

# DESIGN BULLETIN #18/2003 (Revised August 2011)

## Rumble Strip Placement Practices

### **August 2011 Update to Design Bulletin #18/2003**

- Drawing CB6 3.52M4 Rev.5 Supersedes CB6 3.52M4 Rev.4
- Recommended Practices for Transverse Rumble Strips at Stop Controlled Intersections

### **May 2011 Update to Design Bulletin #18/2003**

Revisions to practices and delivery methods.

### **May 2007 Update to Design Bulletin #18/2003:**

Drawing CB6 3.52M4 Rev.3 Supersedes CB6 3.52M4 Rev.2

### **September 2006 Update to Design Bulletin #18/2003:**

Drawing CB6 3.52M4 Rev.2 Supersedes CB6 3.52M4 Rev.1

### **June 2006 Update to Design Bulletin #18/2003:**

Drawing CB6 3.52M1 Rev.7 Supersedes CB6 3.52M1 Rev.6  
Drawing CB6 3.52M2 Rev.7 is Obsolete, refer to CB6 3.52M1  
Drawing CB6 3.52M4 Rev.1 Supersedes CB6 3.52M4

## **Summary**

### Centreline and Shoulder Rumble Strips

The department will be installing centerline and/or shoulder milled rumble strips through maintenance contracts, new construction, pavement rehabilitation and/or stand-alone rumble strip construction contracts. Centreline and/or shoulder rumble should be installed where warranted. On two-lane highways shoulder rumble strips are warranted where the shoulders are 1.4m wide or greater. On multilane (divided) highways shoulder rumble strips are warranted on the right hand shoulder if the width is 1.4m or greater. On the left hand shoulder (median shoulder) of divided highways rumble strips are warranted if the shoulder width is 0.6m or greater. Centreline rumble strips are warranted on all undivided paved highways. See the applicable standard drawings for restrictions regarding placement.

### Transverse Rumble Strips at Stop Control Intersections

In the past, transverse rumble strips were used in advance of select rural stop-controlled intersections (installed on the stop-controlled approaches) where other traffic control devices/safety measures were proving ineffective in reducing the number of failure to stop collisions. Transverse rumble strips were part of a hierarchy of progressively more attention grabbing traffic control devices used to improve safety at rural stop-controlled intersections.

The current practice is to install transverse rumble strips in advance of all stop-controlled

intersections (on the stop-controlled approaches) in rural areas where the posted speed limit is 80 km/h or greater and the highway and intersecting approaches are paved (and under provincial jurisdiction).

Transverse rumble strips are not installed in low speed (posted speed of 70 km/h or less on stop-controlled approaches) and urban environments. Within these environments, rumble strips are not required due to shorter stopping sight distances and heightened driver expectation of encountering stop conditions. However, the need for rumble strips may be reviewed for extreme cases within urban areas. In addition, transverse rumble strips are not installed within 300 m of a residence (including in rural areas) to avoid noise concerns.

When warranted, transverse rumble strips are installed in accordance with drawing CB6-3.52M3.

The Recommended Practices guideline for the use of Transverse Rumble Strips at Stop-Controlled Intersections is available at:

<http://www.transportation.alberta.ca/Content/docType233/Production/94TransverseRumbleStrips.pdf>

This Bulletin has been developed in order to achieve consistent practices for installation of rumble strips. This opportunity has also been used to fine-tune the placement criteria to improve the safety results and general cost-effectiveness of the program.

### **Key changes**

- Rumble Strips should not be installed on first stage paving jobs while there is still a backlog elsewhere.
- Projects that are on the three year program for paving should not have rumble strips installed at this time. Likewise projects expected to be seal coated in the near future should not be treated. These projects may be identified through the Regional Seal Coat Program and current project ranking for programs.
- The department intends to address the backlog of rumble strips on all provincial highways in the three fiscal years 2011/12, 2012/13 and 2013/14. The Regions will manage the delivery of the program. Henceforth new pavement projects should generally include installation of shoulder, centerline and transverse rumble strips if warranted (as directed by the Project Sponsor).
- Centreline rumble strips should not be installed if the pavement surface is showing any signs of distress. The distress may be related to the centre joint, pavement age or other factors. It is understood that the best time to install centreline rumble strips is when the pavement is new however, given that there is a substantial backlog, it is desirable to install rumble strips on some older pavements to provide enhanced safety on a network basis.
- After centreline rumble strips are installed the contractor is not required to repaint the centreline markings. Repainting will be done by other forces. It is desirable to have the repainting done as soon as possible after the centreline rumble strips are installed however this is not considered essential. If early repainting is not possible

then the repainting of the centreline can be done at the time of the next regularly scheduled repainting.

- The Recommended Practices guideline for the use of Transverse Rumble Strips at Stop-Controlled Intersections.

