Deutsches Institut für Bautechnik

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Approval body for construction products and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments

Designated according to Article 29 of Regulation (EU) No 305/2011 and member of EOTA (European Organisation for Technical Assessment)

# European Technical Assessment ETA-16/0835 of 4 January 2017

English translation prepared by DIBt - Original version in German language

**General Part**

| | |
|---|---|
| Technical Assessment Body issuing the European Technical Assessment: | Deutsches Institut für Bautechnik |
| Trade name of the construction product | ECClos-S |
| Product family to which the construction product belongs | Kit for closure systems for conveyor systems |
| Manufacturer | Stöbich Brandschutz GmbH<br>Pracherstieg 6<br>38644 Goslar<br>DEUTSCHLAND |
| Manufacturing plant | Stöbich Brandschutz GmbH<br>Pracherstieg 6<br>38644 Goslar<br>DEUTSCHLAND |
| This European Technical Assessment contains | 24 pages including 17 annexes which form an integral part of this assessment |
| This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of | European Assessment Document (EAD) 350022-01-1107 |



Deutsches Institut für Bautechnik
Kolonnenstraße 30 B | 10829 Berlin | GERMANY | Phone: +49 30 78730-0 | Fax: +49 30 78730-320 | Email: dibt@dibt.de | www.dibt.de

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## Specific part

### 1 Technical description of the product

This European technical approval applies for the closure system "ECClos-S" for conveyor systems, hereinafter referred to as "ECClos-S". The closure system can be designed to close vertically from the top down or horizontally. "ECClos-S" primarily consists of the following components[1]:

- Single-leaf sliding leaf

  The approx. 122 mm thick sliding leaf can consist of one part or multiple parts (segment construction). The sliding leaf or one sliding leaf segment consists of two layers of mineral fibre board bonded with synthetic resin (each 50 mm thick) between which a gypsum board (20 mm thick) is secured with water glass adhesive. 0.75 mm thick steel sheet formwork is glued to the outside of the mineral fibre boards. Calcium silicate boards (2 x 20 mm) covered by a frame profile are fastened to the edges of the sliding leaf.

  The sidewise and upper depth of coverage of sliding leaf and wall amount to 187 mm.

- Fixed panel with clearance for the conveyor

  The fixed panel consists of aerated concrete stones 150 mm thick to which thin bed mortar is applied, with an upper cover layer of 20 mm thick calcium silicate boards to the safety edge, and is secured to the wall via brackets (or floor-standing if used on flexible wall construction). The clearance in the fixed panel is configured for the respective conveyor technology. Various intumescent materials are used in the necessary functional gaps.

- Guide for the sliding leaf
  - Vertical closing (from top to bottom)

    Guide braces secured at the side of the sliding leaf grip a wall frame (2 mm) secured to the wall. Grip plates secured at the top of the sliding leaf grip behind locking nuts, which in turn are secured to the wall using fasteners such as threaded bolts or anchors, when closing.
  - Horizontal closing

    Depending on the weight, three different methods of suspending the sliding leaf are possible:

    a) up to 200 kg: two single sets of running gear with polyamide rollers on an oval pipe rail

    b) up to 400 kg: single set of running gear with steel rollers on a flat steel rail

    c) up to 780 kg: double set of running gear with steel rollers on a flat steel rail

    The sliding leaf is guided by a guide roller which runs in a guide profile of the sliding leaf. The rail is secured to the wall using brackets. Grip plates secured on the opening side of the sliding leaf grip behind locking nuts, which in turn are secured to the wall using fasteners such as threaded bolts or anchors, when closing.



[1] The documents describing the structure of "ECClos-S" in detail and the product specifications of the building materials used are deposited with DIBt.

- Seal system

  Strips of an intumescent material are positioned as follows in the closure area:
  - on the wall, on bases of 20-mm-thick calcium silicate boards in the overlap of the sliding leaf and adjacent wall
  - on the side of the sliding leaf facing the wall
  - on the lower edge of the sliding leaf
  - in the conveyor technology area in the fixed panel
  - On the face of the sealing frame
- Closing device (closing weight system)

  In versions with horizontal closing, the closure is closed via a closing weight system or spring force, and in versions with vertical closing, the deadweight of the sliding leaf is used for closing.

## 2 Specification of the intended use in accordance with the applicable European Assessment Document

In accordance with this European technical approval, the "ECClos-S" can be used as closure to seal necessary openings of trackbound conveyors (see table 2) in internal walls (see table 1) at normal ambient conditions (categoriy $Z_2$ according TR024[2] or +5 °C to +40 °C, 25 % r. H. to 75 % r. H., class 0 according EN 1670).

"ECClos-S" is not intended for passenger transportation. The normal position of the closure shall be opened or closed.

The "ECClos-S" shall only be used if the following conditions apply:

- The normally-open closure (open in the normal position; closes in the event of a fire) shall be equipped with a hold-open system suitable for the closure – where applicable in conjunction with the national regulations.
- The normally-open closure, which cannot be opened from a fixed position (floor, pedestal etc.), is to be equipped with a drive to open the closure.
- It is to be ensured that the closing of the closure is not obstructed by conveyed goods or other objects.
- It is to be ensured that the closed closure cannot be damaged by conveyed goods or other objects.

When used, in particular the permitted service conditions of the intumescent materials used are to be observed.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the "ECClos-S" of at least 10 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.



[2] category $Z_2$ according to TR024: intended for use at internal conditions with humidity classes other than $Z_1$ (high humidity), excluding temperatures below 0°C

Table 1: Permitted dimensions of the clearance of the component opening

| Component (supporting construction) in which the closure can be installed[a)] | max. fire resistance class[b)] | Clearance of the wall opening[c)] | | |
|---|---|---|---|---|
| | | maximum clear width | maximum clear height | Maximum surface (closing direction) |
| High-density solid wall<br>Masonry or solid concrete with an overall density of ≥ 800 kg/m³ and a thickness ≥ 200 mm | E 120<br>$EI_1$ 90<br>$EI_2$ 120<br>EW 60 | 4,500 mm | 5,100 mm | 13.5 m²<br>(horizontal)<br>12.1 m²<br>(vertical) |
| Low-density solid wall<br>Aerated concrete with an overall density of ≥ 450 kg/m³ and a thickness ≥ 200 mm | E 120<br>$EI_1$ 90<br>$EI_2$ 120<br>EW 60 | 4,500 mm | 4,770 mm | 13.5 m²<br>(horizontal)<br>12.1 m²<br>(vertical) |
| Flexible wall construction (gypsum board type F to EN 520)<br>Thickness ≥ 160 mm | E 120<br>$EI_1$ 90<br>$EI_2$ 120<br>EW 60 | 4,500 mm | 4,500 mm | 13.5 m²<br>(horizontal)<br>12.1 m²<br>(vertical) |
| | $EI_1$ 120 | 3,000 mm | 3,400 mm | 10.0 m² |

a) Supporting construction to EN 1366-7[3], section 7.2 or EN 1363-1[4], section 7.2
b) Fire resistance class per EN 13501-2[5] in accordance with the Evaluation Report
c) Minimum dimension unrestricted

Table 2: Permitted sealing systems for the continuous conveyor technology[6]

| Sealing system for | Fixed panel thickness (and material) | Minimum depth of the seal on the fixed panel (sealing via calcium silicate boards) | Minimum depth of the seal at the sliding leaf | Maximum fire resistance class |
|---|---|---|---|---|
| roll conveyor | 150 mm (aerated concrete) | – continuous steel profiles: 175 mm<br>– between the rollers: 2 x 25 mm webs or 4 x 15 mm webs | Sliding leaf thickness | EI 120 |
| belt conveyor | 150 mm (aerated concrete) | – continuous steel profiles: 175 mm | Sliding leaf thickness | EI 120 |
| chain conveyor | 150 mm (aerated concrete) | – continuous steel profiles: 175 mm | Sliding leaf thickness | EI 120 |

The conveyor tracks can be continuous or disconnected or disconnected while closing of the closure in the closing area of the flat leaf.

3 EN 1366-7:2004 Fire resistance tests for service installations – Part 7: Conveyor systems and their closures
4 EN 1363-1:1999 Fire resistance tests – Part 1: General requirements
5 EN 13501-2:2007 Fire classification of construction products and building elements – Part 2: Classification using data from fire resistance tests, excluding ventilation services
6 see Annexes 13 to 15

NOTE: Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this document.

## 3 Performance of the product and references to the methods used for its assessment

### 3.1 Safety in case of fire (BWR 2)

| Essential characteristic | Performance |
|---|---|
| Fire resistance (EN 13501-2) | See clause 2, table 1 and 2 |
| Mechanical durability of self-closing (EN 13501-2) | C5 |
| Reaction to fire (EN 13501-1) | See following table 3 |

Table 3: reaction to fire of the used materials

| component | material | reaction to fire class according to EN 13501-1 |
|---|---|---|
| slider leaf, fixed panel | steel sheet | A1 |
| | calzium silicate boards | A1 |
| | gypsum boards | A1 |
| | aerated concrete stones | A1 |
| | thin bed mortar | A1 |
| | mineral fibre boards bonded with synthetic resin | at least class E |
| | Water glass adhesive | at least class E |
| | PU adhesive | at least class E |
| guide | steel | A1 |
| Seal system | Intumescent material<br>– Palusol 100<br>– Promaseal PL<br>– Tenmat Firefly 102 | at least class E |
| Closing device | steel | A1 |
| Fixing material | steel | A1 |

### 3.2 Hygiene, health and the environment (BWR 3)

| Essential characteristic | Performance |
|---|---|
| Content of dangerous substances | |
| Flame retardants | The product does not contain halogenated aromatic compounds or organophosphorus compounds |
| Release scenarios regarding BWR 3 in accordance with EOTA TR 034: IA1 | |

## 4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

In accordance with EAD No. 350022-00-1107, the applicable European legal act is: 1999/454/EG.

The system to be applied is: 1

In addition, with regard to e.g. reaction to fire for products covered by this EAD the applicable European legal act is: 1999/454/EG.

The systems to be applied are: 1 / 3 / 4 (dependent on classes of reaction to fire)

## 5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

The manufacturer shall provide installation instructions and maintenance instructions for every "ECClos-S". The maintenance instructions shall clearly indicate which work is to be performed to ensure that the installed closure system continues to perform its task after long-term use.

