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**REVISION OF THE CONSOLIDATED RESOLUTION
ON ROAD TRAFFIC (R.E.2)**

Signing for roadworks

Note by the secretariat

At its thirty-seventh session, the Working Party (WP.1) had considered a new proposal concerning signing for roadworks, submitted by Denmark and the Russian Federation (TRANS/WP.1/2001/33) and had asked the representatives of PRI and IRF to submit a new version of paragraph 2.2 of this document; this can be found in document TRANS/WP.1/2002/16. Switzerland for its part had transmitted in writing the comments and proposals appearing in document TRANS/WP.1/2001/33/Add.1.

In view of the different opinions expressed at the thirty-eighth session, WP.1 decided to postpone the discussion until its thirty-ninth session. It requested the secretariat to prepare a consolidated document and to present the various options proposed for paragraph 2.2 in order to facilitate a final decision.

This then is the aim of this document which takes account of the various proposals put forward and the comments made. Sections of document TRANS/WP.1/2001/33 which have been amended or sections added to the document appear in bold italics. The most recent comments by the countries are annexed to this document.

DRAFT RECOMMENDATION FOR ROAD WORKS SIGNING AND SAFETY

1. GENERAL REQUIREMENTS

- 1.1 Road signs, horizontal and vertical delineation devices, electrical lighting installations, traffic control devices and protective barriers shall be made of high performance materials, capable of resisting the rough conditions of use on road work zones and be easy to install and remove.
- 1.2 Mobile barriers, fences or guardrails or any other suitable devices shall be used to ensure the safety of the persons working on roads as well as the road users passing through the work zone. *(R.E.1?)*
- 1.2 *(The secretariat suggests that the sentence should be inverted to read: “The safety of the persons working on roads as well as the road users passing through the work zone shall be ensured by mobile barriers, fences or guardrails or any other suitable devices.”)*
- 1.3 The wearing of safety garments described in Recommendation No. 4.2 of the Consolidated Resolution on Road Traffic (TRANS/SC.1/294/Rev.5) [is strongly encouraged] **should be obligatory** on all road work zones. *(R.E.1?)*
- 1.4 Vehicles used in road work zones [shall] **should** be equipped with special amber warning lights and preferably marked to the front and to the rear with red and white bands of a retroreflective material. *(R.E.1?)*
- 1.4 *The secretariat recalls that the conditions for the use of the special amber warning lights are defined in article 32, paragraph 14 (b) of the Vienna Convention on Road Traffic. It suggests the following wording:*
- “Vehicles used in road work zones [shall] **should, when their presence on the road constitutes a danger or inconvenience to other road-users, be systematically** equipped with special amber warning lights and preferably **carry at** the front and **at the** rear red and white bands of a retroreflective material.”*
- 1.5 Slow moving vehicles, in particular those which by construction cannot exceed the speed of 30 km/h, should also be marked with additional rear markings as recommended in the Consolidated Resolution on Road Traffic (Recommendation No. 2.10) in document TRANS/SC.1/294/Rev.5. *(R.E.1?)*

2. TECHNICAL REQUIREMENTS

- 2.1 The photometric and colorimetric properties of all road signs, markings and additional markings of vehicles should comply with the provisions set out in the International Commission on Illumination (CIE) publication 39-2 (TC-1.6) 1983 “Recommendations for Surface Colours for Visual Signalling”.

- 2.2 (*PRI/IRF proposal*): “The minimum retroreflective level for temporary signs should correspond to the class required for permanent signs for the road category in question or when conditions are similar. It is, however, recommended, in view of the additional danger to which the presence of road works gives rise:
- that Class II should be made mandatory for all signs on roads with separate carriageways, particularly motorways, and, on two-way roads, for the road works sign (A, 16) and for all means employed to guide users when the width of the carriageway is substantially decreased, lanes are switched or the number of lanes reduced.
 - that use should be made of a fluorescent background or surround colour on retroreflective signs so as to draw the attention of road-users to particularly dangerous situations.”
- 2.2 (*Interpretation of the proposal by Switzerland based on the initial text*): the minimum **recommended** values regarding the photometry of retroreflective materials used on road work signs in the vicinity of road work zones **are** those of Class II materials defined in the **above-mentioned** CIE document.
- 2.2 (*Proposal by the Russian Federation amending the two subparagraphs of the PRI/IRF proposal*):
- “that retroreflective Class II materials should be used for the sign A, 16 and other signs announcing the bypassing of roadworks and the narrowing of the roadway;
 - that use should be made of a fluorescent background or surround colour for signs announcing particularly dangerous sections of road.”
- 2.3 Damaged material, signs, markings and safety equipment shall be replaced whenever necessary; to this effect, regular inspections shall be carried out during the entire duration of the road works.
- 3. ADVANCE WARNING SIGNS**
- 3.1 Advance warning that work is in progress on the section of road ahead shall be given by the sign A, 16 with the shape A^a according to the 1968 Convention on Road Signs and Signals and the European Agreement supplementing it.
- 3.2 This sign shall be placed at sufficient distance ahead, allowing drivers to adapt early enough their driving to the particular situation they will encounter.
- 3.3 Any other additional signs, such as speed reduction indications (C, 14); narrow carriageway (A, 4) width, height, weight or axle load restrictions (C, 5 - 6 - 7 - 8); prohibition of overtaking (C, 13); indication of lane changes, etc. [may] **shall** be placed in such a way that drivers can clearly distinguish them from other road traffic signs regulating normal traffic conditions.