The following changes have been made to rumble strip placement criteria:

- Centreline rumble strips are only to be installed after painted roadway lines.
- Centreline rumble strips shall not be installed within 50 m at the centre of an intersection.
- Centreline rumble strip depth 9mm +/- 2mm (was 6mm +/- 2mm)
- Shoulder rumble strip depth is 9mm +/- 2mm (was 8mm +/- 2mm)
- Centreline rumble strip spacing 700mm +/- 200mm (was 300mm)
- The centerline may be fogged if directed by the Engineer (this will normally be addressed in a Special Provision).
- Pick-up of detritus created from the milling operation is no longer required. This is replaced by a requirement to “sweep off the road surface”.
- On undivided highways, centreline rumble strips can be installed along passing and no passing zones (was only at double barrier lines - no passing zones).
- Two lane highways with minimum shoulder width 1.4m (was 1.8m)
- Multi-lane highways with right shoulder of 1.4m (was 1.8m)
- Multi-lane highways with left shoulder of 0.6m (was 1.0m)
- Bridges and bridge approaches where the shoulder exceeds 1.4 m (was 1.5m) – install rumble strips beginning 100m prior to approach and end 10 m prior to deck. Rumble strips are not to be placed on bridge decks unless approved by the department as a “special” installation.
- May install selectively at locations where hazards exist near travel lanes provided the right hand shoulder exceeds 1.4 m (was 1.5m) e.g. railway crossing cantilever structures, raised medians etc.
- The Recommended Practices guideline for the use of Transverse Rumble Strips at Stop-Controlled Intersections.

Date of Issue: October 20 2003.

Effective Date: October 20, 2003.

Revision Date 2: September 5, 2006

Revision Date 3: May 15, 2007

Revision Date 4: May 24, 2011.

Revision Date 5: August 31, 2011.

Contact: Bill Kenny, Technical Standards Branch, Alberta Transportation.

Drawing applicable with this Design Bulletin (click on link below):

CB6-3.52M1 Typical Layout for Continuous Milled Rumble Strips for Shoulders

CB6-3.52M3 Typical Layout for Milled Rumble Strips for Stop Conditions

CB6-3.52M4 Typical Layout for Milled Rumble Strips for Centreline

<http://www.transportation.alberta.ca/655.htm>

Recommended:

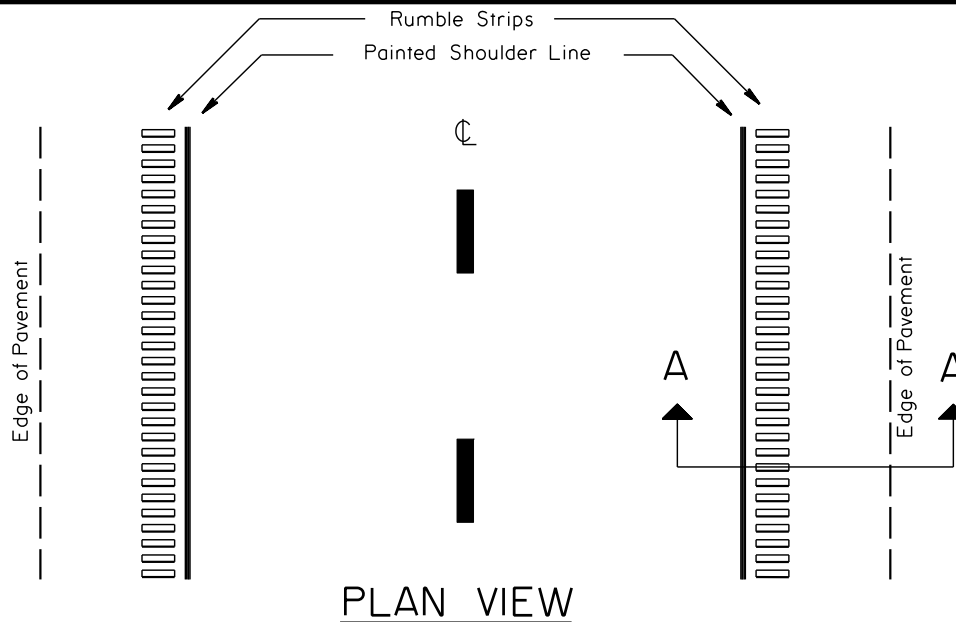


Bill Kenny, P.Eng.  
Director,  
Design, Project Management and Training  
Date 31 AUG 2011

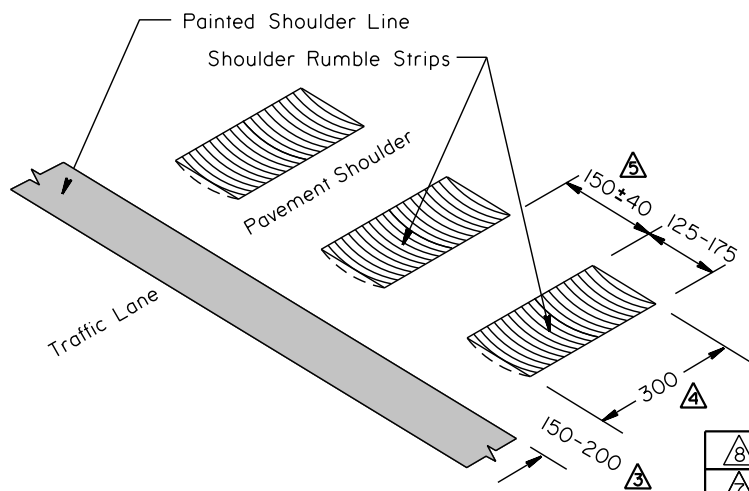
Approved:



