

INTERNATIONAL STANDARD

ISO
4172

Second edition
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Technical drawings — Construction drawings — Drawings for the assembly of prefabricated structures

*Dessins techniques — Dessins de construction — Dessins d'assemblage
des structures préfabriquées*



Reference number
ISO 4172:1991(E)

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 4172 was prepared by Technical Committee ISO/TC 10, *Technical drawings, product definition and related documentation*.

This second edition cancels and replaces the first edition (ISO 4172:1981), clause 2 and subclause 4.3 of which have been technically revised.

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Technical drawings — Construction drawings — Drawings for the assembly of prefabricated structures

1 Scope

This International Standard specifies general rules for the preparation of working drawings intended for the field assembly of prefabricated structures for building and civil engineering works.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard 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 128:1982, *Technical drawings — General principles of presentation*.

ISO 129:1985, *Technical drawings — Dimensioning — General principles, definitions, methods of execution and special indications*.

ISO 1046:1973, *Architectural and building drawings — Vocabulary*.

ISO 2444:1988, *Joints in building — Vocabulary*.

ISO 2445:1972, *Joints in building — Fundamental principles for design*.

ISO 2553:1984, *Welds — Symbolic representation on drawings*.

ISO 4068:1978, *Building and civil engineering drawings — Reference lines*.

ISO 4157-1:1980, *Building drawings — Part 1: Designation of buildings and parts of buildings*.

ISO 5455:1979, *Technical drawings — Scales*.

ISO 5457:1980, *Technical drawings — Sizes and layout of drawing sheets*.

ISO 6284:1985, *Tolerances for building — Indication of tolerances on building and construction drawings*.

ISO 7200:1984, *Technical drawings — Title blocks*.

ISO 7437:1990, *Technical drawings — Construction drawings — General rules for execution of production drawings for prefabricated structural components*.

ISO 8048:1984, *Technical drawings — Construction drawings — Representation of views, sections and cuts*.

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 prefabricated structure: Structure erected out of prefabricated structural components.

3.2 prefabricated structural component: Component of a prefabricated structure delivered to the construction site as a purpose-made part.

4 Documentation

4.1 General

The documentation for prefabricated structures shall comprise

- location drawings (general arrangement drawings),
- detail drawings,

- c) component schedules (and component range drawings), and
- d) additional specifications and lists for incidental materials, special shipping instructions, etc.

These shall be prepared in accordance with the relevant parts of the International Standards listed in clause 2.

4.2 Location drawings

4.2.1 A location drawing is a simplified representation of a prefabricated structure and the location of designated structural components. The components may be represented by an extra thick line (see figure 1, figure 3 and figure 4) or by their simplified outlines.

For each group of components for prefabricated structures, connected by similar construction conditions, the location drawings should be given in the sequence of their application during the assembly.

If necessary, design charts or loading schemes shall be given on location drawings, which shall indicate loading limitations, erection procedures, and other details concerning erection and assembly such as joints and jointing and temporary works, and shall refer to documents giving such information.

The location drawings for prefabricated structures shall show the following:

- a) layout grid lines of buildings;
- b) designations of structural components;
- c) relationship of components to the layout grid lines;
- d) specific levels of structural components;
- e) reference to the detail drawings.

The structural components should be shown in plans, sections or views, as illustrated in figures 1 to 6.

The location drawings for complicated three-dimensional structures should be made in different planes.

The preferred scales for location drawings are 1:50, 1:100 and 1:200.

4.2.2 On the location drawings of prefabricated foundations and other underground structures it is also recommended to show the following:

- a) outline of foundation beds;
- b) foundation sublayers (broken line);

- c) their sizes;
- d) their relationship to layout grids;
- e) foundation beams;
- f) basement walls.

Location drawings for foundation and other underground structures shall be represented on the assumption that the ground is transparent.

4.2.3 In the title of the location drawing for a prefabricated floor, reference should be made to the number of the floor or to the level of an intermediate floor or a stair landing, in accordance with ISO 4157-1.

