



**International
Standard**

ISO 7519

**Technical product documentation
(TPD) — Construction
documentation — General
principles of presentation for
general arrangement and assembly
drawings**

*Documentation technique de produits (TPD) — Documentation
de construction — Principes généraux de présentation pour les
dessins de disposition générale et d'assemblage*

**Second edition
2024-03**

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Contents

Page

Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Construction drawings	2
4.1 General principles	2
4.1.1 Standardized and documented approach to communication	2
4.1.2 Conveyance of purposes	2
4.1.3 Dimensional accuracy	2
4.1.4 Use of content from scanned sources	3
4.1.5 Provision and robustness of external references	3
4.2 Types of drawings	3
4.3 Organization of drawing sets	3
4.3.1 Supplementary information of drawings	3
4.3.2 Hierarchy and grouping of drawings	4
4.4 Site plan	4
4.5 Site layout drawing	5
4.6 General arrangement drawings	6
4.7 Assembly drawings	6
4.8 Component drawings	7
4.9 Detail drawings	7
5 General techniques	7
5.1 General	7
5.2 General representation techniques	7
5.2.1 Simplification	7
5.2.2 Representation types	7
5.3 Simplified representation	8
5.3.1 General	8
5.3.2 Simplified low level representation	8
5.3.3 Simplified medium level representation	8
5.3.4 Simplified high-level representation	8
5.3.5 Simplified detailed representation	9
5.4 Graphical symbols	9
5.4.1 General	9
5.4.2 Graphical symbol types	10
5.4.3 Presentation	10
5.4.4 Consistent understanding	10
5.4.5 Readability	10
5.5 Lines	10
5.5.1 Line types	10
5.5.2 Line width	11
5.5.3 Line use for parts in the cutting plane	11
5.5.4 Line use for parts in front of the cutting plane	11
5.5.5 Line use for parts beyond the cutting plane	11
5.5.6 Line use for indicating function within a simplified representation	12
5.5.7 Line use for indicating function within a graphical symbol	12
5.5.8 Other line uses	12
5.6 Hatching, shading and colour	13
5.6.1 Purpose	13
5.6.2 Hatching and scale	13
5.6.3 Hatching of large area	13
5.7 Alphanumeric information	14

5.7.1	General	14
5.7.2	Text styles and height	14
5.7.3	Designations	14
5.7.4	General text	14
5.7.5	Reference keynotes	14
5.7.6	Schedules and lists	15
6	Application of representation	15
6.1	Stairs and ramps	15
6.2	Doors	16
6.2.1	Simplified representation	16
6.2.2	Door swings	17
6.3	Windows	17
6.4	Suspended ceilings	18
6.5	Openings, holes and recesses	18
6.5.1	Openings and holes	18
6.5.2	Recesses	19
6.6	Arrow symbols	19
6.7	Referencing and cross referencing	19
	Annex A (informative) Examples of door and window representation	21
	Annex B (informative) Materials in plan or section	24
	Bibliography	26

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 10, *Technical product documentation*, Subcommittee SC 8, *Construction documentation*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/SS F01, *Technical drawings*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 7519:1991), which has been technically revised.

The main changes are as follows:

- validation of normative references;
- inclusion of recommendations for site plans and site layout drawings;
- new [Clause 4](#), describing a hierarchy of drawings and defining scopes of general arrangement and assembly drawings;
- new [Clause 5](#), containing updated descriptions of methods for conveying information on drawings;
- new [Clause 6](#), containing identified representations and symbol application requirements;
- new [Annex A](#), providing examples of door and window swing functions and window parts;
- new [Annex B](#), providing examples of materials used in simplified representation;
- some consideration of the use of computer-aided drafting or design (CAD), as well as building information modelling (BIM).

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document aims to condense rules and recommendations from International Standards and give guidance concerning the production of easy-to-read construction drawings, specifically building layouts.

Methods used by the architectural and engineering professions to produce construction drawings varies, from a human holding a pencil or ink pen to computer aided drafting or design (CAD), as well as building information modelling (BIM). Regardless, what is produced as paper deliverables has generally remained consistent. The same presentation approaches and graphical symbols are used.

Further developments in information technology are providing more efficient and convenient methods for delivering, sharing and communicating information. As these technologies evolve, two constant elements relating to what is produced are construction drawings and records. These allow for visual verification and validation using agreed standard presentation methods.

Construction drawings are used by both designers and constructors to communicate using a common language. Regardless of the method of production of the drawing, the content, displayed as lines, symbols, patterns and other techniques predominantly made available on paper or display, is clear, precise and unambiguous in terms of the meaning it conveys.

In this document, the phrase “construction drawing” aligns with the concept of “technical drawing” as defined in the ISO 128 series. Therefore, it is intended to be interpreted in the broadest possible sense, encompassing the total package of documentation specifying the building.

This document is complementary to the ISO 128 series for construction drawings.

The figures included in this document are intended to illustrate the text and/or to provide examples of the related technical drawing specification. These figures are not fully dimensioned and toleranced, showing only the relevant general principles. In all figures, the leader lines using an arrow and text ending with “type” and numbers indicate the line types used for the representations. They are not elements which are presented on a construction drawing.

Technical product documentation (TPD) — Construction documentation — General principles of presentation for general arrangement and assembly drawings

1 Scope

This document establishes general principles of presentation to be applied to construction drawings for general arrangement and assembly, mainly within the field of building and architectural drawings.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 128-2, *Technical product documentation (TPD) — General principles of representation — Part 2: Basic conventions for lines*

ISO 128-3, *Technical product documentation (TPD) — General principles of representation — Part 3: Views, sections and cuts*

ISO 3098-1, *Technical product documentation — Lettering — Part 1: General requirements*

ISO 6707-1, *Buildings and civil engineering works — Vocabulary — Part 1: General terms*

ISO 7200, *Technical product documentation — Data fields in title blocks and document headers*

ISO 9431, *Construction drawings — Spaces for drawing and for text, and title blocks on drawing sheets*

ISO 10209, *Technical product documentation — Vocabulary — Terms relating to technical drawings, product definition and related documentation*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 6707-1 and ISO 10209 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1 geometrical information

description of detail and extent of information that can be expressed using shape, size, dimension and location

Note 1 to entry: Geometrical information can also describe material and movement of objects.

[SOURCE: EN 17412-1:2020, 3.12, modified — Note 1 to entry added.]

3.2

alphanumeric information

description of detail and extent of information that can be expressed using characters, digits and symbols or tokens such as mathematical symbols and punctuation marks

[SOURCE: EN 17412-1:2020, 3.13]

3.3

graphical symbol

visually perceptible figure with a particular meaning used to transmit information independently of language

Note 1 to entry: A graphical symbol can represent objects of interest, such as products, functions or requirements for manufacturing or quality control.

Note 2 to entry: A graphical symbol is not to be confused with a *simplified representation* (3.4) of a product, which is normally drawn to scale and which can look like a graphical symbol.

