

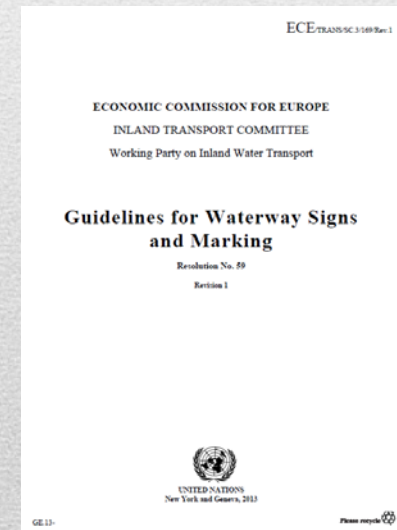
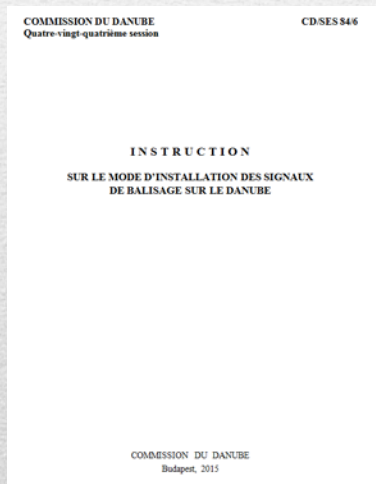
Revision of Resolution No. 59 Guidelines for Waterway Signs and Marking

UNECE secretariat

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22 - 24 June 2016, Geneva

BACKGROUND

- **Instruction on the installation of signs and markings on the Danube**
- **Guidelines for Waterway Signs and Marking (Resolution No. 59, revised)**
- **European Code for Inland Waterways, fifth revised edition**



New amendment proposals

New terms:

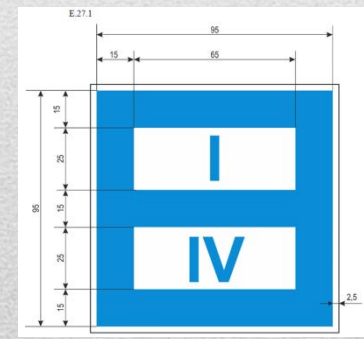
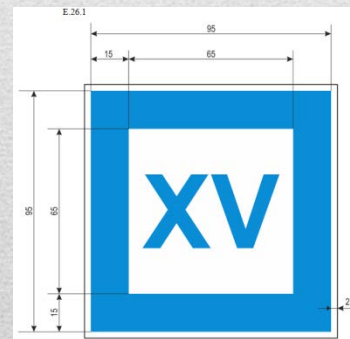
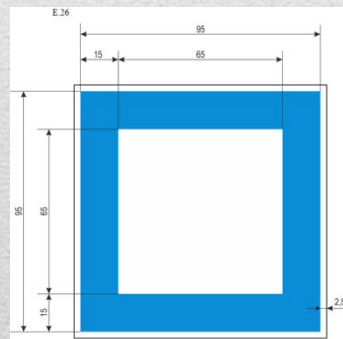
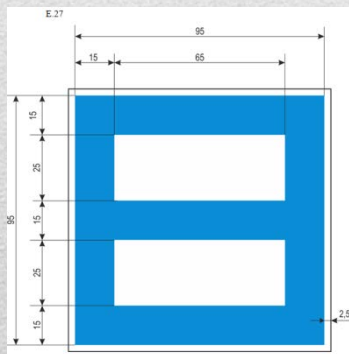
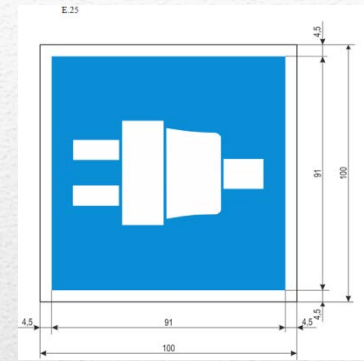
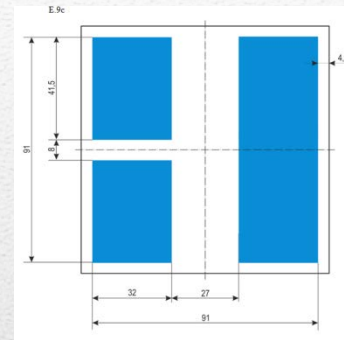
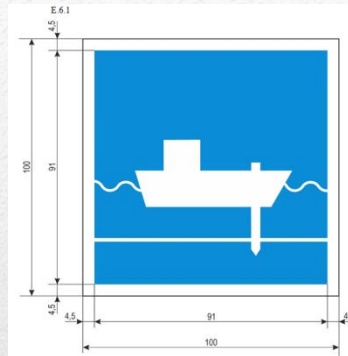
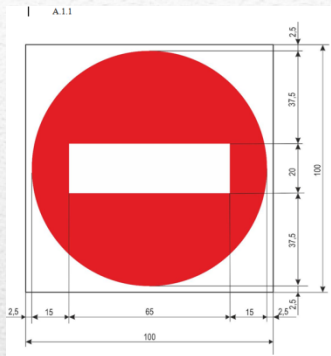
- **Floating signs:** Signs and signals installed on the waterway
- **Bank marks:** signs installed on the banks
- **Marking plan:** plan for the installation of signs and marks