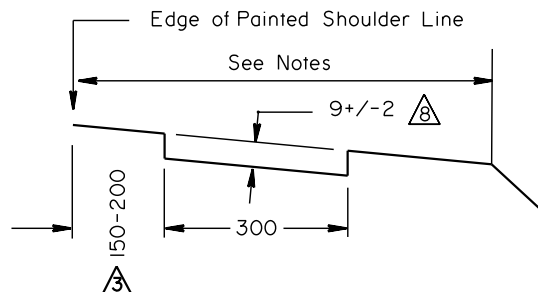
Moh Lali, P.Eng.  
Executive Director,  
Technical Standards Branch  
Date AUG. 31/11



**PLAN VIEW**



**TYPICAL CONTINUOUS SHOULDER RUMBLE STRIP INSTALLATION**



**SECTION 'A-A'**

NOTE: All dimensions are in millimetres.

**Notes:**

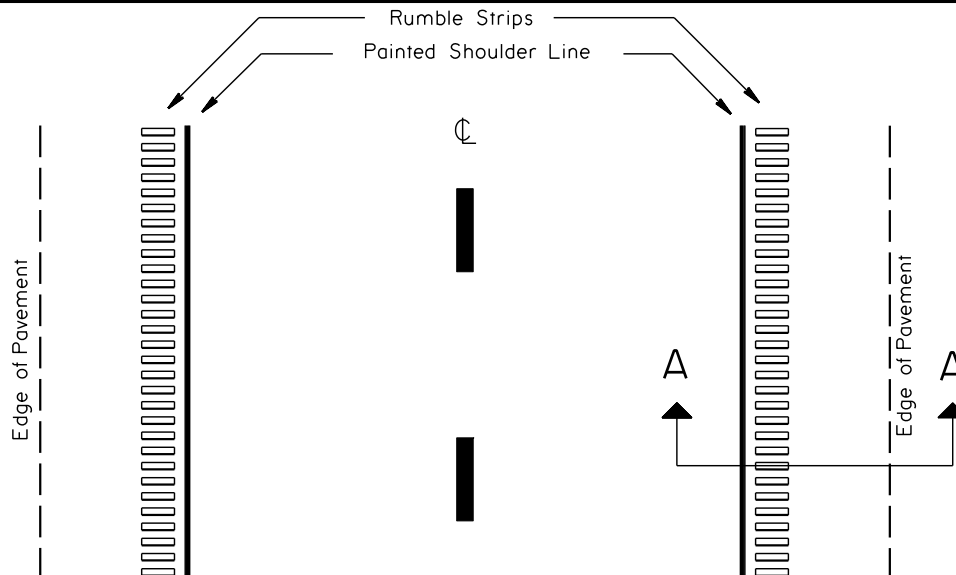
1. Rumble strips are to be placed on existing paved projects on:
  - two-lane highways with minimum 1.4m shoulders  $\triangle$
  - multi-lane highways with minimum 1.4m right shoulders  $\triangle$
  - multi-lane highways with minimum 0.6m left shoulders.  $\triangle$
2. Rumble strips should only be installed on interchange ramps when directed by the Consultant.  $\triangle$
3. Rumble strips are not to be placed through urban areas, within 300m of residences or where shoulder widths are reduced due to the presence of turning lanes.  $\triangle$
4. Rumble strips are to be interrupted for intersections and accesses. Strips are to be terminated 60m prior to the taper and reinstated 60m from the end of taper. Where there are no tapers, rumble strips may be terminated/reinstated 200m from the intersection or as determined in the field.  $\triangle$
5. Rumble strips are to be placed at the approaches to all bridges that have barrier systems if the shoulder exceeds 1.4m. Strips will commence 100m prior to the approach guardrail and terminate 10m prior to the bridge deck. Rumble strips are not to be placed on bridge decks unless approved by the department as a "special" installation.  $\triangle$
6. Rumble strips may be installed selectively at locations where hazards exist near the travel lanes provided the right hand shoulder exceeds 1.4m e.g. Railway crossing cantilever structures, raised medians etc.