[SOURCE: ISO 81714-1:2010, 3.1]

3.4

simplified representation

representation drawn in accordance with the valid rules of projection and on which individual elements of the product are not shown, provided this does not present difficulties in understanding the drawing

[SOURCE: ISO/TS 128-71:2010, 3.2]

4 Construction drawings

4.1 General principles

4.1.1 Standardized and documented approach to communication

Construction drawings shall use a standardized and documented approach to present information that is clear, concise and unambiguous. This shall be achieved using a variety of techniques, such as lines, hatching, shading, colour, text, schedules and lists, as well as references to external sources.

4.1.2 Conveyance of purposes

To lessen the risk of ambiguity, each drawing should minimize the purposes conveyed. The purposes of each drawing shall be identified in the drawing title or supplementary title in accordance with ISO 7200, with additional information provided within the general notes.

The content of a drawing shall be conveyed using identifiable representation and graphical symbols consistent with the purposes. A symbols legend, within the space for text (see ISO 9431), or alternatively a separate legend drawing, shall be referenced to identify the key drawing elements.

4.1.3 Dimensional accuracy

Construction drawings shall be dimensionally accurate and coordinated with geospatial referencing to ensure a common coordinate system. Construction drawings shall be based upon an identified site base datum or point.

Construction drawings shall be produced to different scales depending upon the project needs and identified purposes. The drawings should indicate the intended paper size and each view should indicate the scale.

NOTE 1 A site or project grid on the construction drawings is generally established based upon the site datum.

NOTE 2 See ISO 4463-1 for the relationship between the different grids (structural reference grid, secondary setting-out grid and site grid) and use of secondary (setting-out) lines.

NOTE 3 See ISO 5455 for additional information on scale.

4.1.4 Use of content from scanned sources

Where construction drawings include content from point clouds or photogrammetry, as a record of construction, the content shall be reproduced to ensure that the information provided is both clear and concise in accordance with the documented standards.

4.1.5 Provision and robustness of external references

Where information is referenced from external sources using hyperlinks or similar, the long-term provision and robustness of the link shall be guaranteed or, alternatively, an offline copy shall be provided.

4.2 Types of drawings

Depending upon the object scope of representation, the following construction drawing types can be used:

- site plan, indicating the extent of the construction site and associated works in context;
- site layout drawing, indicating building location, phases, zones or volumes, topography and layout on site;
- general arrangement drawing, indicating the arrangement of elements which represent a whole building or part of a building;
- assembly drawing, demonstrating a spatial region, a functional system or a set of components;
- component drawing, representing a component with its parts;
- detail drawing, presenting a connection between components or enlarged demonstration of a part;
- drawing with schedules and lists.

NOTE 1 See ISO 10209 for definitions of drawing types.

NOTE 2 This document primarily describes general arrangement drawings and assembly drawings, even though many of the techniques are also applicable for other types.

NOTE 3 Documents of specifications or instructions are also used for delivering further information.

Building components which are detailed or specified in other documents, such as component range drawings, detail drawings, parts list and specifications, may be shown in a simplified manner on general arrangement and assembly drawings.

NOTE 4 The degree of simplification depends on the kind of object represented, the scale of the drawing and the purpose of the documentation. This is further described in [Clause 5](#).

4.3 Organization of drawing sets

4.3.1 Supplementary information of drawings

To enhance readability, drawings shall include supplementary information, such as explanations, instructions, references, a location figure and a revision table in accordance with ISO 9431.

Drawing sets may include a common legend explaining lines, notation, elements and graphical symbols used within the set.

Drawing sets shall include referencing to appropriate views or views on drawing, such as plans, elevations, sections, callouts and schedules or to details providing increased level of detailed information. The references can be in the form of hyperlinks to other drawings, documents or different kinds of digital objects.

NOTE Projection methods and representation of views, sections, cuts and cut with mirrored orthographic projection are specified in ISO 128-3.

Further information regarding references to drawings and documents for manufacturing, construction and assembly shall be made, normally in the space for text on the drawing sheet (see ISO 9431).

4.3.2 Hierarchy and grouping of drawings

By definition, site plans and site layout drawings are types of general arrangement drawings. In the context of this document, however, they are viewed as being in the top of a hierarchy of drawings, based on the size of the objects represented. This is shown in [Table 1](#). Drawings may also be grouped into sets based upon other criteria, e.g. identifying organizations, locations, phases, zones or volumes, levels, disciplines and systems.

Table 1 — Hierarchy of drawing types

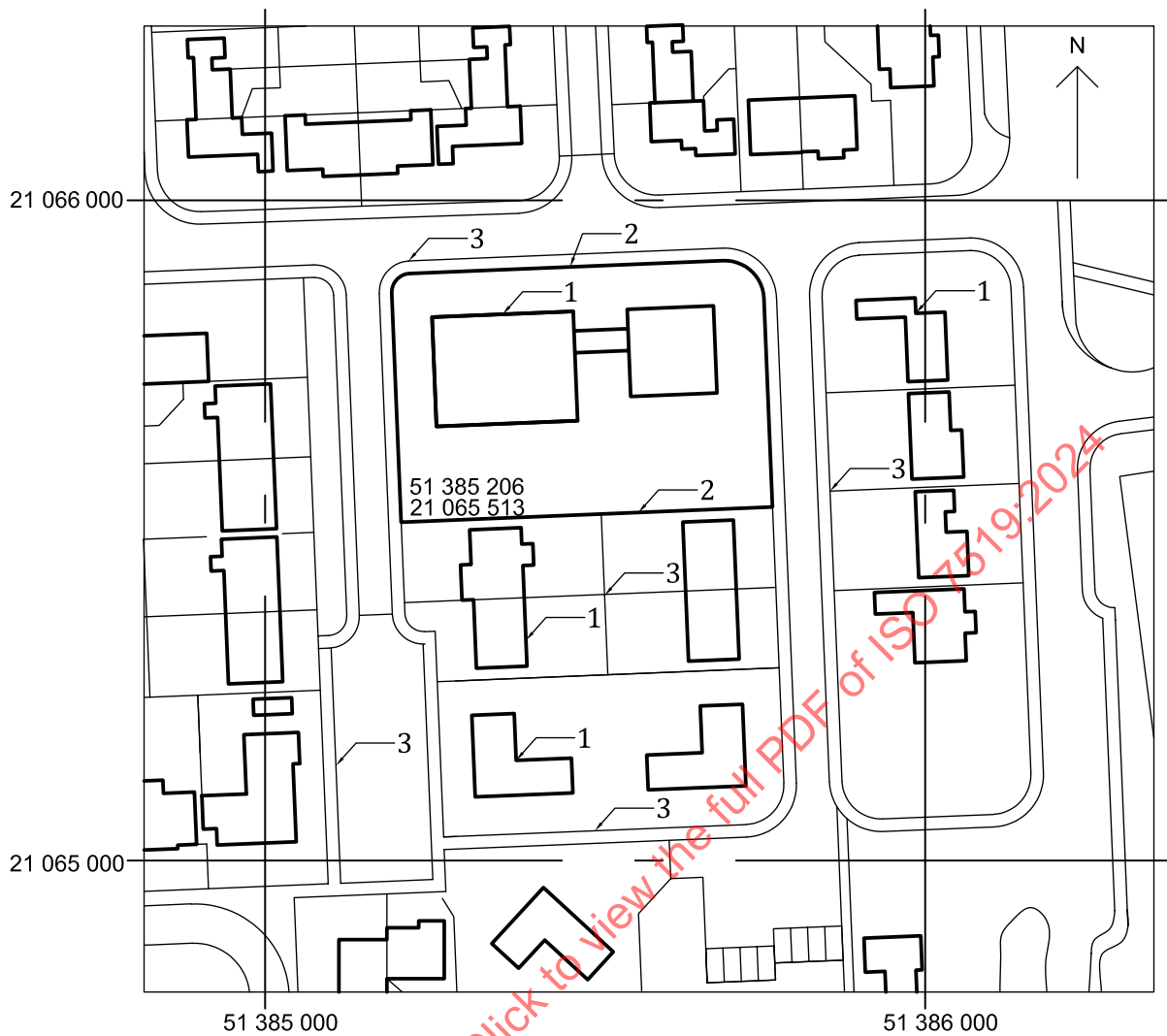
Types of drawing	Example
Site plan	Geographical location, context and boundary of a building
Site layout drawing	Location of the building, including landscaping features
General arrangement drawing	Building storey
Assembly drawing	Kitchen furnishings
Component drawing	Doors
Detail drawing	Wall section