4.2.4 In draughting the location drawings for prefabricated panel wall structures, the outlines of the component shall be shown with thick lines (see figure 6).

4.3 Detail drawings

4.3.1 Details may be shown on separate drawings or may be included as additional information on the location drawings.

The preferred scales for details are 1:20, 1:10 and 1:5.

Details shall be properly annotated on the relevant location drawings. Details should be given in the same sequence of the order of the respective section on the drawing.

4.3.2 Representations of joints will be the main part of the detail drawing. Joints are usually shown on separate sheets.

A representation of joints shows the relationship between prefabricated structural components, where they come together, and shall show

- a) layout grid lines,
- b) joint dimensions with an indication of the necessary tolerances,
- c) the designations of components shown on the location drawing and, if required, additional marks to identify the surfaces that are to come together at the joint,
- d) methods of connection, e.g. welding, bolted connections or the use of continuity reinforcement, in conjunction with site-poured concrete, and
- e) built-in parts and connection details, including the products to be used.

Two joints, the one being a mirror image of the other, shall be shown as two independent joints, and have independent designations.

If it is necessary to differentiate between the graphical representation of joints required for erection and assembly and those representations that describe the finishing of the joint (i.e. corrosion protection, thermal movement, etc.), or between supporting joints, sealing joints and open joints, this shall be done by using separate designations, or symbols that are explained on the drawing.

Examples of the graphical representation of joints are given in figure 7 and figure 8.

NOTE 1 Where necessary, the graphical representation of joints should be supplemented by text covering such matters as erection procedures, assembly and corrosion protection.

4.4 Component schedules

4.4.1 A component schedule is a document listing components of prefabricated structures.

4.4.2 A component schedule shall contain the following information in the sequence listed:

- a) designation of the components (unique reference);
- b) denomination of the components;
- c) number of components.

4.4.3 The component schedule should also contain the following information in the sequence listed:

- a) mass, in kilograms or tonnes;
- b) sizes;
- c) total mass, in kilograms or tonnes;
- d) special references;
- e) remarks.

If the component schedule is prepared on one or several separate sheets, each sheet shall have its own title block, placed below the schedule.

5 Designation of prefabricated structural components

On the location drawing the prefabricated components shall be denoted by designations.

Components that are identical should have identical designations.

