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Inland navigation vessels  
Installation of berths and loading areas  
English version of DIN EN 14329

Fahrzeuge der Binnenschifffahrt – Einrichtung von Liege- und Umschlagplätzen

**European Standard EN 14329 : 2004 has the status of a DIN Standard.**

*A comma is used as the decimal marker.*

### National foreword

This standard has been prepared by CEN/TC 15 'Inland navigation vessels' (Secretariat: Germany). The responsible German body involved in its preparation was the *Normenstelle Schiffs- und Meerestechnik* (Shipbuilding and Marine Technology Standards Committee).

Document comprises 17 pages.



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English version

Inland navigation vessels  
Installation of berths and loading areas

Bateaux de navigation intérieure –  
Arrangement de mouillages et  
installation de transbordement

Fahrzeuge der Binnenschifffahrt –  
Einrichtung von Liege- und  
Umschlagplätzen

This European Standard was approved by CEN on 2004-02-02.

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## Foreword

This document EN 14329:2004 has been prepared by Technical Committee CEN/TC 15 "Inland navigation vessels", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2004, and conflicting national standards shall be withdrawn at the latest by September 2004.

This European Standard is intended to be an aid for the construction of berths and loading areas for inland navigation vessels and to support intermodal transport in the transport chain.

The "loading area" interface described in the standard helps to introduce inland navigation vessels into logistics and freight and fleet management considerations.

It gives a summary of the necessary devices and their minimum requirements. In this way, it is intended improving the safety of the users both on the ship and the shore side.

Berths and loading areas may be parts of handling areas, berthing areas and harbours

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

## 1 Scope

This European Standard applies to the installation of berths and loading areas for inland navigation vessels.

It also applies to berths and loading areas for inland navigation vessels in seaports.

This standard does not apply to Ro-Ro systems, ferry terminals, floating equipment, bunker stations, landing stages used for passenger changeovers or for holding areas.

## 2 Normative references

This standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 526, *Inland navigation vessels — Gangways with a length not exceeding 8 m - Requirements, types.*

EN 13056, *Inland navigation vessels — Stairs with inclination angles of 30° to < 45° — Requirements, types.*

EN 13574:2001, *Inland navigation vessels — Permanently installed climbing devices with a length not exceeding 5 m.*

EN 14144, *Lifebuoys — Requirements, tests.*

EN 14145,  *HOLDERS for lifebuoys.*

## 3 Terms and definitions

For the purposes of this European Standard, the following definitions apply:

### 3.1

#### **berth**

landing place  
landing stage with mooring systems and shore connections

### 3.2

#### **loading area**

berth for loading and unloading inland navigation vessels

### 3.3

#### **holding area**

area used just for short-term waiting until the vessels continues its journey or is assigned a berth or loading area

### 3.4

#### **climbing device**

stair and quay ladder

### 3.5

#### **mooring system**

fixed device for making fast inland navigation vessels

### 3.6

#### **shore connection**

fixed crossing point from the inland navigation vessels to the shore

### 3.7

#### **dolphin**

permanent pile or bundle of piles with mooring system

### 3.8

#### **landing**

walkable surface between two stairs or at their end points

### 3.9

#### **berm**

narrow walkable surface running parallel to the bank separating the top slope or wall from a slope or wall lying beneath it, see Figures A.5 to A.7

## 4 Requirements

### 4.1 General requirements

Berths and loading areas shall be constructed to ensure it is safe to enter, leave and lie at the berth. Coming alongside aligned, vertical dolphins and large-area guideways shall be safely facilitated. It shall not be possible for inland navigation vessels to get hooked up or caught up in them.

Direct crossing over to the shore shall be possible. If height differences have to be overcome, stairs shall be preferred to quay ladders.

Direct communication shall be possible between the installation operators and the ship's crew at the loading areas. Direct visual contact shall be aimed for.

Changing water levels and loading conditions of the inland navigation vessels shall be taken into account.

Bollard heads, holding devices at the harbour operating level and waterside stair edges shall be marked with contrasting colours.

### 4.2 Berths for extreme high water levels

**4.2.1** Dolphins that are to be used for extreme high water levels also shall be designed to project above the water level to be expected.

**4.2.2** Dolphins shall project at least up to the maximum water level to be expected.

NOTE The different national designations apply for the maximum water level to be expected.

