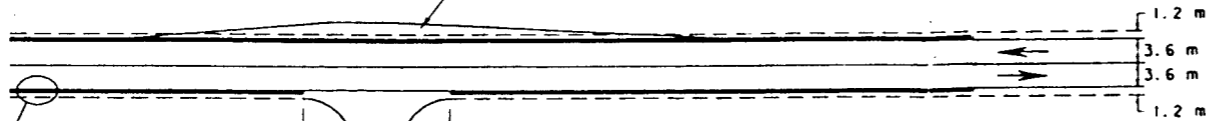
Shoulder width < 1.2 m (4 feet)

Rumble strips shall generally not be provided on shoulders less than 1.2 m (4 feet) wide. In cases where there is little or no bicycle use and the incidence of run-off-the-road accidents is high, rumble strips should be considered. Justification to provide rumble strips must be documented in the Scope of Work Report.

**CLOSING**

Adherence to this policy will result in more consistent use of shoulder rumble strips on Montana highways.

CONTINUE RUMBLE STRIPS ALONG THE FULL LENGTH, INCLUDING TAPERS, OF MAILBOX TURNOUTS, SCENIC TURNOUTS, HISTORIC MARKER TURNOUTS, ETC.

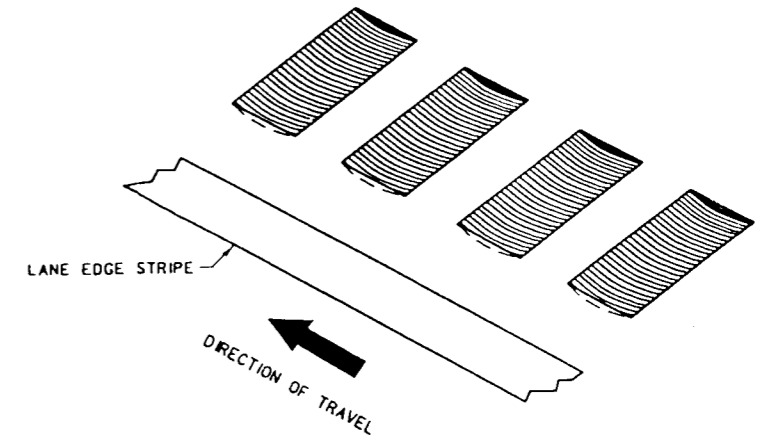


\* DETERMINE THE METHOD OF INSTALLATION FOR RUMBLE STRIPS ON EXISTING CONCRETE SHOULDERS ON A CASE-BY-CASE BASIS.

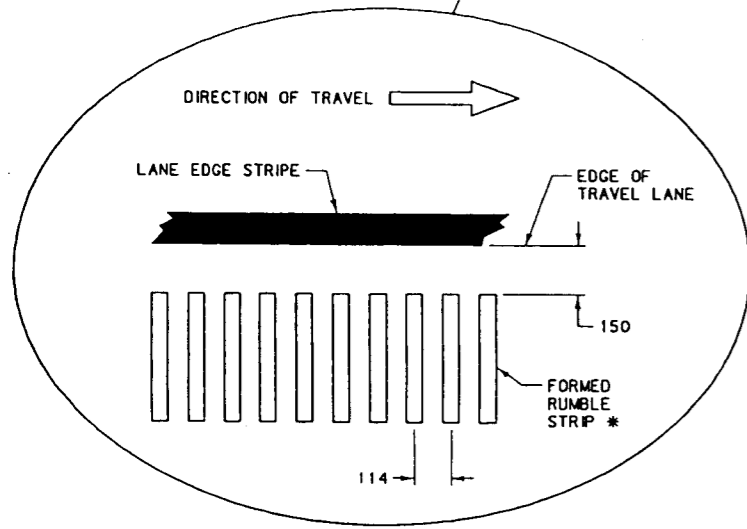
PROVIDE RUMBLE STRIPS ON THE RIGHT AND LEFT SHOULDERS OF ALL NATIONAL HIGHWAY AND PRIMARY NEW CONSTRUCTION, RECONSTRUCTION, AND OVERLAY PROJECTS, UNLESS THE SHOULDERS ARE LESS THAN 1.2 m IN WIDTH.

ON SEGMENTS OF NATIONAL HIGHWAY OR PRIMARY ROUTES WITHIN DESIGNATED CITY OR URBAN LIMITS, USE ENGINEERING JUDGEMENT ON A CASE-BY-CASE BASIS TO DETERMINE IF RUMBLE STRIP INSTALLATION IS APPROPRIATE.

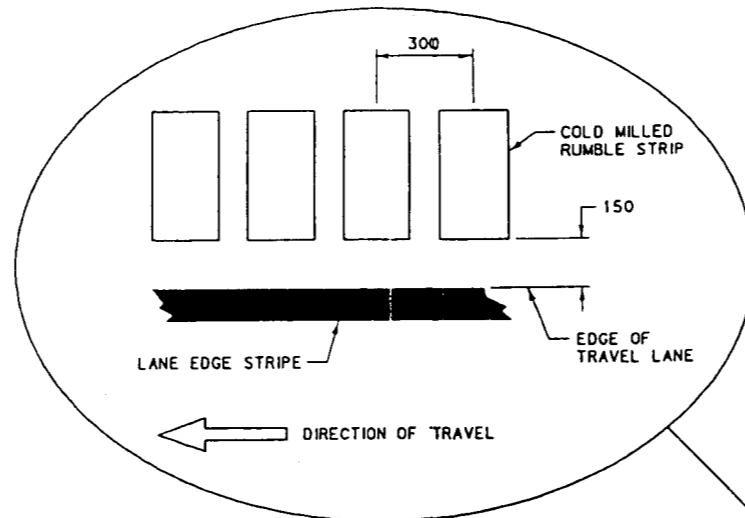
NATIONAL HIGHWAY ROUTE OR PRIMARY ROUTE APPLICATION



