Audio-Tactile Line Marking

Operational Instruction 2.13

March 2025

Government of South Australia
Department for Infrastructure and Transport

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Publication details

Document information

Title	Audio-Tactile Line Marking Operational Instruction 2.13
Owner	Traffic Engineering Standards
KNet reference	#1586919

Change history

Version	Date changed	Nature of amendment
4	21 May 2009	Original issue approved for use
5	11 January 2017	Amend positioning of ATLM
6	14 September 2018	Allow on lane lines; use of black ATLM
7	20 November 2020	Format updates, criteria for use amended
8	11 November 2021	Broadened information on wide centreline treatments and use of continuous black ATLM, figures and identifiers added, adopted terminology consistent with AS 1742.2, constraints on use amended
8.1	23 August 2022	Amendment to Figures 4.6 and 4.7 to show all valid variations of ATLM
9	11 March 2025	Format Changes

Approvals record

Approver	Position	Date	Signature
Stephen Pascale	Manager, Traffic Services	6 March 2025	Digital Approval 46883


We acknowledge the Traditional Custodians of the Country throughout South Australia and recognise their continuing connection to land and waters. We pay our respects to the diversity of cultures, significance of contributions and to Elders past, present and emerging.

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1 Introduction

This document provides guidance on the use of Audio Tactile Line Marking (ATLM) as an active warning device for road users on roads under the care and control of the Department for Infrastructure and Transport (the Department). It provides information on determining where to locate ATLM, the installation criteria and operational considerations.

This document shall be read in conjunction with Australian Standard *AS 1742.2 Manual of Uniform Traffic Control Devices (MUTCD) Part 2: Traffic control devices for general use (2022)* Clause 5.3.10, and the Department's *Pavement Marking Manual*. Councils may also refer to this document for guidance on the use of ATLM on their roads.

2 Purpose of ATLM

Driver fatigue is a significant factor in "run-off-road" crashes in rural areas. The purpose of ATLM is to reduce rural road crashes by providing a noise (audio) and vibratory (tactile) warning to road users who may stray due to fatigue or poor visibility due to rain or fog. It is considered a highly effective countermeasure with a high benefit/cost ratio in most cases.

ATLM provides superior wet weather delineation. Drivers tend to focus on the edge line for guidance when traffic is approaching at night to avoid being dazzled by headlights.

ATLM is also considered a supporting treatment towards Safe System, as it provides some crash reduction without providing a physical separation by a space or barrier between opposing traffic lanes.

2.1 Departmental policy

The Department's current policy is to install ATLM abutting edge lines on key high speed arterial roads. This is based on the predominance of single vehicle loss of control/run off road crashes on rural roads. There may be locations where dividing and lane line ATLM may be a suitable treatment if criteria contained in this instruction are met.

Note that ATLM should not be installed on Strategic Cycling Routes or known Cycling Routes unless a wider sealed shoulder of greater than 0.5 m from the edge of the ATLM can be provided.

3 ATLM installation criteria

All ATLM shall be coloured either white or black.

Thermoplastic rib profile ATLM is the current treatment type used by this department.

Any proposed departure from the following criteria should be addressed through the Traffic Impact Statement (TIS), which should outline the background to the departure and the potential impacts/risks

associated with the proposal. The documentation and process of seeking and obtaining endorsement and approvals remains the responsibility of the proposer.

3.1 Edge line ATLM criteria

Edge line ATLM is most effective when installed on a road with adequate lane width and a wide sealed shoulder. The requirement for a sealed shoulder is based on:

- Austroads guidance, to enable available recovery width for an errant driver
- Avoiding accidental damage and removal of ATLM through grading of unsealed shoulders

Table 1 – Minimum Installation Criteria for Edge Line ATLM

	Comments
Minimum Criteria for Edge Line ATLM	
Posted speed limit greater than or equal to 100 km/h	Not installed in residential or built-up areas, refer Section 3.5 '*Constraints of use*'.
Sealed Lane width greater than or equal to 3.3 m	Absolute minimum 3.1 m sealed lane where a minimum of 300 mm sealed shoulder is available outside of ATLM. Sound pavement condition
Sealed shoulder 0.5 m or greater	1.0 m preferred if available for improved recovery width on roads with a history of fatigue related road crashes
Additional Criteria that may be considered	
Road section prone to frequent fog and low visibility conditions	

3.2 Dividing line ATLM criteria

Dividing line ATLM should be considered:

- Where wide centreline is to be installed,
- Where central flexible barrier is to be installed, or
- Where location has a history of road safety issues related to head on crashes

Table 2 – Minimum Installation Criteria for Dividing Line ATLM

	Comments
Minimum Criteria for Dividing Line ATLM	
Localised Site	High speed rural road sections
Additional Criteria that may be considered	
Road section prone to frequent fog and low visibility conditions	

3.3 Wide centre line treatment ATLM criteria

ATLM should be provided on all wide centre line treatments (WCLT).

3.4 Lane line ATLM criteria

For lane line ATLM, only the line marking strip is made tactile, not the gap between the lines, i.e. the ATLM shall mirror the line marking in place.

The markings are all 100 mm wide.

