Deutsches Institut für Bautechnik

Public-law institution jointly founded by the federal states and the Federation

European Technical Assessment Body for construction products

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European Technical Assessment ETA-24/0730 of 7 November 2024

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	Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA
Product family to which the construction product belongs	Kit for closure system for conveyor systems
Manufacturer	JANSEN TORE GmbH & Co. KG Am Wattberg 51 26903 Surwold DEUTSCHLAND
Manufacturing plant	JANSEN TORE GmbH & Co. KG Am Wattberg 51 26903 Surwold DEUTSCHLAND
This European Technical Assessment contains	45 pages including 34 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	350022-01-1107

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Specific part

1 Technical description of the product

This European technical approval applies for the kits for closure systems "ORPHEUS-FAA" (sliding gate, single and double leaf, each consisting of one to three elements) and "APOLLO-FAA" (lifting gate, single leaf, consisting of one to three elements) for continuous or interrupted conveyor systems.

Regarding the closing direction of the closures, vertically closing from top to bottom (lifting gate) and horizontally closing (sliding gate) versions are possible in internal walls.

The closures primarily consist of the following components[1]:

– movable sliding leaf

  The movable sliding leaf consists of a maximum of three elements. The approx. 62 mm thick sliding leaf consists of various vertically arranged panels. A panel consists of a steel-sheet housing (0,75 mm) with a fire protection insert made of two plasterboards (each 9,5 mm) and an expanding perlite board (40 mm) in between, which are fully glued together.

  The width of the panel must not go below 300 mm and must not exceed 850 mm.

  In the case of continuous conveyor a sealing segment is placed at the closing edge of the sliding leaf (see Annex 25).

  The lateral overlaps for the lifting gate are at least 100 mm and for the sliding gate 98 mm at the inlet and 187 mm at the opposite inlet.

  The upper overlap of sliding leaf and wall is at least 173 mm for the lifting gate and 94 mm for the sliding gate.

– Fixed panel with clearance for the conveyor

  The fixed panel consists of steel hollow profiles, covered with fire protection boards. It is secured to the wall via brackets.

  The clearance in the fixed panel is configured for the respective conveyor technology. Various intumescent materials are used in the necessary functional gaps. In the fixed panel may be inserted cable penetration seals (see table 7)[1].

– Guide for the sliding leaf

  The guiding rails, running gears, running rails and wall fastenings are dimensioned according to dimension and weight of the sliding leaf. They comply with the declarations of the drawings of the control plan[1] at least.

  - Vertical closing top down

    The slide leaf is guided on a rail attached to the wall. A multi-folded steel sheet (lintel labyrinth) is arranged at the upper edge.

  - Horizontal closing on a wall

    The sliding leaf is suspended from the running rail by running gears. The rail is secured to the wall using brackets.

    Guide rails and guide rollers, which are attached to the panels, serve as guidance between the individual telescopic elements of the gate leaf in the lower gate leaf area.

    Continuous, multi-edged steel sheets (wall labyrinths) are arranged on the sides.

[1] The documents describing the structure of the kits "ORPHEUS-FAA" und "APOLLO-FAA" in detail and the product specifications of the building materials used are deposited with DIBt.

- Seal system

  In the overlap of the movable sliding leaf and adjacent wall on the side of the sliding leaf facing the wall additional strips of an intumescent material[1] are positioned.

  The closure in the conveyor technology area is sealed by sealing segments on the sliding leaf and the fixed panel (see table 6).

  Strips of calcium silicate boards are positioned in the gaps between conveyor technique and fixed panel. Strips of an intumescent material are positioned in the residual gaps[1].

- Closing device (closing weight system)

  The kits "ORPHEUS-FAA" and "APOLLO-FAA" will be closed via stored mechanical energy (closing weight system, spring force, deadweight of the sliding leaf).

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

2.1 General

In accordance with this European Technical Assessment, the kits "ORPHEUS-FAA" and "APOLLO-FAA" were assessed as closure to seal necessary openings in internal walls for conveyor systems disconnected in the closing area (table 1 to 3) and for conveyor systems which are continued in the closing area (see table 4 and 5).

The kits "ORPHEUS-FAA" and "APOLLO-FAA" are not intended for passenger transportation. The normal position of the closures shall be opened (closing in the event of fire).