$\triangle$ 8	REVISED DEPTH TO 9mm +/-2	B.K.	24 MAY '11
$\triangle$ 7	REVISED SHOULDER WIDTHS	B.K.	05/06/06
$\triangle$ 6	REVISIONS TO NOTE ON PLACEMENT PRACTICES	B.K.	09/03
$\triangle$ 5	REVISED DIMENSION	B.K.	02/99
$\triangle$ 4	REVISED WIDTH OF RUMBLE STRIPS	B.K.	01/99
$\triangle$ 3	REVISED OFFSET FROM SHOULDER LINE	T.N.	09/98
$\triangle$ 2	REVISED "ENGINEER" TO "CONSULTANT"	T.N.	07/98
$\triangle$ 1	REV PLATE AND RENUMBERED FROM TEB 5.19	S.L.	03/98
No.	REVISIONS	BY	DATE

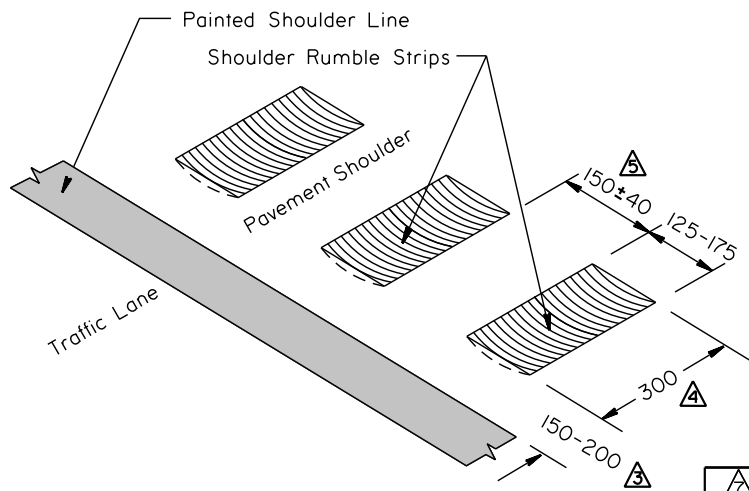
<p>Approved:</p> <p>ORIGINAL SIGNED BY ALLAN KWAN</p> <p>Executive Director, Technical Standards Branch</p> <p>Date: MARCH 08/96</p>	
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**TYPICAL LAYOUT  
for CONTINUOUS  
MILLED RUMBLE STRIPS  
for SHOULDERS**

Prepared By: T.N.	Checked By: B.K.	Scale: N.T.S.	Dwg No.: CB6-3.52MI
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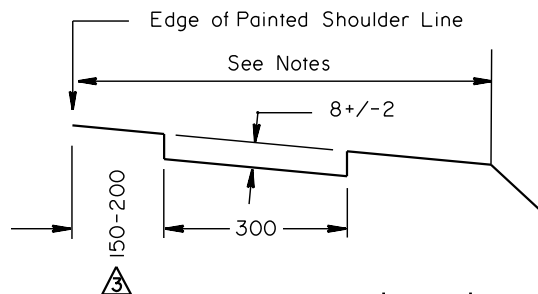
**PLAN VIEW**



**TYPICAL CONTINUOUS SHOULDER RUMBLE STRIP INSTALLATION**

**Notes:**


1. Rumble strips are to be placed on existing paved projects on:
  - two-lane highways with minimum 1.4m shoulders  $\triangle$
  - multi-lane highways with minimum 1.4m right shoulders  $\triangle$
  - multi-lane highways with minimum 0.6m left shoulders.  $\triangle$
2. Rumble strips should only be installed on interchange ramps when directed by the Consultant.  $\triangle$
3. Rumble strips are not to be placed through urban areas, within 300m of residences or where shoulder widths are reduced due to the presence of turning lanes.  $\triangle$
4. Rumble strips are to be interrupted for intersections and accesses. Strips are to be terminated 60m prior to the taper and reinstated 60m from the end of taper. Where there are no tapers, rumble strips may be terminated/reinstated 200m from the intersection or as determined in the field.  $\triangle$
5. Rumble strips are to be placed at the approaches to all bridges that have barrier systems if the shoulder exceeds 1.4m. Strips will commence 100m prior to the approach guardrail and terminate 10m prior to the bridge deck. Rumble strips are not to be placed on bridge decks unless approved by the department as a "special" installation.  $\triangle$
6. Rumble strips may be installed selectively at locations where hazards exist near the travel lanes provided the right hand shoulder exceeds 1.4m e.g. Railway crossing cantilever structures, raised medians etc.