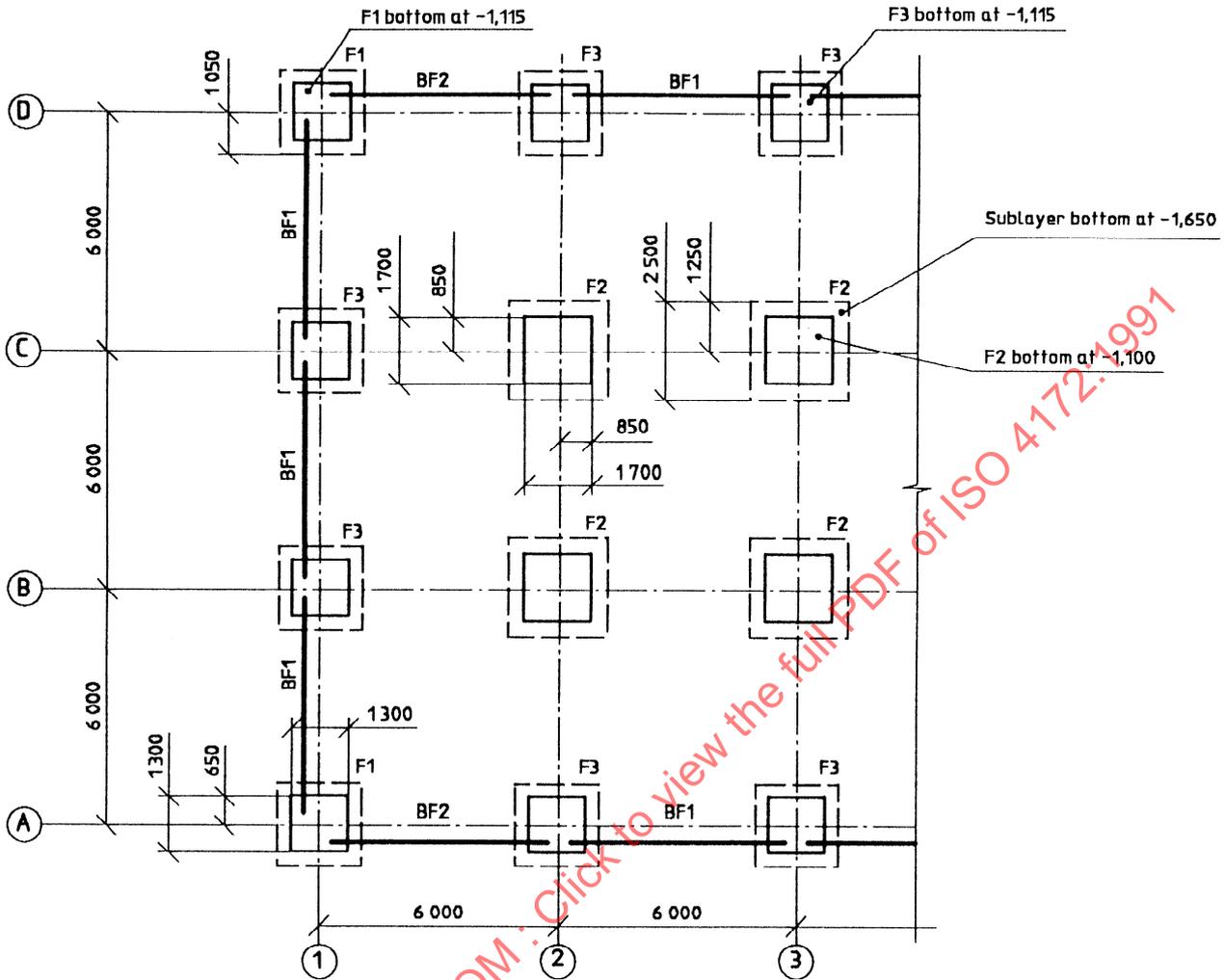
Structural components which are located manually shall be designated with independent designations.

The designations of components on the location drawings and detail drawings shall be shown adjacent to the graphical representation of a component [see figure 9a) and figure 9b)], or with leader lines [see figure 9c)].

The designations given in figures 1 to 10 are only examples.

NOTE 2 Figures 1 to 10 relate to a single typical structure and are for illustrative purposes only.

