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Working Party on Inland Water Transport

Working Party on the Standardization of Technical and Safety Requirements in Inland Navigation
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agenda item 4)

AMENDMENT OF THE SIGNS AND SIGNALS ON INLAND WATERWAYS (SIGNI)

Transmitted by the Government of the Netherlands

Note: The Working Party, at its twenty-second session, asked Governments and river commissions to transmit national or international standards for waterway signs and marking with a view to considering if such standards should possibly be added to SIGNI (TRANS/SC.3/WP.3/44, para. 21).

The secretariat reproduces below the Guidelines for waterway signs and marking received from the Government of the Netherlands.

GUIDELINES FOR WATERWAY SIGNS AND MARKING

1. GENERAL

1.1 Revised guidelines

The ‘Guidelines for Waterway Signs and Marking’, published in 1990, have been revised following changes in the regulations, changes in the way locks and bridges are operated and technical developments. New chapters have been added dealing with lights on structures and the marking of navigable waters. These revised Guidelines have been formally adopted by the Minister of Transport, Public Works and Water Management and set out the traffic markings for shipping on waterways managed by national government, and have been published in the Government Gazette. The Guidelines have also been sent by way of information to the executives of other public bodies which operate waterways.

The Guidelines will be kept up to date by the Shipping Division of the Transport Research Centre, Directorate-General for Public Works and Water Management. Where regulatory matters are involved, the Directorate-General for Freight Transport will be consulted.

1.2 Harmonised system

Rules on waterway signs and marking in the Netherlands are made in accordance with Section 4 of the Shipping Act, and are included in the various shipping regulations applying to Dutch inland waterways. The system of waterway signs and marking presented in these regulations is taken primarily from relevant resolutions of the United Nations Economic Commission for Europe: "Signalisation des voies de navigation intérieure" (SIGNI), Resolution No. 22 of 9 November 1982 and "Code européen des voies de navigation intérieure" (CEVNI), Resolutions Nos. 24, 26, 27 and, most recently, 39 of 16 October 1998. The harmonised system of traffic signs set forth in these resolutions is aimed at all European waterways, and forms a ‘closed’ system. This means that on the waters in question shipping should not encounter any traffic signs other than those belonging to the harmonised system. A buoyage system has therefore also been included, and this incorporates the system of the International Association of Lighthouse Authorities (IALA) for marine navigation. The buoyage system is based on the Maritime Buoyage System A which differs in a number of respects from the SIGNI/CEVNI system.

For the waters on which the Inland Waterways Police Regulations (IWPR) apply (i.e. all Dutch inland waters with the exception of the conventional Rhine, the Western Scheldt, the Ghent-Terneuzen Canal and the Eems estuary), the traffic signs described in Annexes 7 and 8 of the IWPR can be used.

On the conventional Rhine (Upper Rhine, Waal, Pannerdensch Canal, Lower Rhine and Lek) the Rhine Police Regulations 1995 (RPR 1995) apply. The traffic signs are listed in Annexes 7 and 8 of these Regulations.

The Western Scheldt Shipping Regulations 1990 do not include a traffic marking system. The IALA Maritime Buoyage System A is used on the Western Scheldt.

Special regulations apply on the Ghent-Terneuzen Canal. The traffic marking is set out in Annexes 5 and 6 of those regulations. Separate shipping regulations also apply to the Eems estuary, and the waterway signs are contained in chapter I of Annex 1 of those regulations.

The various waterway signs from the Annexes of the aforementioned sets of regulations can only be displayed subject to the regulations laid down in the Administrative Provisions (Shipping Traffic) Decree. The legal basis for the traffic signs contained in the various annexes and the obligation to observe them is however contained in the various regulations including the IWPR and the RPR 1995.

Despite seeking to achieve consistency between the different regulations in accordance with the CEVNI, there are differences in the numbering of the traffic signs listed in the various Annexes. The IWPR system was taken as the point of departure for these Guidelines. The IWPR apply to most waterways in the Netherlands.