**SECTION 'A-A'**

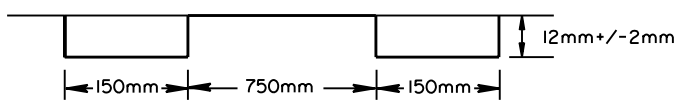
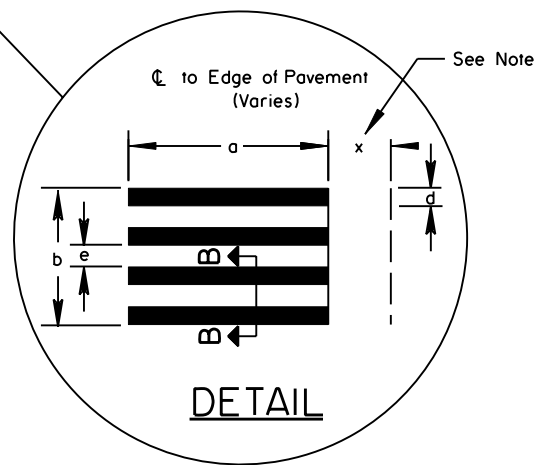
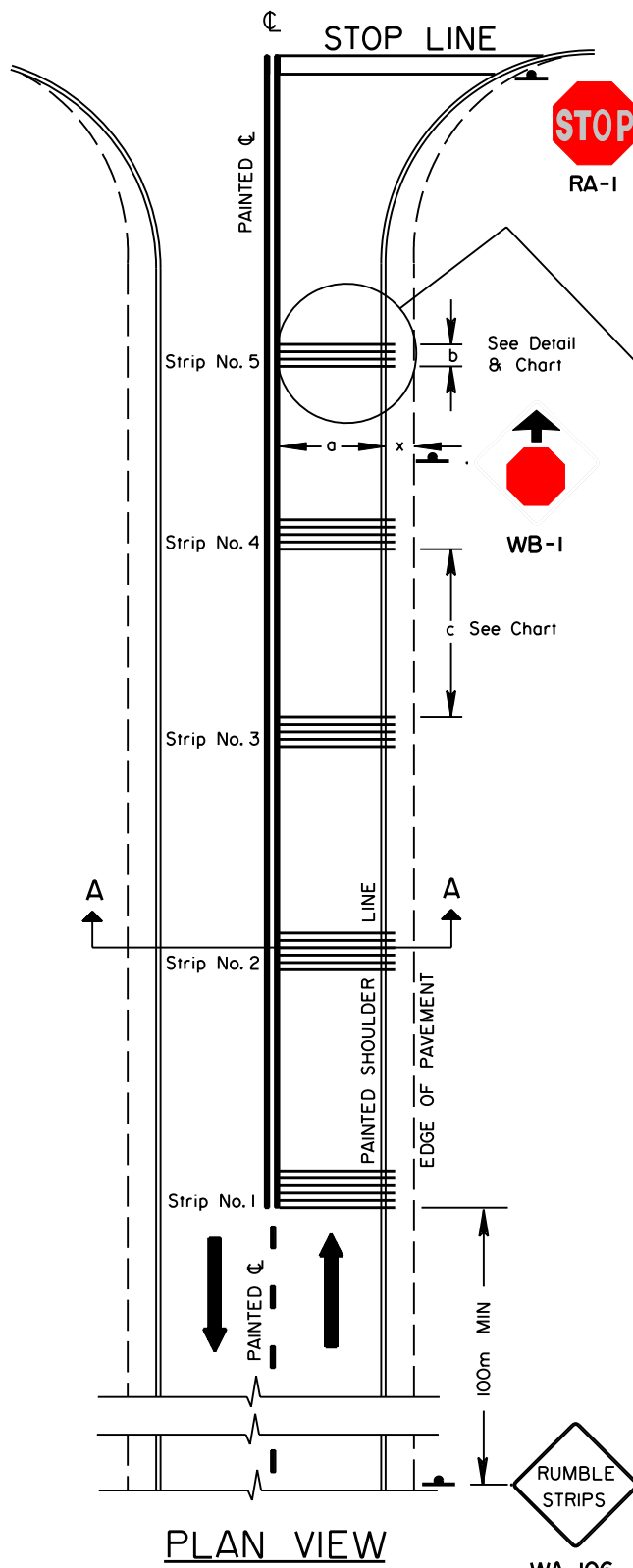
NOTE: All dimensions are in millimetres.

$\triangle$ 7	REVISED SHOULDER WIDTHS	B.K.	05/06/06
$\triangle$ 6	REVISIONS TO NOTE ON PLACEMENT PRACTICES	B.K.	09/03
$\triangle$ 5	REVISED DIMENSION	B.K.	02/99
$\triangle$ 4	REVISED WIDTH OF RUMBLE STRIPS	B.K.	01/99
$\triangle$ 3	REVISED OFFSET FROM SHOULDER LINE	T.N.	09/98
$\triangle$ 2	REVISED "ENGINEER" TO "CONSULTANT"	T.N.	07/98
$\triangle$ 1	REV PLATE AND RENUMBERED FROM TEB 5.19	S.L.	03/98
No.	REVISIONS	BY	DATE

Approved:	
ORIGINAL SIGNED BY ALLAN KWAN	 <b>ALBERTA</b> <small>MINISTRY OF INFRASTRUCTURE AND TRANSPORTATION</small>
Executive Director, Technical Standards Branch	
Date: MARCH 08/96	
<b>TYPICAL LAYOUT</b> <b>for CONTINUOUS</b> <b>MILLED RUMBLE STRIPS</b> <b>for SHOULDERS</b>	
Prepared By: T.N.	Checked By: B.K.
Scale: N.T.S.	Dwg No.: CB6-3.52MI