Table 3 – Minimum Installation Criteria for Lane Line ATLM

	Comments
Minimum Criteria for Lane Line ATLM	
Localised Site	High speed multi-lane roads where the section of road has a recorded history of lack of lane discipline
Lane width greater than or equal to 3.5 m	Sound pavement condition
Additional Criteria that may be considered	
Road section prone to frequent fog and low visibility conditions	

3.5 Constraints on use

ATLM should not be installed within 200 m of a residential building (see figure 3.1) unless it meets one of the following scenarios:

1. Continuous ATLM should be installed on edge lines on roads where they meet at least one of the following criteria:

    - traffic volume of at least 1000 vpd, or
    - curved alignment, or
    - fatigue crash risk, or
    - an identified high or very high risk location, as defined by Road Safety Infrastructure Unit.

2. Continuous ATLM should be installed on dividing lines where very high head-on crash risk exists i.e. roads with:

    - volumes of 2000 vpd or more, and
    - curved alignment, and
    - an identified high or very high risk location, as defined by Road Safety Infrastructure Unit.

ATLM should be discontinued across locations subject to constant wear from traffic braking and turning. Typical locations include intersections and access points to commercial developments, service stations and rest stops.

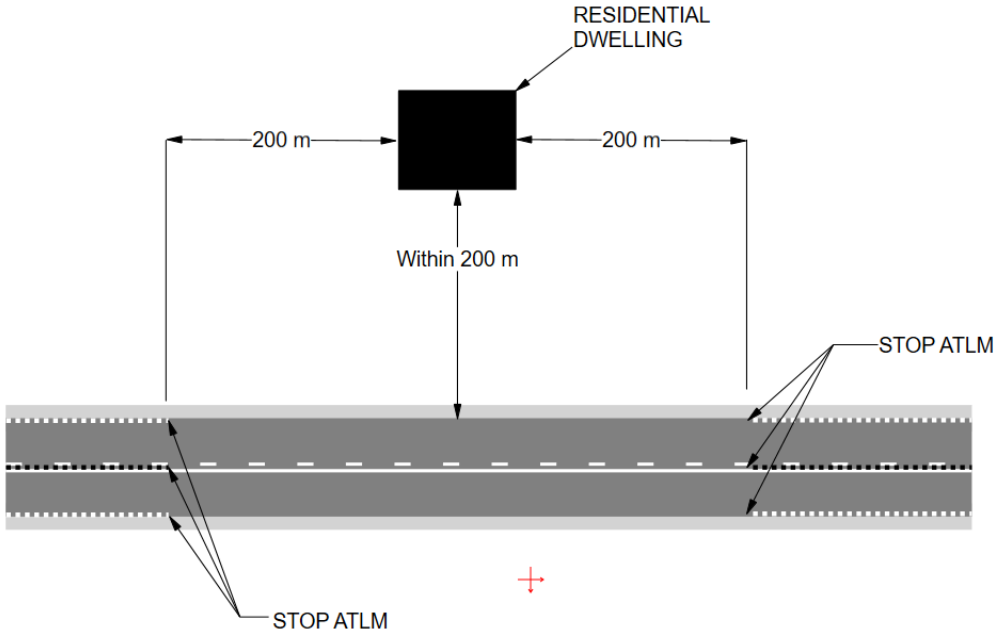


Figure 3.1: Restrictions near residences

4 Position and colour of ATLM

The various configurations of colour and position of the ATLM relative to the line marking are indicated in this section. These configurations include an identifying code for each type.

Traffic control drawings will only indicate that ATLM is installed, not the specific colour and position of the ATLM. This is to allow for future changes in ATLM installation practices without the need to change the traffic control drawings. The identifying code should be quoted in the Traffic Impact Statement for the proposal to describe which configuration is to be used.

4.1 Edge line ATLM

For all new work or rehabilitation work the ATLM marking will be 150 mm wide and can be either:

- White ribs placed abutting left side of the painted edge line (see Figure 4.1), or
- Continuous black ribs placed offset from the edge line (see Figure 4.2), ideally with a 50 mm offset.