The following applies to the kits "ORPHEUS-FAA" and "APOLLO-FAA":

- The normally-open closure (open in the normal position; closes in the event of a fire) is 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 equipped with a drive to open the closure.
- It is ensured that the closing of the closure is not obstructed by conveyed goods or other objects.
- It is ensured that the closed closure cannot be damaged by conveyed goods or other objects.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the kits "ORPHEUS-FAA" and "APOLLO-FAA" 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.

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

2.2 Dimensions of the clearance of the wall opening for conveyor systems disconnected in the closing area and installation in floor position

Table 1: Dimensions of the clearance of the opening in internal walls for single-leaf lifting gate - vertical closing top down for conveyor systems disconnected in the closing area and installation in floor position

component (supporting construction) in which the closure is installed[a)]	maximum fire resistance class[b)]	clearance of the wall opening		
		maximum clear width	maximum clear height	maximum surface
high-density solid wall (masonry or solid concrete with an overall density of ≥ 800 kg/m³ and a thickness ≥ 175 mm)	EI_2 90, S_a	8.700 mm	5.000 mm	43,50 m²
	$EI_2$90, S_a, S_{200}[2]	4.180 mm	4.500 mm	18.80 m²
	$EI_1$60	13.050 mm	5.000 mm	62,25 m²
	EI_1 60, S_a	10.500 mm	5.000 mm	52,50 m²
	$EI_1$60, S_a, S_{200}[2]	4.180 mm	4.500 mm	18.80 m²
high-density solid wall (masonry or solid concrete with an overall density of ≥ 800 kg/m³ and a thickness ≥ 140 mm)	$EI_2$90, S_a, S_{200}[2]	3.400 mm	3.000 mm	10,20 m²
	$EI_1$30, S_a, S_{200}[2]	3.400 mm	3.000 mm	10,20 m²
low-density solid wall (aerated concrete with an overall density of ≥ 450 kg/m³ and a thickness ≥ 200 mm)	EI_2 90, S_a	8.700 mm	4.960 mm	43,15 m²
	EI_2 90, S_a, S_{200}[2]	4.180 mm	4.500 mm	18.80 m²
	$EI_1$60	13.050 mm	5.000 mm	64,73 m²
	$EI_1$60, S_a	10.500 mm	5.000 mm	52,50 m²
	EI_1 60, S_a, S_{200}[2]	4.180 mm	4.500 mm	18.80 m²
low-density solid wall (aerated concrete with an overall density of ≥ 450 kg/m³ and a thickness ≥ 140 mm)	$EI_2$90, S_a, S_{200}[2]	3.400 mm	3.000 mm	10,20 m²
	$EI_1$30, S_a, S_{200}[2]	3.400 mm	3.000 mm	10,20 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

2 S_{200} only applies to closures that consist of a maximum of two elements.
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

Table 2: Dimensions of the clearance of the opening in internal walls for single-leaf slider leaf - horizontal closing for conveyor systems disconnected in the closing area and installation in floor position

component (supporting construction) in which the closure is installed[a)]	maximum fire resistance class[b)]	clearance of the wall opening		
		maximum clear width	maximum clear height	maximum surface
high-density solid wall (masonry or solid concrete with an overall density of ≥ 800 kg/m³ and a thickness ≥ 175 mm)	EI_2 90, S_a	8.700 mm	5.000 mm	43,50 m²
	$EI_2$90, S_a, S_{200}²	4.180 mm	4.500 mm	18.80 m²
	$EI_2$60 $EI_1$30	13.050 mm	5.000 mm	62,25 m²
	EI_2 60, S_a EI_1 30, S_a	10.500 mm	5.000 mm	52,50 m²
	$EI_2$60, S_a, S_{200}² $EI_1$30, S_a, S_{200}²	4.180 mm	4.500 mm	18.80 m²
high-density solid wall (masonry or solid concrete with an overall density of ≥ 800 kg/m³ and a thickness ≥ 140 mm)	$EI_2$90, S_a, S_{200}²	3.400 mm	3.000 mm	10,20 m²
	$EI_1$30, S_a, S_{200}²	3.400 mm	3.000 mm	10,20 m²
low-density solid wall (aerated concrete with an overall density of ≥ 450 kg/m³ and a thickness ≥ 240 mm)	EI_2 90, S_a	8.700 mm	5.000 mm	43,50 m²
	$EI_2$90, S_a, S_{200}²	4.180 mm	4.500 mm	18.80 m²
	EI_1 60	13.050 mm	5.000 mm	62,25 m²
	$EI_1$60, S_a	10.500 mm	5.000 mm	52,50 m²
	EI_1 60, S_a, S_{200}²	4.180 mm	4.500 mm	18.80 m²
low-density solid wall (aerated concrete with an overall density of ≥ 450 kg/m³ and a thickness ≥ 140 mm)	$EI_2$90, S_a, S_{200}²	3.400 mm	3.000 mm	10,20 m²
	$EI_1$30, S_a, S_{200}²	3.400 mm	3.000 mm	10,20 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