- 3.4 Should several signs be used at the same time and should they have to be grouped on the same support, not more than [two] *three* messages at a time shall be shown.

4. ON-SITE ROAD SIGNS

- 4.1 Use of only a certain number of significant road signs should be encouraged. [...] *Examples of frequently used signs are reproduced in the appendix to this recommendation. (The reference to 4.1 should be omitted.)*

5. VERTICAL ON-SITE DELINEATION

- 5.1 All delineation devices should show red and white or red and yellow retroreflective markings in such a way that they have the same aspect by day and by night.
- 5.2 Cones, vertical lane separators, barrels and barriers should have such retroreflective bands to fulfil the requirements in paragraph 5.1.
- 5.3 Electrically illuminated vertical delineators may be used whenever necessary in addition to the devices mentioned above.

6. TEMPORARY HORIZONTAL MARKINGS

- 6.1 To the extent possible, where vertical delineation devices are used on road work zones, temporary horizontal markings should be used to provide continuous visual guidance to drivers under all conditions both by day and at night. The choice of use of horizontal markings should depend on the importance and duration of a road work zone.
- 6.2 Temporary horizontal markings shall be conceived in such a way that road users can clearly distinguish them from any normal horizontal markings which may be left in place. Any normal horizontal markings which could cause confusion should be either erased or blacked out.
- 6.3 If temporary horizontal markings are used they shall be made of materials easily removable and visible by day and by night.

7. DEVIATION SIGNING

- 7.1 If a part of a road is temporarily closed for traffic, signs as described in Recommendation 1.5 of R.E.2 (TRANS/SC.1/295/Rev.3) should be applied to indicate diversions and detours.
- 7.2 These signs should be made with a yellow or orange retroreflective background in accordance with the Convention on Road Signs and Signals, Annex 1, Section G, Chapter I, paragraph 4.

8. END OF RESTRICTIONS

- 8.1 All temporary restrictions should always be cancelled at the end of a road work zone.
- 8.2 Should permanent restrictions to traffic prevail also after the end of road works, they should be repeated as soon as possible after the above-mentioned sign.

9. TRAFFIC LIGHT SIGNALS

- 9.1 Traffic light signals used to regulate traffic flow at a road work zone should preferably be of the three light type.
- 9.2 When possible, vehicle detectors should allow for traffic operated regulation, especially in the case of large variations of the traffic flow.

10. REMOVAL OF UNNECESSARY RESTRICTIONS

- 10.1 All unnecessary restrictions, obstacles and barriers to traffic flow on road work zones should be removed when work is not in progress on weekends and public holidays and also at the time of peak traffic if some traffic lanes were closed because of the work.
- 10.2 Only the necessary warning signs and temporary horizontal markings and vertical delineation devices should prevail under these conditions.