Clarification of use of terms according to CEVNI:

- **Waterway** means any inland water open to navigation
- **Fairway** means that part of the waterway that can actually be used for navigation

**Harmonization between English,
French and Russian texts**

New signs



Chapter 1

1.4 ~~The signs and signals on the water~~ **Floating signs** and bank marks of annex 8 to CEVNI are used to indicate the limits, the direction and the depth of the ~~waterway~~ **fairway** and, in addition, ~~are used~~ to mark obstacles and structures protruding into the fairway or in its vicinity. **Here, the instructions of Section A of Chapter I, annex 8 to CEVNI shall be taken into account.**

Annex 8

BUOYAGE AND MARKING OF THE WATERWAYS

I. GENERAL

A. MARKING OF WATERWAYS

The waterway, the fairway, as well as the danger points and obstacles are not always marked.

Floating waterway markings, are anchored at approximately 5 m distance from the limits that they indicate.

Groynes and shallows can be marked using fixed marks or buoys. These marks or buoys are usually placed on the borders of groynes and shallows or in front of them.

It is necessary to keep a sufficient distance from the marks and the buoys to avoid the risk of getting on the ground or hitting an obstacle.

Chapter 1

Resolution No. 59:

1.7 The luminous range of lights is established by the competent authorities of the respective countries in terms of local navigational conditions. In calculating the luminous range, the atmospheric transmission coefficient 0.6 should be used over a distance of 1 nautical mile.

ECE/TRANS/SC.3/2015/5:

1.7 The luminous intensity of lights is established by the competent authorities of the respective countries in terms of local navigational conditions. In classifying the luminous intensity, it is recommended to use the classification of luminous intensity in Annex 2 to this Instruction, which also includes calculations for luminous range.

**Appendix
5 has been
moved
from
CEVNI to
Resolution
No. 61,
Annex 7**

Chapter 3

Conditions of visibility and dimensions of signs

3.5 → In accordance with IALA recommendations, there are three degrees of visibility of signs and signals.

(a) → First: when, because of the distance, the sign is no more than a blotch on the background and neither shape nor colour can be distinguished (dotted outline); the sign is visible to the naked eye. The meaning of the sign is not yet identifiable (simply visible).

→ (b) → Second: when the sign is clearly visible and its shape and outline can be seen, but the colour remains unclear; identifiable according to CEVNI (identifiable).

(c) → Third: When the shape and colour of the sign can be seen distinctly, the sign is identifiable and distinguishable from its surrounding background (conspicuous).

→ Signs that must be seen by a boatmaster at some imperative distance ("no entry", "keep a particular sharp lookout", etc.) must have a visibility (due to their proper dimensions) of second or third degree. The type and dimensions of signs should be selected accordingly.

Third degree visibility is required when the sign or light is identifiable in principle, but cannot be easily seen at night owing to the surrounding background (presence of construction or a large number of light sources).

