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**Technical product documentation —  
Organization and naming of layers for  
CAD —**

**Part 2:**  
Concepts, format and codes used in  
construction documentation

*Documentation technique de produits — Organisation et dénomination des  
couches de CAO —*

*Partie 2: Concepts, format et codes utilisés dans la documentation pour la  
construction*



## 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 13567-2 was prepared by Technical Committee ISO/TC 10, *Technical drawings, product definition and related documentation*, Subcommittee SC 8, *Construction documentation*.

ISO 13567 consists of the following parts, under the general title *Technical product documentation — Organization and naming of layers for CAD*:

- *Part 1: Overview and principles*
- *Part 2: Concepts, format and codes used in construction documentation*
- *Part 3: [under study]*

Annex A of this part of ISO 13567 is for information only.

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## Introduction

ISO 13567 consists of three parts which deal with CAD layer organization and naming. ISO 13567-1 has a general application whereas ISO 13567-2 and ISO 13567-3 (under study) are applicable to construction projects.

The purpose of ISO 13567 is to establish a common international basis for organizing data in CAD systems that cover the structuring of data into layers.

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# Technical product documentation — Organization and naming of layers for CAD —

## Part 2:

## Concepts, format and codes used in construction documentation

### 1 Scope

This part of ISO 13567 covers the organization and allocation of layers for CAD on construction projects for the purposes of communication and management.

### 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 13567. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreement based on this part of ISO 13567 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 4157-1:—<sup>1)</sup>, *Construction drawings — Designation systems — Part 1: Buildings and parts of buildings.*

ISO 4157-2:—<sup>2)</sup>, *Construction drawings — Designation systems — Part 2: Room numbers.*

ISO 4157-3:—<sup>3)</sup>, *Construction drawings — Designation systems — Part 3: Room identifiers.*

ISO 5455:1979, *Technical drawings — Scales*

ISO 13567-1:1998, *Technical product documentation — Organization and naming of layers for CAD — Part 1: Overview and principles.*

### 3 Definitions

For the purposes of this part of ISO 13567, the definitions given in ISO 13567-1 apply.

### 4 Layer name subclassification

The following concepts are used in the layer name. An independent classification can be applied to each concept.

<sup>1)</sup> To be published. (Revision of ISO 4157-1:1980)

<sup>2)</sup> To be published. (Revision of ISO 4157-2:1982)

<sup>3)</sup> To be published.

#### 4.1 Agent responsible

The agent responsible is the construction specialist responsible for the data.

NOTE — The Agent Responsible subclassification is considered to be unique to each project, and is thus not defined in this part of ISO 13567.

#### 4.2 Element

An element consists of the physical parts of construction works to be allocated by national or international construction classification systems.

NOTE — Elements should also be used to represent areas and spaces when appropriate.

#### 4.3 Presentation

Presentation is information which may relate to particular elements or to the model or drawing, and which may need to be switched on or off.

NOTE — Presentation information is related primarily to the graphic appearance on screen and paper, as opposed to element information which is related to the physical structure.

#### 4.4 Status

Status defines whether physical parts in construction work are new, for retention or demolition etc.

NOTE — This concept allows the modelling of the situation before and after rebuilding of existing facilities in the same model.

#### 4.5 Sector

A sector is a subdivision of a project into physical locations, for example building, block, storey, zone.

#### 4.6 Phase

A phase is a subdivision of a project in time according to the product life cycle, for example project, contract, construction, decommissioning/demolition.

#### 4.7 Projection

Projection is additional or alternative data which are used to produce different views from the same CAD model.

NOTE — Projection may be especially important for component libraries, which are produced outside the project, and therefore cannot be agreed for the project.

#### 4.8 Scale

Scale is additional or alternative data which are used to produce drawings at different scales with different levels of detail.

NOTE — Scale may be especially important for component libraries, which are produced outside the project, and therefore cannot be agreed for the project.

#### 4.9 Work package

A work package is a subdivision used for indication of materials and work sections.

#### 4.10 User defined

User defined is additional information which the user may wish to attach to a separate layer for subdivision or description not covered by the concepts above.

### 5 Layer name format and codes

#### 5.1 Principles

The following concepts, categories, formats and codes should be used to allocate layers on construction projects for the purposes of communication and management. Those involved on any project should agree on the selection of the layers and codes to be used and how the data will be transferred between their CAD systems.

Codes used in the layer names to define layers should be both human- and machine-readable wherever possible. A format with fixed number of characters is used to allow selection of layers by wildcarding. Where reserved codes are given, they should be used only for the purpose specified. Other codes may be used for project-specific values.

