TECHNICAL REPORT 7084

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Technical drawings — Coding and referencing systems for building and civil engineering drawings and associated documents

Dessins techniques — Systèmes de codification et de référencement des dessins de bâtiment et de génie civil et documents associés

Technical Report 7084 was drawn up and was approved by the Technical Committee ISO/TC 10, *Technical drawings*.

Whilst the Technical Committee accepts the need for an International Standard in this field, it recommends immediate publication in the form of a Technical Report which is urgently needed as a basis and guidance for further discussions concerning its technical work.

The document will be revised in many countries after the necessary internal discussion. This Technical Report shall support these discussions.

Contents

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Technical drawings — Coding and referencing systems for building and civil engineering drawings and associated documents

1 Scope and field of application

This Technical Report deals with systems of designations and references for different types of drawings and associated documents, primarily those which are used in the manufacture of components and construction of projects. It concerns also, where applicable, documents relating to earlier phases in the design process.

All examples are related to building projects. However it is recommended to apply this Technical Report whenever possible, also in other fields of engineering.

Different types of documents and their relationships are also described.

Coding and referencing systems are developed taking into consideration :

— primary requirements for the basis of the manufacture and construction of separate projects;

— their relation to general documents which are available for reference;

— the re-use of documents, originally elaborated for a single project.

The systems are applicable to all types of projects of various sizes. For small projects, required abbreviations and shortening may be made according to the practical circumstances and needs.

NOTE — In many countries there are general classification and coding systems for different types of documentation. The desirability of compatability with such systems is taken into account.

Also, when using general classification and coding systems for designations of drawings and different elements in the documentation of separate projects, the fundamental principles in this Technical Report can be used.

2 Reference

ISO 1046, *Architectural and building drawings — Vocabulary.*

3 Types of documents

3.1 General concepts

The documents can be classified according to contents and function into :

— general documents;

— project documents;

— company documents.

General documents include documents with and without relation to the design and construction.

General documents, not directly related to design and construction, include a general background and information.

General documents, related to design and construction, give information that otherwise has to be given in project documents. They are adapted to be used, by references, directly in the design and construction process. They consist of standards, codes and other local construction regulations, prototype drawings, general material and instructions for their execution price-lists for elements, components, materials etc., information papers etc.

The **project documents** are directly made for individual projects. They consist of drawings, schedules, specifications, contracts, minutes etc.

The **company documents** concern the general activities, which are not related to separate projects, of an enterprise. They concern only one definite company and its administration. They consist of account schemes, work cards etc.

A simplified classification of documents into

a) documents related to an object and,

b) documents not related to an object,

distinguishes the documents, elaborated to be used once for one single project from all the other documents, which are used in more than one design and construction process.

3.2 Documents for an individual project

The documents for the documentation of the form and construction of a project (the product) consist of :

— drawings;

— schedules (lists);

— specifications (descriptions);

— design calculations;

— models.

The design of letters, minutes, contracts etc. are also influenced by the requirements of the projects and their execution.

On the **drawings** indications are documented, which need to be shown graphically. Tables, etc. may, in certain cases, be included in the drawing documentation.

In the **schedules** information is documented, which does not have to be shown graphically, but on the other hand needs so much specified information that it is more rational to show separately, in tabular form rather than directly in the specifications.

In the **specifications** the text information relevant to the project is documented in the form of compilations.

In the **design calculations** the information is documented as a basis for the technical conception and construction.

Models are concrete, three-dimensional, often simplified reproductions.

NOTE — The documents for the documentation of the products are the most comprehensive. The documents for the resource account (costs, etc.) and the documentation for the planning, the execution and the follow-up can be considered as annex to these and are not considered further in this Technical Report.

3.3 Relationships between documents

All documents for a project should be considered as a whole, irrespective of who makes them, when they are made or when they are used.

Items of information on the drawings, in schedules, in specifications and in other documents are complementary.

An item of information should be shown only in one place or in as few places as possible in the series of documents for a project. References are made from the other contexts, where the item of information can be appropriate to the place where it is indicated.

The information in schedules and specifications replaces the drawing documentation of standardized objects or manufactured products (catalogue products).

The relationships between different kinds of documents for a project are shown in figure 1.

The specifications include a synthesis of the information about the project. They coordinate all the project documents with the general documents related to the design and construction and other documents.