4.4 Site plan

The site plan is a location drawing showing the boundary and context of the construction site indicating the building(s) location in a plan view (see [Figure 1](#)). The following shall apply:

- The direction of north shall be indicated and preferably be vertical.
- Buildings shall be presented by the footprint (building extent) using continuous extra-wide lines (type 01.3), see [Figure 1](#), line 1.
- The extent of the site boundary shall be indicated using a long-dashed dotted extra-wide line (type 04.3), see [Figure 1](#), line 2.
- The existing context shall be indicated as continuous wide lines (type 01.2), see [Figure 1](#), line 3.
- The geospatial position of either the site boundary or the building, or both, shall be shown.

NOTE In this document, the line type and its number are given according to ISO 128-2.



Key

- 1 line 1, continuous extra-wide line (type 01.3)
- 2 line 2, long-dashed dotted wide line (type 04.2)
- 3 line 3, continuous wide lines (type 01.2)

Figure 1 — Site plan indicating site boundary, building outline, datum and geospatial coordinates.

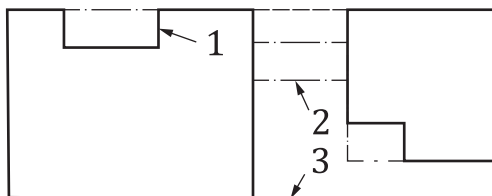
4.5 Site layout drawing

A site layout drawing shows the setting out of the whole or major parts of a building indicating phases, zones or volumes in context of the construction site in a plan view. The following shall apply:

- The direction of north shall be indicated, preferably in the first quadrant (between right and up).
- Buildings or major parts of a building shall be presented by outlines at ground level (the building footprint) using continuous extra-wide lines (type 01.3), see [Figure 2](#), line 1.
- Outlines of building parts extruding above ground, for example floors, roofs, and balconies, shall be shown using long-dashed dotted wide lines (type 04.2), see [Figure 2](#), line 2.
- Outlines of building parts below ground, for example culverts and cellars, shall be shown using dashed wide lines (type 02.2), see [Figure 2](#), line 3.
- A site datum shall be indicated along with coordinates.

- Location of a building or part of a building should be marked with no less than three sets of coordinates along the building footprint.
- Size of building(s) and distance between buildings should be indicated.
- Areas for traffic, parking and access to buildings should be shown.

Other drawings for specific use, for example layout of outdoor fire-prevention and evacuation facilities, can be developed based on the site layout plan.



Key

- 1 line 1, continuous extra-wide line (type 01.3)
- 2 line 2, long-dashed dotted wide line (type 04.2)
- 3 line 3, dashed wide line (type 02.2)

Figure 2 — Lines showing a building on a site layout drawing

4.6 General arrangement drawings

General arrangement drawings represent the whole or major parts of buildings, using techniques described in [Clause 5](#). The following shall apply:

- To show the layout and relationships among assemblies, general arrangement drawings may include multiple types of views, e.g. such as plans, elevations, cuts, and axonometric representations.
- A datum and coordinates shall be indicated on each drawing, except where a defined building grid has been established.
- Dimensions and notations shall include key objects only. Further information shall be indicated within the assembly drawings.
- Dimensions shall indicate either structural or finished dimensions.
- The notes within the title block shall indicate the standards used for the drawing type.
- Specifications or requirements related to the whole or parts of the building should be given with notes, schedule(s) and list(s), which should be placed in the space for text (see ISO 9431).

4.7 Assembly drawings

Assembly drawings represent the location and layout of assemblies, for example functional systems, or fixtures and fittings, in space, using techniques as described in [Clause 5](#). The following shall apply:

- Assembly drawings may include multiple presentation views, e.g. plan, elevation, cuts, and axonometric representation.
- Assembly drawings shall present a combination of components to indicate a single functional system or space(s), regardless of whole or part. Where an assembly is simple, all its components may be represented on a single drawing and the component drawing level omitted.

4.8 Component drawings

Component drawings are used to fully explain a component, which shall provide the level of detailed information required and shall include detailed geometry which has been simplified within the general arrangement or assembly drawings.

Component drawings shall be cross-referenced with other drawings within the construction drawing set.

4.9 Detail drawings

Detail drawings present a connection between components or provide an enlarged presentation of a part or series of parts and how these are assembled. A detail drawing shall use detailed representation (see [5.3.5.2](#)) and can include small geometric elements and methods of fixings omitted from other drawing types.

Detail drawings shall be cross-referenced with other drawings within the construction drawing set using a reference mark, which shall indicate the detail drawing by reference number.

5 General techniques

5.1 General

In construction drawings, objects shall be depicted using a combination of:

- geometrical information, showing shape, size, dimension, location, function and material of objects;
- alphanumerical information, further describing the object, possibly including references to external documentation.

5.2 General representation techniques

5.2.1 Simplification

Drawings shall be drawn using a representation appropriate to the type of drawing produced and the proposed representative scale associated with that drawing.

Due to the size and complexity of objects within construction drawings, their graphical representation shall be simplified, appropriate to the scale of the information to be produced.

NOTE The size of the objects provides a guide to what objects to depict. A general approach indicates that objects smaller than 50 mm at a scale of 1:50 or 100 mm at a scale of 1:100 cannot be clearly presented and therefore can be omitted.

5.2.2 Representation types

Drawings may use different representation types to convey information dependent upon criteria such as the intended purposes, audience, decision status and scale of reproduction.

To facilitate clear and unambiguous information within drawings, elements shall be depicted by one of the following methods:

- simplified representation (see [5.3](#)), using lines (see [5.5](#)) combined with hatching, shading and colour (see [5.6](#));
- graphical symbols (see [5.4](#)).

In addition, designations and text can be used to further describe objects (see [5.7](#)).

5.3 Simplified representation

5.3.1 General

Simplified representation shall use graphical elements to identify the make-up of an object and can represent its shape, size, dimension, location, function, and materials.

In doing this, simplified levels of representation shall be set up as follows:

- low-level representation;
- medium-level representation;
- high-level representation;
- detailed representation.