### 4.3 Berths alongside slopes

**4.3.1** Berms shall be at least 0,7 m wide and be constructed to project above the mean water level. They shall also be capable of being used safely in the vicinity of dolphins, guide stakes and recesses.

**4.3.2** If, when water levels are relatively high, it is no longer possible to reach the stairs of slopes behind dolphins with gangways as specified in EN 526, fixed gangways with railings shall be installed at the height of the top of the slope.

## 4.4 Mooring systems

### 4.4.1 Layout

The horizontal centre-to-centre distance between the mooring systems should be 30 m and shall not exceed 40 m.

The mooring systems shall be installed at the same height on both sides of the climbing device so that their use cannot be hindered by ropes.

The horizontal distance between the climbing device and the mooring system shall not exceed 0,85 m.

The lowest mooring system shall be located not more than 1,5 m above the lowest water level to be expected.

The highest mooring system shall be attached

- a) to the quay wall or
- b) to the top of the dolphin or up to a maximum of 1,0 m below the top edge of the dolphin.

The vertical distance between mooring systems may be 1,5 m and shall not exceed 1,8 m.

### 4.4.2 Holding force

The holding force of a mooring system shall be

- a) at least 100 kN in waterways for inland navigation vessels up to a maximum  $L = 85$  m and  $B = 9,5$  m;
- b) at least 200 kN in waterways for larger inland navigation vessels up to a maximum  $L = 110$  m and  $B = 11,5$  m;
- c) .at least 300 kN in waterways for larger inland navigation vessels.

The holding force of a mooring system in a harbour without a current shall be at least 100 kN.

## 4.5 Fenders

If fenders are fitted, they shall be arranged so that they do not impair the safety of inland navigation vessels in the event of changing water levels and loading conditions.

## 4.6 Stairs and quay ladders

### 4.6.1 General

Berths and loading areas shall have stairs or quay ladders no more than 30 m apart.

Berths where there is a difference of more than 2,0 m between the mean water levels of the harbour operating level and the surface of the water shall have stairs that shall be no more than 60 m apart.

The bottom end of the stairs or quay ladders shall project down to 1,0 m below the lowest water level to be expected, see Figure 1 and Figure 2.

The top end of the stairs or quay ladders shall have a safety area at least 0,5 m deep and at least 2,0 m high.

NOTE The safety area ensures the stairs or quay ladders are safe to use even if there are crane runways in the area.



