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**REVISION OF THE CONSOLIDATED RESOLUTION
ON ROAD TRAFFIC (R.E.1)**

Special infrastructure and facilities

Note by the secretariat

Members of the Working Party will find below the text concerning special infrastructure and facilities, prepared by the small group on restructuring. This relates to chapter 12 of the new R.E.1, in accordance with the structure set out in document ECE/TRANS/WP.1/2005/15/Rev.3. Reference is made in brackets to TRANS/SC.1/294/Rev.5.

R.E.1

PART III - INFRASTRUCTURE AND SAFETY

Improvements in road infrastructure can greatly help to reduce the frequency and gravity of traffic accidents. By configuring roads so that they are user-friendly, designers can influence user behaviour. The road facilities should enable the various categories of users to use the road safely. This part addresses in particular infrastructure and facilities aimed at ensuring the safety of the most vulnerable categories of users (pedestrians, children, persons with impaired mobility, elderly persons, drivers of two-wheeled vehicles) and certain kinds of infrastructure that have special characteristics (civil engineering works, tunnels) or are designed to provide protection from animals and/or to protect animals.

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Chapter 12

Special infrastructure and facilities

12.1 Protection against animals (4.1)

The presence of animals, in particular wild animals, can present a high risk of accidents on roads running through certain areas (for example, forests), especially where vehicles are used at high speeds, such as on motorways and express roads.

Therefore, along heavily used roads, appropriate equipment (fencing) should be installed to protect users from wandering animals. When this is not possible, and on roads with less traffic, appropriate signage should be put in place warning drivers of the possible presence of animals, so that they are more vigilant and adapt their driving, and specifically their speed, accordingly. In areas where there is a risk that wild animals will be encountered, signs should be put up at the entrance to the area, and intermittently within it.

It is also advisable to take measures to protect the animals themselves, including construction of overpasses or underpasses of the appropriate size and shape to allow them to move about without posing a danger to road users.

12.2 Clearance of civil engineering works (4.3)

To facilitate traffic of vehicle categories with high clearance requirements, such as heavy vehicles and coaches, it is important that they should be able to pass safely under civil engineering works that span roads and through tunnels. Throughout the road system, the clearance of new or rebuilt civil engineering works above the carriageway should therefore be at least 4.50 metres for heavily used roads.

In cases where there is less clearance, appropriate signage should be placed at the civil engineering works itself, and also sufficiently far ahead of it to inform the drivers concerned to take alternate routes.

See also paragraph 1.6 of the Consolidated Resolution on Road Signs and Signals (R.E.2) (document TRANS/SC.1/295/Rev.3).

12.3 Tunnels

Although the number of accidents is often lower in tunnels than on the open road, because vehicles are in close quarters accidents in road tunnels, especially those involving fires, can have tragic consequences. It is therefore necessary to take all the measures required to limit the gravity of such accidents.

12.3.1 Context

Tunnel safety became a particularly urgent issue after the tragic accidents that took place between 1999 and 2001 in three long tunnels under the Alps. These accidents put this issue in the media spotlight, bringing political leaders and all the stakeholders into the debate.

To ensure road safety in tunnels, a number of structural, technical and organizational measures must be implemented, taking account of technical progress. Furthermore, consideration must be given to all the elements involved: road users, traffic control and emergency services, infrastructure and vehicles.

12.3.2 Recommendations

In order to attain the highest safety level in road tunnels, the following objectives should be pursued:

- Prevent critical situations in tunnels constituting a danger to human life, the environment and tunnel installations;
- Limit the consequences of events such as accidents and fires. To this end, create the necessary conditions so that:
 - Persons directly affected can effect their own rescue;
 - Users react immediately to prevent the situation from worsening;
 - The emergency services work effectively;
 - The environment is protected;
 - Property damage is limited, to the extent possible.

See also, on safety in tunnels, paragraphs 1.7, 2.1.1.1.2 and 2.2.1.4 of this Resolution.

In respect of measures relating to infrastructure, such measures should, in the light of the high number and interdependence of factors affecting safety, be the subject of careful coordination. This applies especially to elements built on the basis of previous standards, which must be adapted to meet new safety requirements.

In order to ensure the same degree of safety throughout the national road system, safety requirements should be issued at the national level, as directives or regulations applicable to all road tunnels located in the country in question. The European Agreement on Main International Traffic Arteries (AGR), in its Annex II,* describes the standards and measures to be implemented to improve tunnel safety.

* See TRANS/SC.1/375/Add.2. The related measures went into force on 4 January 2006.