



**International  
Standard**

**ISO 24204**

**Oil and gas industries including  
lower carbon energy — Bulk  
material for offshore projects —  
Design for architectural supports**

*Industries du pétrole et du gaz, y compris les énergies à faible  
teneur en carbone — Matériels de base pour les projets en mer —  
Conception pour les supports architecturaux*

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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](http://www.iso.org/directives)).

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This document was prepared by Technical Committee ISO/TC 67, *Oil and gas industries including lower carbon energy*.

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](http://www.iso.org/members.html).

## Introduction

Based on an assessment of past offshore projects, this document aims to provide a set of unified design specifications for architectural supports for offshore projects, responding to the current lack of recognized specifications for such supports in terms of shapes, sizes, dimensions, material and application area.

Company-specific standards from owners, engineering companies and shipbuilders have been prevailing for such specifications. There are big variations in specifications from project to project, because of the lack of international recognized specifications within this area.

Thus, individual architectural supports have often failed to be compatible across different projects. With this document, one unified approach can be applied for their design, material selection, shape and application, etc. This can significantly reduce the delivery time and improve the engineering and fabrication efficiency. Another expected benefit is improvement on the design and application of architectural support types related to design life, maintainability and integrity.

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# Oil and gas industries including lower carbon energy — Bulk material for offshore projects — Design for architectural supports

## 1 Scope

This document specifies the design requirements for architectural supports, in terms of their shape and dimensions, material, strength, etc. This document covers architectural supports of topside and living-quarter regions for fixed or floating offshore oil and gas platforms including lower carbon energy.

## 2 Normative references

There are no normative references in this document.

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions 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 architectural support

member, attached to adjacent structural members, used to maintain the position of architectural components, but not subject to take significant loads from the architectural components

EXAMPLE Lining panel (3.6), partition panel (3.7).

### 3.2 architectural welding

welding used to fix the *architectural support* (3.1) of equal angle or flat bar to the structural member

### 3.3 ceiling panel

overhead interior surface that covers the upper limits of a room, connected with the wall system by being either suspended or self-supported

### 3.4 coaming plate

steel flat bar or vertical surface which is provided to prevent ingress of water

### 3.5 equipment support

architectural member to support equipment installed on the *wall panel* (3.12)

### 3.6 lining panel

non-load-bearing proprietary sandwich panel system of 25 mm in thickness, consisting of mineral or rock wool core and single- or double-sided steel sheeting finish used as a part of the *wall panel* (3.12) system

### 3.7

#### **partition panel**

non-load-bearing proprietary sandwich panel system of 50 mm or 100 mm in thickness, consisting of mineral or rock wool core and double-sided steel sheeting finish used as a part of the *wall panel* (3.12) system

### 3.8

#### **quality control plan**

##### **QCP**

written set of procedures and activities aimed at delivering products that meet quality objectives for a project as stated in contract documents and other procedures, manuals and guidance

### 3.9

#### **tack welding**

welding used to fix the *architectural support* (3.1) of the channel to the structural member and weld applied to connect the top and bottom profile of the channel to the architectural support or itself

### 3.10

#### **technical liner**

thin metal panel fixed to support profiles which are usually provided to protect insulation from mechanical damage

### 3.11

#### **vibration absorber**

material or device used to reduce a transmission of vibration on the *wall panel* (3.12)

Note 1 to entry: The vibration absorber between the *architectural support* (3.1) and the wall panel can be installed in accordance with the project specification.

### 3.12

#### **wall panel**

single piece of material, usually flat and cut into a rectangular shape that serves as the visible and exposed covering for a wall

Note 1 to entry: Wall panels are functional as well as decorative, providing insulation and sound proofing, uniformity of appearance, along with some measure of durability or ease of replaceability. According to the installation location and the existing steel wall, it is composed of lining wall panel and partition wall panel.

## **4 Architectural support specification**

### **4.1 General**

This clause specifies the standard design for architectural supports as the following types:

- a) lining panel support;
- b) partition panel support;
- c) coaming plate;
- d) technical liner support;
- e) equipment supports on wall panel.