Low-level, medium-level and high-level simplified representation shall be used within general arrangement and assembly drawings. The level of simplification shall be appropriate to the drawing purposes and reproduction scale. If a detail is too complex it might not be possible to reproduce on a plotted output.

No distinct border exists between simplified and detailed representation. Typically, the simplified representation shows only the outlines of an object, while a detail also shows internal arrangement of parts of the object, e.g. a wall construction. However, to enhance understanding, larger sub-parts can also be shown while using simplified representation.

Depending on complexity and scale, a suitable line group shall be used. See [5.5.2](#).

See [Annex B](#), [Tables B.1](#) and [B.2](#), for examples of materials used in plan or section.

5.3.2 Simplified low level representation

When using simplified low-level representation, only object outlines shall be shown. No internal boundaries or materials shall be indicated. See [Figure 3 a\)](#).

5.3.3 Simplified medium level representation

When using simplified medium-level representation, major internal layers, skins and large cavities in objects visible at the chosen scale shall be shown. Main materials shall be identified in cut view. See [Figure 3 b\)](#).

5.3.4 Simplified high-level representation

When using simplified high-level representation, all features visible at the chosen scale shall be shown. This includes major and minor geometry with layers, skins and cavities. Minor elements, including material definitions, shall be identified in cut view and projection. See [Figure 3 c\)](#).

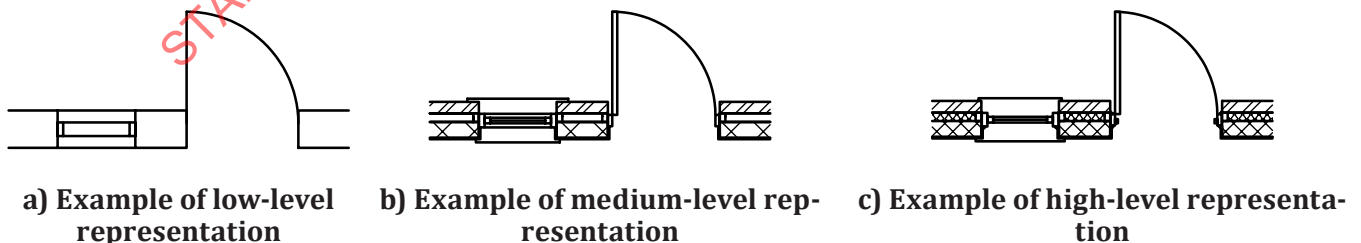


Figure 3 — Simplified levels of representation

5.3.5 Simplified detailed representation

5.3.5.1 General

For details, the levels of complexity required to be shown may exceed that of simplified representation.

5.3.5.2 Use of detailed representation

Detailed representation shall be used within detail drawing types, typically at scale 1:10 or greater, or where the complexity of the geometry does not impact the clarity of the information to be presented.

5.3.5.3 Parts to be included within detailed representation

Parts drawn using detailed representation may encompass manufactured products and fixings, including complex geometry and profiles omitted from other forms of simplified representation, as well as their material and fixing requirements. See [Figure 4](#).

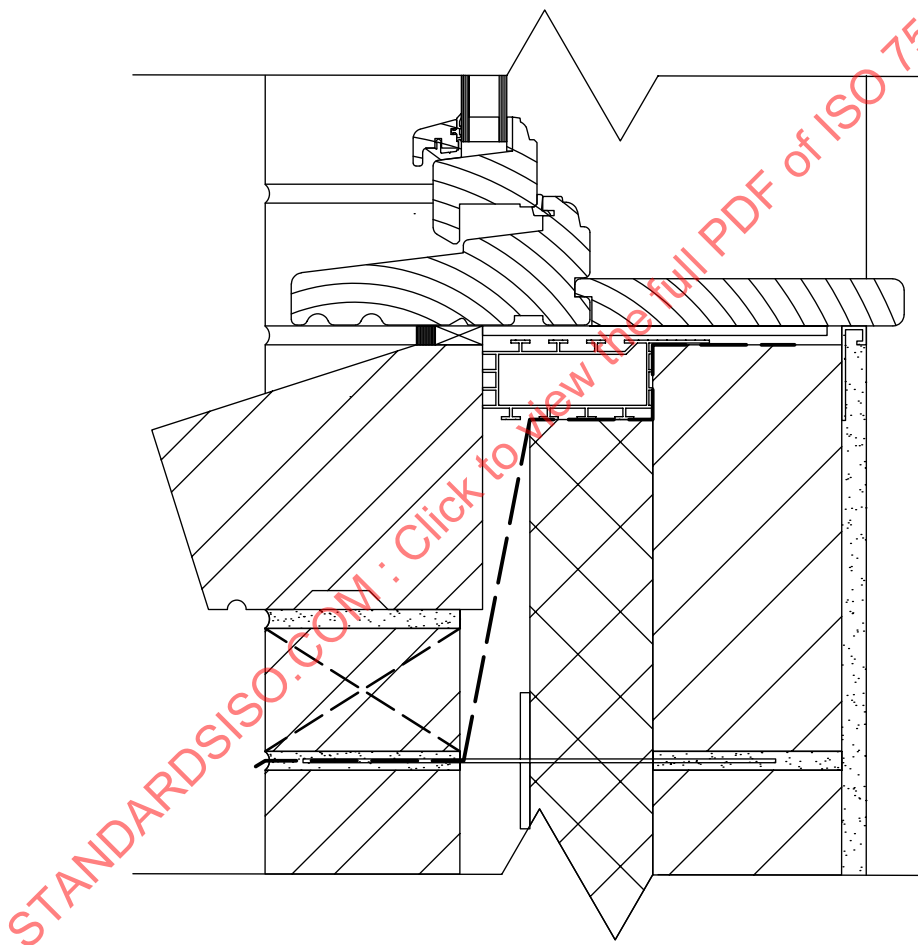


Figure 4 — Example of detailed level representation

5.4 Graphical symbols

5.4.1 General

Graphical symbols shall be used based upon a documented standard and used consistently through all drawings of the same type.

5.4.2 Graphical symbol types

Graphical symbols used in construction drawings are of two fundamental types:

- object symbols, showing the location, geometric size or physical characteristics of a building object. Symbols may be:
 - scale dependent, keeping the same relative size to non-symbolized objects as the scale changes, for example a tree symbol in a site layout drawing;
 - scale independent, always having the same size on the drawing regardless of scale, for example a light switch, see [Figure 5](#).
- explanatory symbols, providing information of a drawing's notation, e.g. north point.

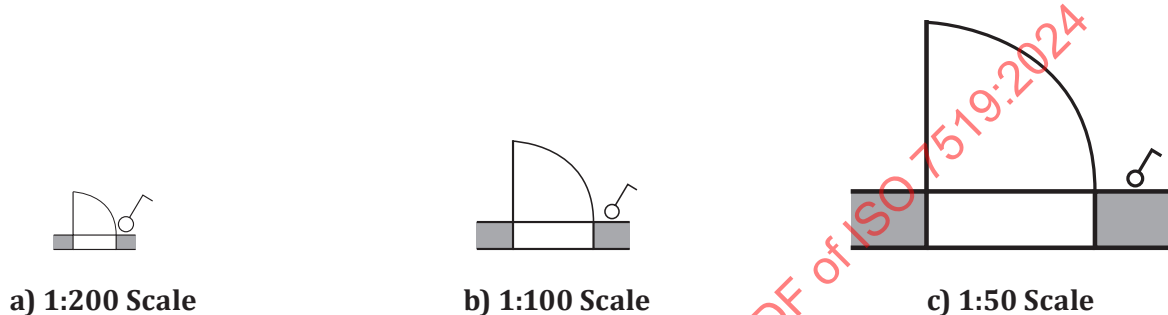


Figure 5 — A scale independent symbol beside a simplified door representation, at three scales

5.4.3 Presentation

Lines in graphical symbols shall have a width as described in [5.5.2](#).