Table 3: Dimensions of the clearance of the opening in internal walls for double-leaf slider leaf - horizontal closing for conveyor systems disconnected in the closing area and installation in floor position

component (supporting construction) in which the closure is installed[a)]	maximum fire resistance class[b)]	clearance of the wall opening		
		maximum clear width	maximum clear height	maximum surface
high-density solid wall (masonry or solid concrete with an overall density of ≥ 800 kg/m³ and a thickness ≥ 240 mm)	EI_2 90, S_a	8.000 mm	5.000 mm	40,00 m²
	EI_1 60	12.000 mm	5.000 mm	60,00 m²
	EI_1 60, S_a	10.500 mm	5.000 mm	52,50 m²
high-density solid wall (masonry or solid concrete with an overall density of ≥ 800 kg/m³ and a thickness ≥ 140 mm)	$EI_2$90, S_a, S_{200}[2]	3.400 mm	3.000 mm	10,20 m²
	$EI_1$30, S_a, S_{200}[2]	3.400 mm	3.000 mm	10,20 m²
low-density solid wall (aerated concrete with an overall density of ≥ 450 kg/m³ and a thickness ≥ 240 mm)	EI_2 90, S_a	8.000 mm	5.000 mm	40,00 m²
	EI_1 60	12.000 mm	5.000 mm	60,00 m²
	EI_1 60, S_a	10.500 mm	5.000 mm	52,50 m²
low-density solid wall (aerated concrete with an overall density of ≥ 450 kg/m³ and a thickness ≥ 140 mm)	$EI_2$90, S_a, S_{200}[2]	3.400 mm	3.000 mm	10,20 m²
	$EI_1$30, S_a, S_{200}[2]	3.400 mm	3.000 mm	10,20 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

2.3 Dimensions of the clearance of the wall opening for continuous conveyor systems in the closing area and installation in raised position

Table 4: Dimensions of the clearance of the opening in internal walls for single leaf lifting gate - vertical closing - for continuous conveyor systems in the closing area and installation in raised position

component (supporting construction) in which the closure is installed[a)]	maximum fire resistance class[b)]	clearance of the wall opening		
		maximum clear width	maximum clear height	maximum surface
high-density solid wall (masonry or solid concrete with an overall density of ≥ 800 kg/m³ and a thickness ≥ 175 mm)	EI_2 90	4.800 mm	4.350 mm	13,92 m²
	EI_1 60	4.800 mm	4.350 mm	13,92 m²
high-density solid wall (masonry or solid concrete with an overall density of ≥ 800 kg/m³ and a thickness ≥ 140 mm)	$EI_2$90	3.400 mm	3.000 mm	10,20 m²
	$EI_1$30	3.400 mm	3.000 mm	10,20 m²
low-density solid wall (aerated concrete with an overall density of ≥ 450 kg/m³ and a thickness ≥ 175 mm)	EI_2 90	4.800 mm	4.350 mm	13,92 m²
	EI_1 60	4.800 mm	4.350 mm	13,92 m²
low-density solid wall (aerated concrete with an overall density of ≥ 450 kg/m³ and a thickness ≥ 140 mm)	$EI_2$90	3.400 mm	3.000 mm	10,20 m²
	$EI_1$30	3.400 mm	3.000 mm	10,20 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