### **4.2 Lining panel support specification**

#### **4.2.1 Key parameters**

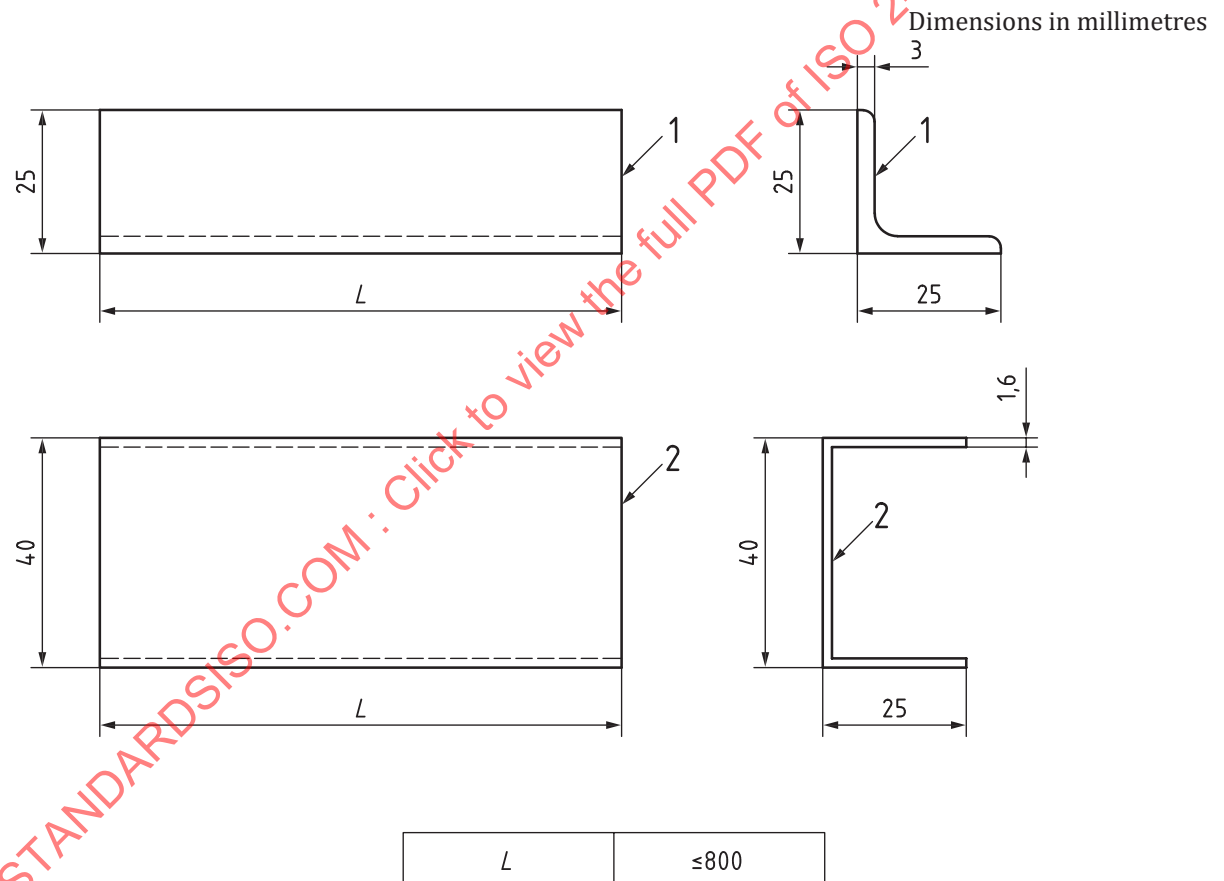
The key parameters of the lining panel support are:

- a) shape;

- b) dimension;
- c) connection;
- d) material;
- e) maximum lining length for single support;
- f) maximum pitch for lining panel support;
- g) application of double pads.

#### 4.2.2 Shape and dimensional specifications

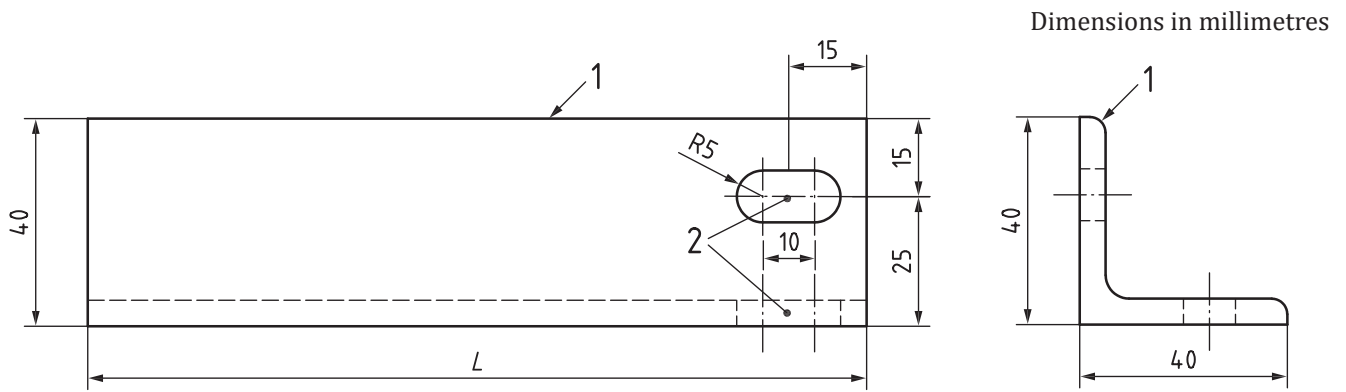
The lining panel support should be, as a minimum, 25 mm × 25 mm × 3 mm (thickness) equal angle or 25 mm × 40 mm × 25 mm × 1,6 mm (thickness) channel or equivalent, as shown in [Figure 1](#), with architectural welding. For installing the vibration absorber with a slot hole on the angle as shown in [Figure 2](#), 40 mm × 40 mm × 5 mm (thickness) equal angle can be used. The vibration absorber may be installed for reducing the transmission of vibration in accordance with project specification.



#### Key

- 1 25 mm × 25 mm × 3 mm (thickness) equal angle
- 2 25 mm × 40 mm × 25 mm × 1,6 mm (thickness) channel
- $L$  support length

**Figure 1 — Maximum length for lining panel support**



**Key**

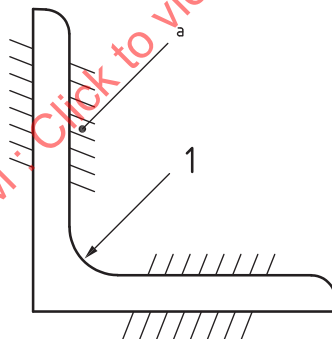
- 1 40 mm × 40 mm × 5 mm (thickness) equal angle
- 2 slot holes
- L* support length

**Figure 2 — Slot hole detail for vibration absorber**

A slot hole is provided at the bottom side of the angle to install vibration absorber. Considering the flexibility of installation, slot holes are provided at both sides of the angle.