Dimensions in millimetres

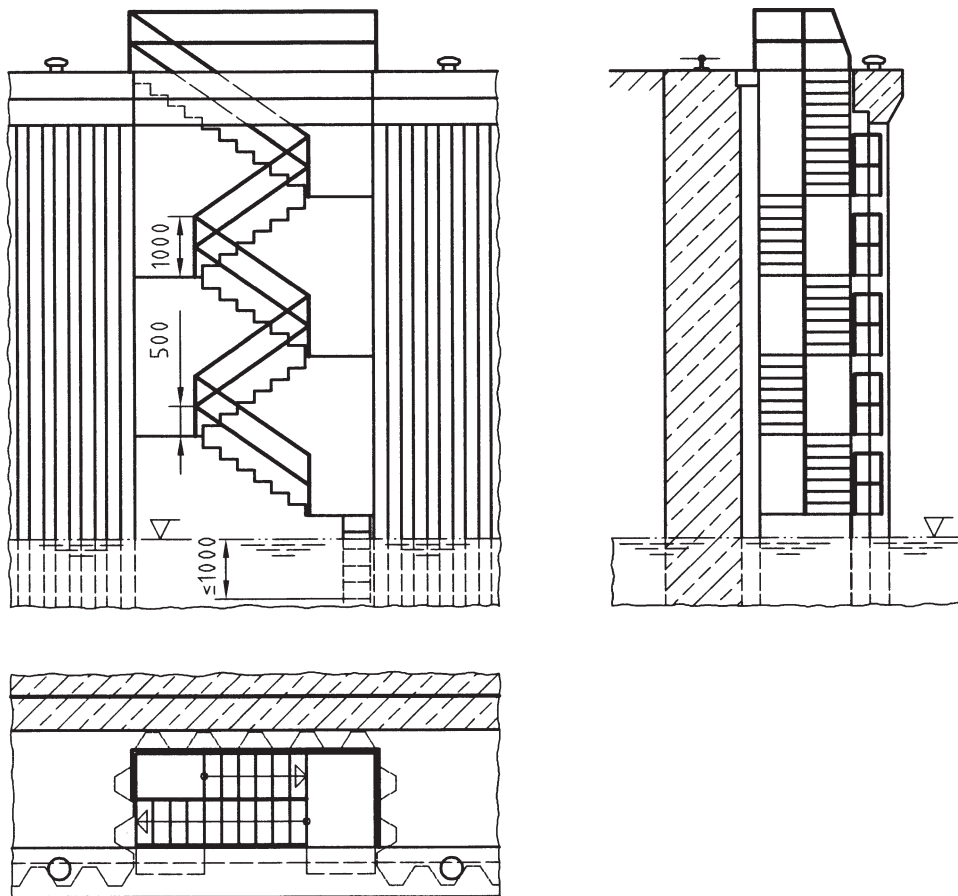


Figure 1 — Staggered stair with landing in a wall recess

#### 4.6.2 Stairs in vertical walls

The stairs shall be installed parallel to the quay wall.

The stair dimensions including the dimensions of the landings shall be in accordance with EN 13056; as a deviation from this, the clear width shall be at least 0,9 m.

In the case of stairs extending more than 3,0 m in height, landings shall be included at least every 2,0 m.

A stair without landings or where there is no change in direction at the landings (see Figure 2) shall have a handrail on the wall-side painted in a contrasting colour and its top edge shall be 1,0 m above the front edge of the step.

A stair which changes direction at the landings (see Figure 1) shall have a railing at the middle level of the stair.

The landings shall be designed so that a gangway as specified in EN 526 can be attached.

Stair cut-outs shall be safely fenced off in areas where there is a risk of falling.

Dimensions in millimetres

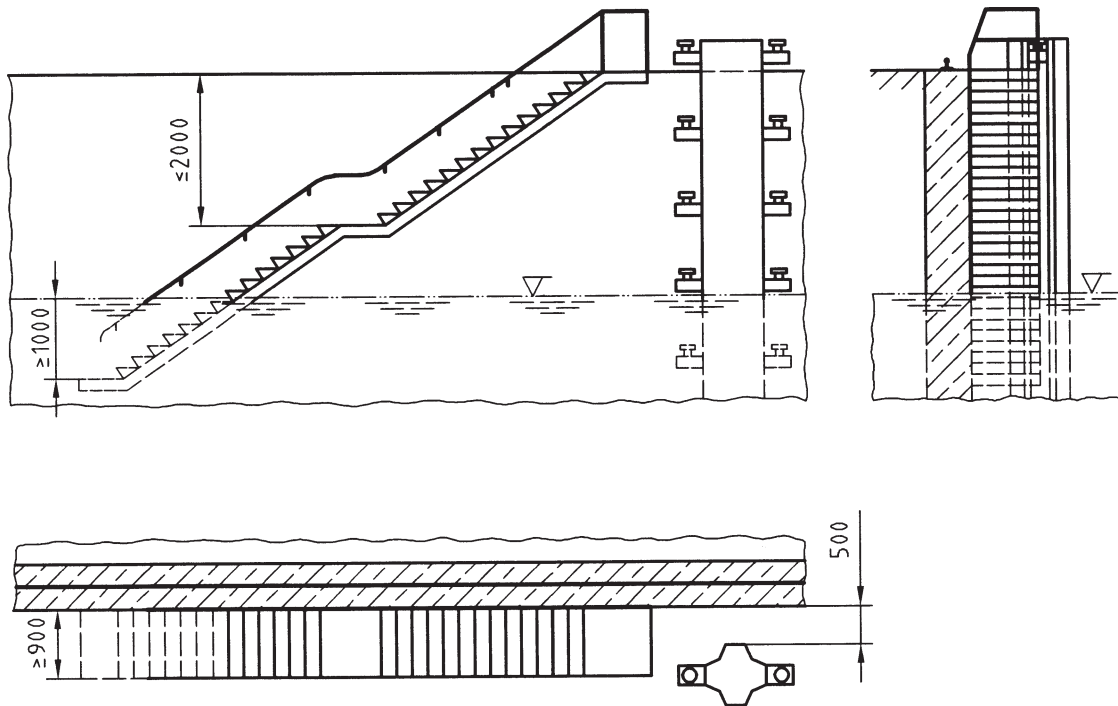


Figure 2 — Stair at set-back embankment wall with intermediate landing arrangement protecting landing posts