Table 5: Dimensions of the clearance of the opening in internal walls for single and double leaf sliding gate - horizontal closing - for continuous conveyor systems in the closing area and installation in raised position

component (supporting construction) in which the closure is installed[a)]	maximum fire resistance class[b)]	clearance of the wall opening		
		maximum clear width	maximum clear height	maximum surface
high-density solid wall (masonry or solid concrete with an overall density of ≥ 800 kg/m³ and a thickness ≥ 200 mm)	EI_2 90	4.800 mm	4.350 mm	13,92 m²
	EI_1 60	4.800 mm	4.350 mm	13,92 m²
high-density solid wall (masonry or solid concrete with an overall density of ≥ 800 kg/m³ and a thickness ≥ 140 mm)	$EI_2$90	3.400 mm	3.000 mm	10,20 m²
	$EI_1$30	3.400 mm	3.000 mm	10,20 m²
low-density solid wall (aerated concrete with an overall density of ≥ 450 kg/m³ and a thickness ≥ 200 mm)	EI_2 90	4.800 mm	4.350 mm	13,92 m²
	EI_1 60	4.800 mm	4.350 mm	13,92 m²
low-density solid wall (aerated concrete with an overall density of ≥ 450 kg/m³ and a thickness ≥ 140 mm)	$EI_2$90	3.400 mm	3.000 mm	10,20 m²
	$EI_1$30	3.400 mm	3.000 mm	10,20 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

In order to seal the continuous conveyor technology, the sealing systems specified in table 6 are used.

Table 6: Sealing systems for the continuous conveyor technology[6]

sealing system for	minimum depth of the seal on the fixed panel[7]	minimum depth of the seal at the sliding leaf	maximum fire resistance class of the sealing system
chain conveyor (annex 31) (continuous steel profiles)	150 mm 250 mm	102 mm	EI 90
Roller conveyor (annex 33) between the rollers two webs (Promatect-H) or steel angles (covered with Promaseal PL) (continuous steel profiles)	150 mm 250 mm	102 mm	EI 90
belt conveyor (annex 32) (continuous steel profiles)	150 mm 250 mm	102 mm	EI 90
Continuous gravity chute made of sheet steel (annex 29)	175 mm 275 mm	122 mm	EI 90
round belt (annex 30)	150 mm 270 mm	102 mm	EI 90

6 see annex 29 to 33
7 The larger depths are required if the closure consists of two elements.

The dimensions of the gap between the movable sliding leaf and
- supporting construction (wall)
- fixed panel and
- continuous conveyor technique

must generally be planed and designed to be as small as possible.

Table 7: Cable penetration seal (in the fixed panel)

Cable penetration seal	fire resistance class	clearance of the opening in the fixed panel		
		maximum clear width	maximum clear height	maximum surface
Hilti Brandschutzstein CFS-BL P (ETA-18/1024)	EI 90	200 mm	50 mm	0,01 m^2

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 to 7
Mechanical durability of self-closing (EN 13501-2)	Installation in internal walls – vertical closing: C2 – horizontal closing: C2
Smoke leakage (EN 13501-2)	See clause 2, table 1 to 3
Reaction to fire (EN 13501-1)	See following table 8

Table 8: 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
	gypsum mortar	A1
	mineral wool	A1
	expanding pearlite board	C
	Water glass adhesive	at least class E
Guide	steel	A1
Seal system	Intumescent material	at least class E
cable penetration seal	Intumescent material	at least class E
Closing device	steel	A1
Fixing material	steel	A1

3.2 Hygiene, health and the environment (BWR 3)

No performance assessed.

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

In accordance with EAD No. 350022-01-1107, 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 of components and materials 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