**4.2.3 Connection detail specification**

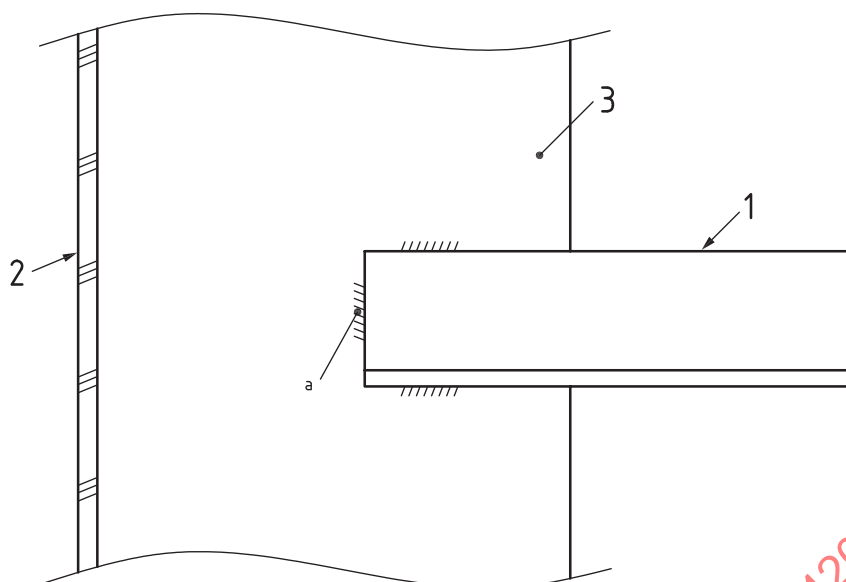
The architectural welding detail for equal angle of the lining panel support to the structural member is shown in [Figure 3](#) and [Figure 4](#). The length of the weld leg for architectural welding shall be minimum 2 mm. When a channel is installed, tack welding shall be applied considering the web thickness of the channel.



**Key**

- 1 lining panel support of equal angle
- a Fillet welding with minimum 2 mm leg length and minimum 10 mm weld length.

**Figure 3 — Fillet weld detail to plate of structural member**

**Key**

- 1 lining panel support of equal angle
- 2 steel bulkhead
- 3 stiffener or girder on steel bulkhead
- a Fillet welding with minimum 2 mm leg length and minimum 10 mm weld length.

**Figure 4 — Lap weld detail for architectural support**

#### 4.2.4 Material specification

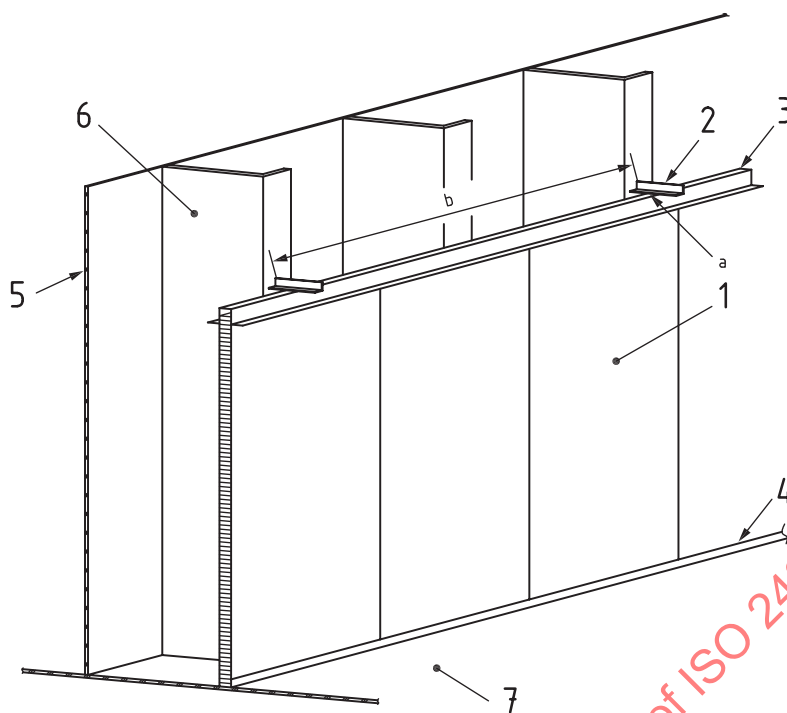
Architectural support material shall conform to typically available construction steel specifications for shapes or plates. Carbon steel is generally recommended. Welding procedures that address the selection of electrodes compatible with the selected support steel specification shall be approved by the client. See [Annex A](#).

#### 4.2.5 Maximum support length

For the single cantilever support type, the maximum support length should be 800 mm as shown in [Figure 1](#). For the support above 800 mm, a brace member shall be provided.

#### 4.2.6 Specification of maximum pitch for lining support

Depending on the arrangement of bulkhead stiffeners, the liner supports should be arranged on the stiffener's top plate as far as practically possible. The maximum pitch between the lining panel supports should be 1 800 mm. It may be increased in accordance with the agreement between the owner and the manufacturer. The general arrangement of the lining panel and its support is shown in [Figure 5](#).

**Key**

- 1 lining panel
- 2 lining panel support as architectural support
- 3 top profile
- 4 bottom profile
- 5 steel bulkhead
- 6 stiffener on bulkhead
- 7 steel deck
- a Tack welding between lining panel support and top profile.
- b Pitch between liner supports.

**Figure 5 — General arrangement for lining panel**

#### 4.2.7 Application of double pads

Double pads shall be installed for supports directly connected to deep tank bulkheads, primary or special structural categories as longitudinal bulkhead and boundaries of rotating machinery rooms.

Double pads shall be installed to avoid galvanic corrosion of dissimilar metals between the structural member and the lining panel support.

### 4.3 Partition panel support specification

#### 4.3.1 Key parameters

The key parameters of the partition panel support are:

- a) shape;
- b) dimension;
- c) connection;
- d) material;

- e) maximum height for single support;
- f) maximum pitch for partition panel support;
- g) application of double pads.