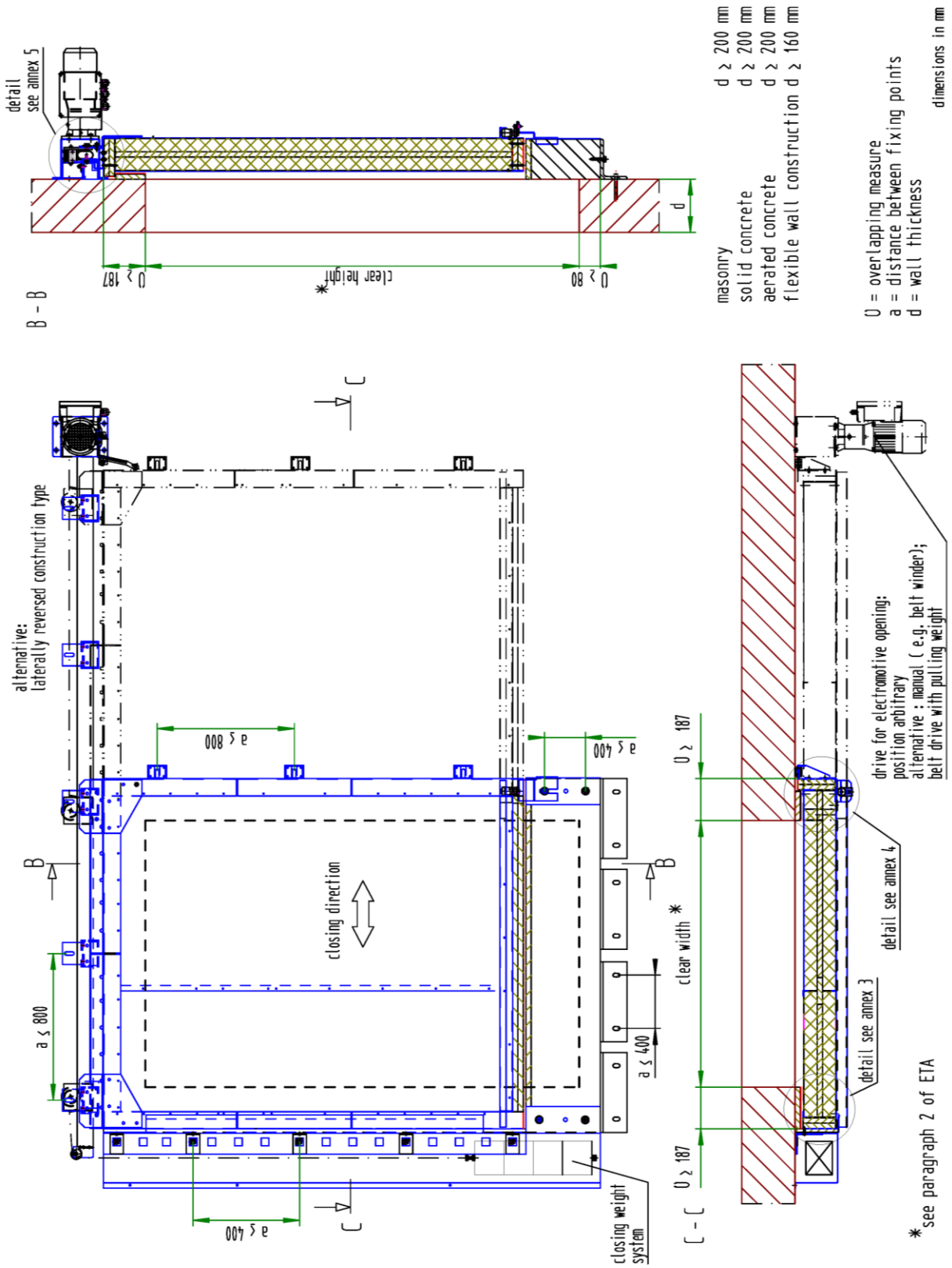
The manufacturer shall provide instructions on processing, packaging, transport, storage and use, maintenance and repair of the construction product.