1.3 Competent authority

Section 2, subsection 1, of the Shipping Act provides that the Minister of Transport, Public Works and Water Management is the authority competent to erect traffic signs for waterways managed by central government. This competence is delegated to the Chief Engineers/Directors of the Regional Departments of the Directorate-General for Public Works and Water Management (RWS) under special regulations made for this purpose. The only exception to this is the RPR 1995, in which this competence is delegated to the 'competent body' as designated by Decree, i.e. the Chief Engineers/Directors of the East Netherlands and South Holland Departments within the RWS.

In the case of waterways not managed by central government the competent authority is the management board of a public body other than central government if the waterway is managed by that body, or the management board of a municipality in which the waterway lies where it is not under the management of a public body.

2. USE OF TRAFFIC SIGNS

2.1 Definition

A traffic sign is defined in Section 1, subsection 1, at g, of the Shipping Act as: an object or combination of objects placed in, beside or above a shipping channel which indicates to shipping:

a. an item of information about the condition of a given location on, or a given section of, a shipping route, or
b. an item of information, a recommendation, an instruction or a prohibition with regard to the behaviour of traffic at a given location on, or a given section of, a shipping route.

The various regulations have several ways of classifying traffic signs. The best known classification is that used in the Inland Waterways Police Regulations and the Rhine Navigation Police Regulations 1995, which set forth the traffic signs on waterways in Annex 7 and signs for marking shipping channels in Annex 8. These regulations followed the SIGNI/CEVNI system.

2.2 Use

Traffic signs are in principle intended to complement. They should be used in situations not dealt with by the general and special shipping regulations, at least as far as prohibitory and mandatory signs are concerned. Modern regulations tend to maximise the role of traffic signs, however, in order to ensure clarity to users.

The regulations tend to prescribe only in cases where traffic signs are not effective or are undesirable. However it is not desirable that waterways should become ‘signboard jungles’.

Traffic signs which inform or recommend have no counterpart in the written regulations. They are erected on the responsibility of the operator who seeks to provide a well equipped waterway. However the philosophy of having a closed system of traffic signs applies: only traffic signs listed in the applicable regulations can be displayed. Furthermore it also applies quite explicitly to informative and recommendatory signs. This principle preserves legal certainty for users.

Section 30 of the Shipping Act prohibits the unauthorised erection or removal of traffic signs prescribed pursuant to this Act and the erection of objects of any kind which might cause confusion to shipping. The use of traffic signs which have not been authorised by the law therefore have no legal status as far as users are concerned. Users may disregard them, and they are therefore not a sensible way of implementing policy. Indeed the use of ’non-existent’ signs of this kind could constitute a punishable offence. Section 3 of the Shipping Act indicates the interests which need to be safeguarded. Account obviously needs to be taken of these interests when traffic signs are erected. These interests are:

a. assuring safety and the smooth circulation of shipping;

b. maintaining shipping channels and guaranteeing their usability;

c. preventing or limiting damage caused by shipping to the hydrology, banks, water defences and permanent structures built in or over shipping channels.

In order to serve these interests signs may also be erected in order to prevent or limit:

a. nuisance or danger caused by shipping to persons not on a vessel on water;

b. damage due to shipping to scenic or scientific features in an area through which shipping channels pass.

If the need is felt, in the day-to-day operation of a shipping route, for a new traffic sign, a proposal should be submitted to the competent authority or the Minister of Transport, Public Works and Water Management, as appropriate.

Where practical queries arise related to the traffic signs which are not properly clarified by the Guidelines below, advice can be requested from the Transport Research Centre, Directorate-General for Public Works and Water Management.

2.3 General characteristics

2.3.1 Colours of traffic signs

On new traffic signs the colours red, orange, yellow, green, blue, white, grey and black should comply with standard NEN 3381. This standard distinguishes between backlit signs and signs on which the image is painted on or applied by another technique to the exterior and, where appropriate, illuminated externally. The ‘RAL numbers’ referred to in the previous version of the Guidelines no longer apply. The NEN 3381 standard is subject to any changes which may be made by the Commission Internationale de l'Eclairage (CIE).

2.3.2 Alphanumeric characters

Alphanumeric characters on traffic signs should conform to the Ovink font, intended to provide a standard for the various traffic signs. This font was chosen because of its high legible distance (6.2 metres per cm character height). Use of the ANWB font is also permitted.