#### 4.3.2 Shape and dimensional specifications

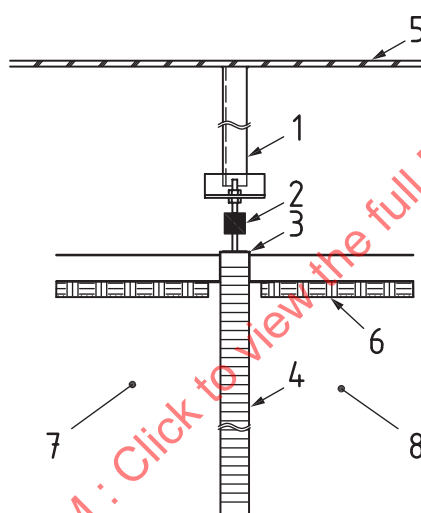
The partition panel support should be, as a minimum, 25 mm × 25 mm × 3 mm (thickness) equal angle or 25 mm × 40 mm × 25 mm × 1,6 mm (thickness) channel or equivalent.

For installing the vibration absorber with a slot hole on the angle, 40 mm × 40 mm × 5 mm (thickness) equal angle can be used for the whole members for partition panel supports as shown in [Figure 2](#).

#### 4.3.3 Connection detail specification

Welding details for the partition panel support to the structural member are the same as lining support details as shown in [Figure 3](#) and [Figure 4](#).

For the vibration absorber, an example of the connection detail is shown in [Figure 6](#).



#### Key

- 1 partition panel support
- 2 vibration absorber
- 3 top profile
- 4 50t partition panel
- 5 steel deck
- 6 ceiling panel
- 7 room A
- 8 room B

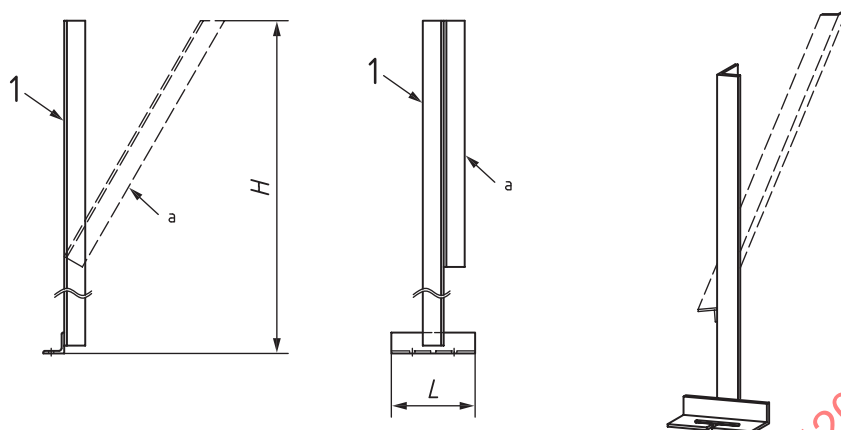
**Figure 6 — Example of connection detail for vibration absorber of partition panel support**

#### 4.3.4 Material specification

Architectural support material shall conform to typically available construction steel specifications for shapes or plates. Carbon steel is generally recommended. Welding procedures that address the selection of electrodes compatible with the selected support steel specification shall be approved by the client. See [Annex A](#).

### 4.3.5 Maximum support height

For the single support type, the maximum height should be 1 500 mm. For over 1 500 mm support, a brace member shall be installed as shown in [Figure 7](#).



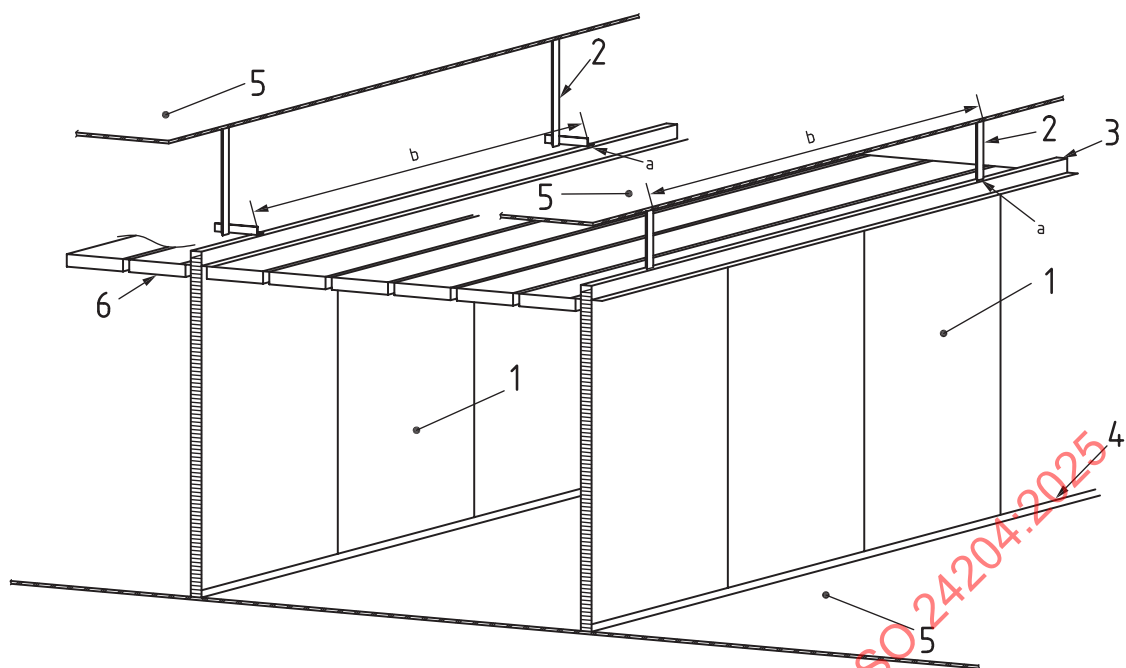
#### Key

- 1 partition panel support
- $L$  support length
- $H$  support height
- <sup>a</sup> Additional brace member ( $H > 1\,500$  mm).