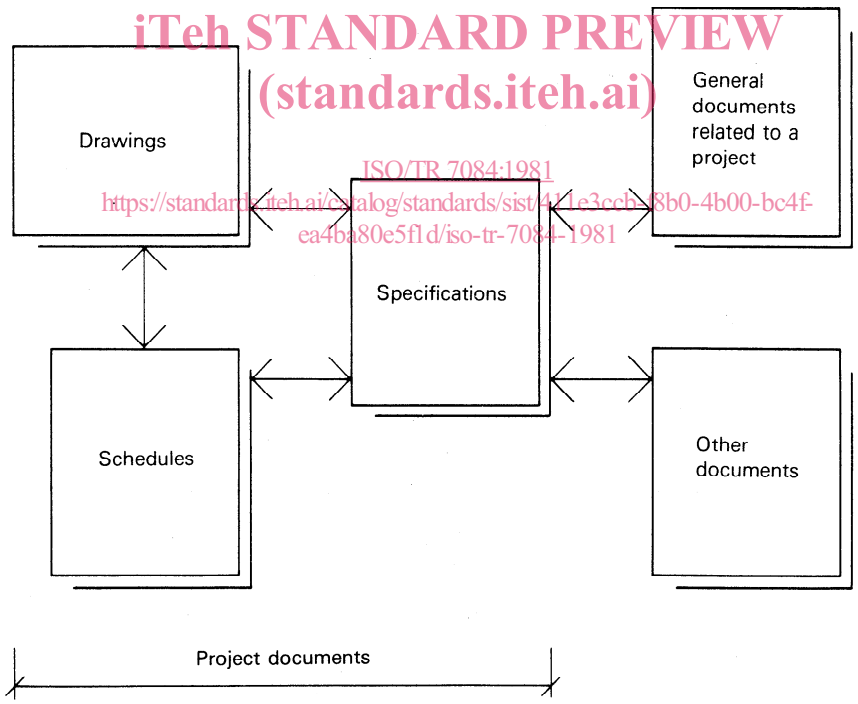

Figure 1

4 Drawings

4.1 Types of drawings

The division of the drawings follows basically the division of the project.

Further divisions of the documentation are made having regard to its intended purposes.

The documentation on the drawings for the project and its parts shall make clear :

— position, extent and mutual relationships;

— form and construction;

— assembly and joining.

Four main categories of drawings are distinguished :

— general arrangement drawings (location drawings);

— assembly drawings;

— component range drawings;

— detail drawings.

Diagrams form a further category of drawings.

The **general arrangement drawings** show the position of the elements included in the project, their extent and their mutual relationships. The documentation on series of plans, sections, views (elevations) and diagrams is made in a hierarchical level classification for :

— the project as a whole in the final design;

— ground, building and installations respectively in the final design;

— parts of the project, functional units, phases of the construction work, structure, material and production units, etc. for the project as a whole;

— parts of the project, which are shown separately, generally in a larger scale, because of the quantity of information to be shown (partial general arrangement drawings).

The general arrangement drawings have three main purposes : location, reference and dimensioning.

Information as a basis for the execution of work can also be given.

The **assembly drawings** show named assemblies of the project, inserted in their context. The drawings can include plans, sections and views.

The assembly drawings are primarily used when showing assemblies of composed elements (such as staircases, entrance sections and other named, composed parts of the building). They give information about the erection and assembly. They are also used for the work that is executed on the construction site.

The **component range drawings** show separately the prefabricated components of the project, which need a drawn documentation. They can include plans, sections and views. Series of similar objects can be shown with a limited number of figures.

The component range drawings are primarily used for manufacture (structural components, doors, windows, internal fixtures, etc.).

The **detail drawings** show delimited parts of an object (components or assemblies respectively), generally in a large scale, with specified information about the form and construction or about the assembly and joining. In certain cases a whole object may need such a documentation.

Diagrams (schemas) show objects with very simplified figures in order to make clear the functional relationships, the assembly sequences, etc. They can be included in the documentation on the general arrangement drawings as well as on the detail drawings.

The concepts and descriptions given above refer to types of drawings in principle, to define the logic of the information they each contain in the sequence. Thus the vocabulary can be extended for various, more specific needs and the appropriate words be used in various languages.

4.2 Relationships between drawings

It must be possible to follow the documentation systematically from the general arrangement drawings to separate details and should be done over as few drawings as possible, see figure 2.