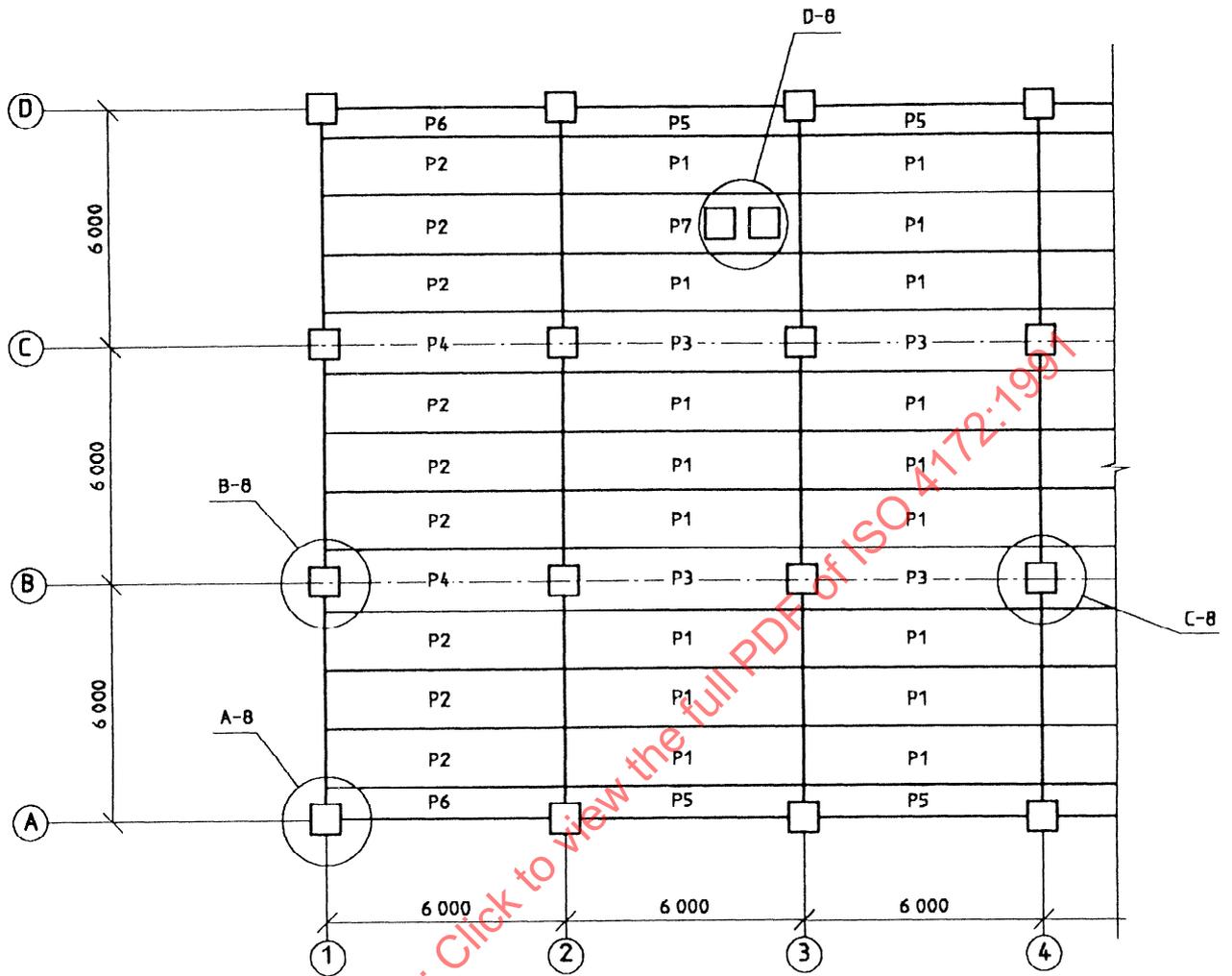
Dimensions in millimetres,
except indication of levels in metres



NOTE - The setting out sizes of F1, F2 and F3 bases have been included by way of example and will apply to bases with similar references.

Figure 1 — An example of a location drawing (plan) for foundations and foundation beams (Scale 1:200)

Dimensions in millimetres



NOTE - The use of leader lines is deprecated except where necessary.

Figure 2 — An example of a location drawing (plan) for floor slabs (Scale 1 : 200)

