UDC 744.423 : 625.78 : 628.1/.3 : 626/627 **DEUTSCHE NORM**

Plans for public utilities, water resources DIN management and for long-distance pipelines 2425 Maps and plans for water engineering, flood and coastal protection Part 6 Planwerke für die Versorgungswirtschaft, die Wasserwirtschaft und für Fernleitungen; Karten und Pläne für den Gewässerausbau, den Hochwasser- und Küstenschutz As it is current practice in standards published by the International Organization for Standardization (ISO), the comma has been used throughout as a decimal marker. Contents Page Page 1 Appendix A 1 Example of a general site plan, A.1 2 Purpose..... 1 9 3 1 Appendix B Types of maps and plans and their scales 4 1 Extract from a site plan for a waterway **B**.1 1 development, scale 1:2500 10 2 Appendix C 2 C.1 Extract from a longitudinal section for a 2 4.4 2 waterway development, vertical scale 1:100, 3 47 3 Appendix D 3 Normal cross section for a waterway develop-D.1 3 5.1 3 3 3 5.4 Plan symbols, examples of plans 4 **Field of application** 1

This standard applies to the preparation of maps and plans of areas of above ground waters, including coastal waters.

2 Purpose

The standard is intended to assist in the preparation of plans in the form of overall drafts, preliminary drafts and structural drafts for water engineering, flood and coastal protection and also for the preparation of "as completed" plans, flow diagrams and hydrographic maps. It also applies to the corresponding representations, e.g. in regional area planning plans, plans for the overall planning of water resources and tracer plans for the conservation of the countryside.

3 General

It is recommended that standard sizes according to series A of DIN 823 be used for all plans. For strip sizes, deviations in length from the dimensions given in DIN 823 are permissible.

Where possible, site plans must be orientated to the north, or else provided with a north arrow.

All information on heights must be referred to mean sea level (NN).

Dimensions must be given in m.

The direction of flow of the waters must be made clear. Where available and necessary, kilometrages and stationings must be entered.

If coordinates are shown in the official documents, they must, where necessary, be reproduced.

The scale must be shown in all maps and plans.

In the case of extracts from and montages of official maps, a note must be made of their official designation. If a multiplicity of entries would be confusing, subject maps and plans must be prepared for the individual aspects; as far as possible, the scale and the sheet limits must not be altered.

Types of maps and plans and their scales 4

4.1 General map

The general map shall show the arrangement of installations and projects in the area as a whole. Official topographical maps must be used.

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Berlin

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4.2 General site plan

The general site plan shall show the existing situation and plans for the waterway in relation to one another. As a rule, topographical maps of scales 1 : 50 000 to

1:5000 must be used.

Depending on the purpose of the general site plan, the following, in particular, must be entered:

- building projects and construction sections
- limits of the catchment area
- waters
- installations in and on the water
- flood areas
- political boundaries
- protected areas
- land redistribution areas
- sheet boundaries of site plans

See Appendix A for an example of a general site plan.

4.3 Site plan

The site plan must give a complete representation of the project and of the areas directly affected by it. Where necessary, detailed plans must also be prepared.

The site plan must be drawn up on the basis of topographical maps or of independent photographs.

The project and all installations, boundaries, designations, etc., which are important to the planning, effects and success of the project must be entered. This normally includes the information to be entered in the general site plan and, in particular, depending on the purpose of the site plan:

- above ground waters with names, direction of flow, length of river in kilometres and stationing, dykes, drops, mitre sills, weirs and other water engineering works with the most important data thereof (widths, heights, year of construction), method of stabilizing and vegetation of the water bed
- bridges, landing stages, ferries and other installations in or on waters with their most important data (clear width, free passage width, clear height, etc.)
- hydro-power plants and other installations for utilizing water, with their most important data (design inflow, design drop height, type of utilization, extracted volume or inflow)
- traffic routes with their designations (Federal railway from to, road classification and number)
- public utility installations
- limit of flood areas with the highest known high water level (HHW) with discharge and date
- specified flood areas
- quarries, gravel pits and other soil excavations
- trial pits, drilling sites and groundwater measuring points or groundwater contours
- gauges and other measuring points for hydrographic surveys, bench marks, heights of surveyed points and contours
- natural and cultural monuments worthy of preservation
- important property boundaries
- intersections (e.g. of cross sections)

- stretch of water of normal cross section
- point from which photographs attached to the draft were taken, their numbering and direction of view

See Appendix B for an example of a site plan.

4.4 General longitudinal section

A general longitudinal section is usually required in the case of extensive building projects where, because of their length, longitudinal sections can be represented only in several part plans or where, for other reasons, an overall plan is necessary.