2.3.3 Standard sizes

Four standard sizes will be adopted for traffic signs, related to the width of the water surface. These will be referred to as types 1, 2, 3 and 4, in order of increasing size. These four standard sizes were adopted on the basis of trials. Waterways have been divided into four categories, depending on water surface width, as follows:

category a: width up to 20 metres

category b: width 20 - 60 metres

category c: width 60 - 170 metres

category d: width greater than 170 metres

There is a one-to-one correspondence between the width categories a to d and the board types 1 to 4. Board type 0 applies in harbour or at a jetty. For a classification of waterways by width, see Annex 1. It should be noted that width at water level can differ considerably from the navigable width.

Table 1: Standard board sizes as function of width of water surface

Width category	Board type	Standard board sizes (mm)				Recognition distance (m)
		square boards		rectangular boards		
		A.10	other	A.1	other	
		D.1		E.1		
		D.2				
a	1	480x480		480x720		200
b	2	800x800		800x1200		350
c	3	1200x1200		1200x1800		550
d	4	1600x1600		1600x2400		700
a	1		600x600		600x900	120
b	2		1000x1000		1000x1500	200
c	3		1400x1400		1400x2100	300
d	4		2000x2000		2000x3000	400
	0	320x320	400x400	320x480	400x600	

For a number of boards, i.e. square boards A.10, D.1 and D.2, and rectangular boards A.1 en E.1, special formats apply. These are boards which because of their simpler configuration are more readily recognisable, so that a smaller size is acceptable.

2.3.4 Scale drawings

The scale drawings of the signs have not changed since the previous edition of the Guidelines. The board manufacturers are aware of the scale drawings, which are appended as Annex 2 to this document.

2.4 Placement of boards

2.4.1 Orientation

Signs have two possible orientations, namely:

a. parallel to the axis of the channel

b. perpendicular to the axis of the channel

Signs of type a are predominantly prohibitory or indicative signs, and are placed on the side of the channel to which the prohibition or the indication applies.

Most signs are positioned as described under b, and generally do not apply to one side of the channel. These signs are erected at right angles to the axis of the channel so that they are visible to a user when under way.

2.4.2 Elevation

Traffic signs need to be placed so that they can be seen clearly and in good time. In order to achieve this, signs on the bank need to be positioned at a certain elevation. This is defined as the height of the lower edge of the sign above local mean water-level. Table 2 gives the minimum elevation in mm above mean water-level.

Board type	Board size in (mm)	Minimum elevation (mm)
1	600 x 600 (600 x 900)	2000
2	1000 x 1000 (1000 x 1500)	3000
3	1400 x 1400 (1400 x 2100)	4000
4	2000 x 2000 (2000 x 3000)	5000

Table 2: Elevation as function of board type

In areas where the water level can vary considerably, a practical approach must be taken. It is also advisable to ensure that visibility is not impeded by trees, bushes, buildings, etc. Account should be taken, when placing signs, of possible planning restrictions imposed by the local land-use plan.

2.4.3 Lighting

Waterway signs which must be visible at night for reasons of safety need to be lit when it is dark. The lighting must be even and must not cause glare to shipping or road traffic. The light intensity must be such

that the signs are not over-illuminated and the symbols are clearly recognisable. When engineering works are being carried out, it is advisable to illuminate all traffic signs.

2.4.4 Retroreflective material

Signs which are not generally lit, for example kilometre boards, can be equipped with retroreflective material to make them more conspicuous if lit up by a waterway user with a searchlight or spotlight.

In order to ensure adequate reflectivity, a material of at least category II (based on the NEN 3381 standard) must be used. This will minimise the duration for which the searchlight has to be used.

If certain signs have to be discernible and recognisable from a great distance or at a very oblique angle, material with even better wide-angle characteristics and greater reflectivity can be used. Retroreflective material cannot obviate the need for the illumination of waterway signs, but it can perform a back-up function in case the lighting fails.

Generally speaking it can be said that retroreflective material is only a sensible option where the waterway user will be consciously looking for information with a searchlight.