**Figure 7 — Maximum support height ( $H \leq 1\,500$  mm,  $L \leq 500$  mm)**

### 4.3.6 Specification of maximum pitch for partition panel support

Considering structural arrangement of stiffeners on deck, the maximum pitch between the partition panel supports should be 1 800 mm. It may be increased in accordance with the agreement between the owner and the manufacturer. The general arrangement of the partition panel and its support is shown in [Figure 8](#).

**Key**

- 1 partition panel
- 2 partition panel support
- 3 top profile
- 4 bottom profile
- 5 steel deck
- 6 ceiling panel
- a Tack welding between partition panel support and top profile.
- b Pitch between partition panel supports.

**Figure 8 — General arrangement for partition panel support**

#### 4.3.7 Application of double pads

Double pads shall be installed for supports directly connected to deep tank deck, primary or special structural categories such as main hull deck, strength decks and bottom for rotating machinery room.

Double pads shall be installed to avoid galvanic corrosion direct connection of dissimilar metals between the structural member and the partition panel support.

#### 4.4 Coaming plate specification

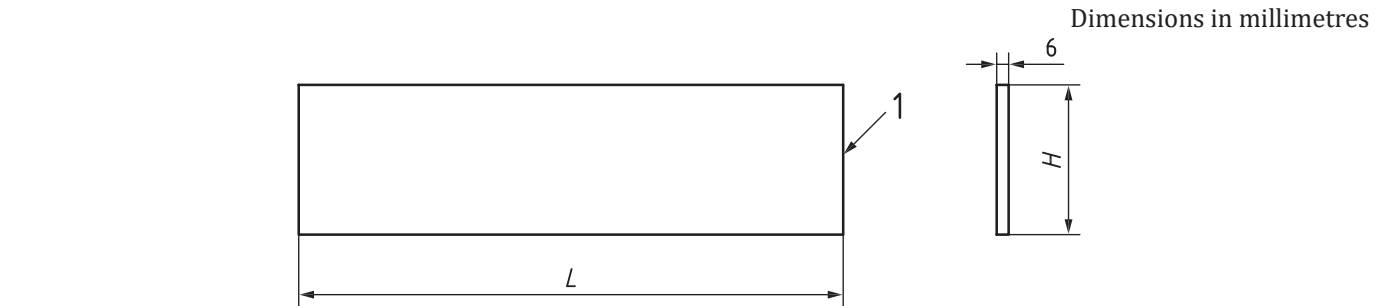
##### 4.4.1 Key parameters

The key parameters of coaming plates are:

- a) shape;
- b) dimension;
- c) connection;
- d) height;
- e) material.

#### 4.4.2 Shape and dimensional specifications

A 6 mm plate with 75 mm to 180 mm height shall be used for coaming as shown in [Figure 9](#).



##### Key

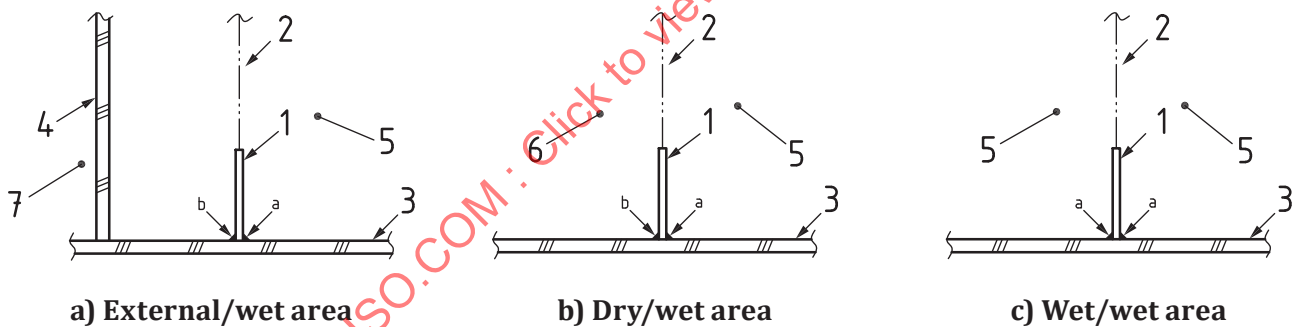
- 1 coaming plate
- $L$  coaming length
- $H$  coaming height

Figure 9 — Coaming plate

#### 4.4.3 Connection detail specification

For welding of coaming plates adjacent to wet space, one side continuous welding shall be applied. The intermittent welding with sealant finish shall be applied for dry and external areas.

The welding detail for the coaming plate to the structural deck is shown in [Figure 10](#) considering adjacent areas.



##### Key

- 1 coaming plate
- 2 wall such as lining panel, partition panel, technical lining and etc.
- 3 steel deck
- 4 steel bulkhead
- a Continuous welding with minimum 2 mm leg length.
- b Intermittent welding with sealant finish with minimum 2 mm leg length.
- 5 wet area
- 6 dry area
- 7 external area

Figure 10 — Welding detail for coaming plate considering wet, dry and external areas

#### 4.4.4 Material specification

Architectural support material shall conform to typically available construction steel specifications for shapes or plates. Carbon steel is generally recommended. Welding procedures that address the selection of electrodes compatible with the selected support steel specification shall be approved by the client. See [Annex A](#).

