

## Pedestrian Safety Global Technical Regulation Preamble

*The preamble should document the reasoning used to make the final decisions on all aspects of the gtr. This is rough outline of what needs to be included in the preamble. It was developed using the Pedestrian Safety gtr proposal as a starting point. Questions are asked to help fill in each of the sections. In general the preamble should discuss “how’s”, “what”, and “why’s”. (i.e. How were these tests chosen? What options were discussed? Why were these values picked?)*

### A. Statement of Technical Rationale and Justification

#### I. Introduction

Road accident statistics indicate that a significant proportion of road casualties are pedestrians and cyclists who are injured as a result of contact with a moving vehicle. The majority of these injuries are caused by being struck by the front structure of the vehicle. Most of these accidents take place in urban areas where serious or fatal injuries can be sustained at relatively low speeds, particularly in the case of children. **[Are there statistics that document the scope of the problem? What is the target population?]**

Nevertheless, it is considered that there is scope to mitigate the severity of injuries to pedestrians by improving the frontal structures of motor vehicles. Above a certain speed the scope to reduce such injuries is limited but, at speeds below approximately 40 km/h, the possibility exists to significantly reduce the levels of injury sustained by pedestrians involved in frontal impacts with motor vehicles. **[Why 40 km/h? Where did this number come from?]**

Clearly the maximum benefit from making vehicles pedestrian friendly would occur if all types of vehicles comply with these technical provisions, but it is recognized that their application to heavier vehicles (larger trucks and buses) would be of limited value and may not be technically appropriate in their present form. For this reason the scope of application will be limited to the passenger cars, sport utility vehicles (suvs), light trucks and other light commercial vehicles. Since these vehicle categories represent the vast majority of vehicles currently in use, the proposed measures will have the widest practicable effect in reducing pedestrian injuries.

#### **Description of the proposed regulation**

Through study reviews it has been concluded that child and adult heads and adult legs are the body regions to be most affected by contact with the front end of vehicles. On the vehicles themselves it has been seen that the bonnet top, the windscreen and the A-pillars are the vehicle regions mostly identified with a high potential for contact. The shape of the vehicle is also considered to be important as it can have influence on the injury levels. The speed to be considered is presently agreed as 40 km/h to provide good potential coverage of the injury frequency. **[What studies? What were the study results? What percentage of injuries will be covered by this regulation?]**

## II. Procedural Background

- **When was the informal working group formed?**
- **Who is sponsoring/chairing the group?**
- **When was the formal proposal adopted?**
- **When did the GRSP agree to forward the gtr to the Executive Committee?**

## III. Existing Regulations, Directives, and International Voluntary Standards

At the present time there are no regulations concerning the provision of improved protection for pedestrians and other vulnerable road users in the Compendium of Candidates.

The following is a summary of work proceeding in this area:

**[Update this section as needed.]**

- The Japanese Government has proposed a new regulation on pedestrian protection. The regulation will address the issues of providing protection for the child and adult heads. It will apply to passenger cars and small trucks with application from 2005 for new vehicle types and from 2010 for existing vehicle types (certain other vehicles have a timetable which is later by two years). The regulation will require compliance with test requirements using representative head impactors.
- The EU has recently adopted a similar Directive but which also covers requirements for leg injuries to be addressed. The proposal and its requirements will be incorporated into Community legislation under the EC whole vehicle type approval system set up by Directive 70/156/EEC, as amended. It will apply to passenger cars, suvs, light trucks and other light commercial vehicles with application dates in two phases starting in 2005 and 2010.
- The Canadian bumper regulation is one of the most stringent in the world and needs to be investigated as to the effect of bumper designs on pedestrian safety.
- The US terminated development of a pedestrian head impact requirement in the early 1990's. Since then, US efforts have mainly focused on research in support of The International Harmonized Research Activities (IHRA) pedestrian safety working group.
- IHRA has developed test procedures for head protection and is considering, as a new step, leg protection requirements.

## IV. Discussion of Issues Addressed by the gtr

### (a) Scope

The proposed gtr focuses on the **[which body regions?]** and **[which vehicle contact areas?]** for *the development of an appropriate test regime to be used*. The testing is based on separate component tests, i.e. separate head and leg impactors. The specifications of the impactors and the application of the tests are detailed.

- **How was the Scope determined?**

- **What were the discussions and their resolutions?**

(b) Applicability

*(Text from proposal...It is proposed that the scope of the vehicles to be covered by the proposed gtr will be defined by use of a matrix of tests and vehicle category in order to cater for all the variances in vehicle category definition. By use of this approach each Contracting Party may accept the gtr while indicating which test it would apply to which vehicle category. It is to be stressed that this would be considered as a first approach to defining the scope of application and that the ultimate goal would be to comply with the vehicle categories being proposed by GRSG. )*

- **How was the Applicability developed?**
- **What options were discussed? Why were they accepted or rejected?**
- **How were the categories chosen? Are they representative of fleets in Japan, Europe, and the U.S.?**

(c) Definitions

- **Discuss any issues that were controversial and how they were resolved.**
- **Whose definitions were used and why?**

(d) General Requirements

**Discuss any issues that developed during the discussion of what would be included in this section.**

- **What tests were evaluated? Why were they accepted or rejected?**

(e) Performance Requirements

**General Information needed for all parts of this section:**

- **All performance requirements need to be justified.**
- **How were the values determined? Why were they chosen?**
- **What other values were discussed? Why were they rejected?**

(f) Test Conditions

- **How were these tests developed?**
- **What were the testing options discussed? Why were they accepted or rejected?**
- **How were the details determined?**
- **Are these tests feasible?**
- **Are they based on crash tests or computer modeling?**
- **What computer models were evaluated? Why were they accepted or rejected?**
- **Is there any experimental or field data to support the conditions?**
- **Does the model used to develop the test conditions have acceptable biofidelity?**
- **Were these test conditions validated for all vehicle categories?**
- **Is the data used to develop the models (IHRA data from 1994-2000) still applicable to the current vehicle fleet?**

(g) Test Procedures

- **How were the test procedures chosen?**
- **What options were discussed? Why were they accepted or rejected?**
- **How were the details developed?**
- **Why were the test velocities chosen?**
- **How were the test locations/zones determined? Are there exemptions?**
- **Are the tests feasible? What documentation do we have to show biofidelity, repeatability, reproducibility, and durability of the tests and devices?**
- **Were the tests validated?**

V. **Regulatory Impact and Economic Effectiveness**

- **How many vehicles will need to be changed?**
- **What types of changes to non-compliant vehicles will be needed to allow them to pass the new requirements?**
- **What are the expected costs of the changes?**
- **Of the target population, how many injuries and fatalities could be avoided if this regulation is adopted?**