The documentation on the assembly drawings and component range drawings completes the documentation on the general arrangement drawings.

The documentation on the detail drawings can complete all other documentation. Therefore reference can be made to it from all other categories of drawings.

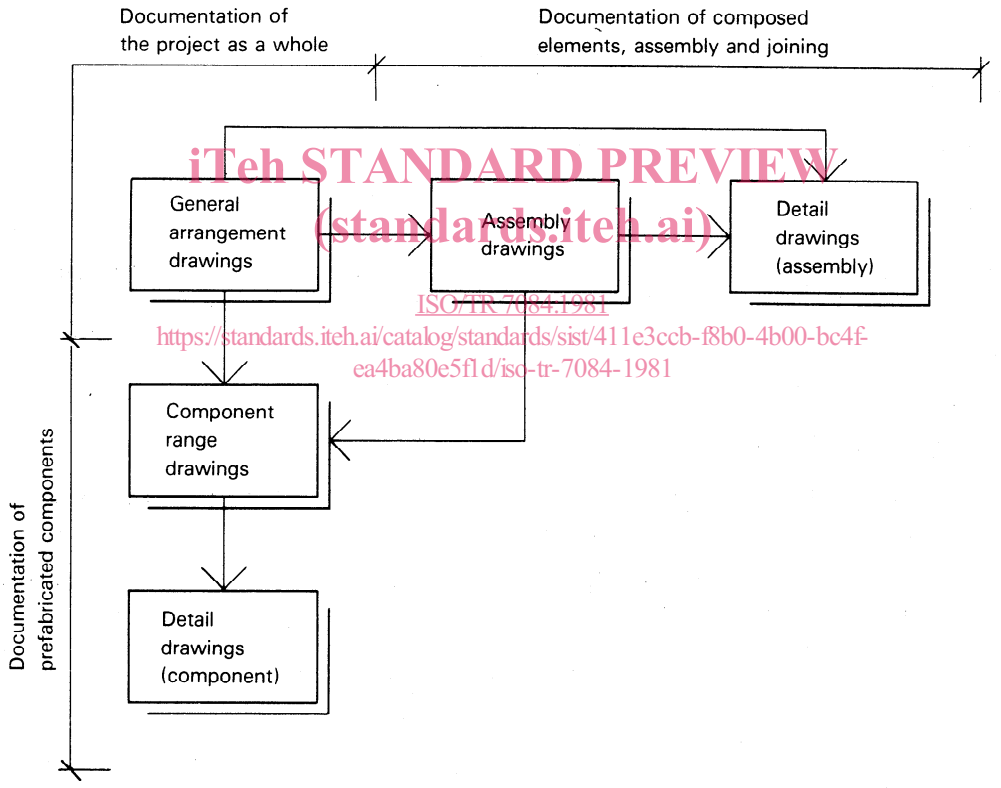

Figure 2

A fully developed pattern for the drawing documentation consists of a number of levels. At each level there is a summarized and a detailed documentation, see figure 3. A summarized and a detailed documentation may also exist on the same drawing.

4.3 Denomination and designation of drawings

The drawings and their contents are identified with :

— the drawing name, indicated in the title block of the drawing;

— the drawing number, indicated in the title block of the drawing;

[The drawing designation consists of a drawing number, completing (future) registration designation.

The drawing designation should always be included in a reference to a drawing from another document.]

— dating in the title block of the drawing and further in the registration field of the title block of the drawing.