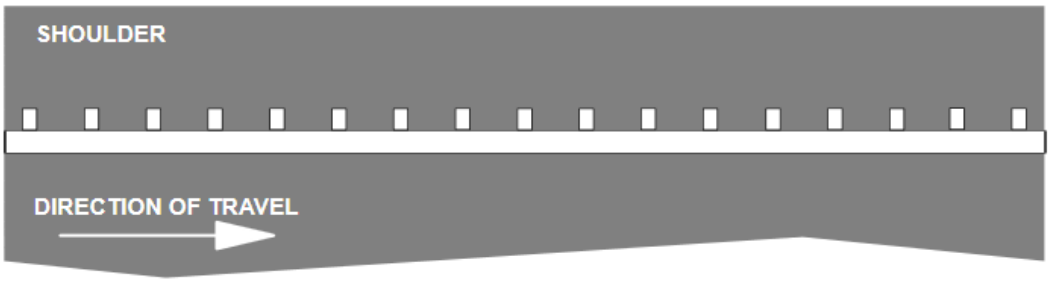


Figure 4.1: Audio-tactile ribs adjacent to edge line - ATEL1

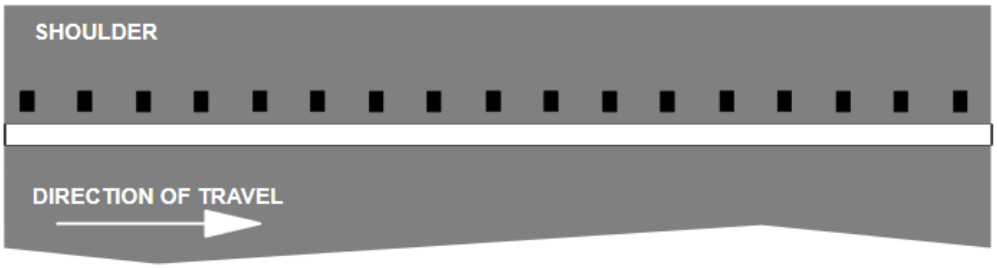


Figure 4.2: Audio-tactile ribs offset from edge line - ATEL2

4.2 Dividing Line ATLM

For a broken dividing line the ATLM can be

- Discontinuous white ribs placed to match the line marking (see Figure 4.3), or
- Continuous ribs, with the colour of the ribs to match the line marking pattern (either a combination of white ribs on lines, with black ribs in the gaps, or black ribs applied prior to the white line marking) (see Figure 4.4).

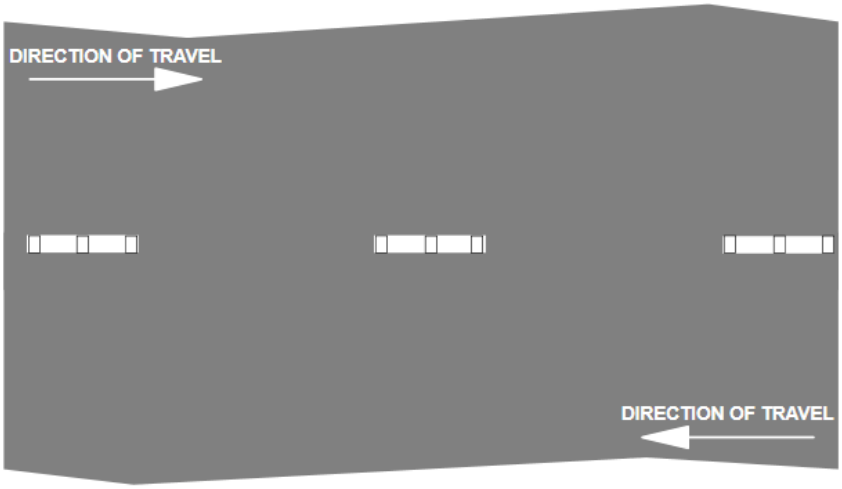


Figure 4.3: Audio-tactile ribs on broken dividing line (white, on line marking) – ATDL1

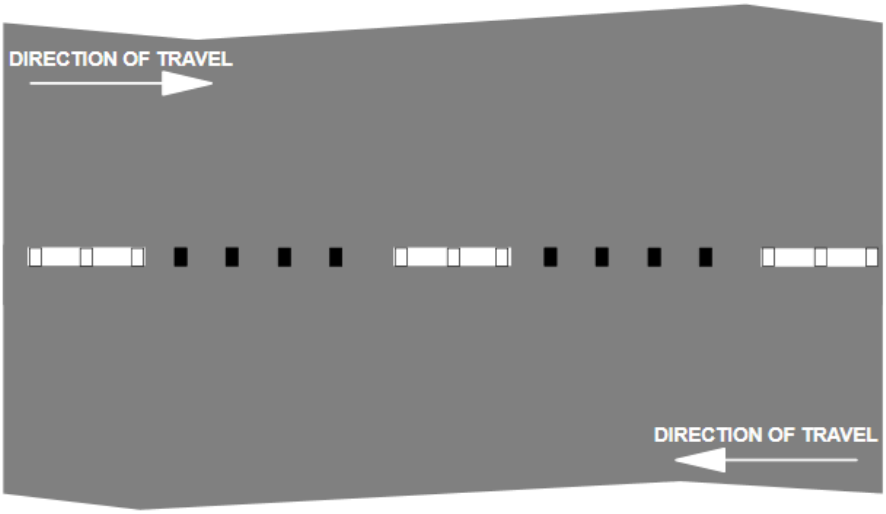


Figure 4.4: Audio-tactile ribs on dividing line (Broken dividing) – ATDL2

For a single barrier line the ATLM shall be white and placed on the line marking in place. (See Figure 4.5)