The graphical symbols shall be presented with the same orientation and shall not be rotated across a set of construction drawings.

Symbols can be used to represent specific functions within simplified representations.

5.4.4 Consistent understanding

Graphical symbols may share common elements to aid in providing consistent understanding of their meaning. All symbols used within a drawing or set of drawings shall be indicated using a key.

5.4.5 Readability

Graphical symbols shall reflect the scale of the drawing to be produced, considering the readability when printed. Possible printing or reproduction in half scale should also be considered, e.g. printing an A1 size drawing in A3.

Graphical symbols shall use leaders to identify the correct location where symbols cannot be placed due to readability issues. See ISO 128-2.

5.5 Lines

5.5.1 Line types

Types and description of lines shall be in accordance with ISO 128-2.

5.5.2 Line width

Line width shall be appropriately set up on the basis of the following aspects in a drawing to avoid lines overlapping each other on a formal plotted output:

- the type of the drawing;
- the size and complexity of the represented object;
- the scale of the drawing.

Line width shall be in accordance with ISO 128-2:2022, Clause B.3.

NOTE ISO 128-2 specifies the levels of line width which are used for representation and lettering of graphical symbols: narrow, wide and extra-wide, plus a special line width used for graphical symbols in between the width of the narrow and the wide lines. Line widths for five line groups, named according to the wide line, are given in ISO 128-2:2022, Table B.2.

EXAMPLE In line group 0,5 mm, the narrow line is 0,25 mm; the wide line is 0,5 mm; the extra-wide line is 1 mm; the symbol line is 0,35 mm.

5.5.3 Line use for parts in the cutting plane

For parts crossing the cutting plane in sections and cuts, and when no hatching or shading is used, the following lines shall be used:

- continuous extra-wide line (type 01.3) for outlines [line 1 in [Figure 6 a](#)];
- continuous wide line (type 01.2) for boundaries of different materials within the parts [line 2 in [Figure 6 a](#)].

For parts crossing the cutting plane in sections and cuts, and when hatching or shading is used, the following lines shall be used:

- continuous wide line (type 01.2) for outlines [line 2 in [Figure 6 b](#)];
- continuous narrow line (type 01.1) for boundaries of different materials within the parts [line 3 in [Figure 6 b](#)].

5.5.4 Line use for parts in front of the cutting plane

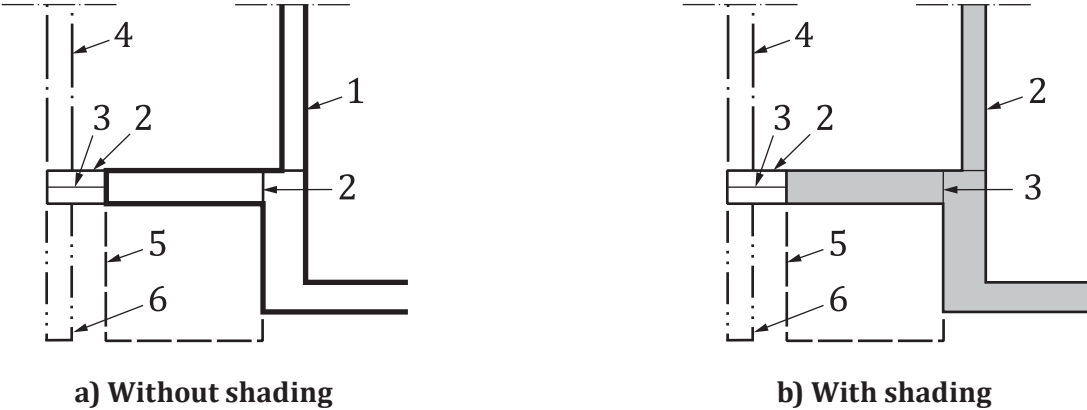
For parts in front of the cutting plane in sections and cuts, the following lines shall be used:

- long-dashed dotted wide line for visible outlines (type 04.2) [line 4 in [Figures 6 a](#) and [6 b](#)];
- long-dashed double-dotted wide line for hidden outlines (type 05.2) [line 6 in [Figures 6 a](#) and [6 b](#)].

5.5.5 Line use for parts beyond the cutting plane

For parts beyond the cutting plane in cuts (sectional view), and in elevations and plan views, the following lines shall be used:

- continuous wide line (type 01.2) for visible outlines [line 2 in [Figures 6 a](#) and [6 b](#)];
- continuous narrow line (type 01.1) for boundaries of different materials within the parts, and for the border between different inclinations in floors, roofs, etc. [line 3 in [Figures 6 a](#) and [6 b](#)];
- dashed wide line (type 02.2) for hidden outlines [line 5 in [Figures 6 a](#) and [6 b](#)].



Key

- 1 line 1, continuous extra-wide line (type 01.3)
- 2 line 2, continuous wide line (type 01.2)
- 3 line 3, continuous narrow line (type 01.1)
- 4 line 4, long-dashed dotted wide line (type 04.2)
- 5 line 5, dashed wide line (type 02.2)
- 6 line 6, long-dashed double-dotted wide line (type 05.2)

Figure 6 — Lines in sections and cuts

5.5.6 Line use for indicating function within a simplified representation

Where lines are used to indicate a specific function or performance criteria within a simplified representation, for example a window or window opening type, the line convention in [Table 2](#) shall be used.

Table 2 — Line use for indicating function within a simplified representation

Function	Representation	Description (line type)
Primary function	—————	Continuous narrow line (type 01.1)
Secondary function		Dotted narrow line (type 07.1)

5.5.7 Line use for indicating function within a graphical symbol

Where lines are used to indicate specific function or performance criteria within a symbol, for example light switch or pile symbol, the line convention in [Table 3](#) shall be used. Line width shall be the same as the line width of the symbol, as defined in [5.5.2](#).

Table 3 — Line use for indicating function within a symbol

Function	Representation	Description (line type)
Primary function	—————	Continuous line (type 01)
Secondary function		Dotted line (type 07)

5.5.8 Other line uses

ISO 128-2:2022, Annex B, describes the use of other line types for representing, for example, reference planes, cutting planes, centre lines and grids.

5.6 Hatching, shading and colour

5.6.1 Purpose

Hatching, shading and colour may be used to indicate specific purposes, including:

- indication of objects being in the cutting plane of a section or cut;
- representation of new or demolition works such as indicated in ISO 7518;
- representation of specific construction objects, e.g. different installation systems;
- representation of specific materials;
- indication of functional requirements;
- indication of specific spaces, zones or use requirements.