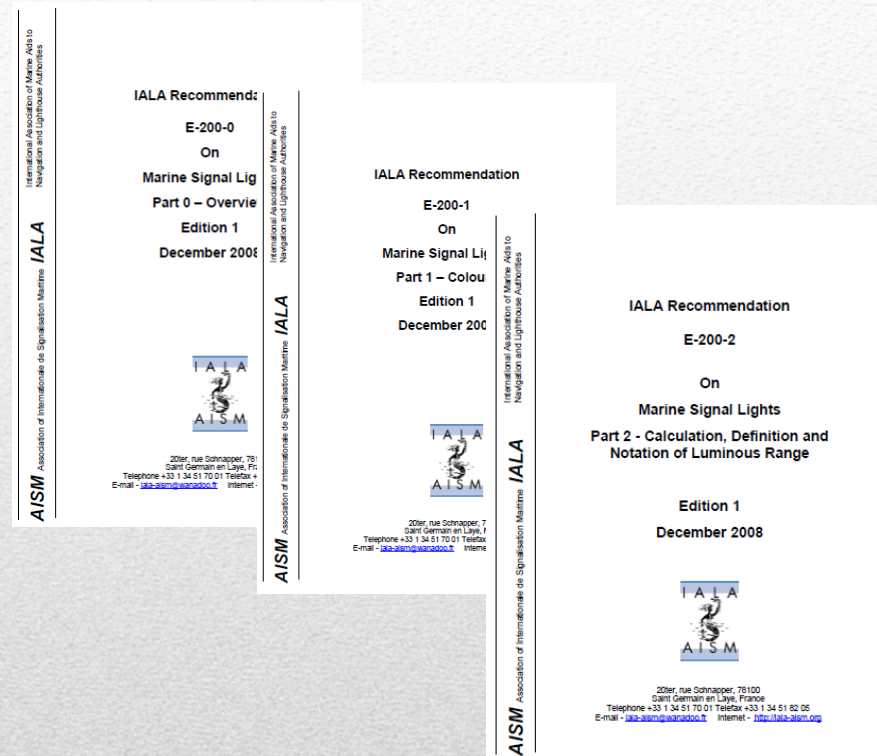
3.6 → The degree of visibility of signs and lights, as of any object, depends primarily on the size of the angle of sight, the colour contrast, the contrast in luminance and weather conditions on the following conditions.

→ Signs:

- Angle of sight;
- Colour contrast and differences;
- Lighting (including natural day light) and weather conditions.

→ Lights:

- Luminous intensity;
- Competing lights and background lighting;
- Weather conditions.



In para. 3.8 degrees are replaced by angular minutes

Chapter 3

3.9 Examples of the minimum measurements for the signs, marks and buoys from annexes 7 and 8 to CEVNI are given in Appendix² 1 to these guidelines. Alphanumeric characters on ~~traffic~~ signs should intend to provide a standard for the various ~~traffic~~ signs.

The letters, figures and analogous symbols should be of a height not less than one five-hundredth of the maximum distance from which they must be read, and the thickness of the stroke should be not less than one-seventh of that height.¹⁴

For bank marks and signs, ~~the~~ minimal height from the lower rim of the board down to the ~~ground~~ **base of the lowest sign** shall be 3 m. In places where it is necessary due to the configuration of the terrain (relief), a height of 2 m is allowed.¹⁵ At highest navigation water levels, the height **between the water surface and of the** ~~water level up to~~ the lower rim of the board **of the lowest sign** should not be less than 1.5 m.¹⁶

It is proposed to bring para. 3.9 in line with the Instruction

Chapter 3

Resolution No. 59:

3.14 When boards are lighted, it should be ensured that the shade of their colour is unchanged. The luminance of the sign or signal perceived, like that of any object, depends not only on the lighting but also on the capacity of the surface of the sign to reflect the light waves falling on it. This shall be taken into consideration when the signs are painted; this shall be done in such a way that the surface of the sign is smooth and reflects the light properly and is not dull and covered with an uneven coat of paint.