## 4.5 Technical liner support specification

### 4.5.1 Key parameters

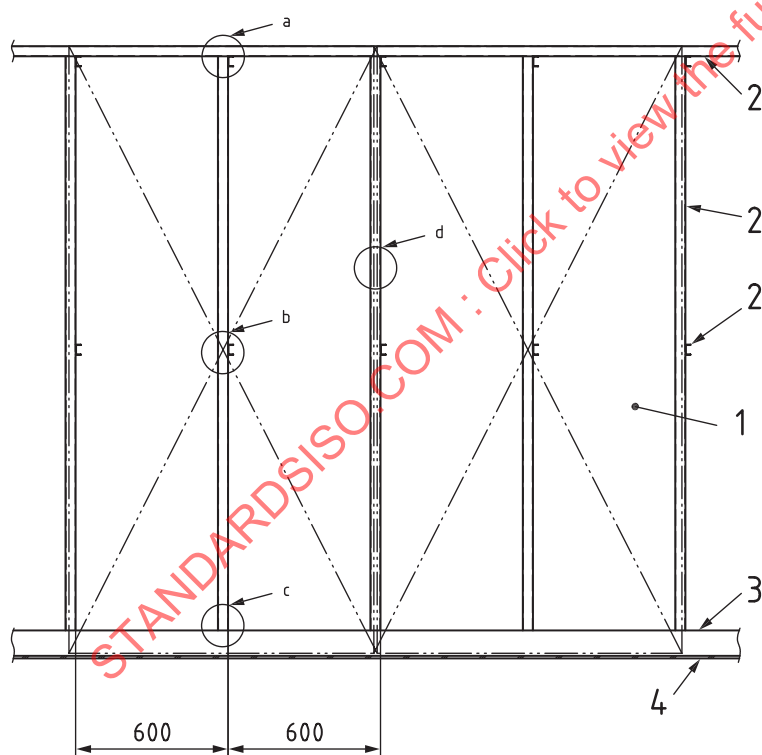
The key parameters of the partition panel support are:

- a) type;
- b) shape;
- c) dimension;
- d) connection;
- e) material;
- f) application of double pads.

### 4.5.2 Types of technical liner support

There are two types of technical liner support in accordance with the fabrication method and construction stage of the architectural compartment.

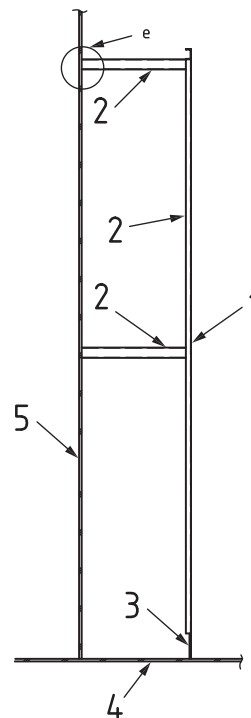
For type A, as shown in [Figure 11](#) and [Figure 12](#), the channels are assembled at the construction yard considering room and structural members arrangement according to the arrangement drawing.



#### Key

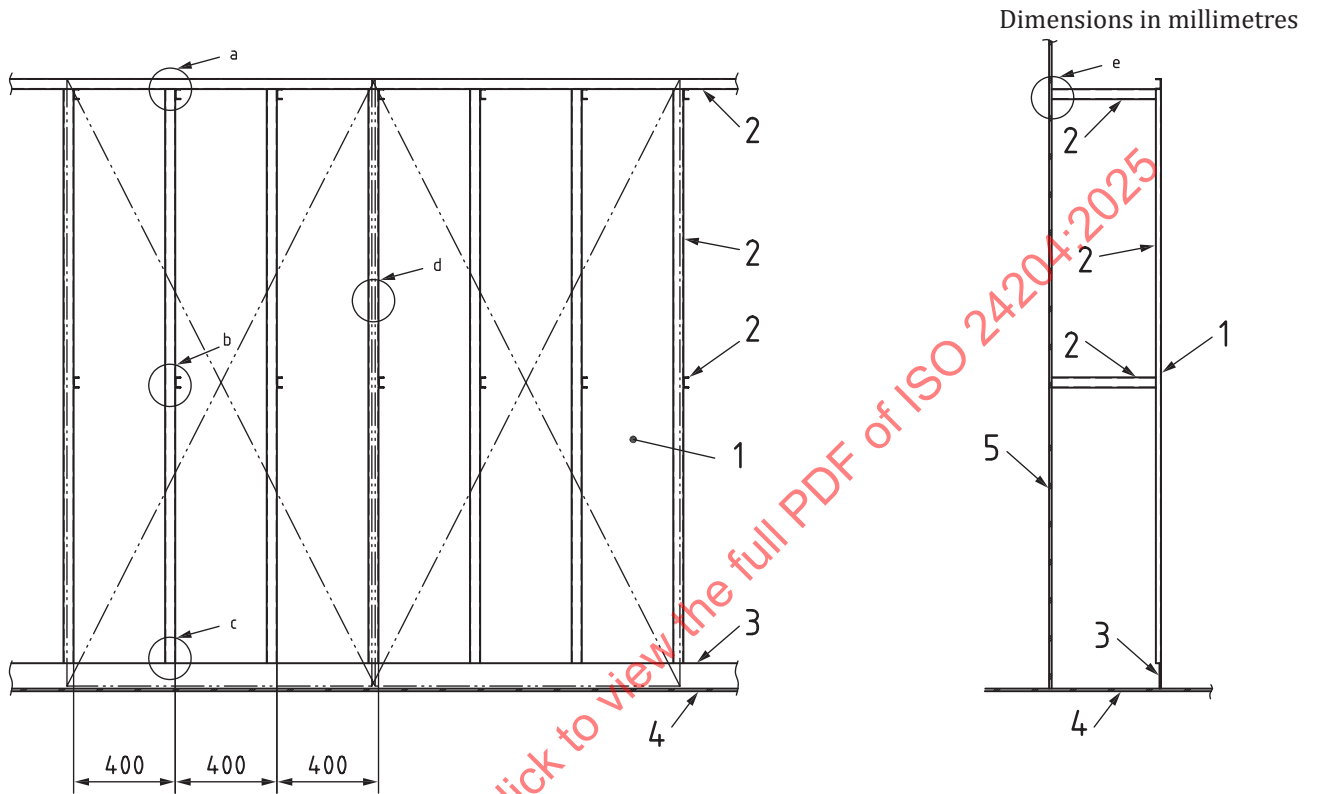
- 1 technical lining
- 2 technical lining support
- 3 coaming plate
- 4 steel deck
- 5 steel bulkhead
- a See [Figure 14](#), a).