The use of colour should consider restrictions due to reproduction techniques used, which possibly change the hues and possible meaning of the information conveyed. Grayscale copying should also be considered. Colour may be applied for lines, hatching, shading and texts. Images and scanned contents shown on drawings can display original colours.

Commonly colours should be used to:

- differentiate functional system breakdown;
- highlight mark-up for certain purposes;
- distinguish groups of building objects.

5.6.2 Hatching and scale

Where hatching is used to indicate materials at medium, high or detailed simplified representation, the size and detail of the hatching shall be appropriate for the scale of the drawing to be produced. Examples of major and minor material hatches are provided in [Annex B](#) and shown in [Tables B.1](#) and [B.2](#).

Hatching shall be illustrated using continuous narrow lines (type 01.1).

NOTE In detailed representation, hatches can be illustrative rather than symbolic, for example showing simplified annual growth rings in wood objects or showing actual size of tiles.

5.6.3 Hatching of large area

Hatching of large area can be limited to a zone along the outline of the area. See example in [Figure 7](#).

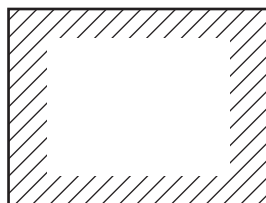


Figure 7 — Hatching of large area

5.7 Alphanumerical information

5.7.1 General

Objects shown using simplified representation or graphical symbols may be complemented by alphanumerical information in the forms of:

- designations indicating, for example, type or size;
- text providing further information.

The alphanumerical information may be placed:

- adjacent to the object, with a leader indicating the object described;
- in the space for text (see ISO 9431).

Alphanumerical information should be kept to a minimum to ensure that drawings remain clear and uncluttered.

5.7.2 Text styles and height

To ensure legibility of text, the following apply:

- Text styles should be kept to a minimum.
- Lettering dimensions shall be in accordance with ISO 3098-1 and the text height should be a minimum of 2,5 mm.

If drawings can be reduced in size, e.g. reduced from A1 to A3, larger text size should be considered.

5.7.3 Designations

Designations may be used to identify buildings, spaces, systems, assemblies and components, and shall be used in a consistent manner within a project.

Designations may also be used to indicate small objects where their geometric size or location does not facilitate the use of simplified representation or symbols, for example a movement joint.

Designation of buildings and parts of buildings should be in accordance with the ISO 4157 series.

The applications of structuring reference designations should be in accordance with ISO 81346-12.

NOTE IEC 81346-1 establishes basic rules for structuring principles and reference designations; IEC 81346-2 specifies the classification of objects and codes for classes.

5.7.4 General text

General text in the form of explanations, instructions and references can be used to provide additional information to the geometrical information in a drawing.

General text should be placed in the space for text according to ISO 9431.

Text used to give specific instructions may be placed in the space for drawing.

NOTE In some circumstances, the term “general note” is used instead of “general text”.

5.7.5 Reference keynotes

Reference keynotes can be used to briefly indicate features of objects as well as reference to other specification, instruction or documentation.

Keynotes shall be placed near the object(s) with leader lines and reference lines in accordance with ISO 128-2:2022, Clause 9.

Alternatively, flag notes (see ISO 129-1) and/or part reference (see ISO 6433) can be used where keynotes are applied.

5.7.6 Schedules and lists

Schedules and lists shall generally be produced in a tabular format to formally specify for:

- constituents of a system, assembly or product;
- a set of objects with similar characteristics;
- information exchange or delivery in a certain scope;
- process or activities.

Schedules and lists should provide sufficient characteristics properties (see ISO 7573) of associated objects to allow review and acceptance. In some cases, schedules can also contain simplified representations to present objects.

EXAMPLES

Schedules and lists can be used to create the following instructions:

- component schedules;
- window or door schedules;
- part lists;
- product data sheet;
- bill-of-material (BOM), material lists;
- drawing schedule;
- schedule of installation

NOTE ISO 7573 gives rules and guidelines for preparation of object lists, including parts lists. Those rules and guidelines are useful and can conditionally or optionally be applied for the schedules and lists on construction drawings on a project-by-project basis.

Schedules and lists shall be placed:

- in the same drawing where the relevant objects are presented; or
- collectively in one or more drawing sheets for multiple objects as general instructions.

6 Application of representation

6.1 Stairs and ramps

Stairs or steps on plan drawings shall be shown as follows:

- Outlines, steps and landings shall be drawn with continuous narrow lines (type 01.1) or continuous wide lines (type 01.2) (see [Figure 8](#)). Both widths shall not be used simultaneously.
- A direction arrow shall be located in the centre of the stair or ramp. The arrow shall be drawn with a continuous narrow line (type 01.1) with an arrowhead indicating direction of rising (see [Figure 8](#)). An open circle shall be used to indicate the bottom riser and an open arrowhead indicating the top riser or level.

- The cutting of a flight of stairs shall be shown symbolically by a single oblique continuous narrow line with zigzags (type 01.1.14) [see [Figure 8 b\)](#)]. If the meaning cannot be misinterpreted, the zigzags may be omitted. Lines above the cutting plane shall be shown using a long-dashed dotted line (type 04) with the same line width and dash length adapted to stair width [see [Figure 8 b\)](#)].

Stairs or steps on plan drawings may be numbered as follows:

- In stairs, levels of landings may be indicated by numerical values in accordance with ISO 129-1 [see [Figure 9 a\)](#)]. In addition, the steps may be numbered in the ascending direction, using “1” for the bottom step [see [Figures 9 b\)](#) and [9 c\)](#)].
- In ramps, the top and bottom levels may be indicated by numerical values in accordance with ISO 129-1 [see [Figure 10 a\)](#)]. In addition, the slope may be indicated by a ratio of inclination [see [Figures 10 b\)](#) and [10 c\)](#)].