Layer names are divided into fields. Each field holds one concept. Fields are either mandatory or optional. Mandatory fields should always be included in the layer names. Optional fields can be used as required in each project. The order of fields in a layer name and the number of characters for each field should be maintained as defined in this part of ISO 13567 unless an alternative is specifically agreed by the project partners and this alternative is documented in a way that assures future retrieval of the layer-structured information.

#### 5.2 Coding conventions

**5.2.1** Where a decision has not been made regarding the use of a field or the field is not being used the underscore character "\_" should be used. The first three fields should always be used, and may not be replaced by the underscore character, except in the situation where a manufacturer is creating a catalogue of components which will be used in various projects. In this case the Agent Responsible field is unknown and the underscore characters should be used for this field.

**5.2.2** If a layer is to be interpreted as relating to all possible values of a specific character position the hyphen "-" character should be used. For indication of no further subdivision of the information, hyphens filling out to the end of the field should be used.

**5.2.3** Alphanumeric characters allowed are the letters A - Z and the digits 0 - 9 in addition to the hyphen and underscore characters.

**5.2.4** All fields are left-justified.

**5.2.5** Unused trailing characters in a field should be represented by the underscore character.

**5.2.6** Unused trailing fields in the optional part of the layer name can be omitted.

## 6 Mandatory fields

### *Concept*

### *Format and codes*

#### 6.1 Agent Responsible

Two alphanumeric characters

Values to be used should be decided on in each project. Manufacturers creating catalogues may use two underscore characters in this field.

#### 6.2 Element

Six alphanumeric characters.

National element tables should be used whenever available.

Unused characters to the right of the national table codes should be coded with the underscore character "\_". The level of detail (number of specific characters) can be decided in each project. Non-specific characters should be coded as hyphens "-". Hyphens followed by underscore(s) in this field indicate graphic not related to elements but to the entire model or drawing page.

#### 6.3 Presentation

Two alphanumeric characters.

A hierarchical subdivision with reserved codes is used for the first character position. At the simplest level of coding a coarse division of information into model related (M) or page/paper related (P) information may be used. On finer levels these categories can be split into several others as required for each project. The second character may be used as a project-specific extension, and has no reserved codes. This character can be used, for example, to separate annotation in alternative languages.

Reserved codes for the first character are:

|                              |                  |
|------------------------------|------------------|
| Whole model and drawing page | -- (two hyphens) |
| Model                        | M                |
| Element graphics             | E                |
| Annotation                   | A                |
| Text                         | T                |
| Hatching                     | H                |
| Dimension                    | D                |
| Section/detail marks         | J                |
| Revision marks               | K                |
| Grid                         | G                |
| Graphic                      | Y                |
| Dimension                    | Z                |
| User                         | U                |
| Red lines                    | R                |
| Construction lines           | C                |
| Page/paper                   | P                |
| Border                       | B                |

|                      |   |
|----------------------|---|
| Border lines (Frame) | F |
| Other graphics       | O |
| Text                 | V |
| Title                | W |
| Notes                | N |
| Tabular information  | I |
| Legends              | L |
| Schedules            | S |
| Tables (Query)       | Q |

Examples of levels of subdivision according to Presentation:

EXAMPLE 1 No subdivision: Two hyphens for all layers --

EXAMPLE 2 Simple subdivision: Model and page/paper layers are separated using the codes

|            |    |
|------------|----|
| Model      | M- |
| Page/paper | P- |

EXAMPLE 3 Subdivision within model and page information:

Second level codes used for model:

|                  |    |
|------------------|----|
| Element graphics | E- |
| Annotation       | A- |
| Grid             | G- |
| User             | U- |

and for Page/paper:

|                     |    |
|---------------------|----|
| Border              | B- |
| Text (page)         | V- |
| Tabular information | I- |

EXAMPLE 4 Further subdivision of categories:

Any of the categories can be further subdivided individually, for example the Annotation information can use layer codes for

|                      |    |
|----------------------|----|
| Text                 | T- |
| Hatching             | H- |
| Dimensions           | D- |
| Section/detail marks | J- |
| Revision marks       | K- |

while the remaining model information is subdivided only according to example 3 and the page/paper information not subdivided but using code "P-".

**EXAMPLE 5** Use of the second character of the Presentation code:

By agreement on an international project text for different languages are separated using numbers:

|         |    |
|---------|----|
| English | T1 |
| German  | T2 |
| Russian | T3 |

This way documents can be presented alternatively in any of the three languages.

**7 Optional fields***Concept**Format and codes***7.1 Status**

Single alphabetic character recommended. Reserved codes:

|                        |            |
|------------------------|------------|
| Whole project          | - (hyphen) |
| New work               | N          |
| Existing to remain     | E          |
| Existing to be removed | R          |
| Existing to be moved:  |            |
| — original position    | O          |
| — final position       | F          |
| Temporary work         | T          |

**7.2 Sector**

Four alphanumeric characters.