Dimensions in millimetres

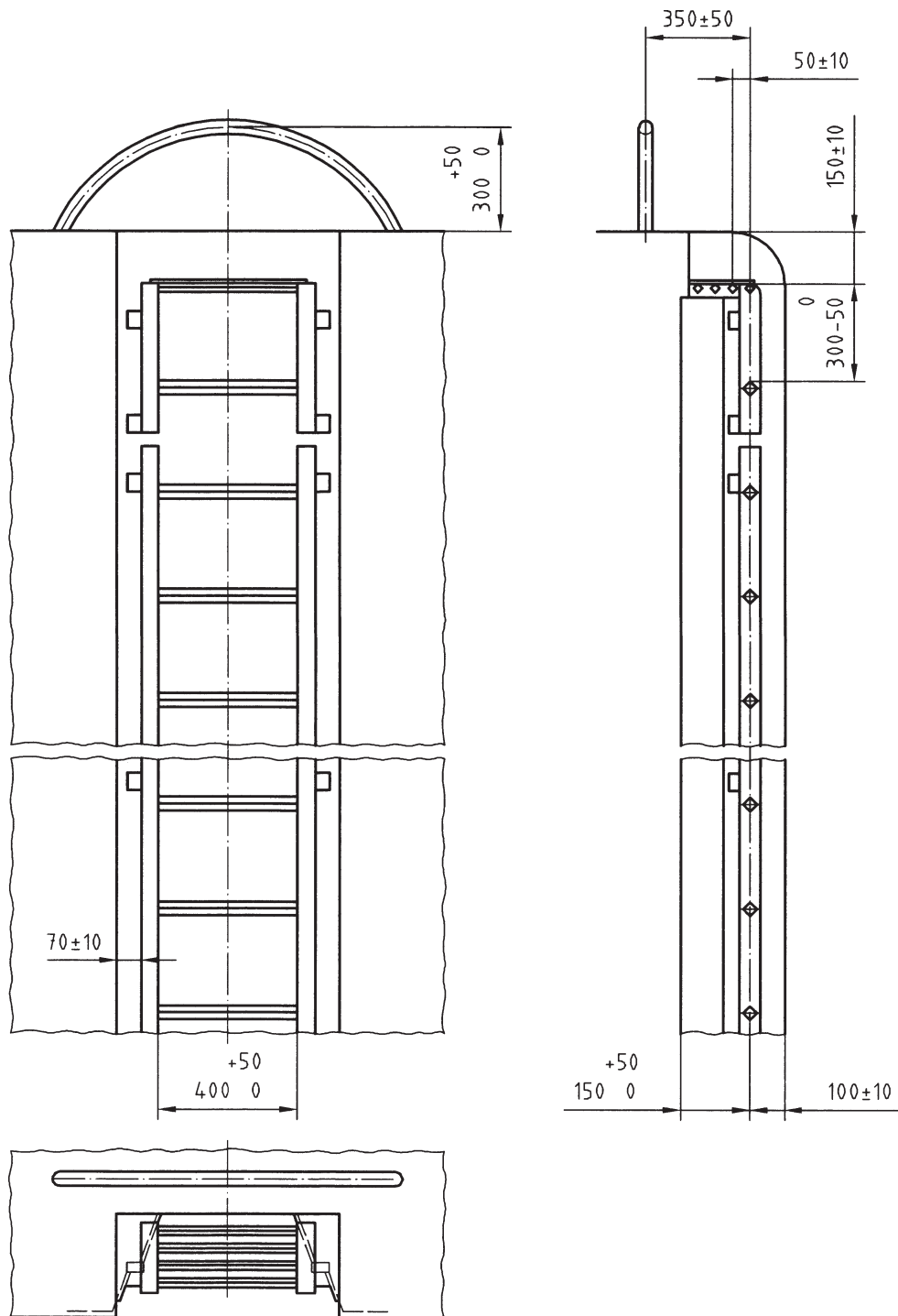


Figure 3 — Example of quay ladder in sheet-piled wall recess with round handgrip on the quay

### 4.6.3 Stairs on slopes

The step dimensions shall be as specified in EN 13056; as a deviation from this, the step width shall be at least 0,9 m.