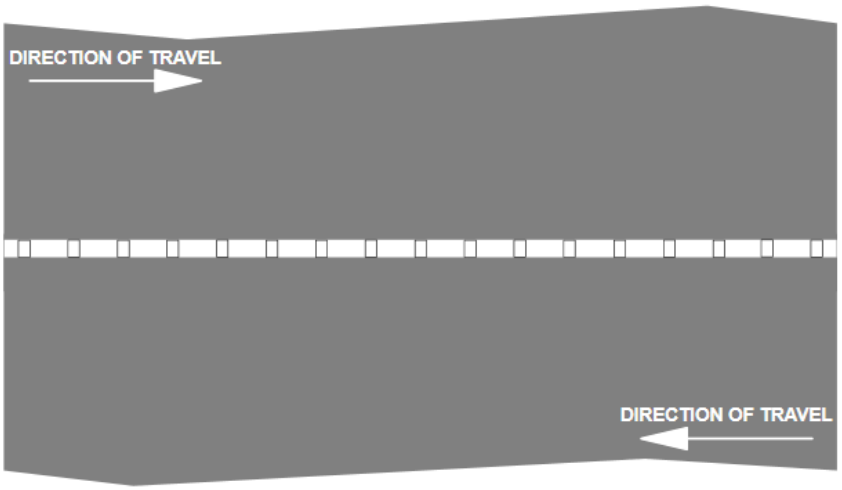
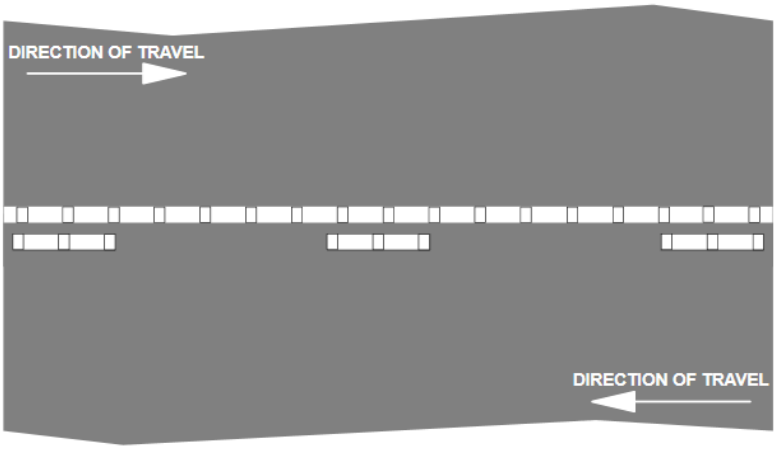


Figure 4.5: Audio-tactile ribs on dividing line (Single barrier) – ATDL3

For double one-way or two-way barrier lines the ATLM can be either

- White, placed on the line marking in place (See Figure 4.6), or
- Black, placed in between the painted lines (See Figure 4.7).



OR

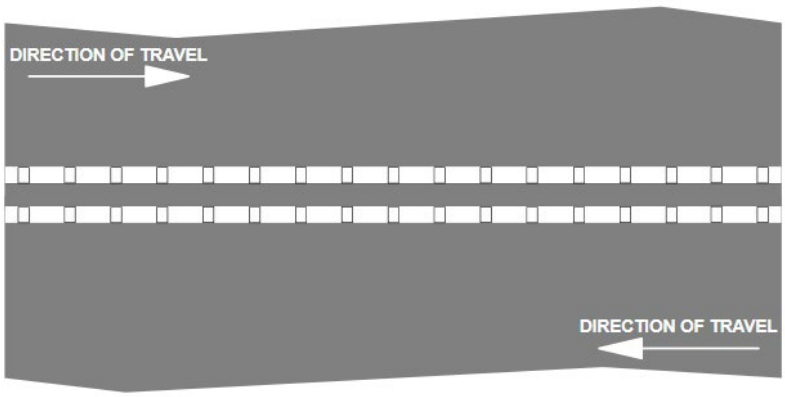


Figure 4.6: Audio-tactile ribs on double one-way or two-way barrier line (white on line marking) – ATDL4