Issued in Berlin on 4 January 2017 by Deutsches Institut für Bautechnik

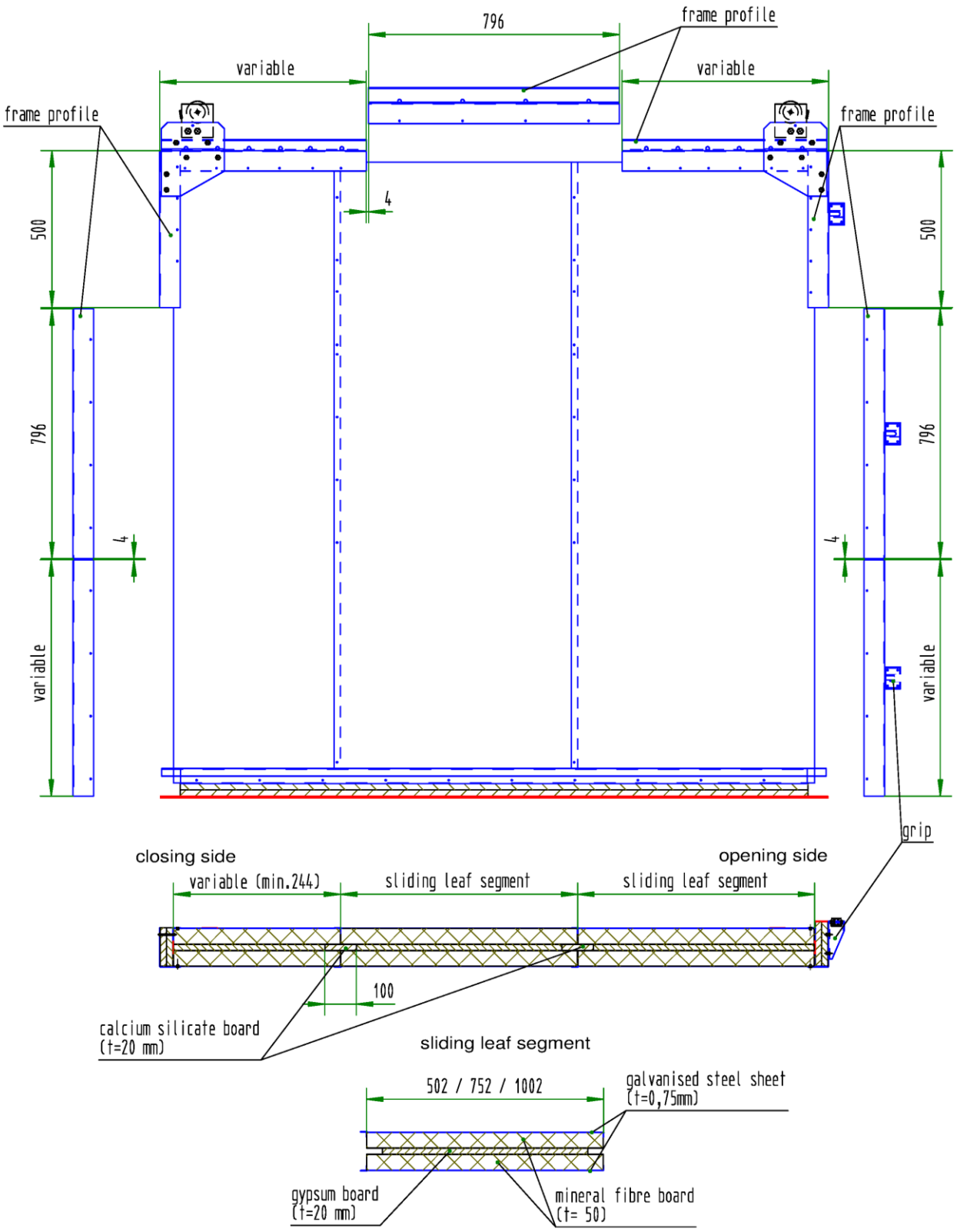
Prof. Gunter Hoppe
Head of Department

*beglaubigt:*
Biedermann

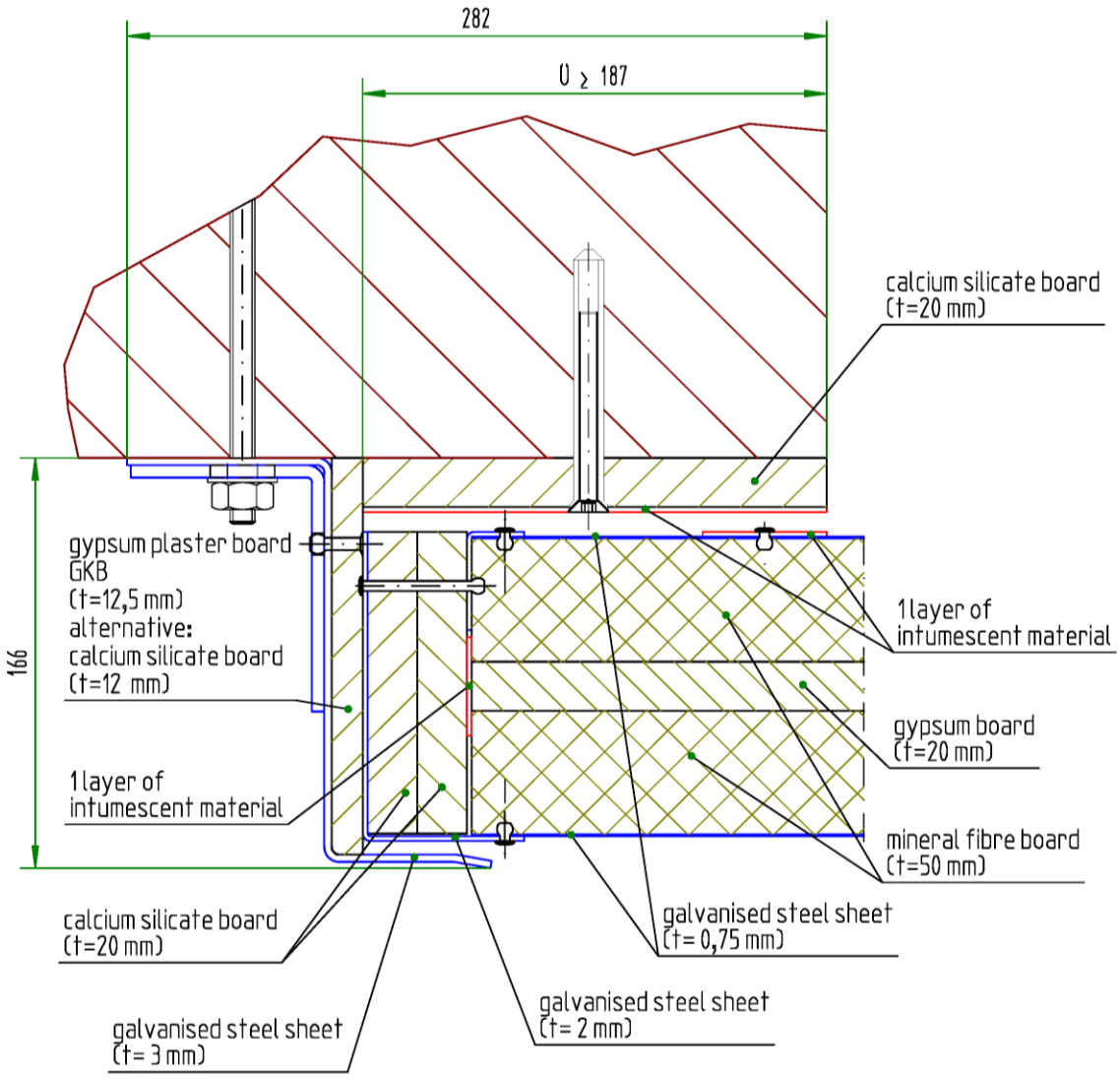
Deutsches Institut für Bautechnik DIBt




| | |
|---|---|
| ECClos-S | Annex 1 |
| Overview<br>Horizontal closing direction<br>(dimensions in mm) | |




| | |
|---|---|
| ECClos-S | Annex 2 |
| Sliding leaf construction<br>Horizontal closing direction<br>(dimensions in mm) | |




Ü = overlapping measure

| | |
|---|---|
| ECClos-S | Annex 3 |
| Detail closing side<br>Horizontal closing direction<br>(dimensions in mm) | |

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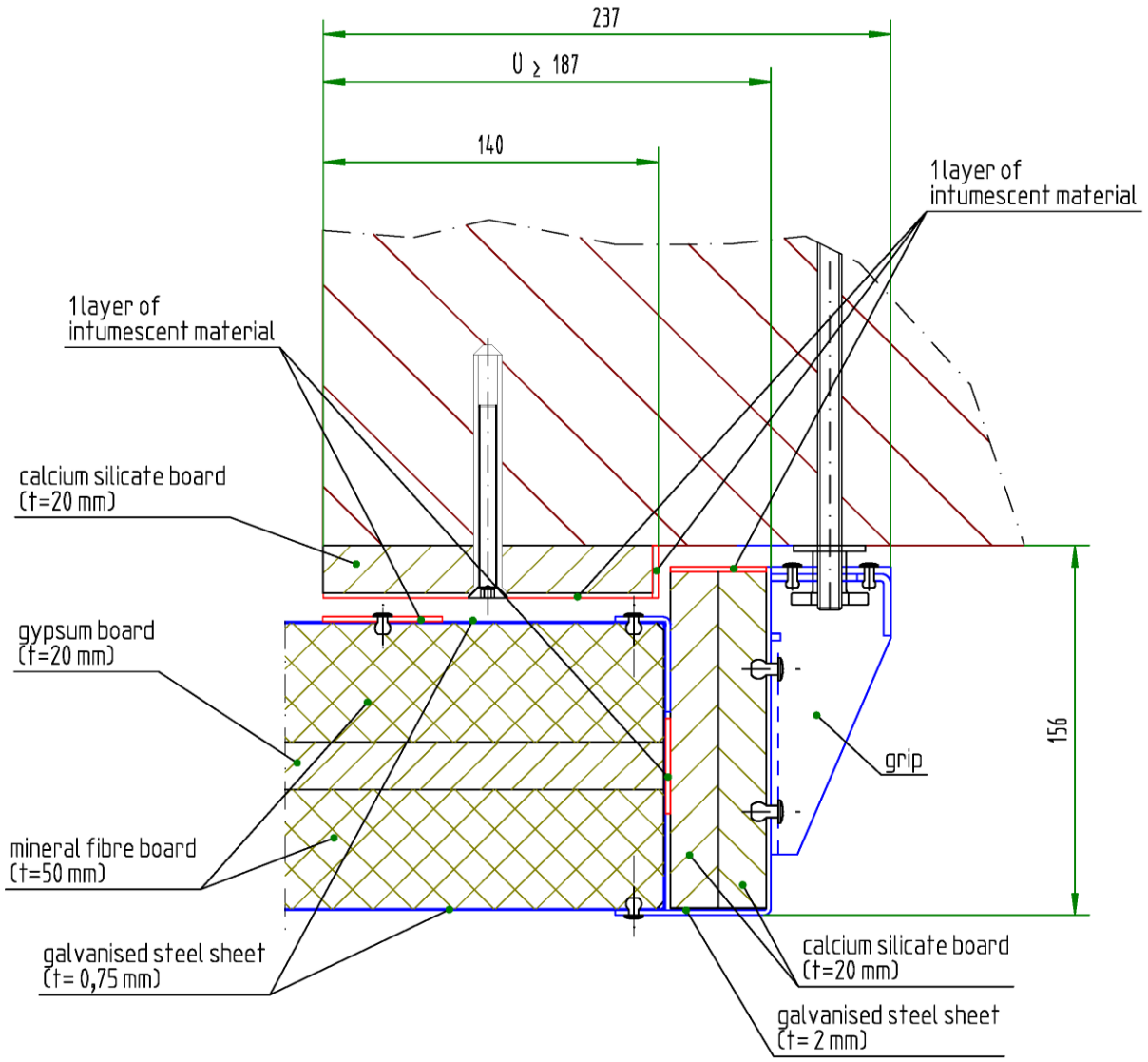


Ü = overlapping measure

| | |
|---|---|
| ECClos-S | Annex 4 |
| Detail opening side<br>Horizontal closing direction<br>(dimensions in mm) | |

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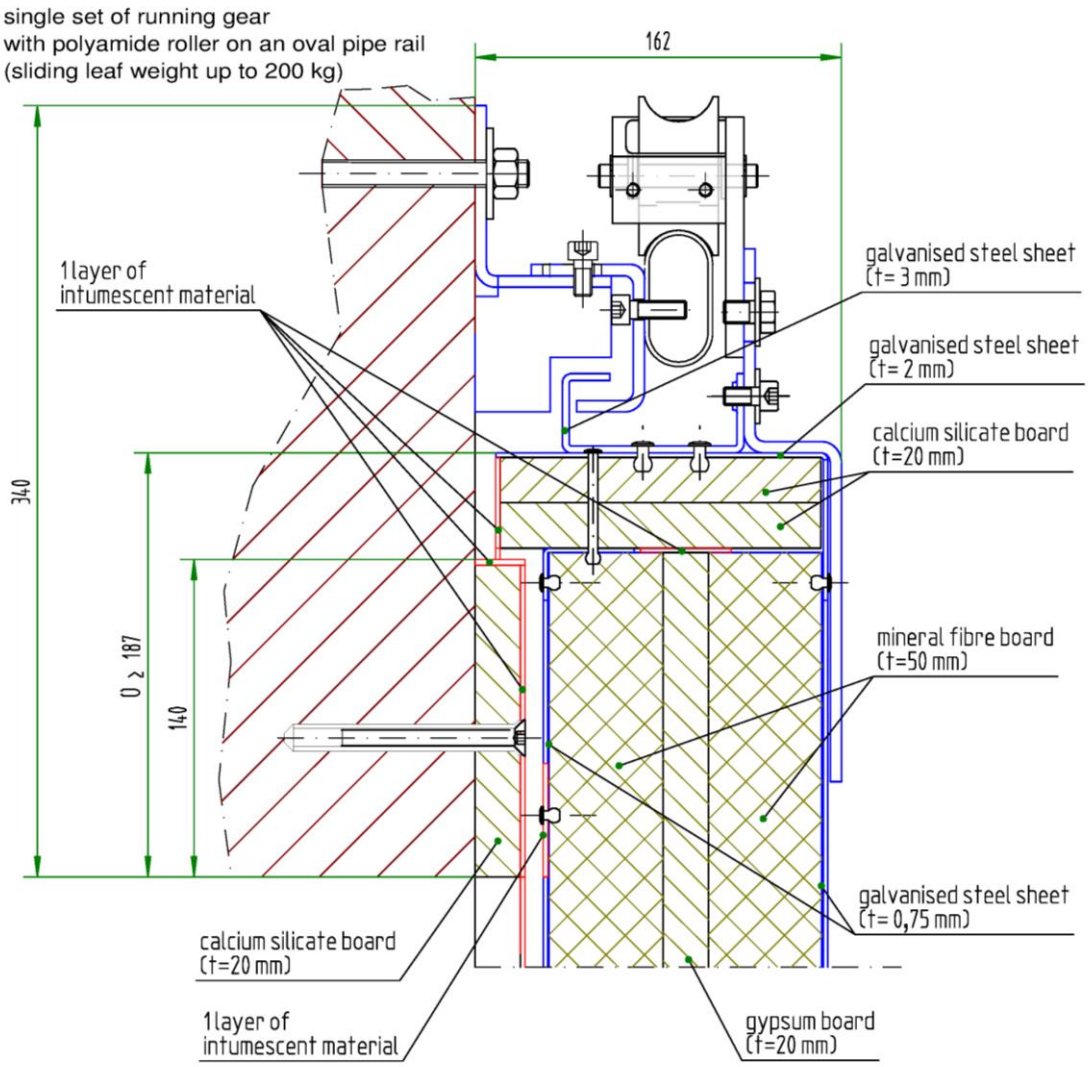
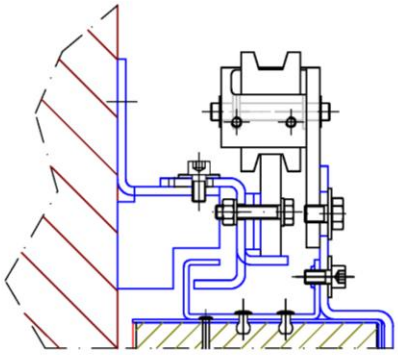
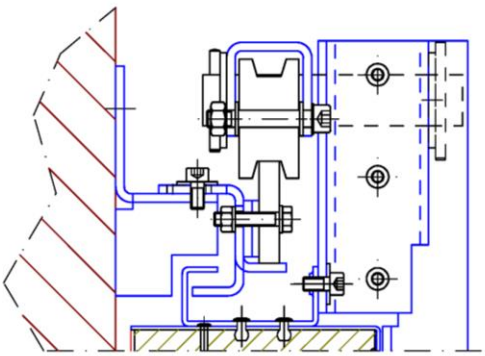



single set of running gear
with steel roller on a flat steel rail
(sliding leaf weight up to 400 kg)

