Operational Instruction

2.13

Audio-Tactile Line Marking

Audio-Tactile Line Marking - 2.13

AMENDMENT RECORD

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Manager, Traffic Services
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For information regarding the interpretation of this document please contact:
Traffic Services
Email : dpti.tassadminsupport@sa.gov.au

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CONTENTS

1. Scope

This Operational Instruction explains the use of Audio Tactile Line Marking (ATLM) as an active warning device for road users. It provides information on determining where to locate treatments, the installation criteria and operational considerations.

2.13

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[1].

2.1 DIT Policy

The department's current policy is to install white 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 0.5m from the edge of the ATLM can be provided.

3. ATLM Installation Criteria

Note that all ATLM shall be coloured 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 undertaking of a 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.

[1] "*Guidance on Median and Centreline Treatments to Reduce Head-on Causalities*", Austroads APR519-16

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 guideline to enable available recovery width for an errant driver
- Avoiding accidental damage and removal of ATLM through grading of unsealed shoulders – this is a real problem that has occurred in practice

For all new work or rehabilitation work greater than 500 m long the ATLM marking will be 150 mm wide and shall be placed abutting left side of the painted edge line (see Figure 2).

For rehabilitation work less than 500 m long the ATLM can match existing installation.

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 s3.4 '*Constraints of use*'.
Sealed Lane width greater than or equal to 3.3 m	Absolute minimum 3.1m sealed lane where a minimum of 300mm 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
Not installed within 300 m of a residence	Can be continuous if written agreement has been made with the residence
Additional Criteria that may be considered	
Road Section prone to frequent fog and low visibility conditions	

3.2 Centreline ATLM Criteria

Centreline 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

For a broken dividing line the ATLM can be white, black or both. The ATLM colour must match the line marking pattern. The ATLM shall be placed on the line marking in place.

For a single barrier line the ATLM shall be white and placed on the line marking in place.

For double barrier line the ATLM can be either white and be placed on the line marking in place or black and placed in between the painted lines.

For wide centreline treatment the ATLM shall be white and place on the right side of the line marking in place.

Table 2 – Minimum Installation Criteria for Dividing Line ATLM

	Comments
Minimum Criteria for Centreline 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 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
Not installed within 300 m of a residence	Can be continuous if written agreement has been made with the residence
Additional Criteria that may be considered	
Road Section prone to frequent fog and low visibility conditions	

3.4 Constraints on Use

ATLM should not be installed within 300 m of a residential building (see figure below) unless appropriate noise barriers are available or installed or unless the frequency and severity of fatigue related crashes in the area are such that a continuous treatment is considered essential on safety grounds. In such cases proximity of 200 m of a residence may be acceptable subject to consultation with the property owner.

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.

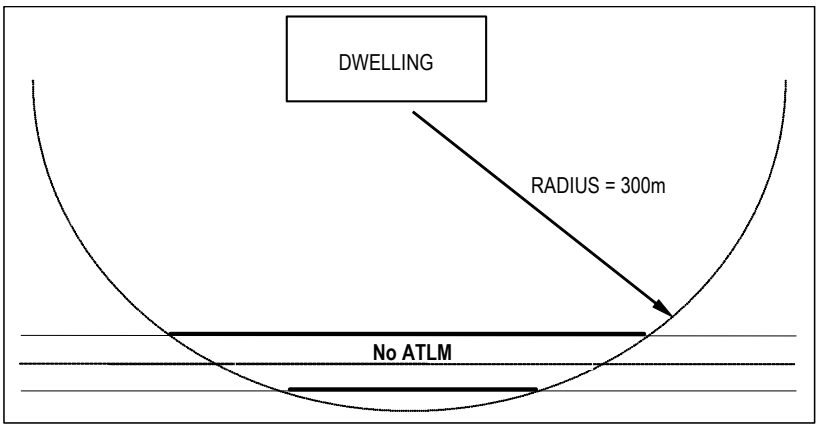

Figure 1 Restrictions near residences

4. Treatment Types

4.1 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 2 Typical ATLM application

4.2 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.

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

5. References

- Austroads Guide to Traffic Management – Part 10 *Traffic Control and Communication Devices* s6.3.7

- Master Specification RD-LM-C2 Supply and Application of Audio Tactile Line Marking, refer to

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