The stairs shall be fitted on one side with railings with a handrail diameter of 25 mm to 50 mm at a height of 1 m above the top front edge of the step

### 4.6.4 Quay ladders

The treads and the distances between them in a quay ladder shall be uniform. The distance between the treads shall be between 250 mm and 300 mm. The clear width of the quay ladder shall be at least  $400^{+50}_0$  mm, see Figure 3.

The dimensions of the quay ladder and the design of the rungs shall be as shown in Figure 1 of EN 13574:2001.

The quay ladder shall have a handgrip as shown in Figure 1 and annex A.

## 4.7 Crossover from inland navigation vessel to shore

### 4.7.1 General

Crossovers shall lead away from the quay edge over the shortest possible path and lead to the harbour traffic ways.

In the vessel access ways at the quay edge, there shall be room to install gangways as specified in EN 526.

### 4.7.2 Layout and dimensions

Traffic ways at the quay edge shall be at least 0,7 m wide, in the bollard, stair recess and quay ladder areas etc. 0,5 m wide and have a headroom of at least 2,1 m.

## 4.8 Illumination

The illumination shall be adequate and uniform and meet the requirements of Table 1.

No lights shall be installed that can interfere with shipping, in particular give rise to confusion with shipping signs, impair their effect or can misdirect or hinder shipping by dazzling or reflection.

**Table 1 — Minimum illuminance  $E_n$  in lx**

Location	Minimum illuminance $E_n$ lx
Storage areas and traffic zones in berths	20
Quay edges and mooring systems	5
Service installations	50
Footpaths	5

## 4.9 Safety devices

### 4.9.1 Emergency call devices

It shall be ensured that emergency calls can be made from the berths at all times if mobile radio communication has not been provided for.

### 4.9.2 Life-saving equipment

Life-saving equipment shall be available no more than 100 m away from the berths, e.g. lifebuoys as specified in EN 14144 with at least a 30 m long floating line in a holder as specified in EN 14145 or life-saving balls and/or poles.

In addition, the berths shall have a sign with instructions for rescuing and reviving a drowning person.

## 4.10 Additional requirements

### 4.10.1 Berths

#### 4.10.1.1 Supply and disposal systems

Berth areas, with the exception of areas for crewless inland navigation vessels and areas where vessels are only seeking protection (holding area), shall be provided with the following supply and disposal systems:

a) Drinking water supply

At least one drinking water point shall be available, marked as such.

b) Shore-side electrical connections

Berths shall have 230/400 V shore-side electrical connections for every inland navigation vessel.

c) Disposal of ship's waste

It shall be possible to dispose of waste in berths or at a central point in accordance with the relevant national regulations.

#### 4.10.1.2 Loading of crew's cars

The berth shall have a suitable area for unloading or loading motor vehicles.

### 4.10.2 Loading areas

The loading areas shall be designed so that, as a function of the equipment used and the load, the loading equipment and inland navigation vessels do not impair each other at any water level and under all loading conditions, the operators are not endangered and no environmental pollution arises.

## 4.11 Marking

### 4.11.1 Notices, signs

Berths and loading areas shall have notices affixed with emergency telephone numbers of **doctors**, **police**, ambulance, **fire brigade** and, if appropriate, the public services.

#### **4.11.2 Holding force**

The mooring systems shall be marked with the holding force in kilonewtons (kN).

#### **4.11.3 Berths for ships carrying dangerous goods**

Berths for ships carrying dangerous goods shall be separately identified.

NOTE See the special provisions relating to the loading of dangerous goods.

#### **4.11.4 Emergency call devices**

If the emergency call device is not readily recognizable, it shall be pointed out by means of suitable notices.