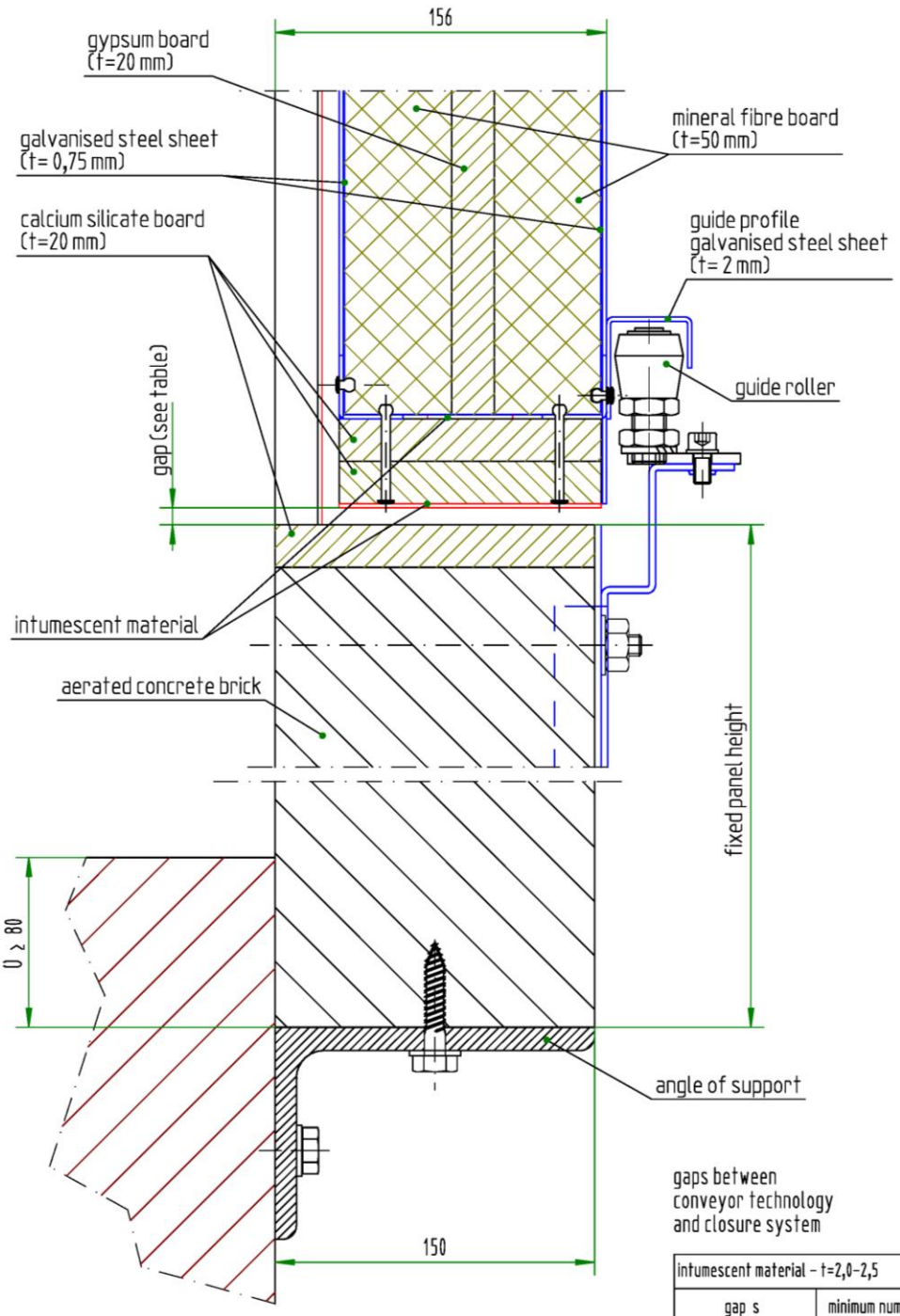


double set of running gear
with steel rollers on a flat steel rail
(sliding leaf weight up to 800 kg)



O = overlapping measure

| | |
|---|---|
| ECClos-S | Annex 5 |
| Detail running rail / upper overlap<br>Horizontal closing direction<br>(dimensions in mm) | |

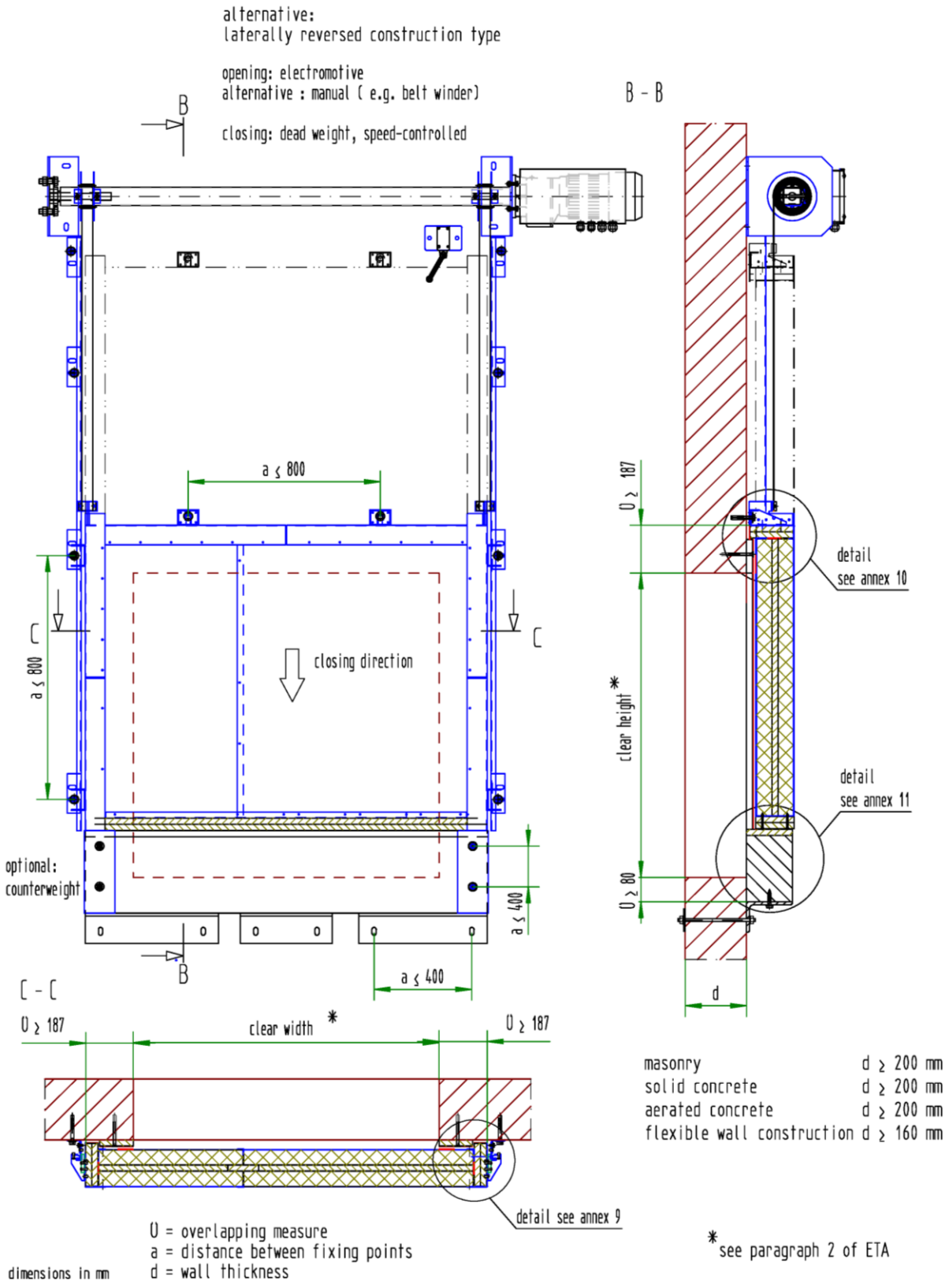



gaps between conveyor technology and closure system

| intumescent material - t=2,0-2,5 | |
|---|---|
| gap s | minimum number of layer |
| 0 - 10 | 1 |
| 10 - 20 | 2 |
| 20 - 30 | 3 |

U = overlapping measure

| | |
|---|---|
| ECClos-S | Annex 6 |
| Detail guide roller / lower overlap<br>Horizontal closing direction<br>(dimensions in mm) | |




| | |
|---|---|
| ECClos-S | |
| Overview<br>Vertical closing direction<br>(dimensions in mm) | Annex 7 |