ECE/TRANS/SC.3/2015/5:

3.14 In order to guarantee the visibility of lighted boards, the back lighting must conform with the requirements of Annex 4 to this Instruction. **In Annex 4, in addition to luminance and its regularity, the colour for the white light source is established to ensure that colours under artificial light look the same as when seen in daylight.**

For reliable identification at night the surface of the sign must be smooth and even, and if possible reflective.

There is
no similar
Appendix
in
Resolution
No. 59

Chapter 3 Conditions for the visibility of lights

Resolution No. 59:

Paras. 3.16-3.18 of Resolution No. 59 are replaced by

para. 3.16 and Annex 2 of **ECE/TRANS/SC.3/2015/5:**

3.16 Luminous intensity is broken down into three classes in terms of navigation lights for inland waterway vessels (see **Annex 2 to this Instruction**).

Annex 2:

Properties of lights

Chapter 4

Resolution No. 59:

4.2.1.7 If the fairway at longer transitions goes through the middle of the river bed or sharply crosses from one bank to another, its axis may be indicated by **a pair of two** cross-channel fairway signs, as shown in Figure 4.

The advantage is given to two cross-channel fairway signs on each side of the fairway in case of straight-line sections longer than 5 km, where the available width for navigation is less than double the width of the minimum prescribed width of the fairway for a particular sector. In this case and when the bank configuration allows so, the cross-channel fairway signs are placed on both margins of the transition (Fig. 4).

~~The advantage is also given to placing~~ **It is always preferable to** two cross-channel fairway signs on each side of the fairway when the fairway² is narrowed by certain obstacles constituting threats to navigation or other hazards marked by **floating**⁷ signs⁸ ~~and signals on the water.~~

ECE/TRANS/SC.3/2015/5:

4.2.1.6 When the fairway follows the middle of the river bed over a long distance or when it crosses abruptly from one bank to the other, its axis may be indicated by two marker posts, as shown in figure 3.

The advantage is given to two cross-channel fairway signs on each side of the fairway in case of straight-line sections longer than 5 km, where the available width for navigation is less than double the width of the minimum prescribed width of the fairway for a particular sector. In that case and when the bank configuration allows so, the cross-channel fairway signs are placed on both margins of the transition (fig. 3).

The advantage is also given to placing two cross-channel fairway signs on each side of the fairway when the fairway is narrowed by certain obstacles constituting threats to navigation or other hazards marked by signs and signals on the water.

Chapter 4

Resolution No. 59:

4.2.1.8 On a section where the ~~navigation line~~ **fairway** returns to the opposite bank immediately after crossing the waterway, three cross-channel fairway signs (the front should have two boards) are mandatorily placed (Fig. 5). In that case, lights of the back cross-channel fairway signs should be strictly oriented to the fairway axis: one to upstream and one to downstream.

ECE/TRANS/SC.3/2015/5:

4.2.1.7 In sectors where the fairway, after moving to the opposite bank, abruptly crosses to the other bank, triple marker posts must be placed (the first sign shall have 2 boards; see figure 5). In this case, the lights of the rear marker posts shall be oriented strictly on the axis of the fairway, one upstream and the other downstream.

Resolution No. 59:

4.2.2 **It is proposed to replace “alluvial channels” by “meandering sectors” according to the Instruction**

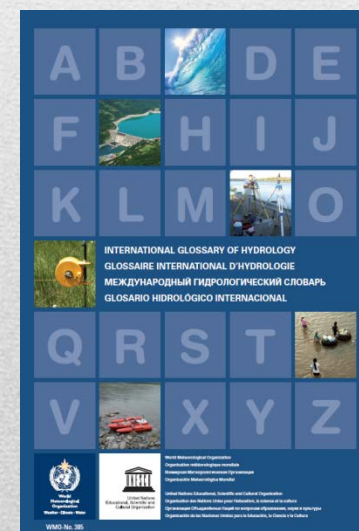
Chapter 4

4.3 *Shallow water marking of shoals*

4.3.1 In ~~shallow water~~ **shoals**, as in other sections, **the principle of the continuous marking of the direction**⁷ ~~sets of marks ensuring a continuous marking of the fairway~~² shall be ~~installed~~ **applied**.