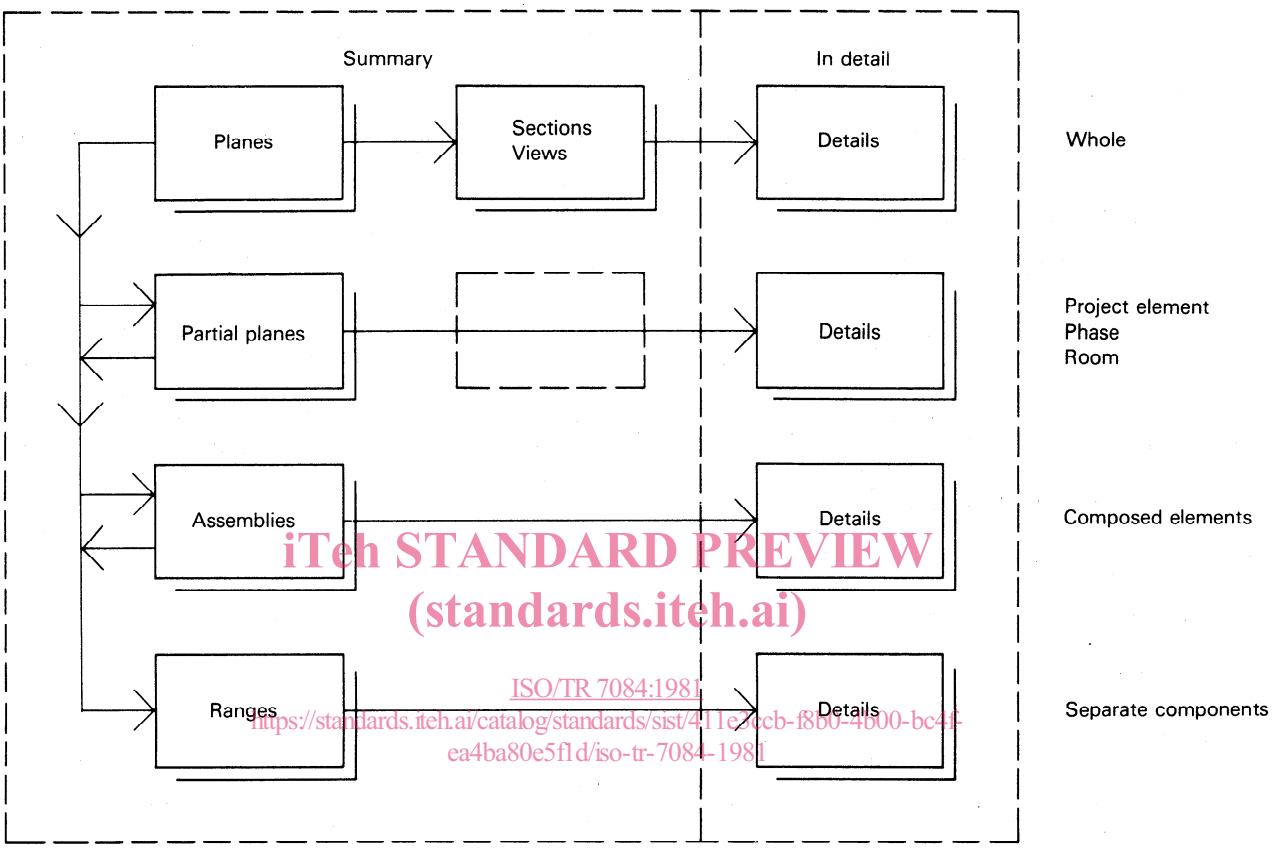

Figure 3

The **drawing name** is indicated according to the following examples :

General arrangement. Building 1, plane 1, part A

General arrangement. Building 1, section B

Dimensioning of frame work. Building 3, beams 4, part B

Details 8-12. External walls, connections

Assembly. Staircase A

Details 1-6. Staircase A

Range. Inner doors, litt. 1.11-1.21

Details 1-9. Inner doors

The drawings for a project are numbered according to uniform principles.

The **drawing number** consists of a group designation, a point and a running number indicating the place of the drawing within the group, for instance A 7.14.

A **group classification** of the drawings is made according to :

— the function and the purpose of the drawing in the documentation;

— a general classification and coding system, see 5.3.

A group classification of the drawings according to function and purpose is made :

— according to the principal division of the project into parts, contracts, etc., if necessary. It is indicated with an abbreviation, for instance A, B, C . . . . or a figure, for instance 1, 2, 3, 4 . . . ;

— according to the drawing category. It is indicated with figures and with the following order of the different drawing categories :

1) introductory surveys, basic material;

2) general arrangement drawings for the project as a whole (block plans, site plans, overall views, etc);

3) general arrangement drawings, i.e. for the ground, the building, the installations, the transport plants, etc., respectively in the overall final design, and with the location of principal elements, assemblies and components;

4) general arrangement drawings and partial general arrangement drawings for parts of the project, i.e. the building and the installations, phases of the construction work, dimensioning of frame work, material and production units, etc.;

5) detail drawings to the general arrangement drawings and the partial general drawings;

6) assembly drawings with their detail drawings;

7) component range drawings with their detail drawings;

8) diagrams, etc.

An appropriate system should be set up so that its application for each project is generally possible.

The drawings are numbered in a running sequence within each drawing group.