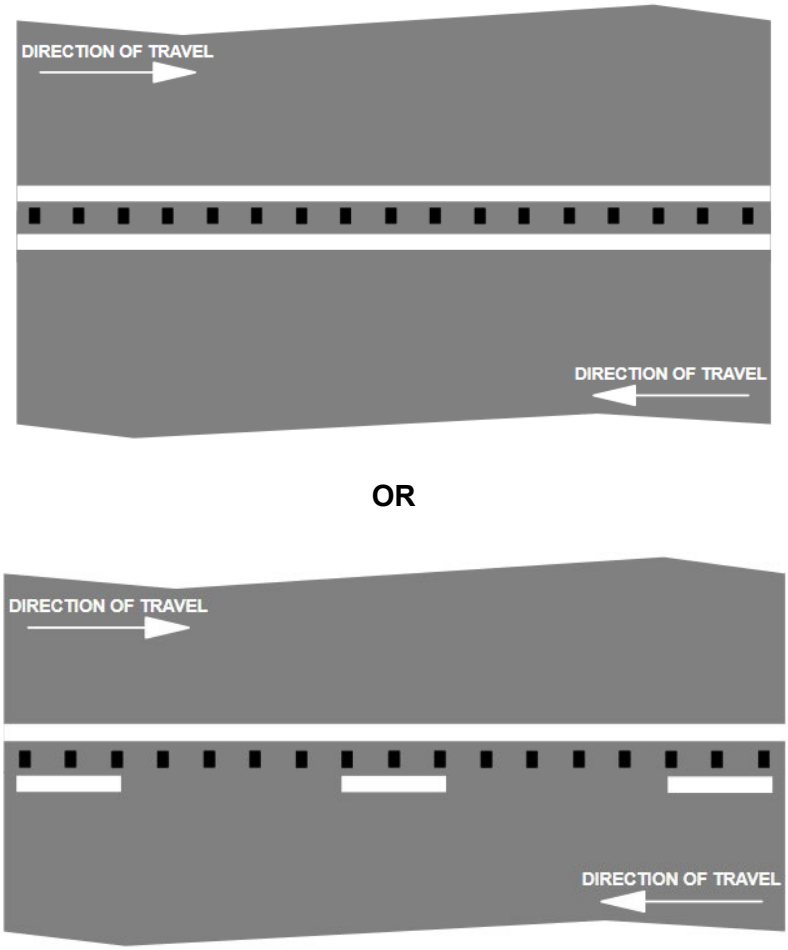


Figure 4.7: Audio-tactile ribs on double one-way or two-way barrier line (Continuous black offset) – ATDL5

4.3 Wide centre line treatment ATLM

For wide centreline treatment:

When the WCLT has double two-way barrier line ATLM can be;

- white and placed on the line marking (See Figure 4.8), or
- continuous black, placed offset within the WCLT (See Figure 4.9).

In situations where warranted, both may be applied simultaneously.

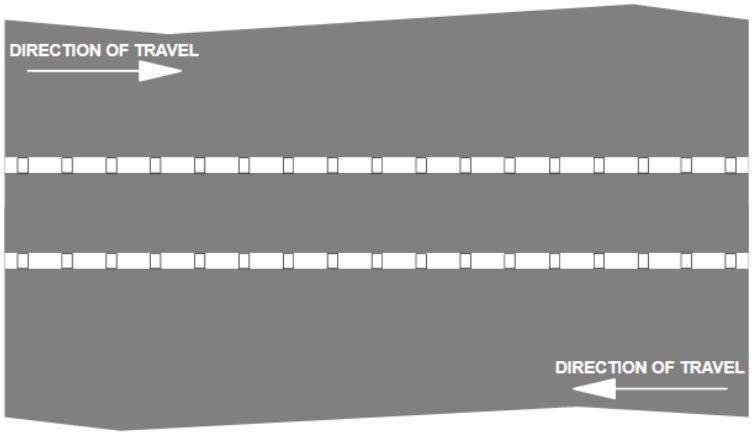


Figure 4.8: Audio-tactile ribs on double two-way barrier (continuous white on line marking) – ATWL1

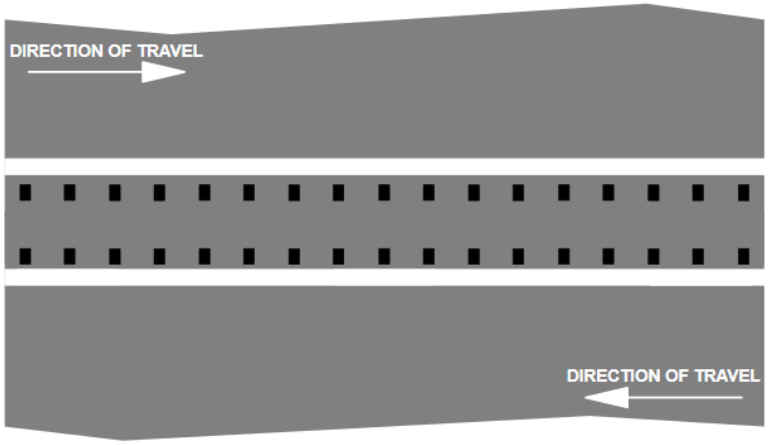


Figure 4.9: Audio-tactile ribs on double two-way barrier (continuous black offset) – ATWL2

When the WCLT has double one-way barrier line ATLM can be;

- white, placed on line marking, (See Figure 4.10), or
- continuous black, placed offset within the WCLT (See Figure 4.11).

In situations where warranted, both may be applied simultaneously.

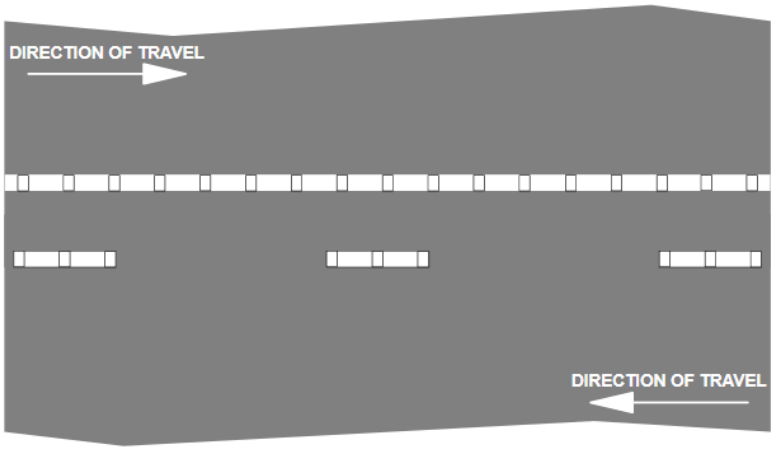


Figure 4.10: Audio-tactile ribs on double one-way barrier (white, on line marking) – ATWL1