Dimensions in millimetres

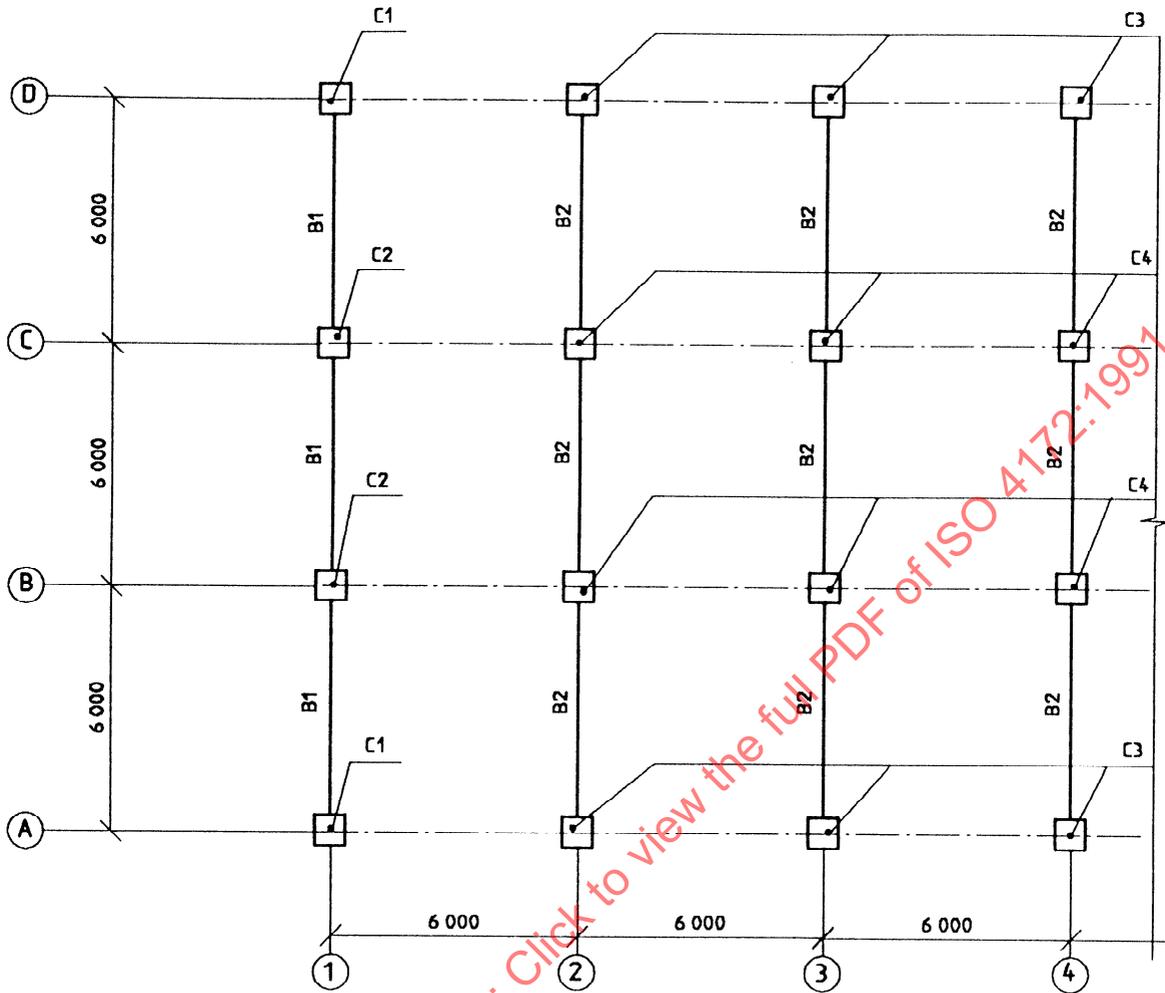


Figure 3 — An example of a location drawing (plan) for the components of a frame (Scale 1:200)