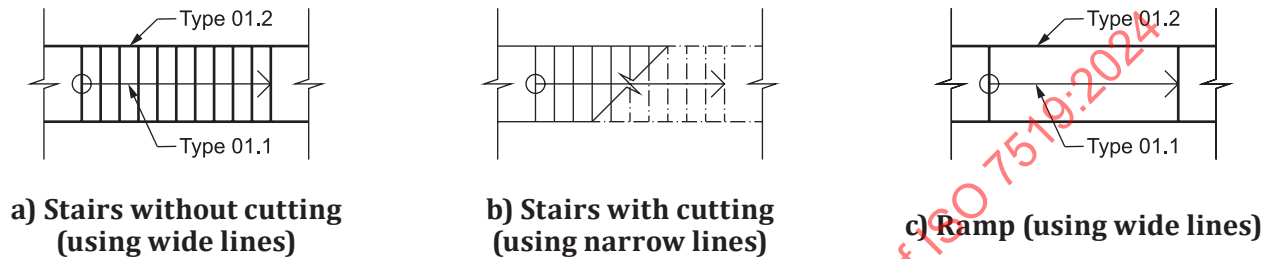


Figure 8 — Stairs and ramps

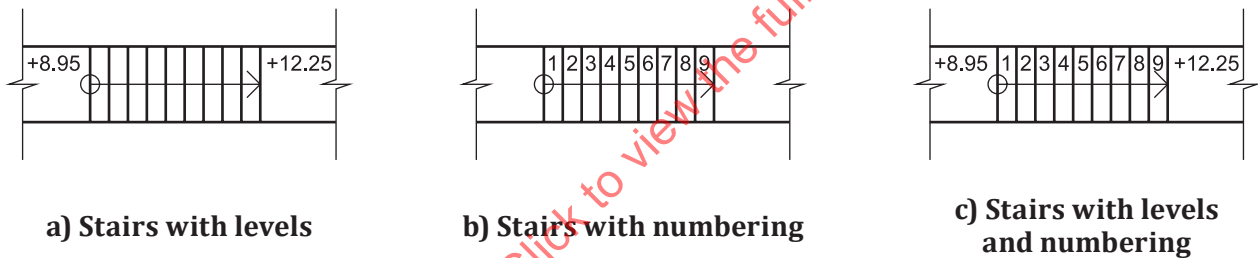


Figure 9 — Stairs with levels and step numbering

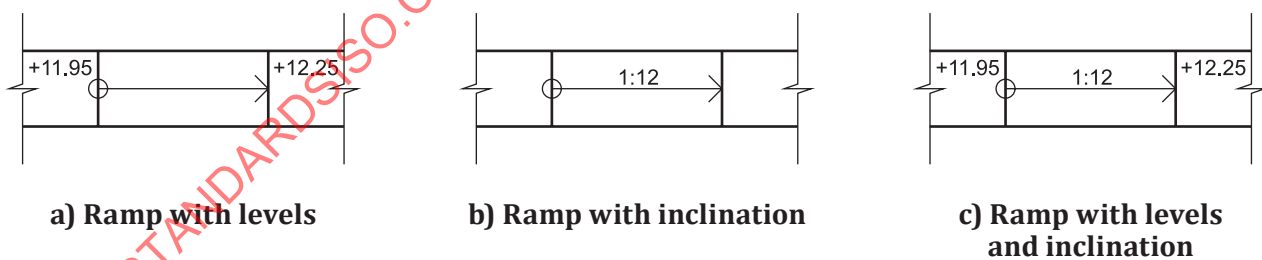


Figure 10 — Ramps with levels and inclination

6.2 Doors

6.2.1 Simplified representation

Doors shall be represented with the appropriate simplified representation to meet the drawing purposes (see [Figure 11](#)).

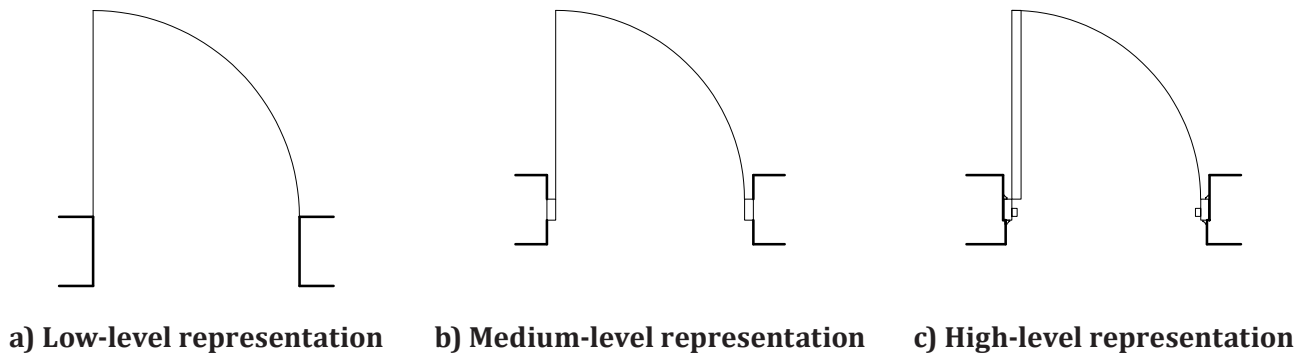


Figure 11 — Door simplified levels of representation for general arrangement and assembly drawings

6.2.2 Door swings

Door swings shall be shown in plan. Swings of side-hung doors may be shown by drawing the door leaf at an angle of 30° without an arc or at an angle of 90° with an arc. Thresholds may be shown (see [Figure 12](#)).

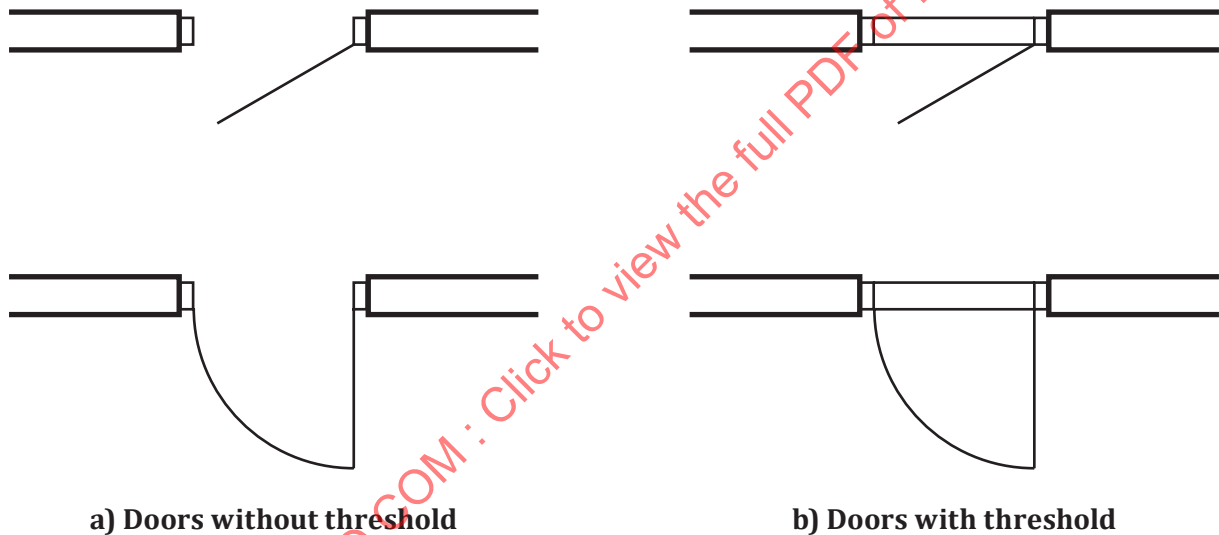


Figure 12 — Simplified representation of door swings, without and with a threshold

Different types of door swings can be indicated using different graphical representations. Examples are provided in [Annex A, Table A.1](#). Examples of revolving, sliding and folding doors are shown in [Annex A, Table A.2](#).

6.3 Windows

Windows shall be represented with the appropriate simplified representation to meet the drawing purposes (see [Figure 13](#)).