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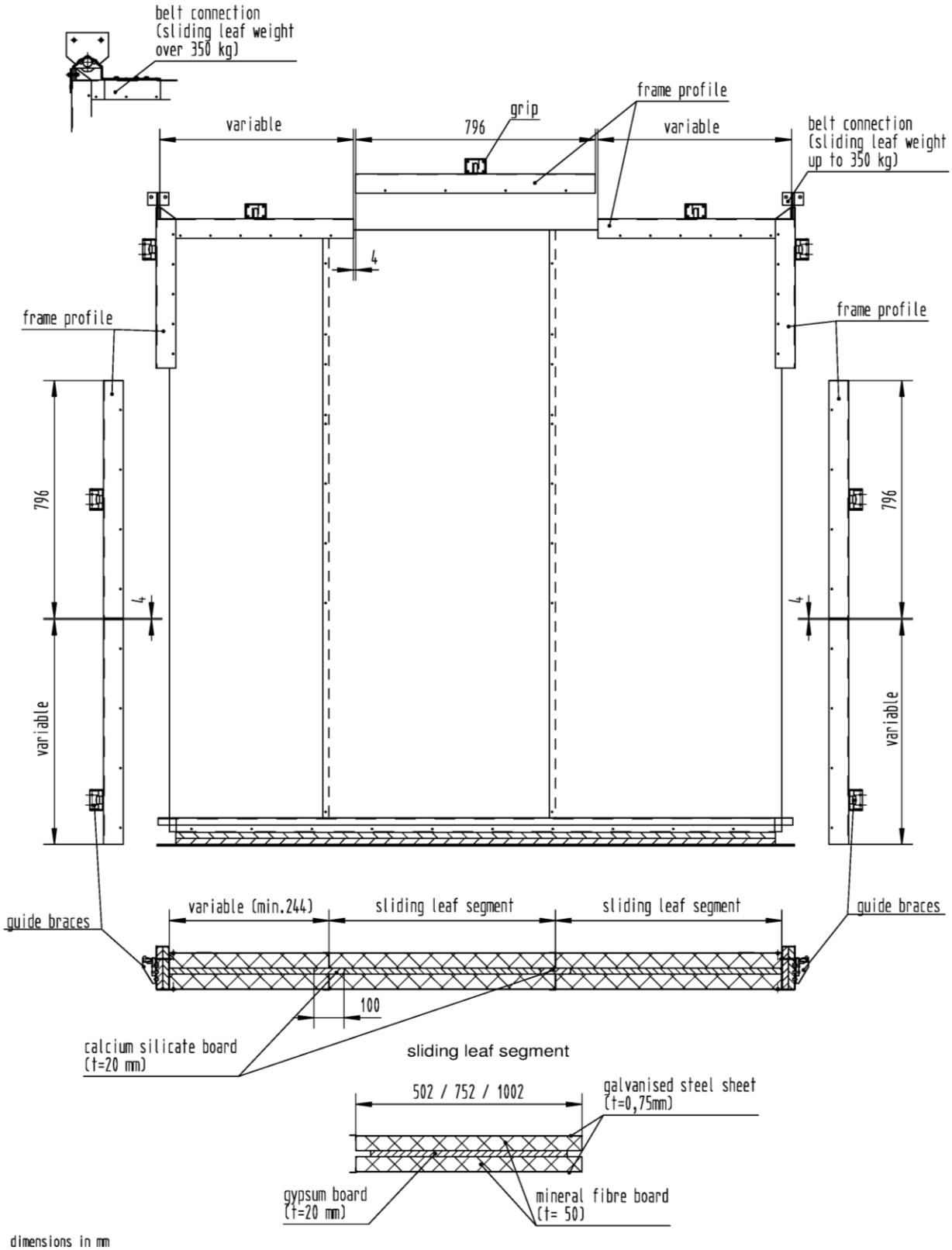
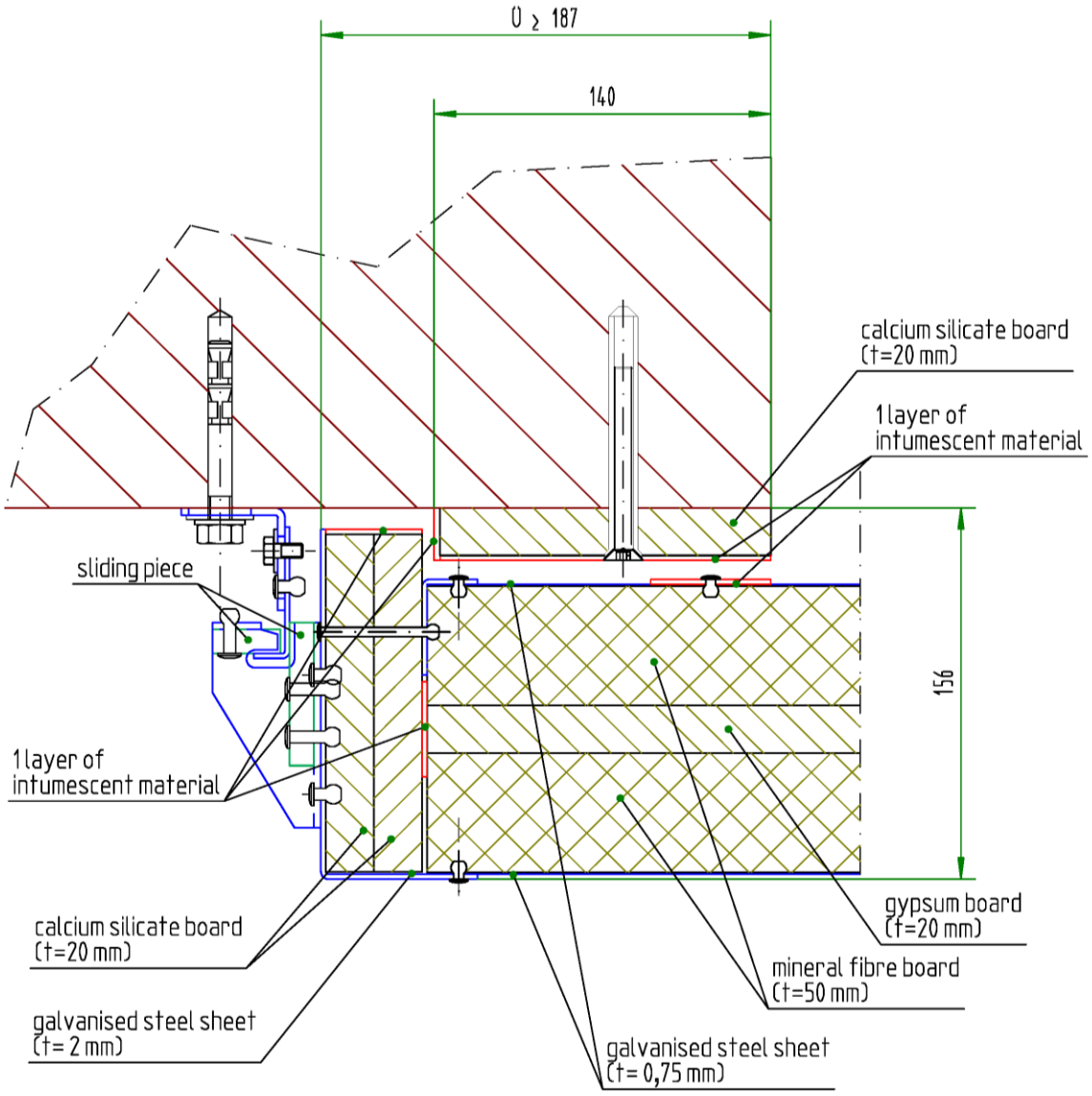



| | |
|---|---|
| ECClos-S | Annex 8 |
| Sliding leaf construction<br>Vertical closing direction<br>(dimensions in mm) | |




Ü = overlapping measure

| | |
|---|---|
| ECClos-S | Annex 9 |
| Detail lateral overlap<br>Vertical closing direction<br>(dimensions in mm) | |

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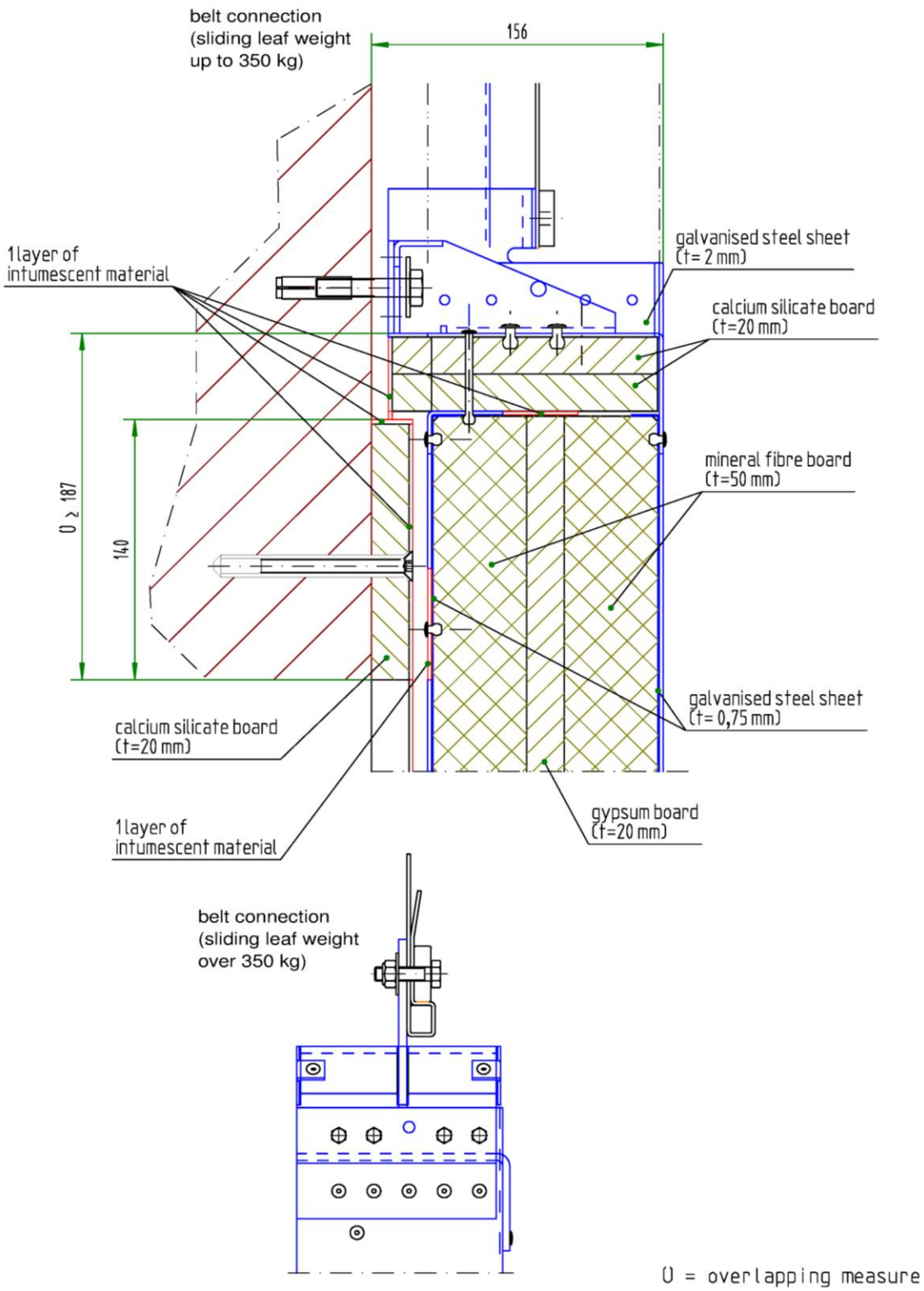


| | |
|---|---|
| ECClos-S | Annex 10 |
| Detail upper overlap<br>Vertical closing direction<br>(dimensions in mm) | |