The first character may be a hyphen in order to indicate negative values. Values to be used should be decided on in each project. There are no reserved codes. ISO 4157-1, ISO 4157-2 and ISO 4157-3 are recommended whenever applicable.

The following is an example for illustration use.

|                             |                     |
|-----------------------------|---------------------|
| Whole extent of project     | ---- (four hyphens) |
| EXAMPLE — Storey 01, zone A | 01A-                |

**7.3 Phase**

Single numeric character recommended.

Values to be used should be decided on in each project.

No codes are reserved.

The following is an example for illustration use.

|                           |            |
|---------------------------|------------|
| Whole duration of project | - (hyphen) |
| Phase                     | 1          |
|                           | 2          |
|                           | 3, etc.    |

## 7.4 Projection

Single numeric character. Reserved codes:

|                            |                  |
|----------------------------|------------------|
| Appears in all projections | - (hyphen)       |
| Plan                       | 0                |
| Elevation                  | 1                |
| Different elevations       | Project specific |
| Section                    | 2                |
| Different sections         | Project specific |
| 3D model                   | 3                |

## 7.5 Scale

Single alphanumeric character. Reserved codes for information to appear at one specific scale or at a range of scales as described in table 1. ISO 5455 is recommended whenever applicable.

**Table 1 — Reserved codes for scales**

| Scale  | 1:1 | 1:5 | 1:10 | 1:20 | 1:50 | 1:100 | 1:200 | 1:500 | 1:1000 |
|--------|-----|-----|------|------|------|-------|-------|-------|--------|
| Code - |     |     |      |      |      |       |       |       |        |
| 1      |     |     |      |      |      |       |       |       |        |
| 2      |     |     |      |      |      |       |       |       |        |
| 3      |     |     |      |      |      |       |       |       |        |
| 4      |     |     |      |      |      |       |       |       |        |
| 5      |     |     |      |      |      |       |       |       |        |
| 6      |     |     |      |      |      |       |       |       |        |
| 7      |     |     |      |      |      |       |       |       |        |
| 8      |     |     |      |      |      |       |       |       |        |
| 9      |     |     |      |      |      |       |       |       |        |
| 0      |     |     |      |      |      |       |       |       |        |
| A      |     |     |      |      |      |       |       |       |        |
| B      |     |     |      |      |      |       |       |       |        |
| C      |     |     |      |      |      |       |       |       |        |
| D      |     |     |      |      |      |       |       |       |        |
| E      |     |     |      |      |      |       |       |       |        |
| F      |     |     |      |      |      |       |       |       |        |
| G      |     |     |      |      |      |       |       |       |        |
| H      |     |     |      |      |      |       |       |       |        |
| I      |     |     |      |      |      |       |       |       |        |

**EXAMPLE 1** Base graphics that will appear at scales 1:50, 1:100 and 1:200 should use code 5.

Additional details, text and hatching to appear at scale 1:50 should use code E.

**EXAMPLE 2** Components intended for use at several scales should be divided in layers using scale codes for intervals or discrete scales. Thus a component to be used at scales 1:1 through 1:200 could use three levels of detail; code A for scale 1:1, code 2 for scales 1:5, 1:10 and 1:20 and finally code 5 for scales 1:50, 1:100 and 1:200.

**7.6 Work package** Two alphanumeric characters.

Materials or work sections may be coded by national systems or project specific agreements.

**7.7 User defined** Alphanumeric string, project specific.

Any number of characters allowed.

## 8 Examples of application of this part of ISO 13567

The following two examples show a project in a country where the national element codes are specified using four characters. The fifth and sixth character of element field, which is not used, is replaced by an underscore.

The headings of the columns in the examples are abbreviated. The full headings can be found by the subclause numbers in clauses 6 and 7 in this part of ISO 13567.

**EXAMPLE 1** Short coding (only mandatory fields are used)

| 6.1<br>Agent | 6.2<br>Element |   |   |   | 6.3<br>Pres. | 7.1<br>St. | 7.2<br>Sector |  |  |  | 7.3<br>Ph | 7.4<br>Pr | 7.5<br>Sc | 7.6<br>Wrk p | 7.7<br>User def. |  |  |  |
|--------------|----------------|---|---|---|--------------|------------|---------------|--|--|--|-----------|-----------|-----------|--------------|------------------|--|--|--|
| A            | -              | 2 | 4 | - | -            | D          | -             |  |  |  |           |           |           |              |                  |  |  |  |

Architects

Stairs

Dimensions