Dimensions in millimetres



- b See Figure 14, b).
- c See Figure 14, c) and d).
- d See Figure 14, e).
- e See Figure 14, f).

**Figure 11 — Overview and sectional view of technical liner support with 600 mm spacing**

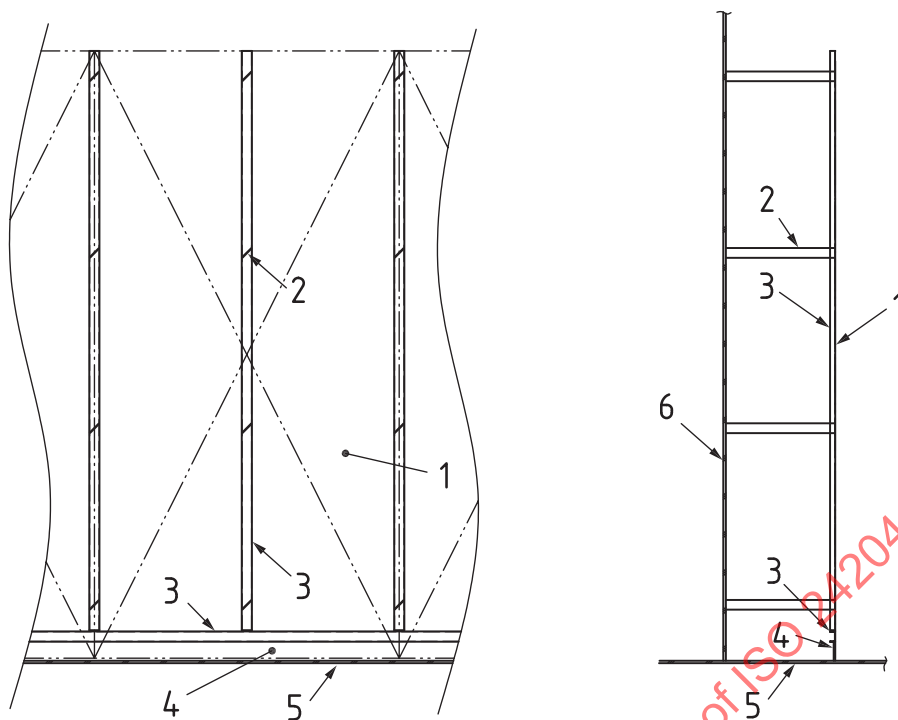


**Key**

- 1 technical lining
- 2 technical lining support
- 3 coaming plate
- 4 steel deck
- 5 steel bulkhead
- a See Figure 14, a).
- b See Figure 14, b).
- c See Figure 14, c) and d).
- d See Figure 14, e).
- e See Figure 14, f).

**Figure 12 — Overview and sectional view of technical liner support with 400 mm spacing**

For type B, as shown in Figure 13, the assembled channels and flat bars are provided and installed considering room and structural members arrangement according to the arrangement drawing.



#### Key

- 1 technical lining
- 2 technical lining support with 50 mm × 4,5 mm (thickness) flat bar
- 3 technical lining support with 20 mm × 40 mm × 20 mm × 1,2 mm (thickness) channel
- 4 coaming plate
- 5 steel deck
- 6 steel bulkhead

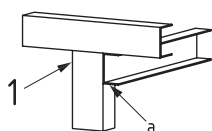
**Figure 13 — Overview and sectional view of technical liner support with 500 mm spacing**

#### 4.5.3 Shape and dimensional specifications

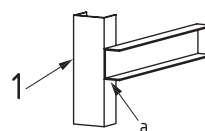
A 20 mm × 40 mm × 20 mm × 1,6 mm (thickness) or 25 mm × 40 mm × 25 mm × 1,6 mm (thickness) channel should be used for the type A technical liner support; a 20 mm × 40 mm × 20 mm × 1,2 mm (thickness) channel with a 50 mm × 4,5 mm (thickness) flat bar can be applied for the type B technical liner support.

#### 4.5.4 Connection detail specification

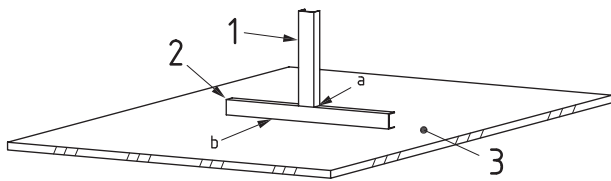
In accordance with [Figure 11](#) and [Figure 12](#), the welding details of technical liner supports as internal connections and supports to structural members are shown in [Figure 14](#).