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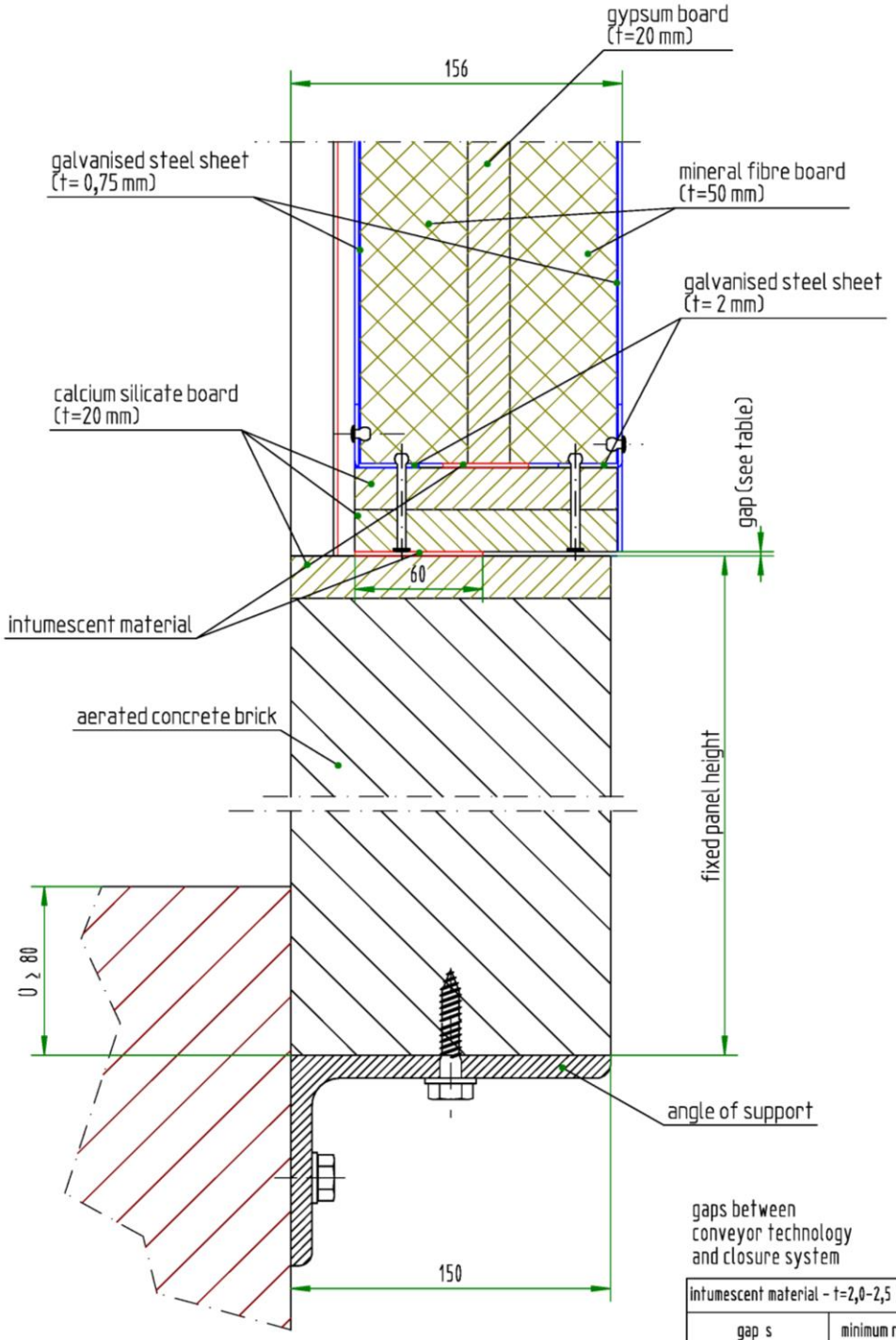


gaps between conveyor technology and closure system

| intumescent material - t=2,0-2,5 | |
|---|---|
| gap s | minimum number of layer |
| 0 - 10 | 1 |
| 10 - 20 | 2 |
| 20 - 30 | 3 |

U = overlapping measure

| | |
|---|---|
| ECClos-S | Annex 11 |
| Detail lower overlap<br>Vertical closing direction<br>(dimensions in mm) | |

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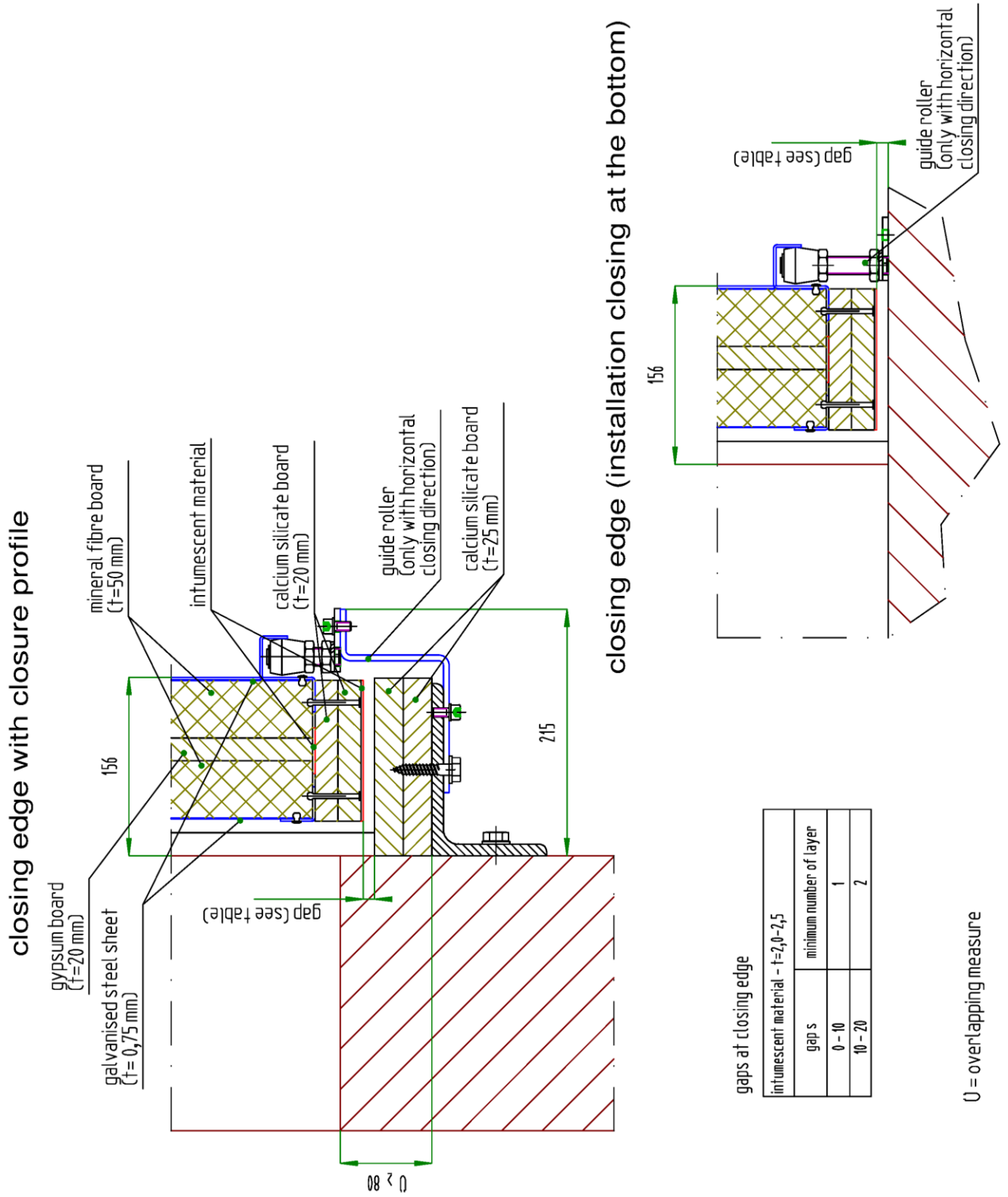


gaps at closing edge

| intumescent material - t=2,0-2,5 | |
|---|---|
| gap s | minimum number of layer |
| 0 - 10 | 1 |
| 10 - 20 | 2 |

ü = overlapping measure

| | |
|---|---|
| ECClos-S | Annex 12 |
| Closing edge<br>Interrupted conveyor technology<br>(dimensions in mm) | |