Appendix

“Examples of frequently used signs for road works”

[The signs reproduced below should be entirely retroreflective]

1. Danger warning signs

- A, 16
- A, 4a
- A, 4b
- A, 7a
- A, 8**
- A, 9
- A, 10a
- A, 17a
- A, 23

2. Prohibitory or restrictive signs

C, 1a
C, 2
C, 5
C, 6
C, 7
C, 8
C, 13aa
C, 14

3. Mandatory signs

D, 1a
D, 2

4. Indication signs

G, 11c
G, 12a

5. Signs indicating priority on narrow sections of road

B, 5
B, 6

Annex

REMINDER OF COMMENTS ADDRESSED TO THE SECRETARIAT THAT ARE STILL RELEVANT

Norway (from document TRANS/WP.1/2001/33)

1. The references to other recommendations in the Consolidated Resolution on Road Traffic (R.E.1) should be updated later when WP.1 adopts the new structure of R.E.1.
2. Part of the recommendation on road works signing (paragraph 1 - General requirements) is rather related to R.E.1. This part could be moved to R.E.1 with a reference to R.E.2 (and vice versa).
3. Re 3.3: The word “may” does not seem appropriate. It indicates that advance signs also may be placed in such way that the drivers cannot clearly distinguish them from other signs regulating normal traffic conditions. That of course may be all right, but in that case the need for this paragraph is questioned. From a legal point of view it is proposed to use the word “shall” or otherwise delete paragraph 3.3. Another question is how one is supposed to place a sign in such a way that the intention is accomplished. The intention of this paragraph is presumed to be that drivers familiar with the actual stretch should be warned that the infrastructure etc. is temporarily altered. The common sense approach is to put the actual sign, for instance speed limit, together with A, 16. If this is covered by the word “place” everything is fine. If not, one should find other words covering this approach.
4. Re 4.1: Norway agrees in principle to this recommendation which provides for the use of a limited number of signs for road works. The type of signs should be limited. Also the number of signs at a certain road stretch should be limited, but this is covered by a general provision of the Convention on Road Traffic (Art. 4 (b)) . It is felt however that the signs reproduced in the appendix do not cover all possible needs and that the signs listed merely should be regarded as the most common examples of road works signs. For instance signs A, 1, A, 2/A, 3, A, 8, A, 11 and A, 24 may also be used. Also a number of prohibition signs could be added. Norway proposes to amend this paragraph as follows:

“4.1 Use of only a certain number of significant road signs should be encouraged. Examples of frequently used signs are reproduced in the appendix to this recommendation.”
5. The title of the appendix should be amended to:

“Examples of frequently used signs for road works”
6. It is proposed to *add sign A, 8* to the list.

France (from document TRANS/WP.1/2001/33)

1.3 Replace “*is strongly encouraged*” by “*should be obligatory*”.

9.1 France uses a flashing yellow light to indicate that the road is clear.

Switzerland (from document TRANS/WP.1/2001/33/Add.1)

Re 1.4: Vehicles for winter service and vehicles assigned to special tasks (for example, sweepers, machines used for road marking and vehicles which, general traffic rules notwithstanding, frequently have to use the middle or the left side of the roadway) are equipped with warning lights. Vehicles used in road works, such as lorries, wheeled excavators, etc. may only be equipped with amber warning lights when in movement in the performance of special work. Otherwise, their presence may be indicated or their safety ensured by means of the usual signalling devices, such as beacons, barriers, road works trailers with flashing lights, signs or other appropriate devices. As at present, vehicles should be equipped with amber warning lights in a minimum number of situations so that the warning light will continue to be fully effective as a means of indicating danger.

For all the above reasons, *Switzerland proposes that the mandatory formula should be replaced by a rule from which it is possible to depart.*

Re 2.2: Class II means HIG, i.e. highly retroreflective

Switzerland is of the opinion that the requirement should be corrected and the mandatory formula replaced by a non-mandatory formula. The authorities should be left a margin of discretion (margin for decision). A non-mandatory formula makes it possible to take decisions adapted to the case in question, which is not possible with a mandatory formula. It should not be laid down as binding that HIG materials are to be used on every road works site. Local conditions sometimes make it possible to use road signs which are less retroreflective (Class I, CIE). For example, the following conditions could be imagined: a road with little traffic, a perfectly clear traffic situation, relatively limited road works, etc. In Switzerland’s opinion, it does not seem advisable to adopt a measure as stringent as that for which paragraph 2.2 provides; we therefore propose *the replacement of the mandatory formula by a rule from which it is possible to depart.*

Re 3.4: Switzerland proposes the possibility of putting *three signs* on each support. Drivers should be informed as fully as possible of obstacles ahead (in the case of road works). Their attention should be drawn to how to adapt their driving to the circumstances and to the restrictions or events they should expect, thus ensuring the fluidity and safety of the traffic. In Switzerland, the supports are equipped, for example, with the following three signs (from top to bottom): 1. Road works (A, 16); 2. Traffic lights (A, 17^a); 3. Maximum speed (C, 14).