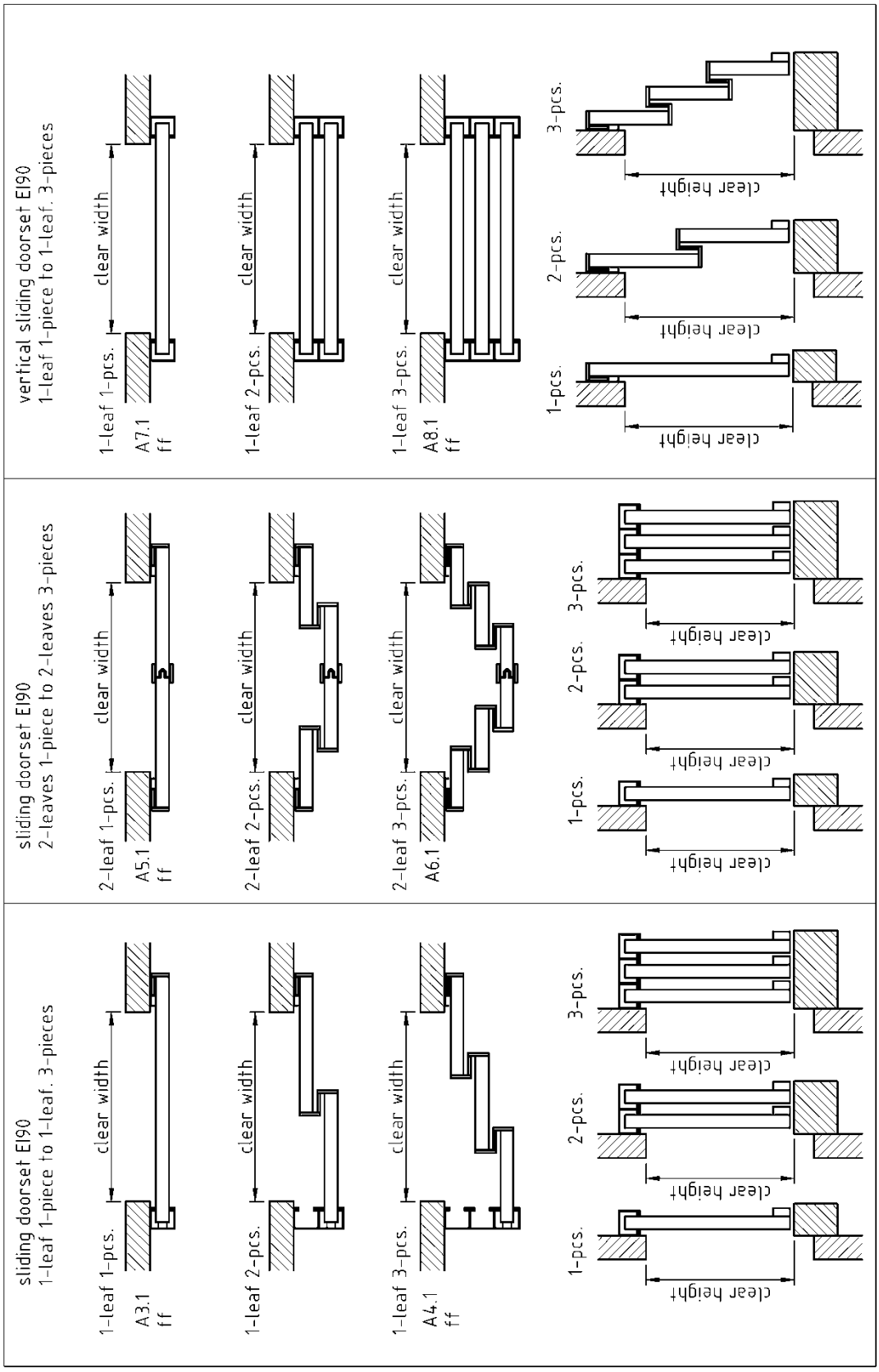
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

The manufacturer provides installation instructions and maintenance instructions for every kit "ORPHEUS-FAA" (sliding gate) und "APOLLO-FAA" (lifting gate). The maintenance instructions 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 7 November 2024 by Deutsches Institut für Bautechnik

Christina Pritzkow
Head of Section

beglaubigt:
Biedermann



Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	Annex 1
Overview of types	

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Fixing to the side or bottom edge for sliding doorsets/vertical sliding doorsets
- aerated concrete (fixing 1/2)
- masonry (fixing 1/2/3)
- concrete (fixing 1/2/3)