— Within each drawing group the drawings are sorted so that the documentation can be easily followed. This can be done by taking into consideration the position of the parts or works shown in the project, materials, work or production phases, manufacturing places, etc.

— It may in certain cases be convenient to form special series of running numbers for drawings, which for one reason or another go together.

— Plan drawings for buildings are preferably numbered in running sequence in order according to the building number, the storey (or beams) number and the part of the storey number.

Proposal drawings and **main drawings** are numbered according to the same principles as the production drawings. If belonging to small projects, they can also be numbered consecutively.

A phase designation can, if necessary, be indicated before the drawing number, for instance 4.34.11, see 5.1.

Outline and **preliminary drawings** are indicated with the same number, primarily the group number, as the final drawing is given in the drawing list.

4.4 Systems of reference

For references between the different parts of the documentation, the names or designations of the shown objects and elements of the project are used, see figure 4.

Figure 4 is applicable with necessary adaption to those objects and elements of the project, which are shown and to the division of the documentation into different drawings and figures. See 5.4.

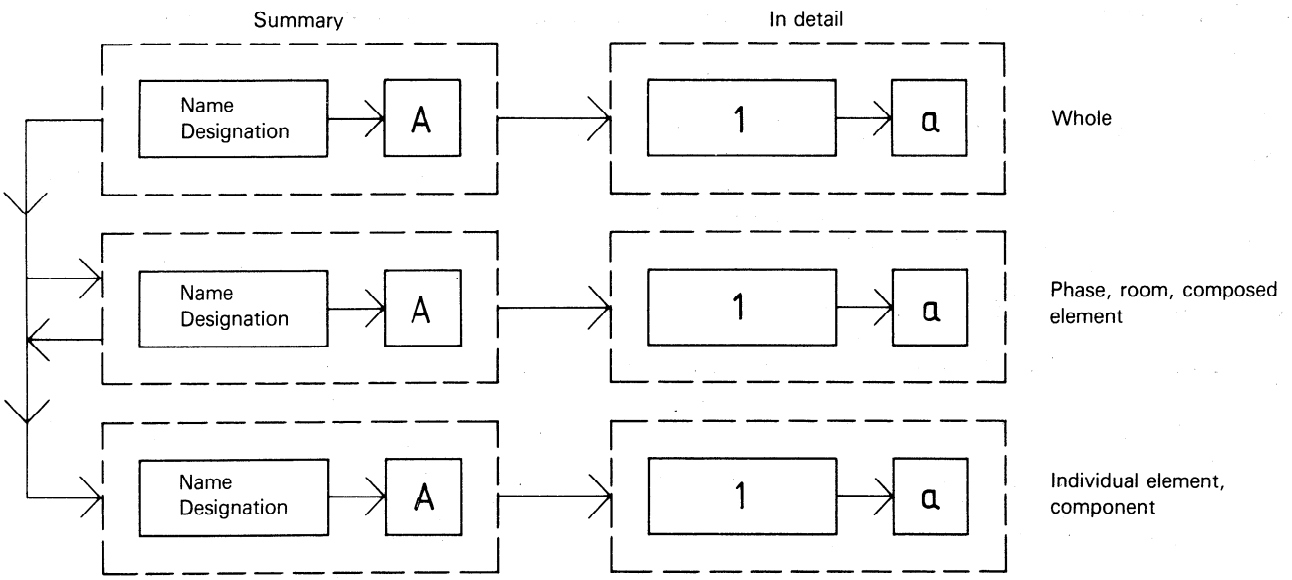

Figure 4

When in a summary the documentation with figures is made clearer by views and sections in a summarized and a detailed documentation, the designations are chosen in the following order (see figure 4) :

- capital letters;
- numerals;
- lower-case letters.

5 Coding and numbering of documents and information within documents

5.1 Coding and numbering of documents

The documents and the information of the documents are classified and coded according to different criteria, as summarized in the table.

Table

Type of document	Document or part of document	Information in the documents
Stage (purpose) Type of document Author (publisher) (project engineer)	Drawing, number Schedule, page Specification, page	Object, designation Figure, designation Text information designation

5.2 Coding and numbering of information within documents

Designations of objects and text information can consist of :

- systematical designation, if required in connection with a general classification and coding system;
- position number (consecutive designation);
- occasional reference designation (for instance between a figure panel and a text panel of a drawing).

For the designations of figures, see 4.4.