2.5 Image display techniques

2.5.1 General recommendations

New image display techniques have come onto the market since 1990, when the previous version of the ‘Guidelines for Waterway Signs and Marking’ was published. These may be used subject to a number of conditions. It is generally recommended that when these new image display techniques are used:

a. the technique must comply with the provisions of the IWPR;

b. deviation from the original colours is possible for some signs if implemented using a new technique. This is dealt with in the descriptions of the relevant signs;

c. because new display techniques sometimes make use of images composed of many pixels, special consideration needs to be given to image design;

d. a general characteristic of the new display techniques is that the text and images can be controlled remotely; variable images are possible within a single display. Phantom effects, i.e. reflective effects and illusions caused by the incidence of sunlight, can be controlled.

2.5.2 Lightguide technology

Figure 1 illustrates lightguide technology, most familiar from the matrix signalling devices positioned above roads. The images are displayed on lens arrays, linked by means of fibre optics (glass or plastic cable) to an optical device with, usually, a main and a back-up light. Every image is controlled from one or more optical devices. By switching the different optical devices on and off, different images, and therefore variable information, can be displayed.

Advantages:	-	no mechanical/moving parts
	-	low maintenance
	-	high luminous intensity (regulable)
	-	high-fidelity imaging
	-	all-weather
	-	socket can be located accessibly
Disadvantages:	-	relatively costly
	-	limited number of images
Application:	-	for example Figure 2: an application of lightguide technology for sign G.5.2 on a railway bridge in Gouda; this technology can also be used in signal lights.

2.5.3 Light emitting diode (LED)

A LED is a small low voltage light source. Its visibility is limited by its angular aperture and the luminance of the LEDs. Images are made up of a large number of LEDs, each controlled separately. In other respects its properties are very similar to those of lightguide technology.

Advantages:	-	no mechanical/moving parts
	-	low maintenance
	-	simple control
	-	high-fidelity imaging
Disadvantages:	-	limited range of display colours
	-	Light output affected by ambient temperature

Application: as 2.5.2

2.5.4 Electromagnetic segmented display

Figure 3 shows an application of an electromagnetic segmented display. Any desired image can be displayed by reversing electromagnetic segments, one side of which is light and the other dark in colour. The angular aperture on these displays is wide, both horizontally and vertically.

Advantages:	-	presentational flexibility
	-	displays in all colours
	-	easy to read
	-	low energy usage
	-	continues to display last image if power fails
Disadvantages:	-	displays must normally be kept in a conditioned cabinet because of moving part
	-	lighting required when dark.

Application: signs, information boards.

2.5.5 Rotary drum display

This technique is illustrated diagramatically in Figure 4. Rotary drum displays are suitable for displaying regularly changing configurations.

Advantages:	-	IWPR configuration can be accurately reproduced
	-	displays in all colours
	-	good visibility
Disadvantages:	-	mechanical parts, so maintenance facilities necessary
	-	number of images limited
	-	lighting required when dark

2.5.6 Moving screens

Can consist of a display with a large number of light dots (LED or bipolar segments), switched so as to form arbitrary texts or diagrams. The text can also move, allowing a message of virtually unlimited length to be displayed.

Advantages:	-	flexible, unlimited displays
	-	no moving parts
	-	all-weather
Disadvantages:	-	monochrome
	-	relatively expensive
Application:	-	information on waiting times, operating times, etc.

3. WATERWAY SIGNS: MEANINGS [1/]

4. SIGNAL LIGHTS ON STRUCTURES

4.1 Locks

A combination of entrance lights should be displayed, preferably on both sides of the lock, but at least on the starboard side. If lights are placed on both sides, they should be at the same height, and as close as possible to the opening into the lock.

Exit lights should also be displayed preferably on both sides of the lock, but at least on the starboard side, level with the halt-line. These lights should only be visible to the boatmaster when in the lock.

4.2 Bridges

Lights marking the bridge opening should also be displayed preferably on both sides of the bridge. If lights are displayed on both sides, they should be at the same height and as close as possible to the opening (see Figure 12).