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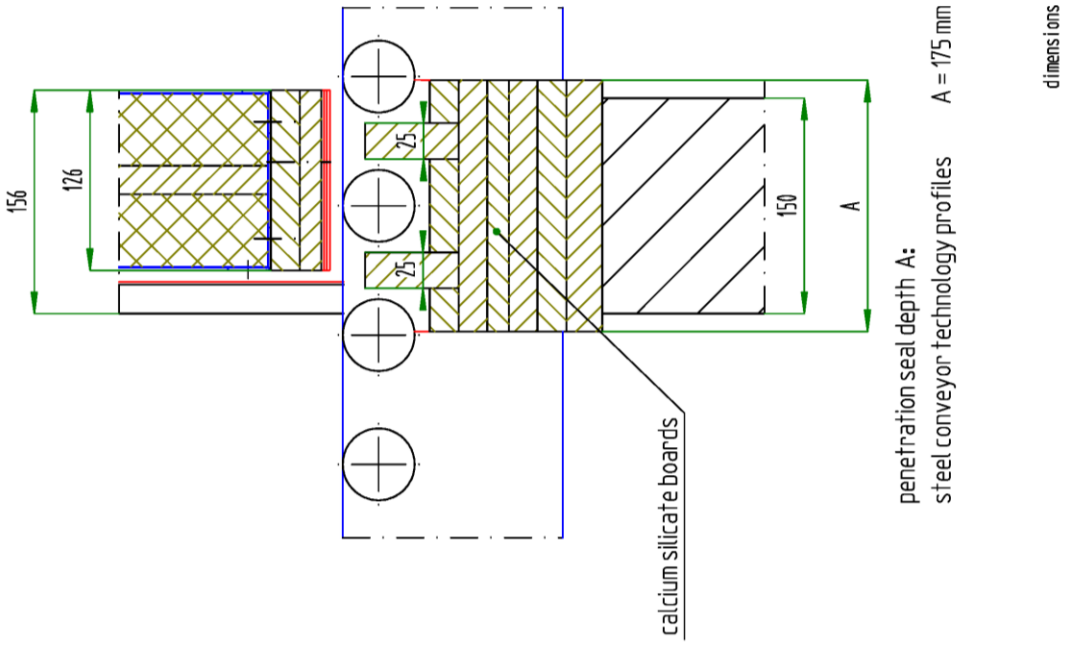


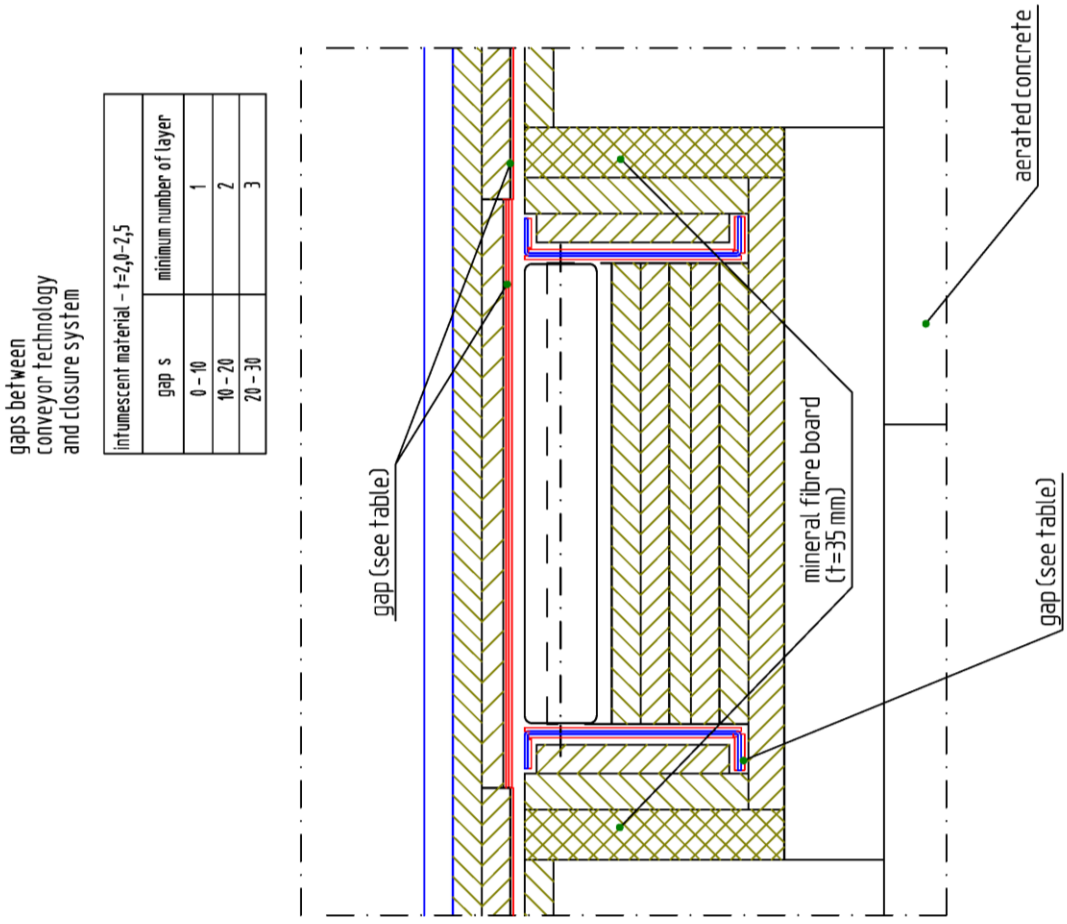


| | |
|---|---|
| ECClos-S | Annex 13 |
| Closing edge<br>Roller conveyor<br>(dimensions in mm) | |

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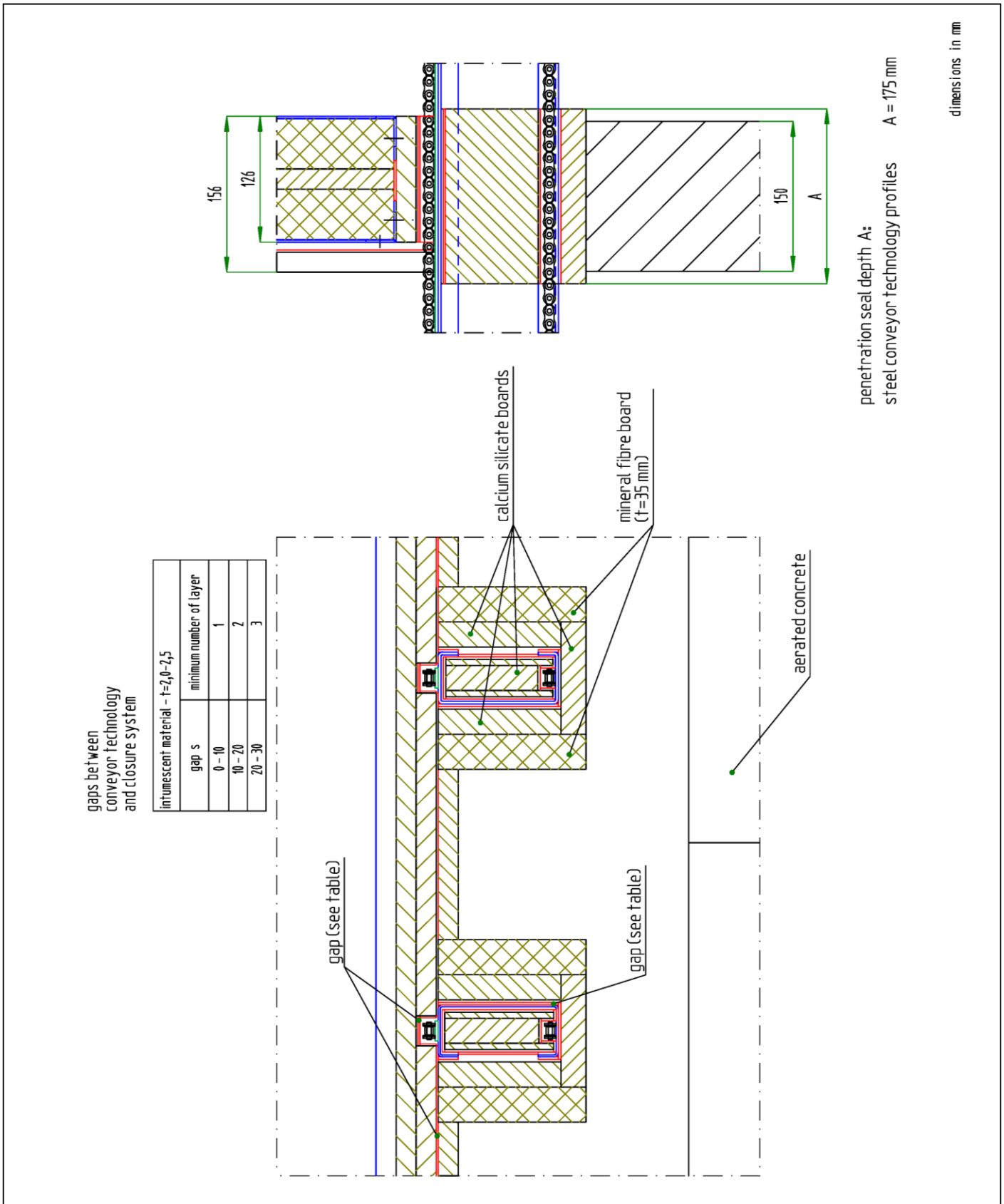


| | |
|---|---|
| ECClos-S | Annex 14 |
| Closing edge<br>Chain conveyor<br>(dimensions in mm) | |