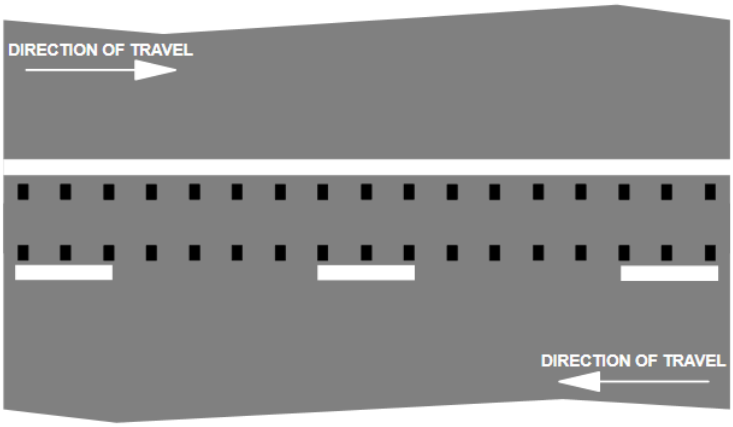


Figure 4.11: Audio-tactile ribs on double one-way barrier (continuous black offset) – ATWL2

When the WCLT has broken dividing lines ATLM can be;

- white, placed on line marking, (See Figure 4.12), or
- continuous black, placed offset within the WCLT (See Figure 4.13).

In situations where warranted, both may be applied simultaneously.

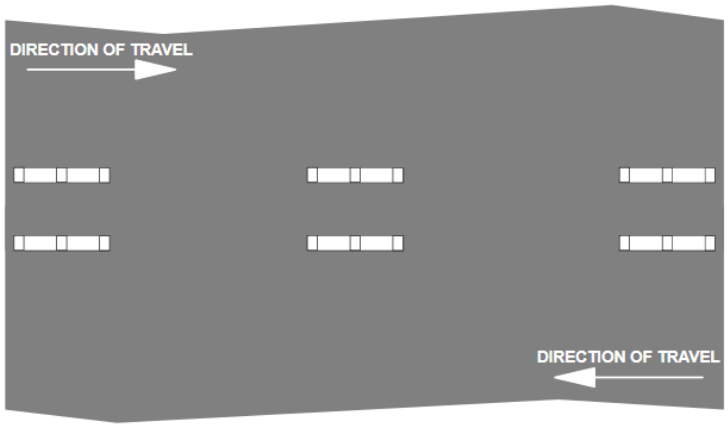


Figure 4.12: Audio-tactile ribs on broken dividing lines (white, on line marking) – ATWL1

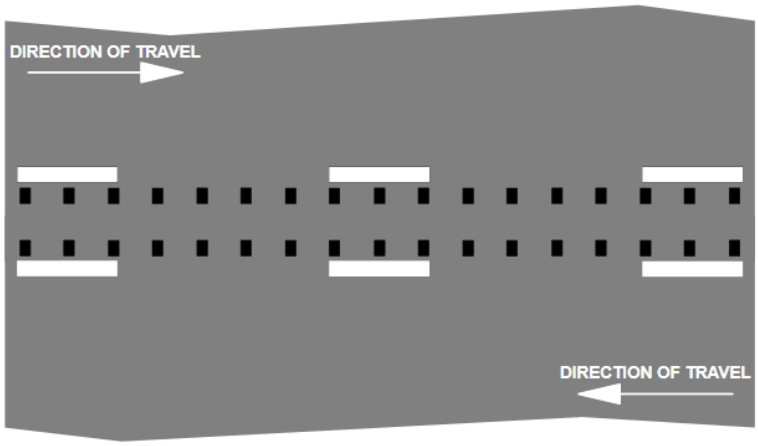


Figure 4.13: Audio-tactile ribs on broken dividing lines (continuous black offset) – ATWL2

4.4 Lane line ATLM

For lane line ATLM, only the line marking strip is made tactile, not the gap between the lines – i.e. the ATLM shall mirror the line marking in place.

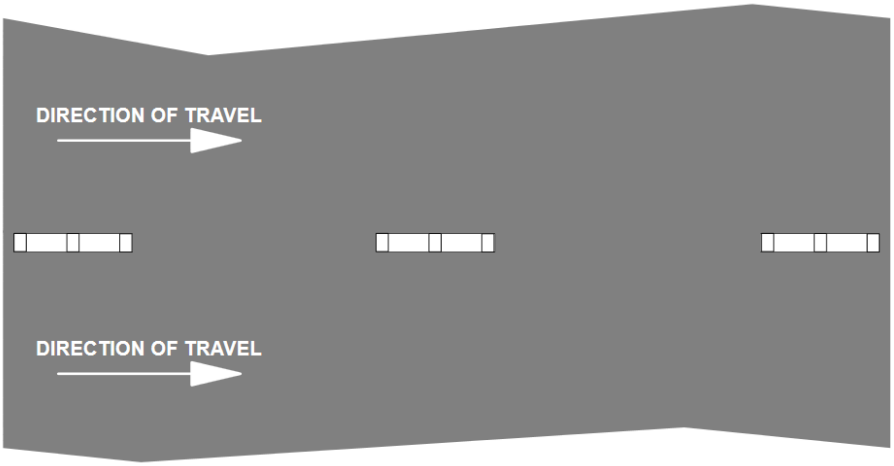


Figure 4.14: Audio-tactile ribs on lane line (white, on line marking) – ATLL1

4.5 Painted median ATLM

Figures 4.15 to 4.18 show options for ATLM in conjunction with painted medians. When the ATLM is placed as per Figure 4.18, continuous black ATLM should be applied prior to the white line marking.