Dimensions in millimetres,
except indication of levels in metres

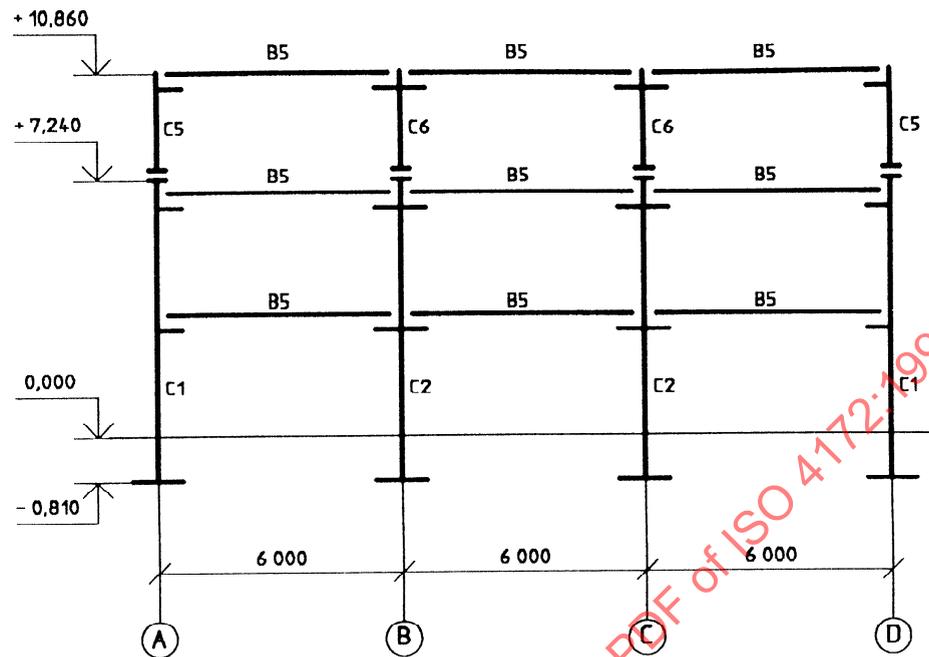


Figure 4 — An example of a typical section (Scale 1 : 200)

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Dimensions in millimetres,
except indication of levels in metres

