




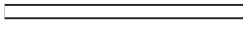









Line symbols

Line shaped objects are represented by line symbols. Due to its, often restricted linewidth, only a small range of graduation of brightness values can be applied. Distinction is therefore mainly made by Line-thickness and total width, as well as by pattern.

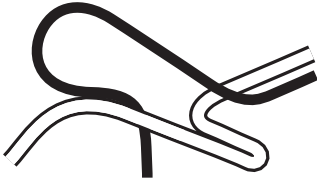
Type distinguished by	Examples	Value/importance distinguished by	Examples
Pattern	 Road	Line width Band width	 Highway
	 Dry wall		 Main road
	 Cableway		 Secondary road
Colour	 Minor road	Lightness value	 Transit road
	 Railway		 Connecting road
	 Canal		 Other roads

A further differentiation is given by the character of lines.

Geometric and rigid

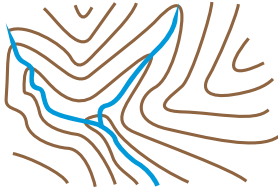


e.g.
boundaries, roads
and canals



e.g.
railways
and roads

Natural and bending



e.g.
Contour lines
and streams

Area Symbols

Area related objects are represented by area symbols.

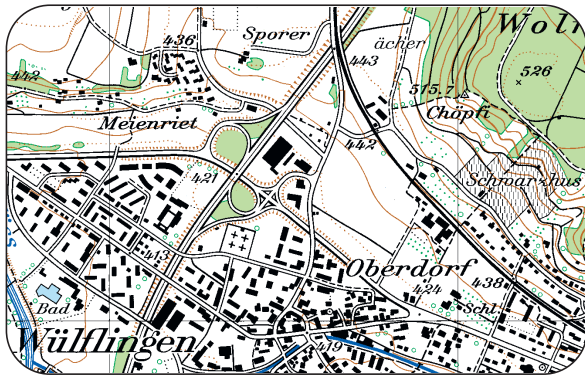
The following means of representation are available in order to make an area visible :

- Outline
- Area colour (without any visible structure)
- Regular area pattern (clearly visible structure in a regular array)
- Irregular area pattern (clearly visible structure in an irregular array)

Outline	Area colour	Regular area pattern	Irregular area pattern

Type distinguished by	Examples	Value/importance distinguished by	Examples
Outline pattern	Lake Lake with changeable water-levels	Lightness value	Young forest High forest
Outline colour	Lake with artificial shore Lake with natural shore		
Shape of the pattern unit	Vineyards Orchard		
Area colour or colour of the area pattern	Forest Lake		
Pattern orientation	Lake Forest		

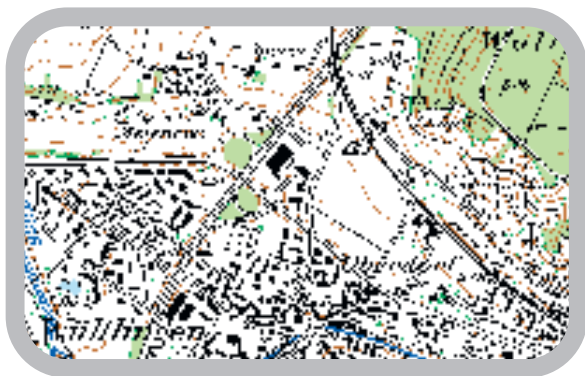
Maps displayed on computer screens



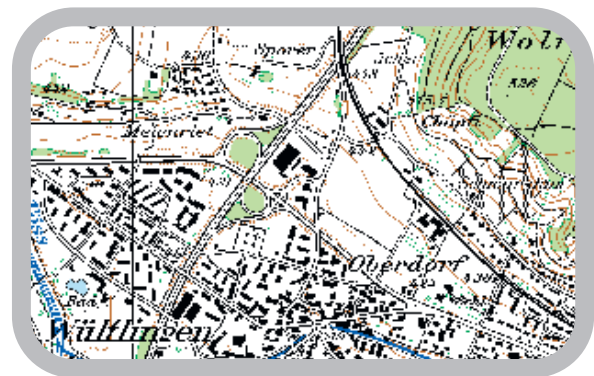
Map fragment 1:25 000, scanned and printed in 508 dpi

A map produced in analogue mode can never be read in its original scale on the monitor. The view is restricted by the fixed format and the coarse resolution of the screen.

- On a large 21 inch screen only a fragment of approx. 13x10 cm of the whole map is legible
- The original map is legible on the screen only when three times enlarged



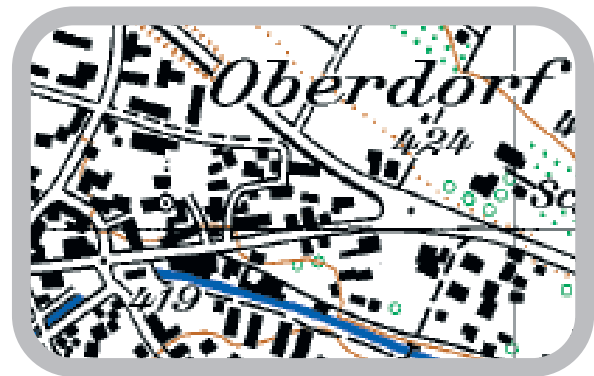
Pixel map of this fragment in its original scale, displayed on the screen with a resolution of 72 dpi