In ~~shallow water~~ **shoals** the fairway² can be marked by cross-channel fairway signs, bank marks² and **floating** signs ~~and signals on the water~~.

The term “shoal” is proposed instead of “shallow water” according to the International Glossary of Hydrology, World Meteorological Organization, Publication WMO-No. 385, 2012.



1318 **shoal** see also bar (in a river)

(1) Submerged bar of sediment, resulting from natural deposition on a channel bed.

(2) Part of an area covered by shallow surface water.

banco de arena (1), bajos fondos (2) véase también barra (en un río)

1) Barra de sedimentos sumergida formada por la sedimentación natural en el fondo de un cauce.

2) Parte de una zona cubierta por agua superficial somera.

haut-fond voir aussi maigre

1) Banc de sédiments submergé, résultant d'un dépôt naturel, sur le lit d'un cours d'eau.

2) Surface submergée par des eaux superficielles peu profondes.

перекат (1), мель (2) см. также бар

(1) Подводный бар наносов, формирующийся в результате естественных отложений в русле реки.

(2) Мелководный участок водоема, покрытый поверхностными водами.

Chapter 5

Resolution No. 59:

5. Image display techniques

5.1 New image display techniques may be used subject to the following conditions:

- (a) The technique must comply with the provisions of CEVNI.
- (b) Deviation from the original colours is possible for some signs when implementing a new technique. This is dealt with in the descriptions of the relevant signs. (...)

ECE/TRANS/SC.3/2015/5:

5. When variable message signs are used to regulate traffic, attention must be paid to the following:

(a) If variable message signs regulating traffic show images of signs from Annex 7 to DFND, the images must be depicted using a mechanical display system (e.g. trilon, rotary drum display, board operated using a band drive). Annexes 1 and 3 are applicable with regard to colour selection and dimensions;

(b) By night, mechanical display systems shall be externally lit. Annex 4 shall be applicable; (/...)

The Working Party may wish to consider the replacement of the text of Chapter 5 by the text from Chapter 5 of ECE/TRANS/SC.3/2015/5 as well as a new appendix on the basis of Appendix 5 of ECE/TRANS/SC.3/2015/5 .

Chapter 6

Resolution No. 59:

6.2 When marking signs equipped with radar reflectors are installed, account must be taken of the furthest distance between the vessel and the sign in terms of the perception of the sign on the radar screen. This distance ~~is not always the same, but~~ depends on the technical characteristics of the radar equipment, the **reflective capacity of the** radar reflectors and the specific conditions of the river and the height of the antenna installed on the vessel, as well as the height of the radar reflector, **both** in relation to the water **surface**.⁷

The Working Party may wish to replace “technical characteristics” by “functional characteristics” in paragraphs 6.2 and 6.3 according to ECE/TRANS/SC.3/2015/5

Chapter 6

Resolution No. 59:

6.3 Vessels and other objectives and objects floating on the surface of the water can be perceived and distinguished on a radar screen as clearly separate from each other depending on the technical characteristics of the radar equipment, the distance to the objective, the distance between objectives, etc. Generally speaking, at a distance of 1 km two objects are perceived as clearly separate from each other when there is approximately 15 m between them.

ECE/TRANS/SC.3/2015/5:

6.3 Vessels and other objectives and objects floating on the surface of the water can be perceived and distinguished on a radar screen as clearly separate from each other depending on the functional characteristics of the radar equipment, the distance to the objective, the distance between objectives, etc. Generally speaking, two objects are perceived as clearly separate from each other when there is approximately 15 m of distance between them in the direction from the observer. **For two objects which, from the point of view of the observer, are separated from one another, the distance depends on the size of the antenna and the distance of the observer. From a distance of 1 km and with an antenna of 1.8 m, the distance between objects is approximately 25 m.**

The Working Party may wish to replace this paragraph by paragraph 6.3 from ECE/TRANS/SC.3/2015/5. Alternatively, the Working Party may wish to delete this paragraph.

Chapter 6

Resolution No. 59:

6.5 Since radar reflectors are **extremely** reliable, every effort should be made to install them by means of supports² on the framework of bridges to mark the navigable passage through the bridge.

The Working Party may wish to replace “extremely” by other wording.