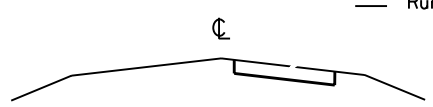
SUPERSEDED

DETAIL MEASUREMENTS FOR MILLED RUMBLE STRIP LAYOUT							
Station	Station	Strip No.	b Strip Length (m)	c Strip Spacing (m)	Number of Bars	d Bar Width (mm)	e Bar Spacing (mm)
000	Stopline						
90.00	92.85	5	2.85		4	150	750
135.00	138.75	4	3.75	42.15	5	150	750
185.00	188.75	3	3.75	46.25	5	150	750
240.00	244.65	2	4.65	51.25	6	150	750
300.00	304.65	1	4.65	55.35	6	150	750



SECTION 'B-B'

PLAN VIEW



SECTION 'A-A'

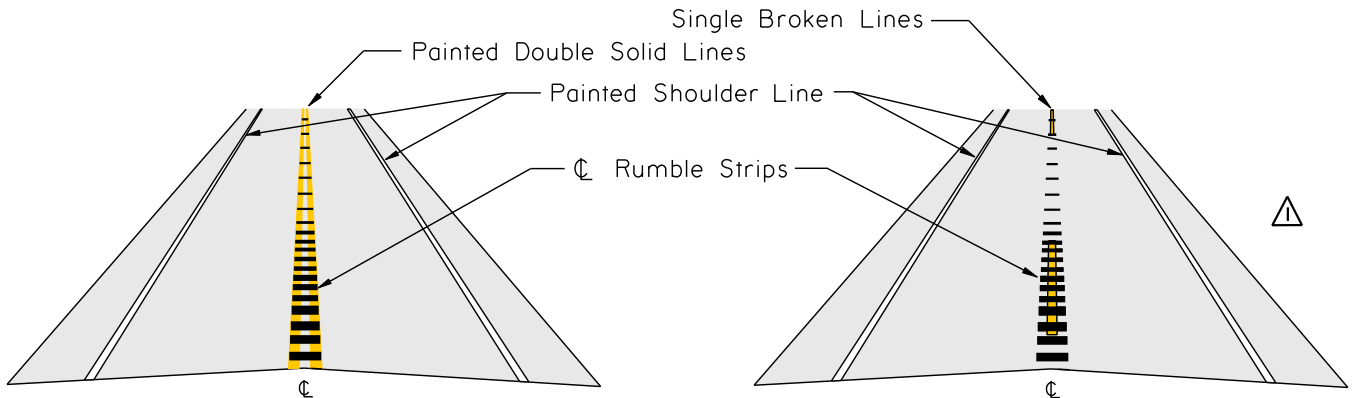
NOTE:  
 A CLEAR AREA (1m WIDE OR THE WIDTH OF THE SHOULDER) WHICHEVER IS LESS, SHALL BE LEFT ADJACENT TO THE EDGE OF PAVEMENT TO ACCOMMODATE CYCLISTS.

No.	REVISIONS	BY	DATE
3	REVISED TO ACCOMMODATE CYCLISTS	B.K.	04/01
2	NOTE ADDED TO SECTION A-A	T.N.	09/98
1	REV PLATE AND RENUMBERED FROM TEB 5.18	S.L.	03/98

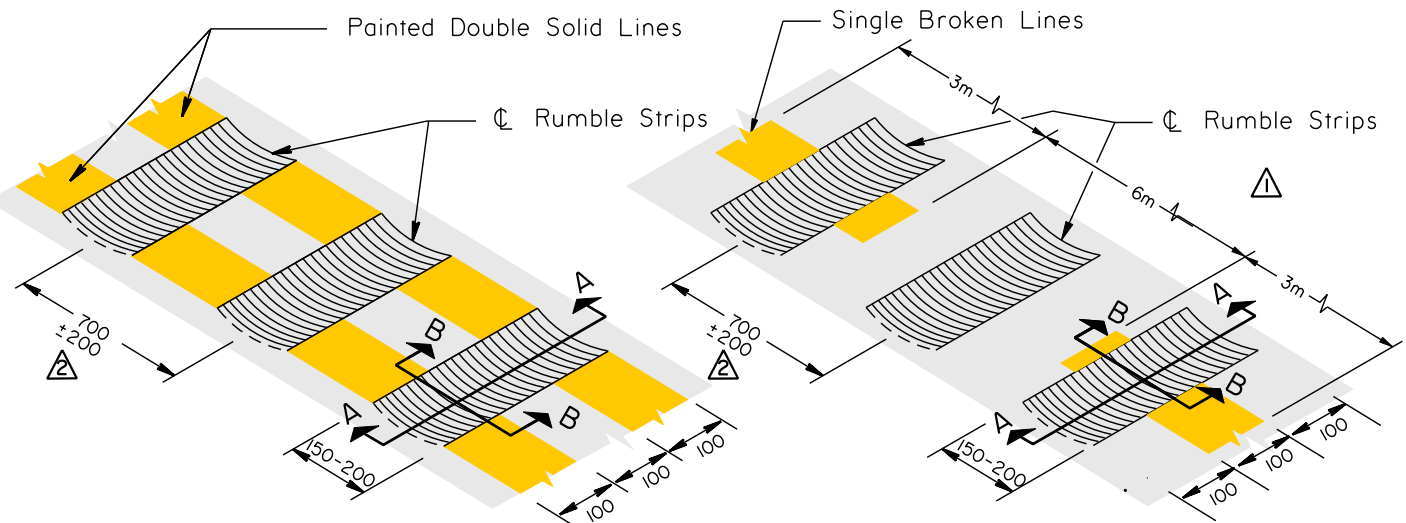
<p>Approved:</p> <p>ORIGINAL SIGNED BY ALLAN KWAN</p> <p>Executive Director, Technical Standards Branch</p>	
<p>Date: MARCH 08/98</p>	