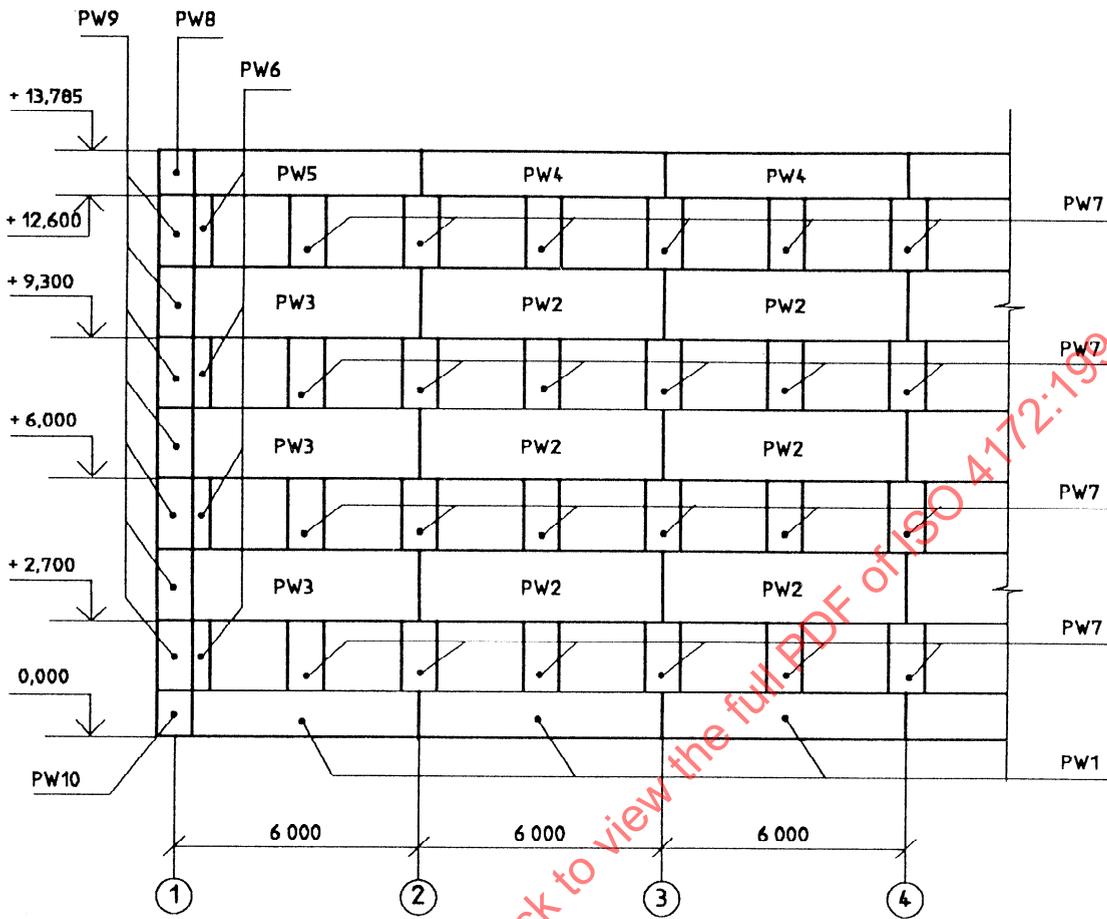


Figure 5 — An example of a location drawing (view) for wall panels (Scale 1 : 200)