## Annex A (informative)

### Illustration of tops of quay ladders and berms

#### A.1 Tops of quay ladders

Dimensions in millimetres

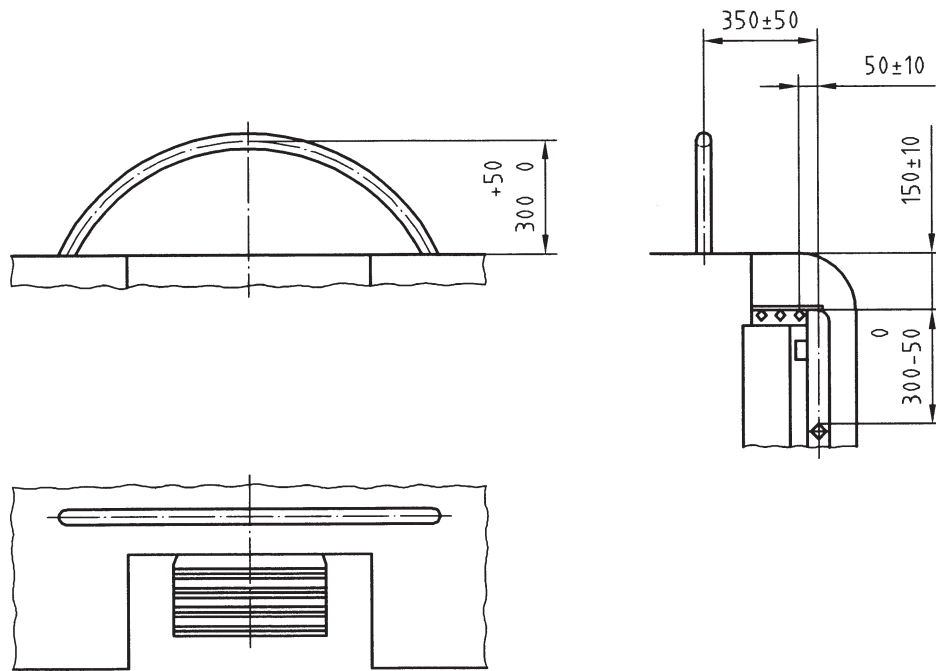


Figure A.1 — Top of quay ladder with round handgrip on the quay

Dimensions in millimetres

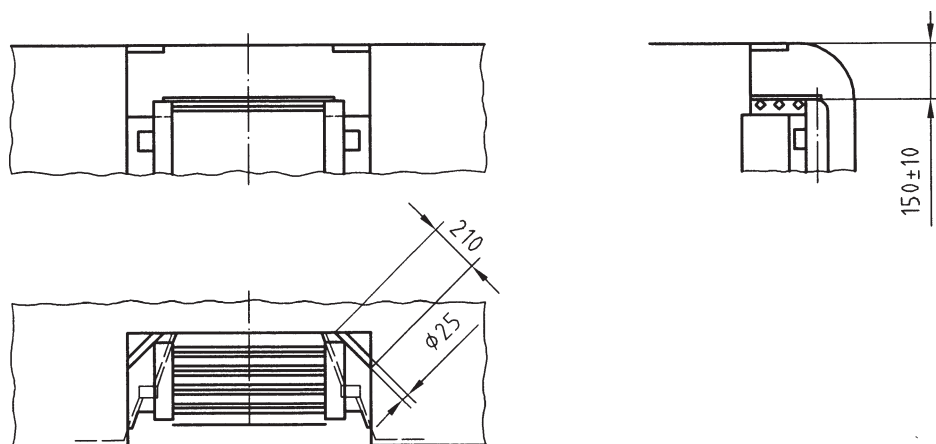


Figure A.2 — Top of quay ladder with two handgrips recessed at the side on the quay