Vector map with the same resolution (72 dpi) in its original scale; it is slightly better legible on the screen



At three times enlargement the details of the pixel map are legible again



The map produced in vector mode creates the image always from the original geometry, independent of the enlargement



In a 10 times enlargement of the pixel map, the original pixels are rather coarse (0.5 mm)



In a 10 times enlargement of the vector map, the standard screen resolution (0.3 mm) is maintained

Recommended minimum dimensions for maps used only on screens

Maps displayed on screen obey their own graphical rules. Due to the coarse resolution of its media, they have to be treated with distinctly coarser minimal dimensions. Ideally they are created in vector mode, the only way coarsening of the pixel structure can be avoided.

- For the following recommendations a pixel size of 0.3 mm is assumed
- Small rotated symbols are extremely difficult to discern; their minimum sizes are therefore generally to be increased by one pixel
- The minimum type size for rotated text is 12 point.

Symbol design on the screen	Screen at 1:1	Minimum size	Minimum interval	Remarks
Point symbol				
	+ × +++	5 pixels	2 pixels	Cross
	△ △	7–9 pixels		Outline
	□ □□	5 pixels	2 pixels	Outline
	● ●●●	5 pixels	2 pixels	Round
	○ ○○○	5 pixels	2 pixels	Outline
Line symbols				
	—	1 pixel		approx. 0.3 mm
	==	1 pixel	2 pixels	Double
	≡	1 pixel	2 pixels	Double
	~	4 pixels		min. amplitude
	2 pixels	3 pixels	Dotted line
Area symbols				
	■ ■ ■ ◆	5 pixels		Solid square, rotated
		3 pixels		Interior
			2 pixels	Spacings

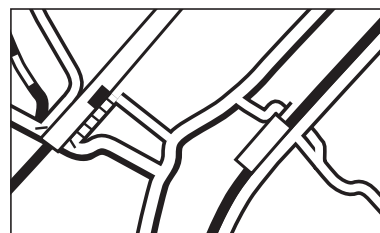
Selection and solution of details



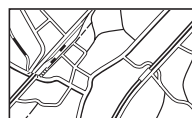
1:25 000



1:50 000 2:1



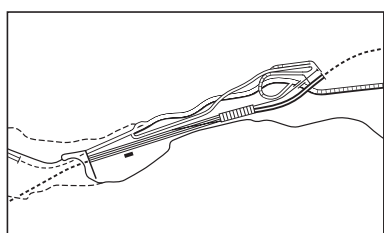
1:100 000 4:1



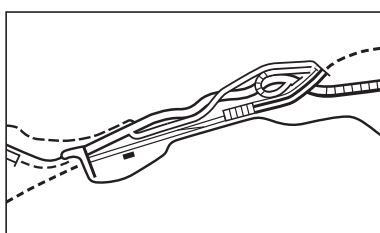
1:1



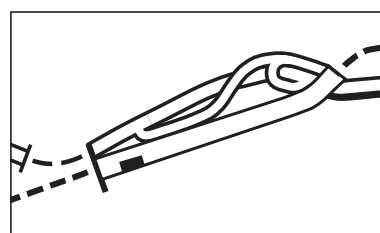
1:1



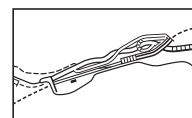
1:25 000



1:50 000 2:1



1:100 000 4:1



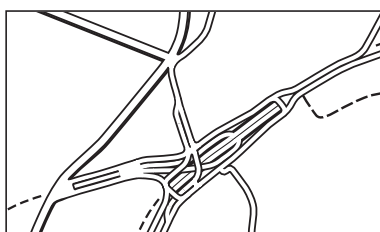
1:1



1:1



1:25 000



1:50 000 2:1



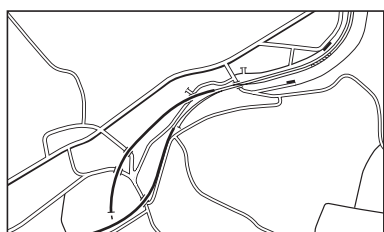
1:100 000 4:1



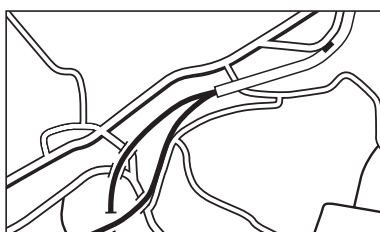
1:1



1:1



1:25 000



1:50 000 2:1



1:100 000 4:1



1:1



1:1

Legibility



A good legibility is achieved by

- keeping minimum dimensions and symbol sizes
- correct application of substitute possibilities

At boundaries, a substitute effect can be well applied. in order to relieve the map image, other linear or linear wise elements, are replacing the boundary symbol.

Making use of substitute possibilities, especially in dense built-up areas and in narrow situations (e.g. canons), are of high importance.

By a combined application of black line symbols and by coloured band, a more generous use can be made of substitute possibilities.