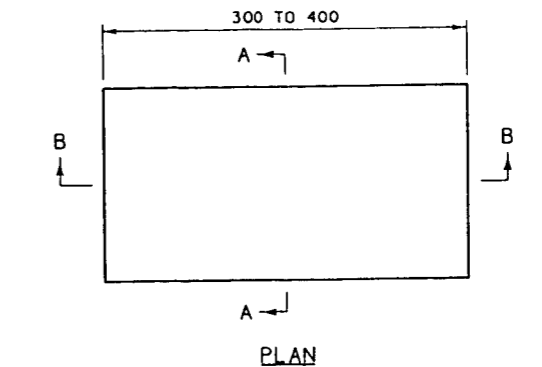
ISOMETRIC VIEW



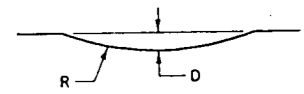
TYPICAL SHOULDER INSTALLATION (CONCRETE PAVEMENT)



TYPICAL SHOULDER INSTALLATION (ASPHALT PAVEMENT)

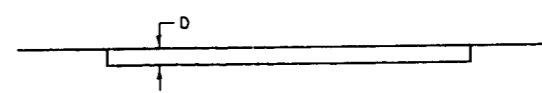


PLAN



SECTION A-A

	D	R
CONCRETE	25	25
ASPHALT	13 TO 19	300



SECTION B-B

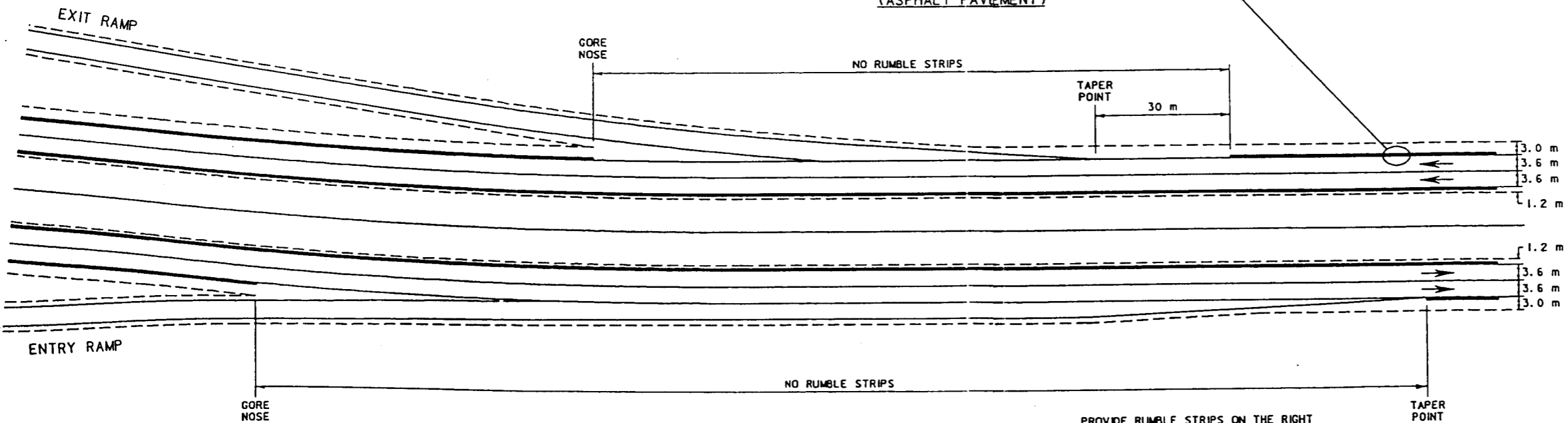
RUMBLE STRIP DETAIL

NOTES:

CONSTRUCT RUMBLE STRIPS IN ACCORDANCE WITH THE SPECIAL PROVISIONS OF THE PROJECT.

DO NOT INSTALL RUMBLE STRIPS OVER CONCRETE BRIDGE DECKS OR WHERE OBSTACLES, SUCH AS CONCRETE BARRIER RAIL, PREVENT PROPER PLACEMENT.

RUMBLE STRIPS ARE MEASURED TO THE TENTH OF A KILOMETER ALONG THE CENTERLINE OF THE ROADWAY, MINUS ANY GAPS CAUSED BY RAMP TERMINALS, OBSTACLES, ETC. MEASURE EACH INDIVIDUAL LINE OF RUMBLE STRIPS SEPARATELY.



INTERSTATE APPLICATION

PROVIDE RUMBLE STRIPS ON THE RIGHT AND LEFT SHOULDERS OF ALL INTERSTATE NEW CONSTRUCTION, RECONSTRUCTION, AND OVERLAY PROJECTS.

ALL DIMENSIONS ARE MILLIMETERS (mm) UNLESS OTHERWISE NOTED.

DETAILED DRAWING	
REFERENCE STANDARD SPEC. SECTION 411	DW 4
CONTINUOUS SHOULDER RUMBLE STRIPS	
EFFECTIVE:	
MONTANA DEPARTMENT OF TRANSPORTATION	MONTANA CADD