Dimensions in millimetres

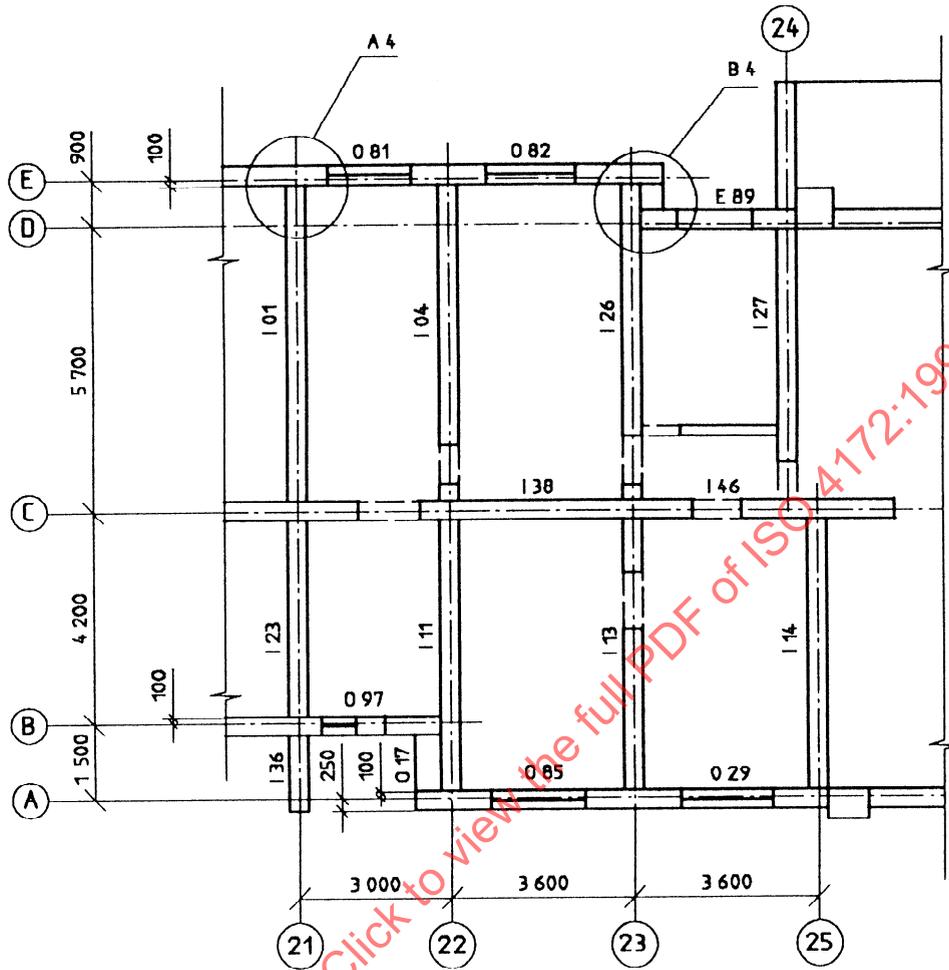
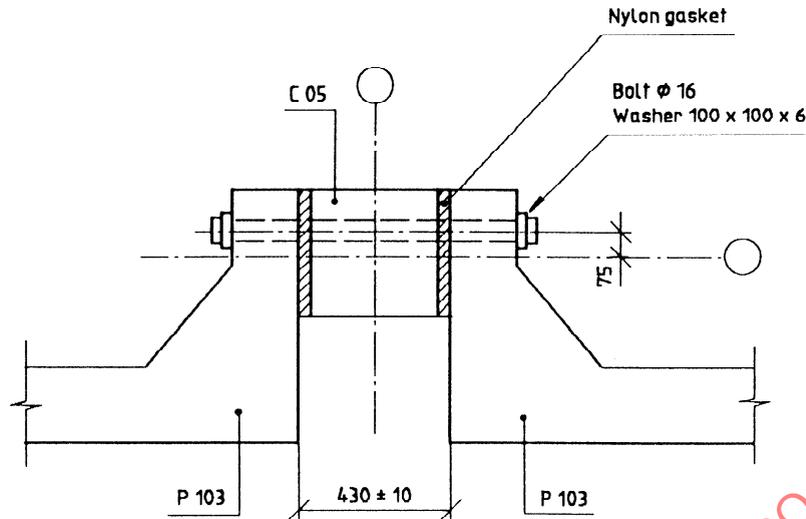
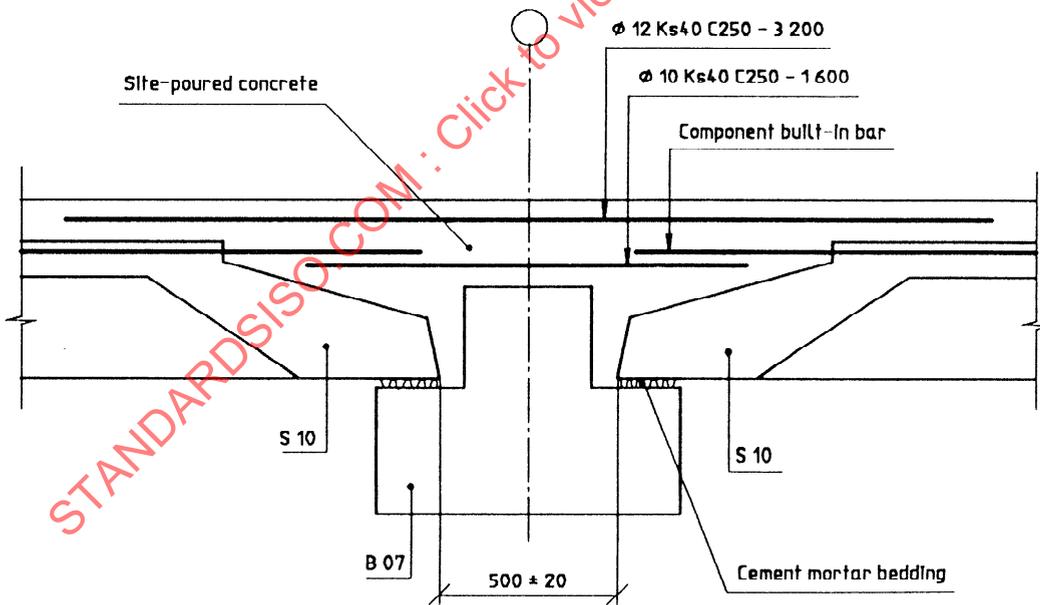


Figure 6 — An example of a location drawing (plan) for wall panels (Scale 1 : 200)



NOTE - These designations may need to be numbered independently.

Figure 7 — An example of a joint with bolted connection — Horizontal section



NOTE - These designations may need to be numbered independently.

Figure 8 — An example of a joint with continuity reinforcement and site-poured concrete — Vertical section