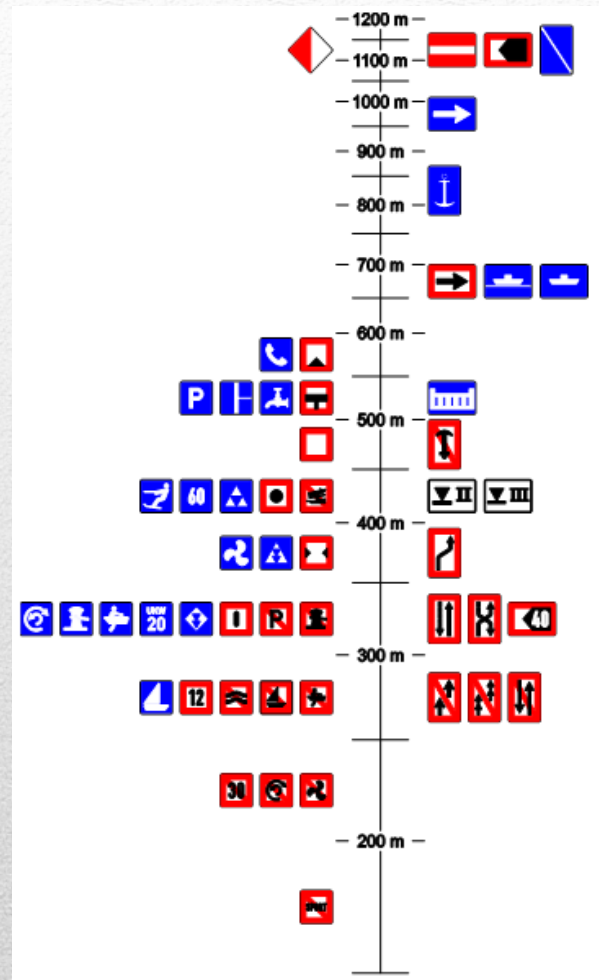
6.7 ~~In general,~~ When radar reflectors are used on marking signs and signals, ~~the rule that these reflectors shall not modify the form or size of the sign or signal should be observed~~ **the visibility of the sign must not be diminished.** Their colour shall also correspond to the colour of the sign ~~or signal~~ in question.

6.8 ~~The most common type of radar reflector is the so-called square octahedral reflector, i.e. a reflector with eight cavities. It is constructed of 3 flat square plates perpendicular to one another.~~ **Radar reflectors on fairway buoys are most often manufactured using two vertical metal plates set as a cross, with a horizontal metal plate intersecting them at a right angle.** The reflectors should be made of aluminium or stainless steel, ~~and not painted so as to enhance reflectivity.~~

This sentence seems to be in contradiction with the last sentence of paragraph 6.7. It is proposed to delete it or modify as: “The paint applied must not diminish the reflectivity of the radar reflector”.

Appendix 1

Guidance on the maximum distances at which the various signs are visible is given in the figure below. The distances are valid for boards with dimensions of 100 cm x 100 cm and 150 cm x 100 cm, with the observer positioned at a right angle to the surface of the board. When using boards of other dimensions, the distance at which the sign is visible should be recalculated according to the chosen scale.



Characters:

For many types of European characters (e.g. ~~DIN 1451~~), when using black type on a white background, the maximum readability distance D – if the observer is positioned at a right angle to the surface of the board – is approximately $D \approx 465 h$, where h equals the height of the character (height of capital letters above the line).

Appendix 2

Appendix 2 contains examples of image display techniques used for signs and marks. Therefore, the Working Party may wish to replace or supplement the existing text with provisions from ECE/TRANS/SC.3/2015/5, annex 4 “Lighting of traffic signs” and annex 5 “Examples for variable-message traffic signs”. The Working Party may also wish to supplement Appendix 2 with examples from other relevant standards applied by member States or add references to them.

ECE/TRANS/SC.3/2015/5

Annex 3. The colours of the reflected light for signs regulating shipping

Annex 4. Lighting of traffic signs

Annex 5. Examples for variable-message traffic signs

There are no similar paragraphs in Resolution No. 59

Thank you