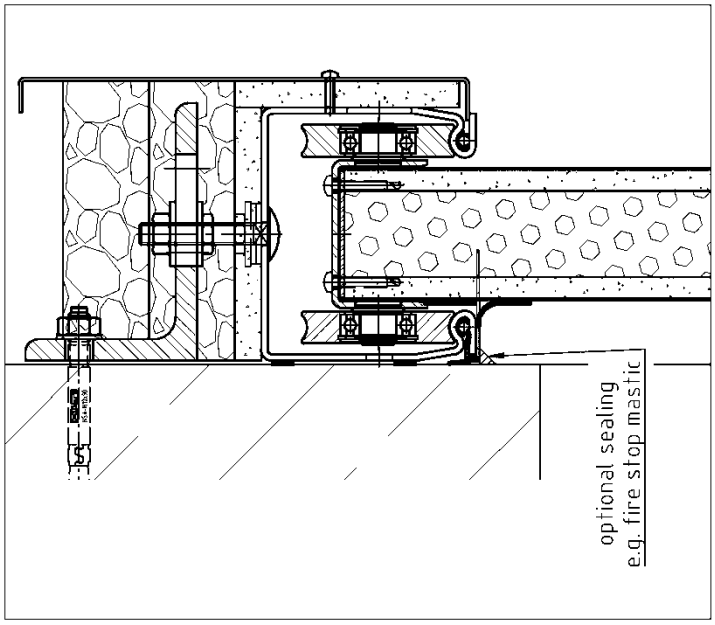
Fixing to the lintel for sliding doorsets/vertical sliding doorsets
- concrete (Befestigung 4/5/6)

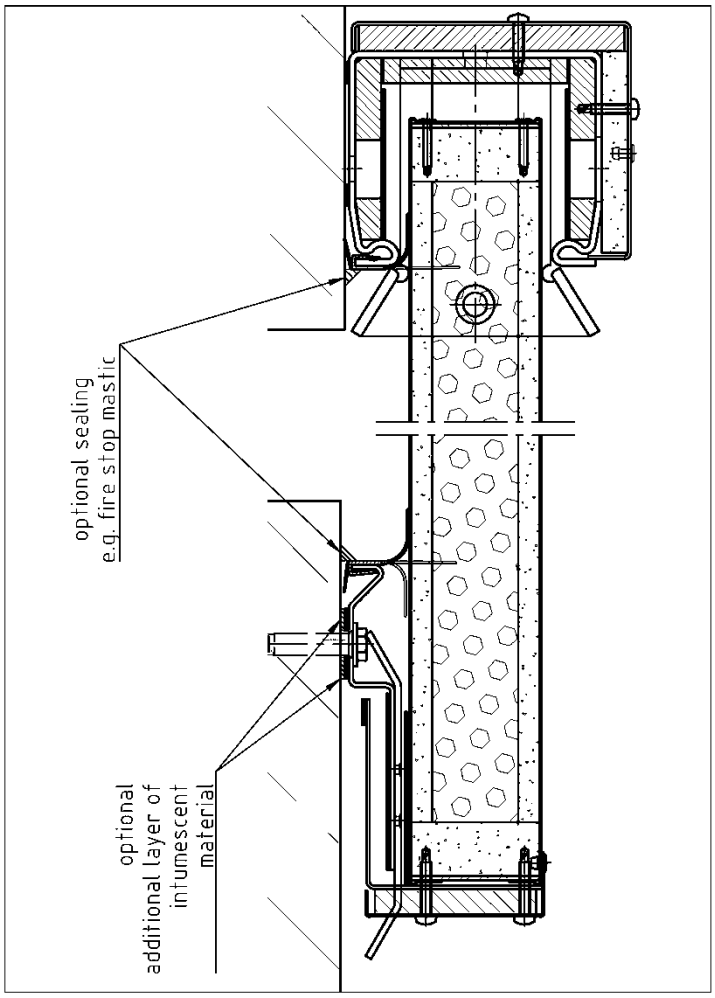
no.	fixing	fixing and min. load capacity [Frk]
		Frk
1	pass-through mounting ≥M8	strength class ≥ 4.6
2	mechanical metal anchor M8 or bonded fastener Φ8 mm according to ETA with proof of performance under fire exposure	≥ 0,21 kN
3	Injection mortar with threaded rod ≥M8 according to ETA with proof of performance under fire exposure	≥ 0,21 kN
4	mechanical metal anchor M10 according to ETA with proof of performance under fire exposure	≥ 8,5 kN
5	pass-through mounting ≥M10	strength class ≥ 4.6
6	Injection mortar with threaded rod ≥M10 according to ETA with proof of performance under fire exposure	≥ 8,5 kN

