Operational Instruction

Audio-Tactile Line Marking
## Audio-Tactile Line Marking - 2.13

### AMENDMENT RECORD

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<td>Ed1/Rev0</td>
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<td>CT</td>
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Manager, Traffic Services
14 / 09 / 2018

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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. **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 edgeline for guidance when traffic is approaching at night to avoid being dazzled by headlights.

2.1 **DPTI Policy**

The department’s current policy is to install white ATLM abutting edge lines on key arterial roads, exhibiting a high incidence of fatigue crash types. 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, unless a separate approval is sought from the Manager of Traffic Operations or Manager, Traffic Services.

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

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, be white in colour and shall be placed abutting the outside 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

<table>
<thead>
<tr>
<th>Minimum Criteria for Edge Line ATLM</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road is on DPTI Fatigue List Refer to Appendix A</td>
<td>Based on high speed Rural road sections where the section of road has a recorded history of fatigue related road crashes</td>
</tr>
<tr>
<td>Sealed Lane width greater than or equal to 3.3 m</td>
<td>3.5 m preferred&lt;br&gt;Sound pavement condition</td>
</tr>
<tr>
<td>Sealed shoulder 0.5 m or greater</td>
<td>1.0 m preferred if available</td>
</tr>
<tr>
<td>Posted speed limit greater than or equal to 100 km/h</td>
<td>Not installed in residential or built-up areas</td>
</tr>
<tr>
<td>Not installed within 300 m of a residence</td>
<td>For noise and amenity reasons&lt;br&gt;200 m acceptable if location has high fatigue crash history</td>
</tr>
</tbody>
</table>

Additional Criteria that may be considered

| Road Section prone to frequent fog and low visibility conditions |

3.2 Dividing Line ATLM Criteria

For Dividing Line ATLM, only the line marking strip is made tactile, not the gap between the lines – i.e. the ATLM shall be placed on the line marking in place.

The reason for this is that different line types will wear differently, and it is critical that drivers recognise that some lines are barrier lines and each line looks the same over the life of the markings.

Table 2 – Minimum Installation Criteria for Dividing Line ATLM

<table>
<thead>
<tr>
<th>Minimum Criteria for Dividing Line ATLM</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Localised Site</td>
<td>High speed Rural road sections where the section of road has a recorded history of fatigue related head-on road crashes</td>
</tr>
<tr>
<td>Sealed Lane width greater than or equal to 3.3 m</td>
<td>3.5 m preferred&lt;br&gt;Sound pavement condition</td>
</tr>
<tr>
<td>Not installed within 300 m of a residence</td>
<td>For noise and amenity reasons&lt;br&gt;200 m acceptable if location has high fatigue crash history</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Minimum Criteria for Lane Line ATLM</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Localised Site</td>
<td>High speed multi-lane roads where the section of road has a recorded history of lack of lane discipline</td>
</tr>
<tr>
<td>Lane width greater than or equal to 3.5 m</td>
<td>Sound pavement condition</td>
</tr>
<tr>
<td>Not installed within 300 m of a residence</td>
<td></td>
</tr>
<tr>
<td>Additional Criteria that may be considered</td>
<td></td>
</tr>
<tr>
<td>Road Section prone to frequent fog and low visibility conditions</td>
<td></td>
</tr>
</tbody>
</table>

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 DPTI's Master Specifications R47.


![Figure 2 Typical ATLM application](image)

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.
- Wide centred medians where the ATLM is placed centrally.

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 Section 6.3.7

- Current DPTI fatigued Roads, KNet document reference 10731680 (*internal use only*).

Appendix A – DPTI Fatigued Roads