TYPICAL LAYOUT FOR MILLED RUMBLE STRIPS FOR STOP CONDITIONS

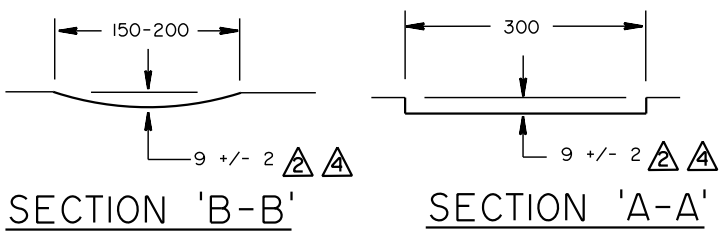
Prepared By: T.N.	Checked By: B.K.	Scale: N.T.S.	Dwg No.: CB6-3.52M3
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GENERAL VIEW (UNDIVIDED HIGHWAY)



TYPICAL C RUMBLE STRIP INSTALLATION A



SECTION 'B-B'

SECTION 'A-A'

NOTE: All dimensions are in millimetres unless otherwise specified.

A	Revised notes and pavement marking.	P.M.	26 July 11
A	Revised notes 1, 2 and 7 and rumble strip depth.	B.K.	24 May 11
B	Revised notes 5.	B.K.	15/05/07
A	Depth and spacing revised. Notes 6 and 7 added.	B.K.	09/05/06
A	Add typical broken line installation and edit notes	B.K.	05/06/06
No.	REVISIONS	BY	DATE

A B A B

A Notes: Centreline Milled Rumble Strips

1. Milling shall be done after painted roadway lines are installed.
2. For existing or new pavements, milling of centreline rumble strips shall be centred on the painted lines.
3. The milled strips shall be continuous over the length required.
4. Centreline rumble strips shall only be installed as indicated in the Special Provisions or as directed by the Consultant.
5. Rumble strips shall not be installed in urban areas or within 300m of residences except where there are double solid yellow lines (in which case the rumble strip should be continuous).
6. Rumble strips shall not be installed within 50m of the centre of an intersection.
7. The centreline may be fogged if directed by the Consultant.

Approved:

ORIGINAL SIGNED BY  
ALLAN KWAN

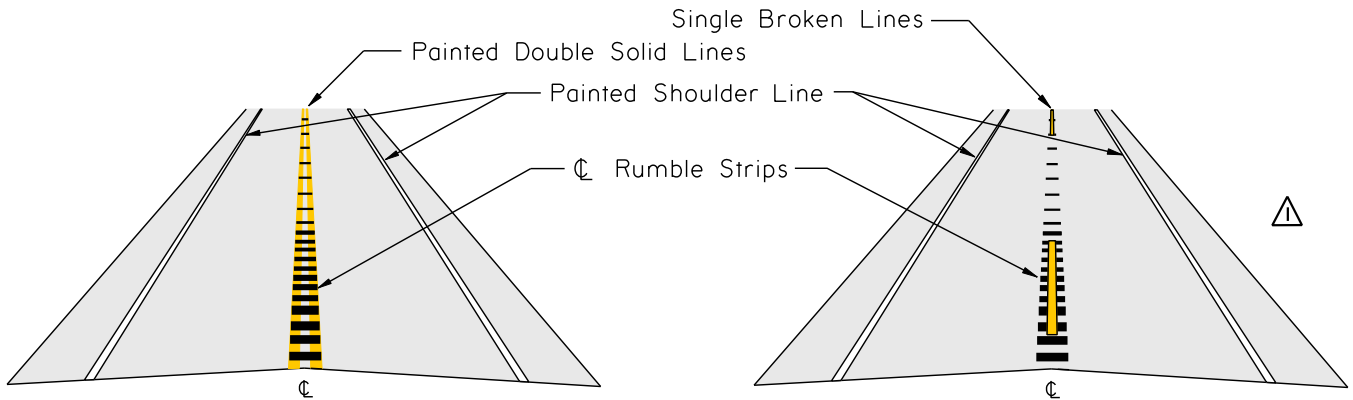
Executive Director,  
Technical Standards Branch