Dimensions in millimetres

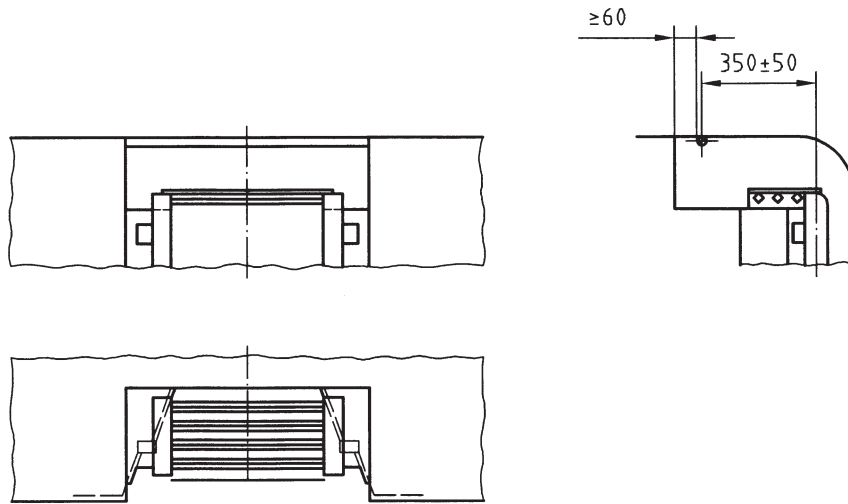


Figure A.3 — Top of quay ladder with recessed transverse handgrip on the quay

Dimensions in millimetres

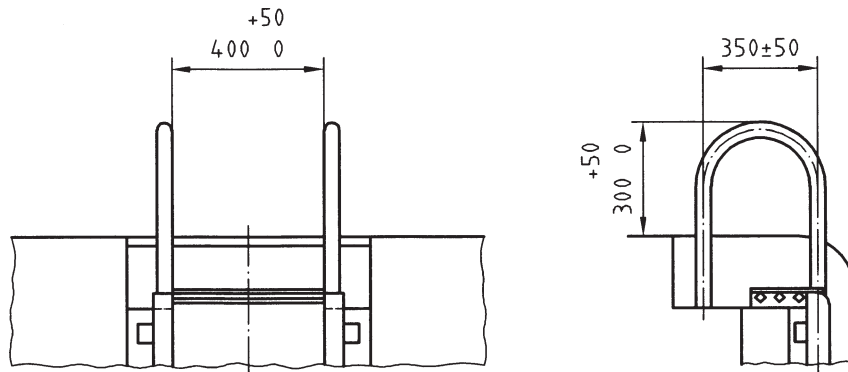
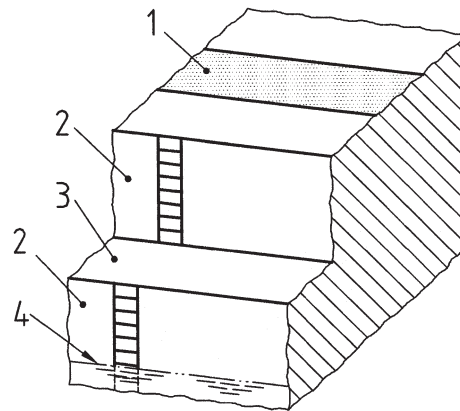


Figure A.4 — Top of quay ladder head with high handgrip on the quay ladder



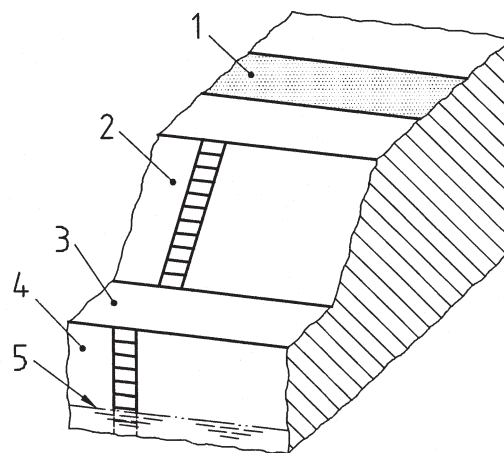
## A.2 Possible design of berms



### Key

- 1 Harbour operation level
- 2 Sheet-piled wall or vertical wall with ladder
- 3 Berm
- 4 Water level

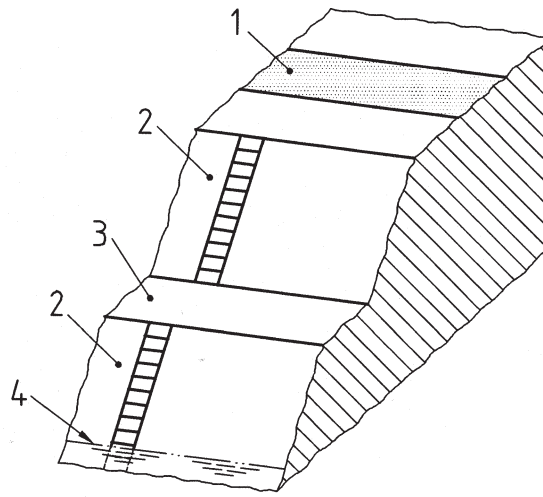
Figure A.5 — Berms on stepped vertical walls



### Key

- 1 Harbour operating level
- 2 Slope with stair
- 3 Berm
- 4 Sheet-piled wall or vertical wall with ladder
- 5 Water level

Figure A.6 — Berm on vertical wall with slope



**Key**

- 1 Harbour operating level
- 2 Slope with stair
- 3 Berm
- 4 Water level

**Figure A.7 — Berm on stepped slopes**