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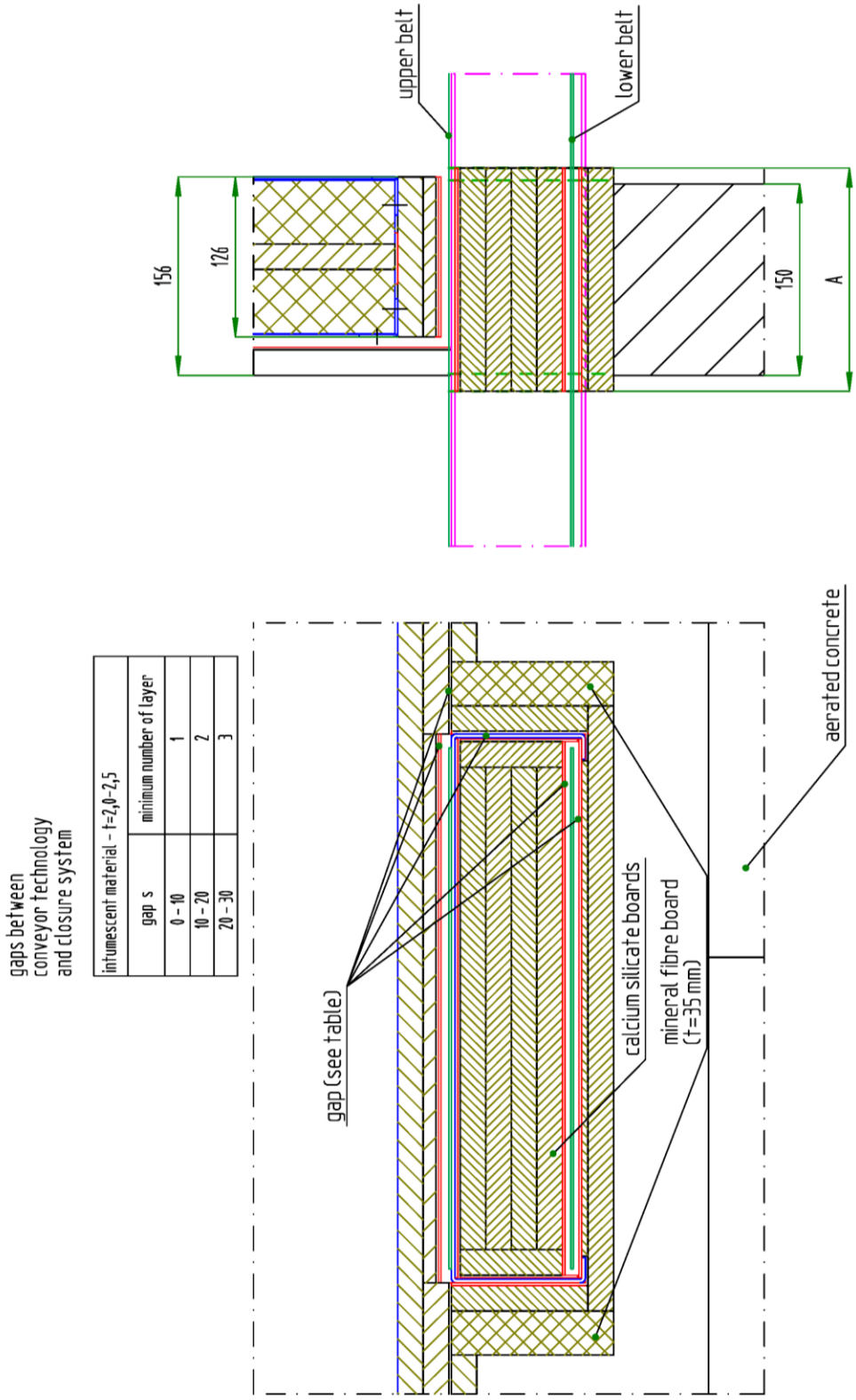


| | |
|---|---|
| ECClos-S | Annex 15 |
| Closing edge<br>Belt conveyor<br>(dimensions in mm) | |

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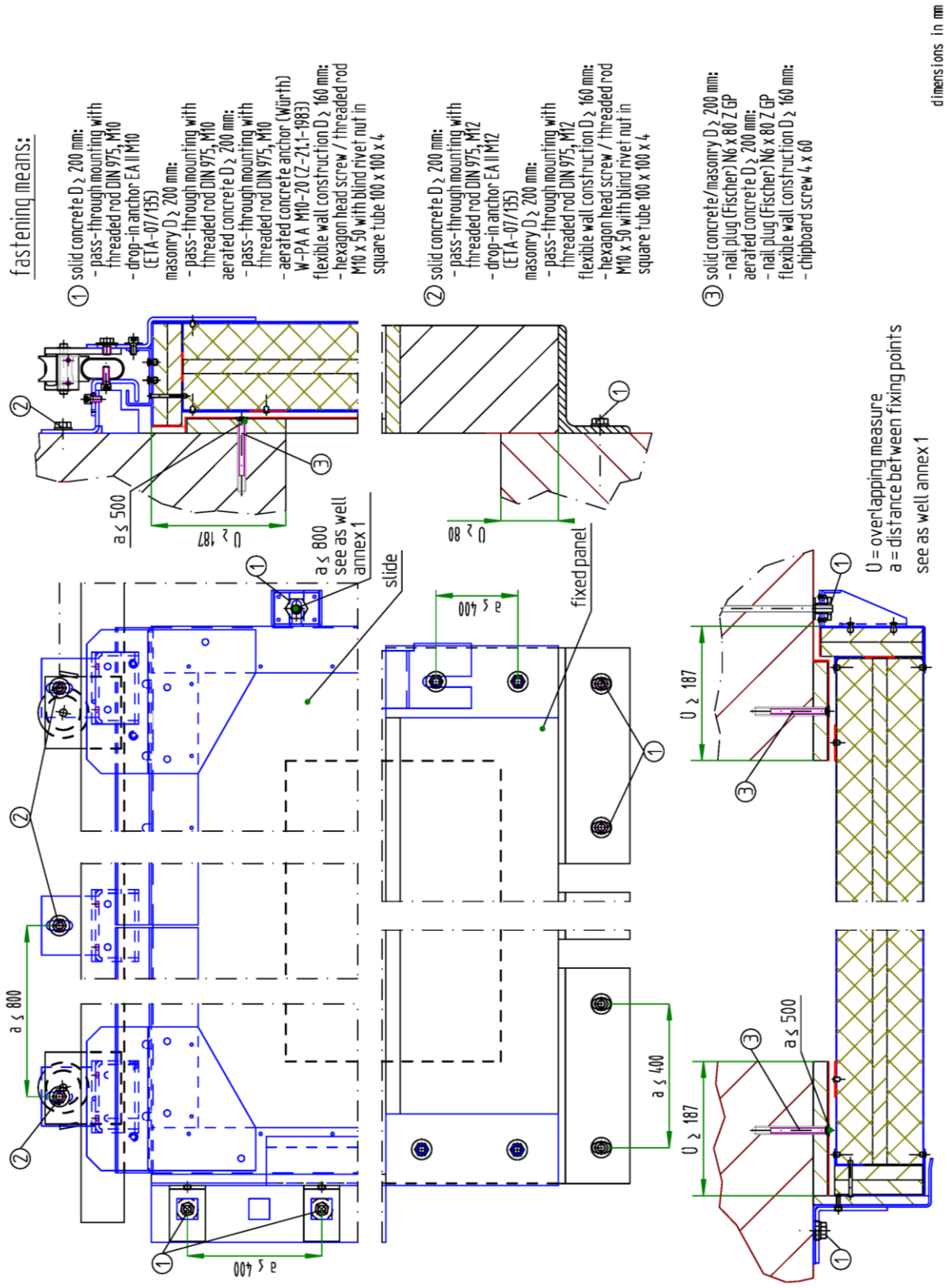


| | |
|---|---|
| ECClos-S | |
| Installation<br>Horizontal closing direction<br>(dimensions in mm) | Annex 16 |

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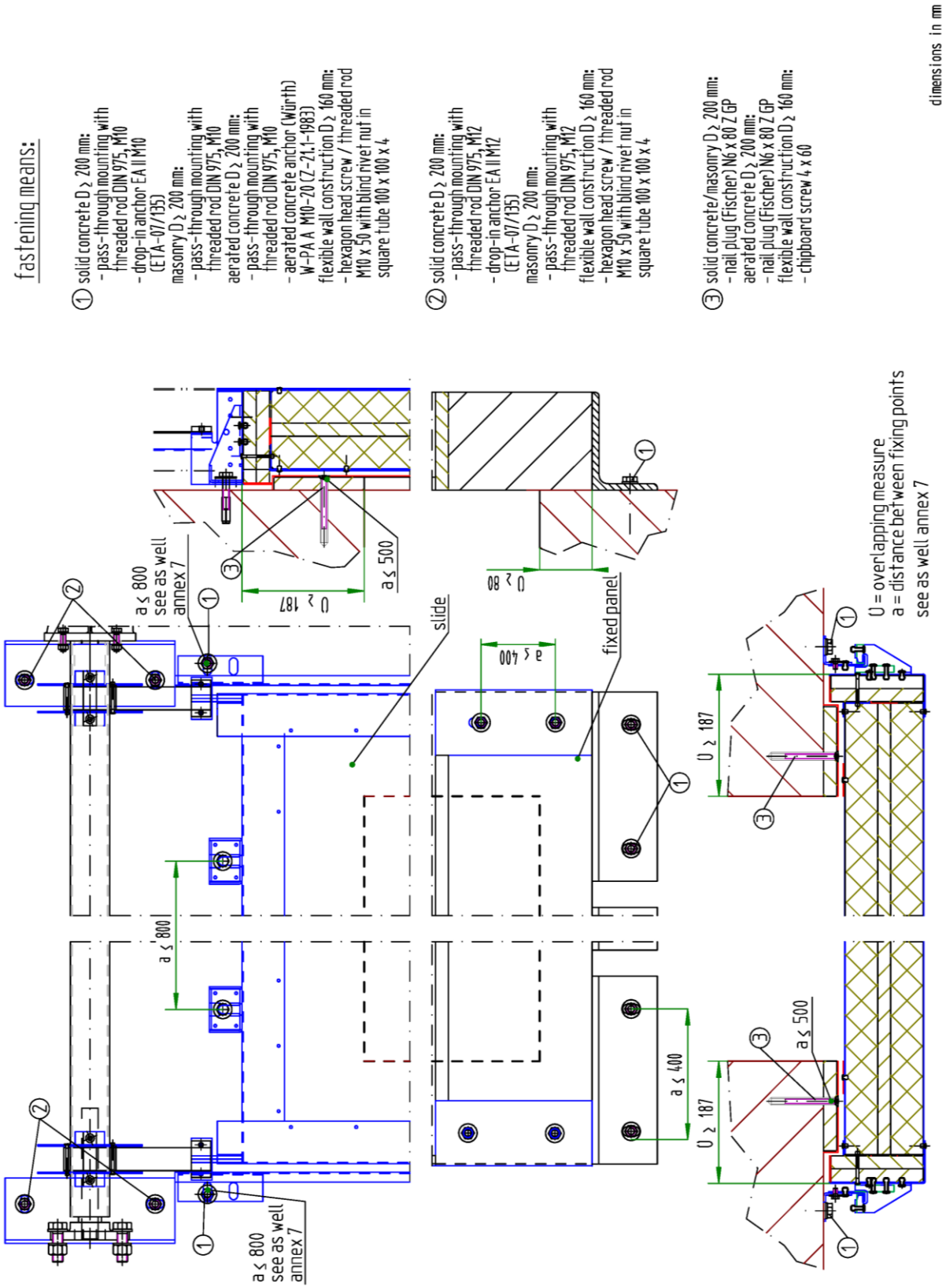


| | |
|---|---|
| ECClos-S | |
| Installation<br>Vertical closing direction<br>(dimensions in mm) | Annex 17 |