Date: September 2003

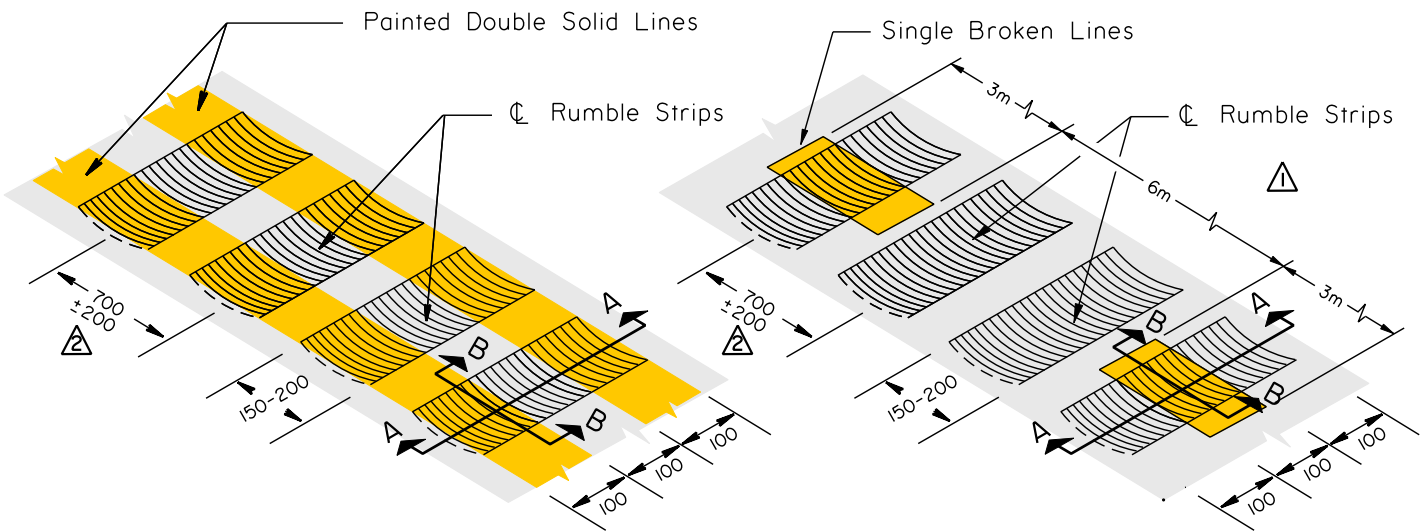
**Alberta**  
INFRASTRUCTURE AND  
TRANSPORTATION

**TYPICAL LAYOUT  
FOR MILLED RUMBLE STRIPS  
FOR CENTRELINE**

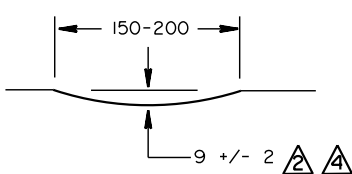
Prepared By: S.L.	Checked By: B.K.	Scale: N.T.S.	Dwg No.: CB6-3.52M4
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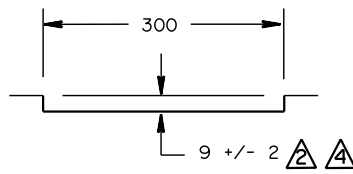
GENERAL VIEW (UNDIVIDED HIGHWAY)



TYPICAL C RUMBLE STRIP INSTALLATION



SECTION 'B-B'



SECTION 'A-A'

NOTE: All dimensions are in millimetres unless otherwise specified.

⚠	Revised notes 1, 2 and 7 and rumble strip depth.	B.K.	24 May 11
⚠	Revised notes 5.	B.K.	15/05/07
⚠	Depth and spacing revised. Notes 6 and 7 added.	B.K.	09/05/06
⚠	Add typical broken line installation and edit notes	B.K.	05/06/06
No.	REVISIONS	BY	DATE



Notes: Centre Line Milled Rumble Strips

1. Milling shall be done after painted roadway lines are installed.
2. For existing pavement, milling of centre line rumble strips shall be centred on the painted lines.
3. The milled strips shall be continuous over the length required.
4. Centreline rumble strips shall only be installed as directed by the Consultant or as shown on the plans.
5. Rumble strips shall not be installed in urban areas or within 300m of residences except where there are double solid yellow lines (in which case the rumble strip should be continuous).
6. Rumble strips shall not be installed within 50m of the centre of an intersection.
7. The centreline may be fogged if directed by the Engineer.

Approved:	
ORIGINAL SIGNED BY ALLAN KWAN	
Executive Director, Technical Standards Branch	INFRASTRUCTURE AND TRANSPORTATION
Date: September 2007	

TYPICAL LAYOUT  
FOR MILLED RUMBLE STRIPS  
FOR CENTRE LINE

Prepared By: S.L.	Checked By: B.K.	Scale: N.T.S.	Dwg No.: CB6-3.52M4
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