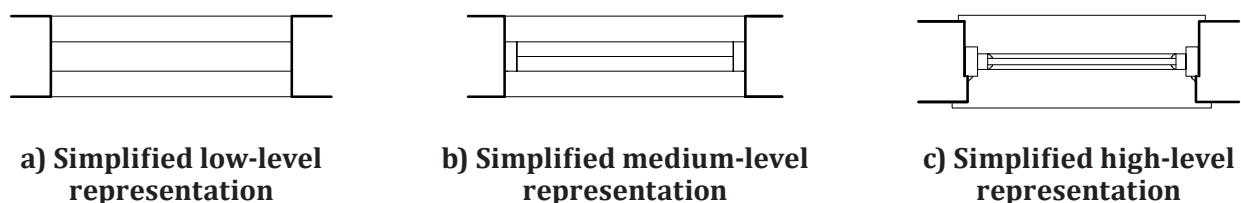


Figure 13 — Simplified representations for window in plan

Parts of a window may be indicated as shown in [Annex A, Table A.3](#).

Different types of window opening functions can be indicated using different graphical representations. Examples are provided in [Annex A, Table A.4](#).

6.4 Suspended ceilings

Suspended ceilings shall be shown on a plan drawing by a diagonal, drawn using a long-dashed double-dotted narrow line (type 05.1). The level of the underside of the suspended ceiling should be indicated by its numerical value or by the room height (see [Figure 14](#)).

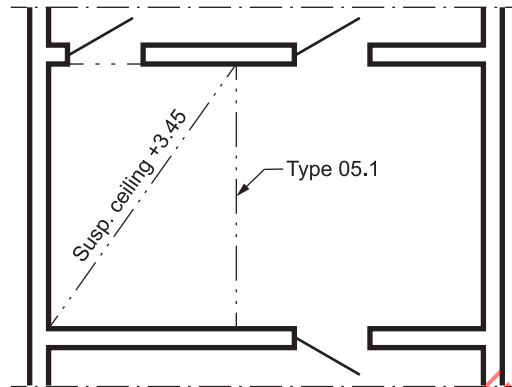


Figure 14 — Suspended ceiling

The outline of a suspended ceiling free from the walls shall be drawn using a long-dashed double-dotted narrow line (type 05.1) (see [Figure 15](#)).

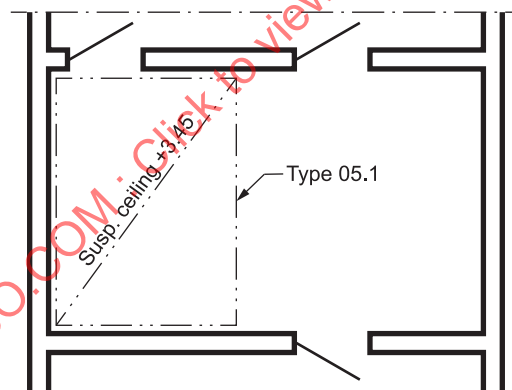


Figure 15 — Suspended ceiling free from wall

6.5 Openings, holes and recesses

6.5.1 Openings and holes

Openings and holes in view and in section shall be indicated by two diagonal continuous narrow lines (type 01.1). The diagonals may be omitted where the meaning of the marking is clear from the context (see [Figure 16](#)).

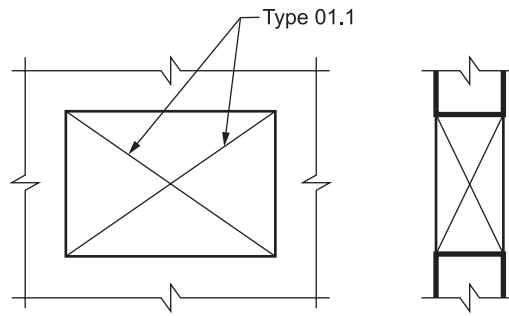


Figure 16 — Openings and holes

6.5.2 Recesses

Recesses in view and in section shall be indicated by one diagonal, drawn using continuous narrow lines (type 01.1). The diagonal may be omitted where the meaning of the marking is clear from the context (see [Figure 17](#)).

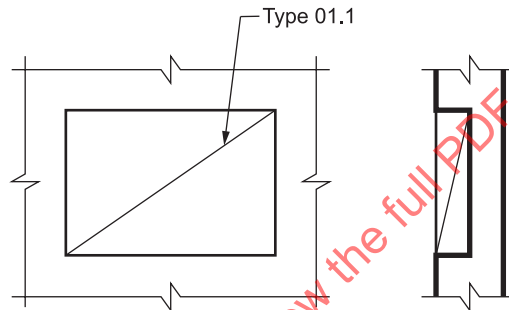


Figure 17 — Recesses

6.6 Arrow symbols

Arrow symbols may be used to convey different necessary information. Line widths of arrow symbols shall be in accordance with ISO 128-2:2022, Annex B.3 (see [Figure 18](#)).

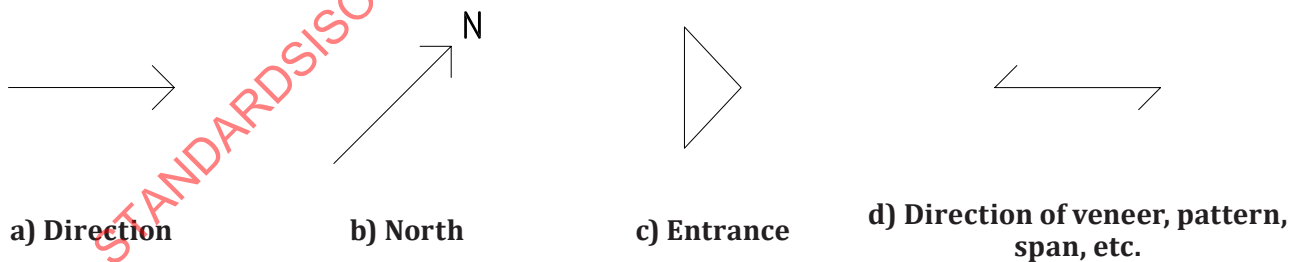


Figure 18 — Arrow symbols

6.7 Referencing and cross referencing

Annotation of objects, indicating references such as specification, may be indicated by a leader line using an arrow.

General arrangement drawings shall indicate both referencing and cross referencing within a set of drawings, providing as a minimum cross-reference to sections, elevations and detail drawings.

The indications for leader lines and reference lines should be used in accordance with ISO 128-2.

Cross-reference indications for views, cuts, sections, enlarged features and other drawings shall be in accordance with ISO 128-3.

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Annex A

(informative)

Examples of door and window representation

A.1 Door swing functions

As an alternative to the method shown in 6.2.2, door swing angle and function can be indicated as shown in Table A.1 by means of the long-dashed double-dotted line, symbol line width.

Table A.1 — Examples of door swing functions and angles shown in plan

Function	Simplified representation	Function	Simplified representation
90° swing, no indication of open or closed		160° swing, no indication of open or closed	
90° swing, normally open		160° swing, normally open	
90° swing, normally closed		160° swing, normally closed	

Examples of simplified representations of revolving, sliding and folding doors are shown in Table A.2.

Table A.2 — Examples of revolving, sliding and folding doors shown in plan

Simplified representation		Application	
Revolving door		Revolving leaves	
Sliding leaf, any type		Sliding leaf, normally closed on face	
		Sliding leaf, any type, sliding into recess	
		Sliding leaf, normally open on face	
Sliding-folding leaves, end hung			
Sliding-folding leaves, centre hung		Sliding folding leaves, centre hung, sliding into recess	

A.2 Window parts

Examples of simplified representations of window parts are shown in Table A.3.