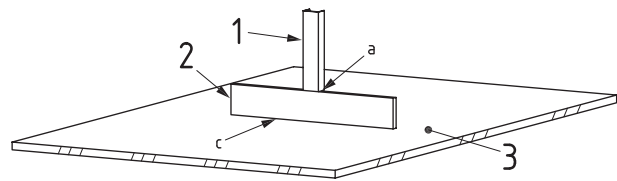
**a) Detail A - channel to channel joint**



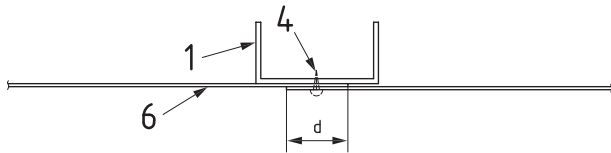
**b) Detail B - channel to channel joint**



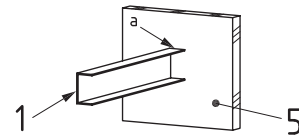
c) Detail C-1 - bottom joint detail  
(channel to deck) for dry area



d) Detail C-2 - bottom joint detail  
(coaming plate to deck) for wet area



e) Detail D - support to technical liner joint



f) Detail E - channel to steel bulkhead joint

#### Key

- 1 technical lining support
- 2 coaming plate
- 3 steel deck
- 4 screw
- 5 steel bulkhead
- 6 technical liner
- a Tack welding.
- b Tack welding with sealant finish.
- c Continuous welding with minimum 2 mm leg length.
- d Overlap dimension minimum 30 mm.

Figure 14 — Connection details for technical liner support

### 4.5.5 Material specification

Architectural support material shall conform to typically available construction steel specifications for shapes or plates. Galvanised carbon steel is generally recommended. Welding procedures that address the selection of electrodes compatible with the selected support steel specification shall be approved by the client. See [Annex A](#).

### 4.5.6 Application of double pads

Double pads shall be installed for supports directly connected to deep tank bulkhead, primary or special structural categories such as longitudinal bulkhead and boundaries for rotating machinery room.

Double pads shall be installed to avoid galvanic corrosion of dissimilar metals between the structural member and the technical liner support.

## 4.6 Equipment supports on wall panel

### 4.6.1 General

In accordance with the standard for wall panel reinforcement for a 25 mm thickness wall panel as shown in [Table 1](#), there are two types of equipment supports on the wall panel, i.e. deck-mounted support and wall-mounted support considering structural arrangement in way of wall panel.

Considering the operation mass of equipment, the standard for wall panel reinforcement is based on each unit of hanging mass on the wall.

The total mass of an equipment includes the mass of all parts of units connected to the equipment.

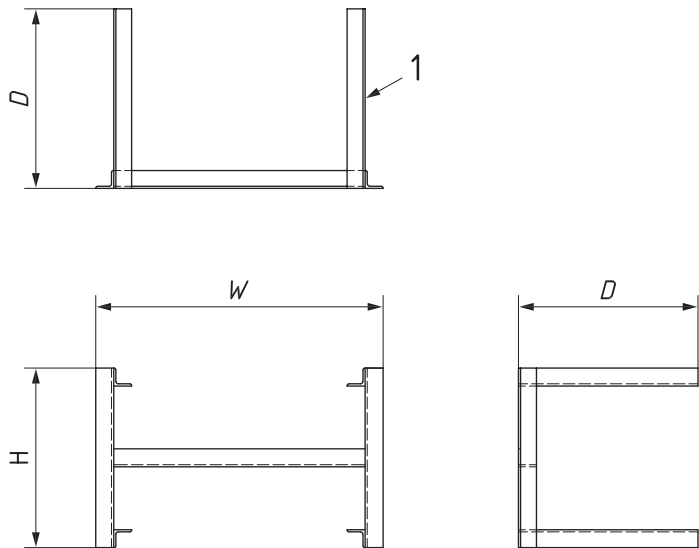
**Table 1 — Standard for wall panel reinforcement**

| Equipment mass<br>$E$ (kg)                                                                                                                           |          | Wall reinforcement                                                                                                            | Fixing method                                                                | Remarks                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| $E \leq 20$                                                                                                                                          | $E < 10$ | Mechanically attach directly to the wall without reinforcement                                                                | Fix with screws and min. 2 screws                                            | For small electrical equipment such as speaker and detector and board<br>Screw size: min. M4 × 19 mm |
| CoG of $E < 250$ mm from wall surface                                                                                                                |          | Mechanically attach directly to the wall without reinforcement                                                                | Fix with screws<br>Min. 4 screws separated from each other by minimum 250 mm | Screw size: min. M4 × 19 mm                                                                          |
| $20 < E \leq 80$<br>CoG of $E < 250$ mm from wall surface                                                                                            |          | Mechanically attach directly to reinforced wall with minimum 1,0 mm plate <sup>a</sup> or square pipe or channel <sup>b</sup> | Fix with screws<br>Min. 4 screws separated from each other by minimum 250 mm | Screw size: min. M4 × 19 mm                                                                          |
| $E > 80$                                                                                                                                             |          | Separate support to be provided                                                                                               | To be defined item by item                                                   | To be defined item by item                                                                           |
| <sup>a</sup> A minimum of 1 mm thick plate for reinforced wall is installed inside or outside of wall panel considering installation stage of plate. |          |                                                                                                                               |                                                                              |                                                                                                      |
| <sup>b</sup> Square pipes or channels are vertically arranged inside of wall panel considering equipment fixing positions.                           |          |                                                                                                                               |                                                                              |                                                                                                      |

#### 4.6.2 Wall-mounted equipment support

The wall-mounted support should be 50 mm × 50 mm × 6 mm (thickness) equal angle or equivalent.

Three types of wall-mounted equipment support considering the height and width of the equipment are shown in [Figures 15](#) to [17](#).



|     |            |
|-----|------------|
| $H$ | $\leq 500$ |
| $W$ | $\leq 800$ |

Key

- 1 equipment support with 50 mm × 50 mm × 6 mm (thickness) equal angle
- $D$  equipment support depth
- $H$  equipment support height
- $W$  equipment support width

Figure 15 — Type 1 wall mounted equipment support with height less than 500 mm, width less than 800 mm and depth less than 500 mm