The length scale shall normally be the same as the scale of the general site plan. Water lines, bed levels and other elevation aspects of the water must be shown, also extending, where necessary to the assessment of the project, beyond the planning stretch.

The extent of the individual longitudinal sections must be shown.

In all other respects, subclause 4.5 must be applied as appropriate.

4.5 Longitudinal section

The longitudinal section must be depicted as descending from left to right. If, however, the main direction of flow is from east to west, that is to say, if a line joining the end points deviates by more than 20° from the north-south direction, then the longitudinal section may be depicted as descending from right to left.

The length scale must correspond to the scale of the site plan. If possible, the vertical scale used must be 1 : 100; otherwise, the vertical scale should be a decimal power of the length scale.

The following, in particular, must be entered:

- horizon referred to mean sea level, if necessary graded in vertical sections
- kilometrage (against the direction of flow) in 100 or 200 m divisions
- kilometre designations of the individual points (cross sections) and the distances between them
- existing bed, with information on the elevation of the points surveyed
- projected bed, stating the elevation at the most important points
- course of both banks, stating the elevation of the points surveyed and also, where necessary, the heights of adjoining installations
- existing and projected dykes
- the most important water levels and energy contours
- gauging stations with metre divisions and information on the gauge datum and other hydrographic measuring points
- junctions of waters, water extraction points and inflow points
- water retaining structures, bed structures, crossing structures, drainage sluices, with information on the elevation of important components (bottom of structure, weir crest, etc.)
- drill profiles in the area of the longitudinal sections
- information on the gradient of the new bed, bed widths and slope inclinations

- location of the cross sections
- stretch of water of normal cross section

If no general longitudinal section is shown, the information must be entered beyond the stretch being developed where this is necessary for the processing of the project and if repercussions on the adjointing stretches are to be expected.

See Appendix C for an example of a longitudinal section.

4.6 Normal cross section

Normal cross sections represent the types of cross section selected for specific stretches of water. Where possible, the length and vertical scales selected must be the same.

In particular, they must show the following:

- all important dimensions
- slope inclinations
- clearance profiles
- significant water levels, stating the affiliated outflows
- bed and slope protection
- sealing
- building materials
- planting of vegetation
- stretch of water to which the normal cross section applies

See Appendix D for an example of a normal cross section.

4.7 Cross section

Cross sections show the existing and future state at specified points on the water.

They must be designated according to the kilometrage and stationing and, in the case of flowing waters, entered as in the direction of flow. Where possible, the length and vertical scales selected must be the same.

The following must be entered:

- reference axes
- important heights
- cut and fill areas

and also, where necessary:

- soil profiles
- water levels of the waterway and groundwater levels, especially for the developed state

4.8 Valley cross section

If the effects of the water extend beyond the zone covered by the cross section, it may be necessary to prepare valley cross sections.

The vertical scale shall be 1 : 100 or larger and the length scale must be selected uniformly for each draft according to the width of the valley and must correspond to the general site plan or to the site plan.

Valley cross sections must, where possible, be drawn up vertically to the direction of the valley and as seen in the direction of flow.

The following should be apparent from the valley cross sections:

- course of the terrain
- traffic routes, buildings and heights of surveyed points

- waters, dykes and decisive water levels
- groundwater surface and groundwater level, with date of reading
- soil profiles

5 Design of maps and plans

5.1 Graphical representation

The standards dealing with drawing techniques must be observed when preparing maps and plans (see "Further standards").

With regard to microfilming according to DIN 19 052 Part 1 to Part 4 and Part 6 (at present at draft stage), at least the sizes of lettering and widths of lines listed in table 1 must be used.

Table 1. Sizes of lettering and widths of lines

For sheet sizes	Size of lettering mm	Width of line mm
up to A2	2,5	0,25
A1	3,5	0,35
A0	5	0,5

5.2 Title block

The title block must appear at bottom right of each individual sheet. A space about 6 cm wide must be left free between the title block and the legend for check notes and approval notes. A title block must contain at least the following information:

- sponsor of the project
- designation of the overall project
- designation of the part of the project shown in the plan
- type of map or plan
- scale
- author of the plan (preparation notes)
- date
- number of plan and installation

5.3 Symbols

5.3.1 General

Symbols are little used in maps and plans for water engineering or for flood and coastal protection. For this reason, they must normally be explained in a legend.

5.3.2 Symbols indicating the purpose of the installations

Drinking water supply	Т
Flood protection	Н
Raising of the low water level	Ν
Utilization of water power	К
Irrigation	В
Retention of bed load, retention of suspended matter	G
Recreation and conservation of the countryside	Е