4.3 Recognition

Signal lights must be such that under normal circumstances they can be seen in good time and readily recognised. In this context, normal circumstances means:

[1/] Note by the secretariat: For reasons of economy the description of meaning of waterway signs which corresponds more or less to that in annex 7 of CEVNI is not reproduced in this document.

a. the normal position of the vessel in relation to the signal;

b. regularly occurring visibility conditions, e.g. daylight, twilight, night, good visibility, rain or mist.

“In good time” means at a position such that the boatmaster is able to comply safely and smoothly with the signal.

4.4 Lenses and luminous intensity

The recognition of a signal light is determined by the visual acuity of the boatmaster, the luminous intensity of the signal, the contrast between the signal and its background and the shape of the sign. In order to ensure the requisite recognition range, the signal light must have a certain lens diameter and luminous intensity. The latter depends heavily on the visibility. In order to formulate practicable recommendations, waterway traffic is subdivided into three categories in Table 4.

Table 4: Categories of vessel

Category	Vessel length (m)	Approximate mean eye-level of helmsman (m)
I	0 - 30	4
II	30 - 100	7
III	100 - 200	10

The signal lights should be located at about eye-level for the helmsman.

The recognition range required is 5 times the vessel length for the assumed category, calculated from the start of the waiting area. The signal light should be dimensioned for the largest vessel that may use the waterway concerned.

Table 5 gives an indication of the required luminous intensity at the centre of the beam for the three categories of vessel.

Table 5: Recommended luminous intensity at the centre of the beam

Vessel category	Maximum recognition range (m)	Lens diameter (cm)	Visibility	Luminous intensity in cd (centre of beam)	
				day	night
I	210	25	Good rain mist	100 150 180	1 1.5 2
II	700	35	Good rain mist	1000 5000 9000	10 50 90
III	1400	35	Good rain mist	4000 * *	40 1500 2600

The symbol * denotes an unrealistically large value. In these cases it is not possible to create a recognisable signal light. By using an extremely high light intensity a light effect of a given colour can be created, but it cannot be regarded as a signal light. There may be a similar effect at night over longer distances.

The x and y chromaticity coordinates for red, green and yellow for a signal light must fall within the ranges given in Figure 13 and Table 6. Figure 13 is taken from Dutch standard NEN 3381 “Traffic signs, general requirements for boards”, issued in September 1992 by the Netherlands Standards Institute. The chromaticity coordinates methodology was established by the Commission Internationale de l'Eclairage (CIE). The chromaticity coordinates given are subject to any changes which may be made by the CIE.

Table 6: Chromaticity coordinates for colours red, green and yellow

Colour	Chromaticity coordinate requirements	Remarks	Colour coordinates of the vertices of the areas of chromaticity				
red	x not less than 0.980 - y y not less than 0.290 y not more than 0.320	boundary towards magenta boundary towards yellow	x y	0.660 0.320	0.680 0.320	0.710 0.290	0.690 0.290
green	x not more than 0.625 y - 0.041 y not less than 0.500 - 0.500 x y not more than 0.726 - 0.726 x	boundary towards white boundary towards blue boundary towards yellow	x y	0.009 0.720	0.284 0.520	0.207 0.397	0.013 0.494
yellow	y not less than 0.382 y not more than 0.425 y not less than 0.790 - 0.667 x	boundary towards red boundary towards green boundary towards white	x y	0.547 0.425	0.574 0.425	0.617 0.382	0.612 0.382

To ensure a good contrast between the signal light and its background a black background plate is required. Table 7 gives the relationship between lens diameter for a signal, the inter-lens distance (centre to centre) and the dimensions of the background plate.

Table 7: Dimensions of background plate

Lens diameter (cm)	Number of lenses	Dimensions of background plate (cm)		Inter-lens distance (cm) axis to axis
		Width	Height	
25	1	75	75	n/a
25	2	75	125	50
35	2	105	175	70

The background plate should be surrounded by a white edge 5 cm wide for a lens diameter of 25 cm and 8 cm wide for a lens diameter of 35 cm.

In the case of exit lights, the signal light can always be 25 cm in diameter and of corresponding luminous intensity.

Example

What are the requirements for signal lights on a lock which receives vessels of 75 metres (category II = 100 metres) which can navigate any waterway?