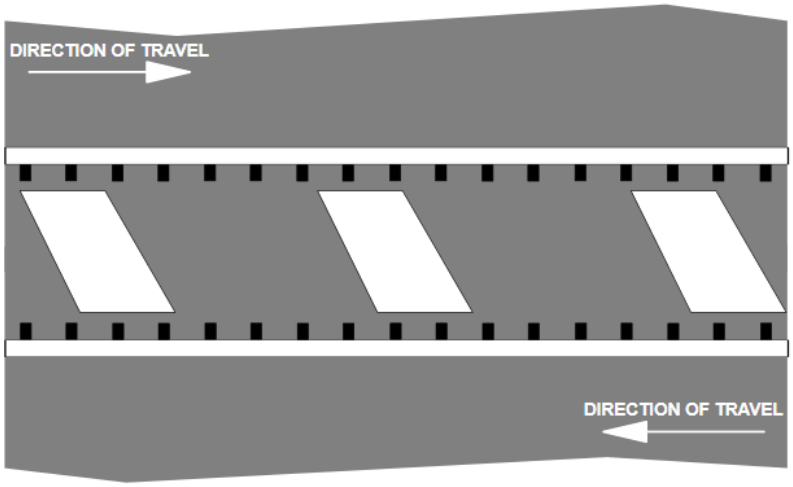


Figure 4.15: Audio-tactile ribs on painted median (continuous black offset) – ATML1

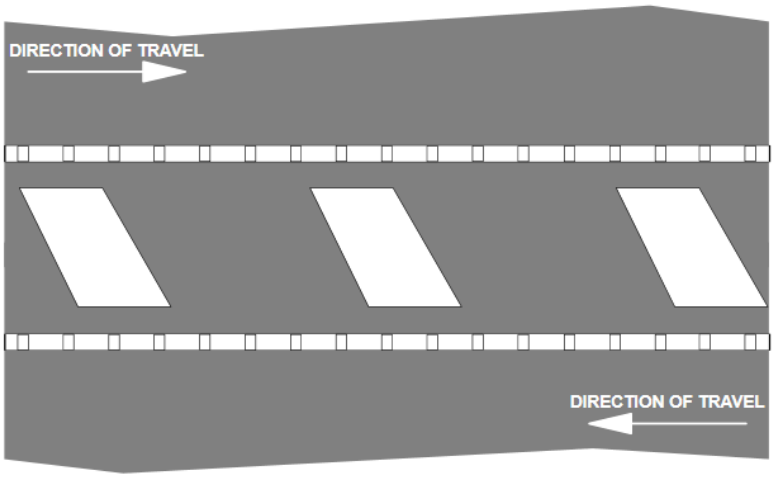


Figure 4.16: Audio-tactile ribs on painted median (continuous white, on line marking) – ATML2

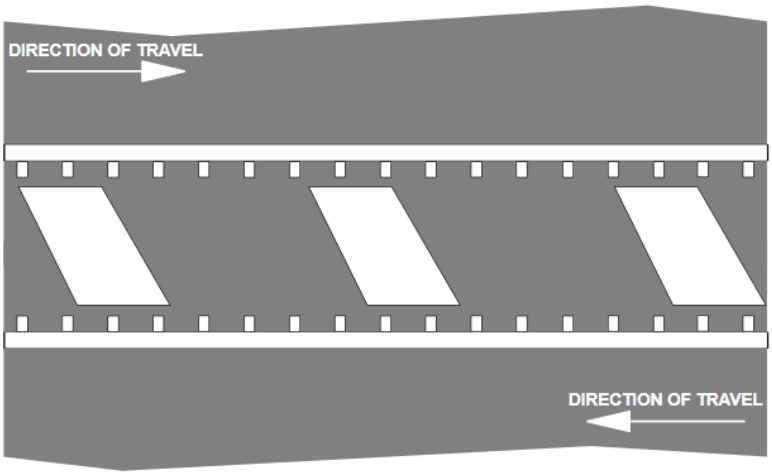


Figure 4.17: Audio-tactile ribs on painted median (continuous white offset) – ATML3

