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**ECONOMIC COMMISSION FOR EUROPE**

INLAND TRANSPORT COMMITTEE

Ad hoc Multidisciplinary Group of Experts on  
Safety in Tunnels  
(Fourth session, 9-11 July 2001)

**Proposal concerning measure 3.08**

Transmitted by the International Road Federation (IRF)

To be integrated into Measure 3.08, following the principles agreed at the Third Session of the Ad hoc Multidisciplinary Group of Experts on Safety in Tunnels:

The basic principles governing the installation of horizontal and vertical signing systems are the following:

- Horizontal and vertical signing systems should be improved and harmonised, at international level, in tunnels and in their advance warning area.
- The use of optimum conspicuity high quality materials should be compulsory at international level.

Following the above, signing should conform to the following specific rules, both in signing items selection and in the materials used.

**1. Signing items**

**1.1 Vertical signing**

Compulsory signing in the advance warning area of the tunnel must include:

- The sign “Tunnel”, as described in the Vienna Convention and in related national legislation. This sign should also include an additional sign showing the length of the tunnel.
- The specific speed limit to be followed in the tunnel.
- The “Overtaking prohibited” sign in bi-directional tunnels.

In the tunnel compulsory signing should include:

- The “Maximum speed limit” sign every 500 m, in the case of tunnels longer than 1000 m.
- The “Overtaking prohibited”, sign in bi-directional tunnels every 500 m in the case of tunnels longer than 1000 m.

At the tunnel exit the signs revoking the limitations, followed in the tunnel, should be placed.

### **1.2 Horizontal signing (Road markings)**

- Horizontal delineation should be applied at the roadside edge (edge lines) at a distance between 10 and 20 cm from the carriageway limit. The line should have a width of 30 cm. Centre lines should have a width of 15cm. (*Reference: Action COST 331 “road markings performance”*).
- In the case of bi-directional tunnels, retro-reflective road studs (“cat’s eyes”) should be applied on both sides of the median line (single or double) separating the two directions at a distance ranging between 10 and 15 cm from the external edge of each line.
- Retro-reflective road studs following the national legislation concerning their maximum height and dimensions every 20m, maximum. If the tunnel is in a road curve, this distance should be reduced, up to 8 m, for the first 10 reflectors from the tunnel entrance. Reflectors should be red on the right and white on the left side. In the case of bi-directional tunnels, reflectors should be double-faced to appear in their correct colour (red=right, white=left) from both traffic directions.

### **1.3 Variable Message Signs**

In tunnels exceeding 2,000 m in length, variable message signs (VMS) should be used in the tunnel entrance to display specific messages in the case of special incidents (accidents, etc.) in the tunnel and, in the case of an emergency, stop the traffic before entering the tunnel. In very long tunnels, exceeding 4000 m in length, such devices should also be used in the tunnel every 2000 m. When there is no incident ahead about which drivers should be aware, no other messages should be displayed on the VMSs, in order to keep, in the drivers conscience, the messages of these devices as most important and crucial to safety.

## **2. Materials**

### **2.1 Vertical signing**

*Optimum conspicuity high quality retroreflective materials should be used in vertical signing. Signs in tunnels should be made of materials with maximum retroreflection and be internally or*

externally illuminated to give optimum conspicuity to oncoming drivers both in day and in night time conditions. Materials used in tunnel signing, both in tunnels and in their advance warning area, should be of the highest level of performance in reflectivity, specified in the national standards of each country, using microcube technology high performing retro-reflective sheeting, granting night time visibility in the case of electrical failure.

## ***2.2. Horizontal signing (road markings)***

*Optimum conspicuity high quality retroreflective materials should also be used in horizontal signing.*

- Road markings shall be of the highest quality to grant day and night time visibility 24 hours.
  - Road markings shall deliver the highest possible conspicuity in wet conditions.
  - Retro-reflective road studs shall be of the highest quality in order to achieve the highest visibility at night.
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