The signal lights must be placed on the lock wall. The recognition range must be 7 x the length appropriate to the vessel category = 700 metres. To ensure signal recognition at this distance, a lens diameter of 35 cm is needed. The luminous intensity at the centre of the beam can be determined with the help of Table 5 as a function of the visibility.

4.5 Remote and automatic control

It is often useful for boatmasters to know, for reasons of safety, whether a facility is controlled locally or in some other way. Where a facility works automatically or is controlled remotely, this can be indicated by sign B.8 in combination with a panel below.

Where a facility operates automatically the approach of a vessel is also detected automatically. In its report "Advanced and automated operation of locks and bridges" the International Navigation Association (PIANC) recommends that systems should confirm that a vessel has been detected by means of a white flashing light. This signal, purely informative in nature, can also be used for remotely operated or self-operated facilities. Passage will be regulated by the red and green signals described in the IWPR.

If desired the waiting time can be indicated by means of a board or moving screen displaying the message “wachttijd xx min” (see 2.5.6).The figure for the minutes decreases with time.

5. WATERWAY MARKING

5.1 General

This section forms a supplement to the 'Guidelines for Navigational Signs', published in 1990. It specifically addresses those topics from Annex 8 of the IWPR where there has in practice been a lack of uniformity in implementation or in traffic signs or on which questions have been repeatedly put to the Transport Research Centre.

5.2 Reference numbers on buoys and markers

Alphanumeric characters on buoys and markers must use the Ovink font. The use of capital letters is recommended. Where both letters and figures are used, their heights should be the same. Where two such combinations occur, as on junction markers, a hyphen should be used.

Characters should not be less than 200 mm high, white on red or green buoys, or black on yellow buoys.

The characters on a lighted buoy can be black on a white background. Signs are usually affixed to special nameplates. It is recommended that the characters be displayed on both sides of buoys.

5.3 Radar reflectors

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. The reflectors should be made of aluminium or stainless steel, and not painted so as to enhance reflectivity.

Practical experience has shown that there is a need for at least two standard sizes of reflectors on buoys and markers. Recommended dimensions are as follows.

type 1: tip to tip height 420 mm
type 2: tip to tip height 850 mm

The square plate referred to above has a hypotenuse of 300 or 600 mm respectively and sides of 210 or 425 mm respectively (see Figure 14). The reflector should be placed in the lying position to maximise its reflectivity (see Figure 15).

It is recommended that type 1 reflectors are used on buoys laid in waterways in categories a to d, and type 2 on lighted buoys laid in category d waterways. Annex 1 gives a classification of waterways.

5.4 Additional marking

Marking additional to the main buoyage can only be used on wide waterways. There can only be one additional marking for a given main buoyage. Additional marking intended for the right side (red - white - red, horizontal stripes) can only be used outside the red main buoyage. Additional marking on the left side (green - white - green, horizontal stripes) can only be used outside the main green buoyage (see Figure 16).

Locations where the additional markings on the left and right sides converge must be marked by means of a junction marker, with a topmark similar to that of a junction marker in the main buoyage. This buoy should be of a similar size to the additional marking buoys (see Figure 17). Shallows to be found in the waterway

between the main buoyage and an additional marking are marked with cardinal marks. These should be of a similar size to the additional marking objects (see Figure 18).

If a shallow is so long that cardinal marking is not satisfactory because of the large distance there would be between the buoys then the channel between the main buoyage and the shallow should be marked by additional buoyage. If it is intended that the waterway on the other side of the shallow should also be marked, this should be done using lateral main buoys (see Figure 19).

When this waterway converges with the waterway marked by additional buoyage, the latter is deemed to be the main waterway. This can be made clear by using a junction marker.