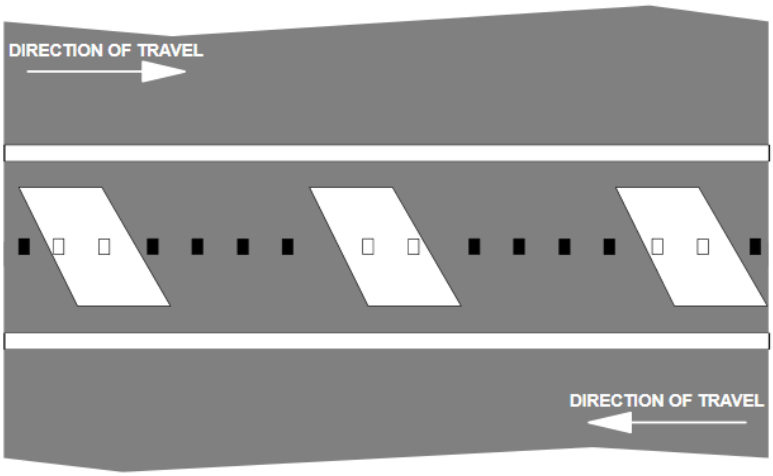


Figure 4.18: Audio-tactile ribs on painted median (continuous central, matching line marking) – ATML4

4.6 Median barrier ATLM

Median barrier ATLM should be treated as wide centreline treatment with two way double barrier line:

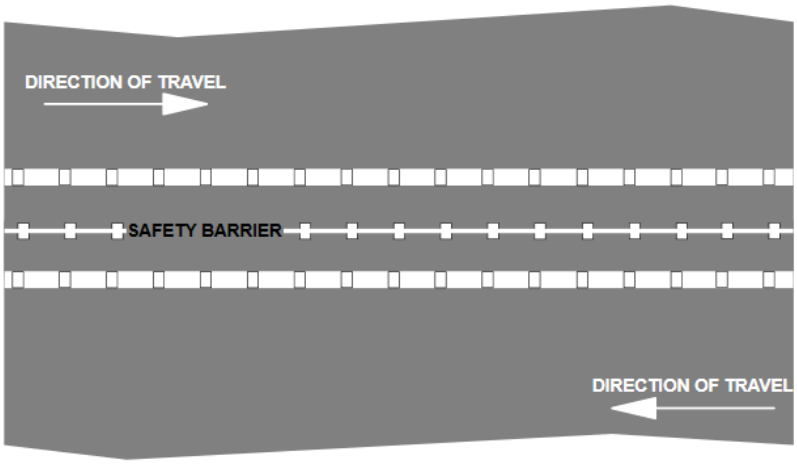


Figure 4.19: Audio-tactile ribs (continuous white on line marking) ATWL1

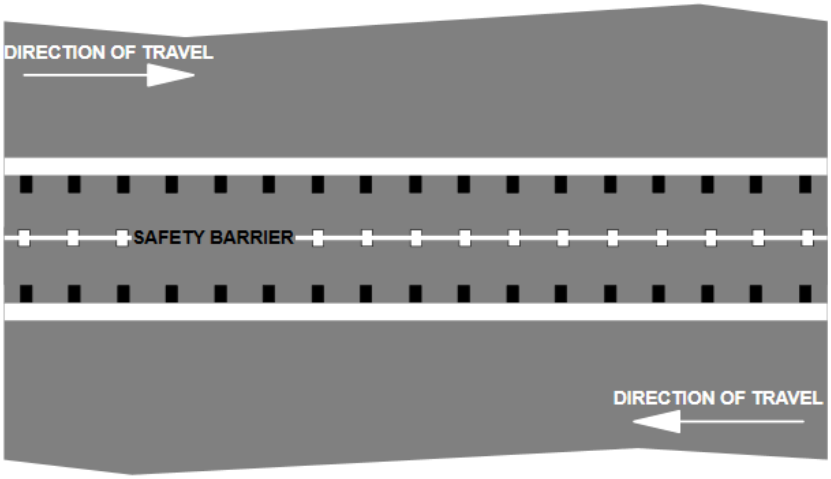


Figure 4.20: Audio-tactile ribs (continuous black offset) ATWL2

5 Treatment types

5.1 Thermoplastic rib profiles

The “Discontinuous thermoplastic style” is the ATLM used in South Australia. It is effective, less expensive and avoids the risk of localised water pooling between the pavement and the thermoplastic.

For ATLM pattern and dimensions refer to DIT’s Master Specifications RD-LM-C2, refer:

https://www.dit.sa.gov.au/contractor_documents/masterspecifications

Figure 5.1 Typical ATLM application

5.2 Other treatments

Although thermoplastic treatment is considered most suitable for Australian rural roads, alternative treatments could be trialled and may consist of:

- Rumble Shoulders – where asphalt or concrete road shoulders have grooves either cut or formed in them, or
- Textured shoulders – where sealed shoulders use larger aggregate stone and texture to that of the lane pavement.
- Milled In – where grooves are milled into the surface of the asphalt or sprayed seal

Any new treatment or product trials will require approval of Manager, Traffic Services.

6 References

Austroads (2016) *APR519-16 Guidance on Median and Centreline Treatments to Reduce Head-on Causalities*

Austroads (2020) *Guide to Traffic Management – Part 10 Transport Control – Types of Devices,* Section 8.3.7

Department for Infrastructure and Transport *Master Specification RD-LM-C2 Supply and Application of Audio Tactile Line Marking*