5.5 Port entrance and branches

The uprights or poles should be red-white horizontally striped or green-white horizontally striped. In the case of poles it is recommended that the stripe height is 2 to 2.5 times the pole diameter. The number of stripes should be at least 4, so that it has a distinctly chequered appearance. There are three standard sizes for topmarks, as shown in Table 8:

Table 8: Standard sizes for topmarks

Shape	Size	Dimensions (mm)
rectangle, red (cylindrical appearance)	1 2 3	450 x 600 600 x 800 720 x 960
		Length of sides (mm)
equilateral triangle, green (conical appearance)	1 2 3	700 900 1100

The size used is determined by the width of water width category, as shown in Table 9:

Table 9: Topmark as a function of water width

Water width category	Size
a b c and d	1 2 3

In order to facilitate the identification of the topmarks from all horizontal directions as rectangular (cylindrical) or triangular (conical) objects, these topmarks will consist of two rectangular or triangular plates attached at right angles to one another.

It is recommended that harbour lights should be continuous lights in order to avoid confusion with flashing lights marking the channel.

5.6 Colour

The colours on signs of new manufacture should conform to the NEN standards described in section 3.2.1.

ANNEX 1

WATERWAYS BY WATER WIDTH CATEGORY

…

Waterway category a (width to 20 m) - board type 1

…

Waterway category b (width 20 - 60 m) - board type 2

…

Waterway group d (width greater than 170 m) - board type 4

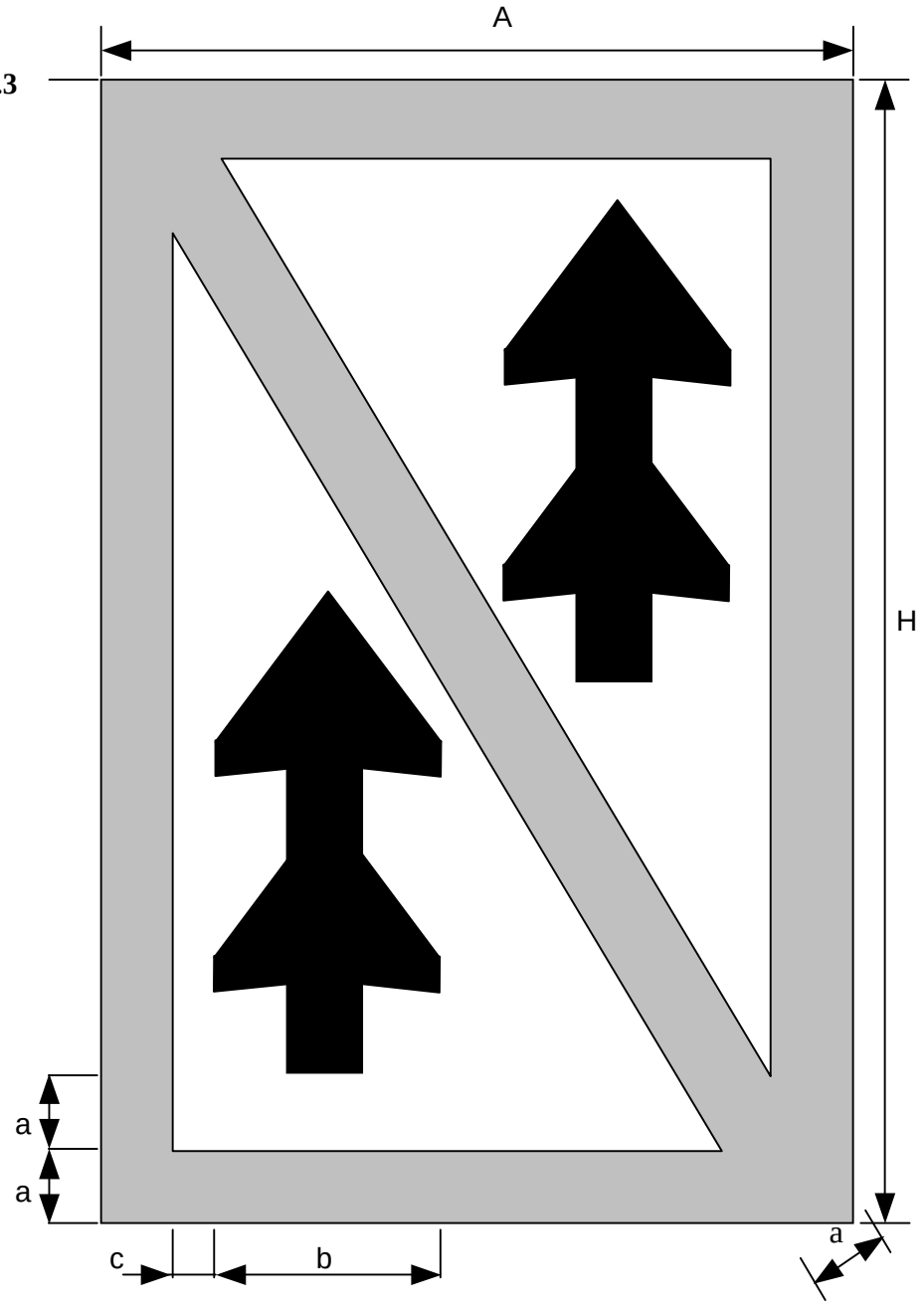
…

ANNEX 2

Scale Drawings

An example of two different signs

Sign A.3



Dimensions in mm

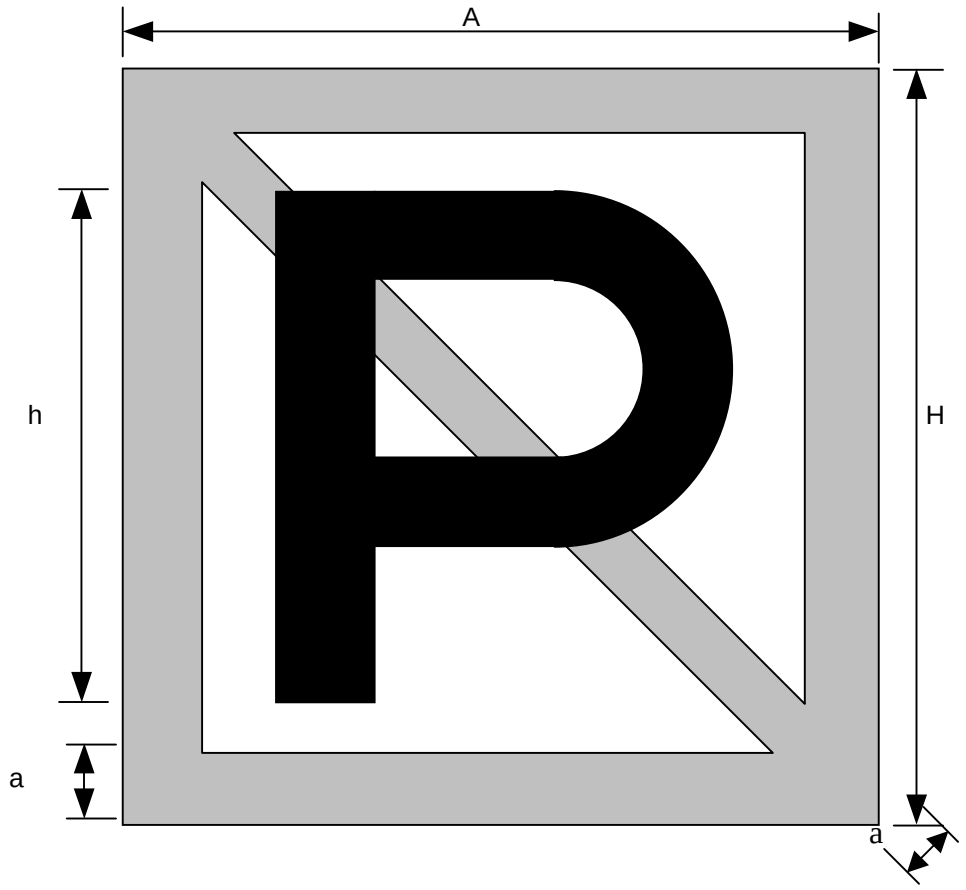
type	A	H	a	b	c
1	600	900	60	180	30
2	1000	1500	100	300	50
3	1400	2100	140	420	70
4	2000	3000	200	600	100

White

Red

Black

Sign A.5



Dimensions in mm

type	A	H	a	h
1	600	600	60	400
2	1000	1000	100	670
3	1400	1400	140	940
4	2000	2000	200	1340

White

Red

Black