Schiebetor ORPHEUS-FAA
Hubtor APOLLO-FAA

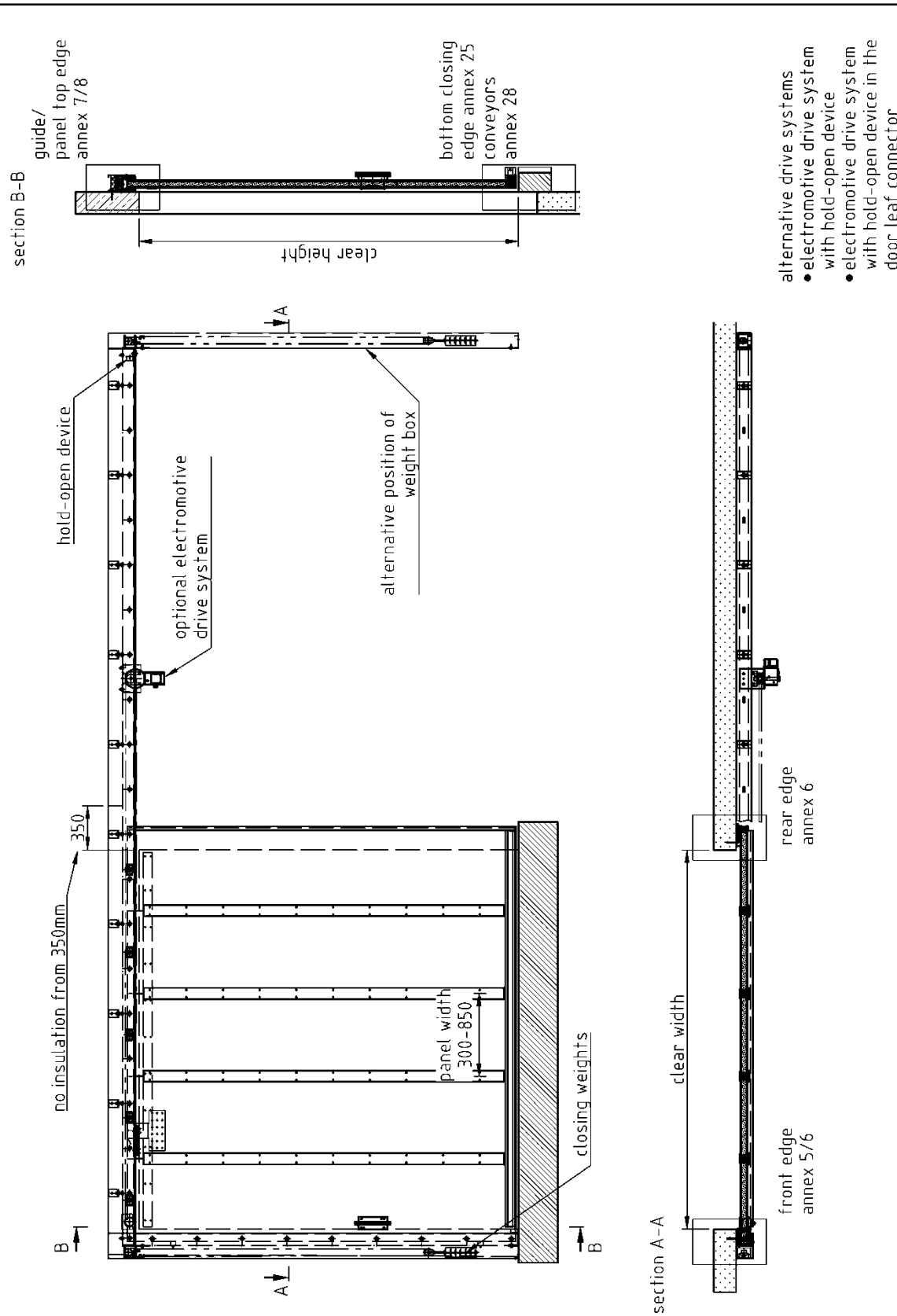
Wall types and fastening – sliding gate / lifting gate

Annex 2



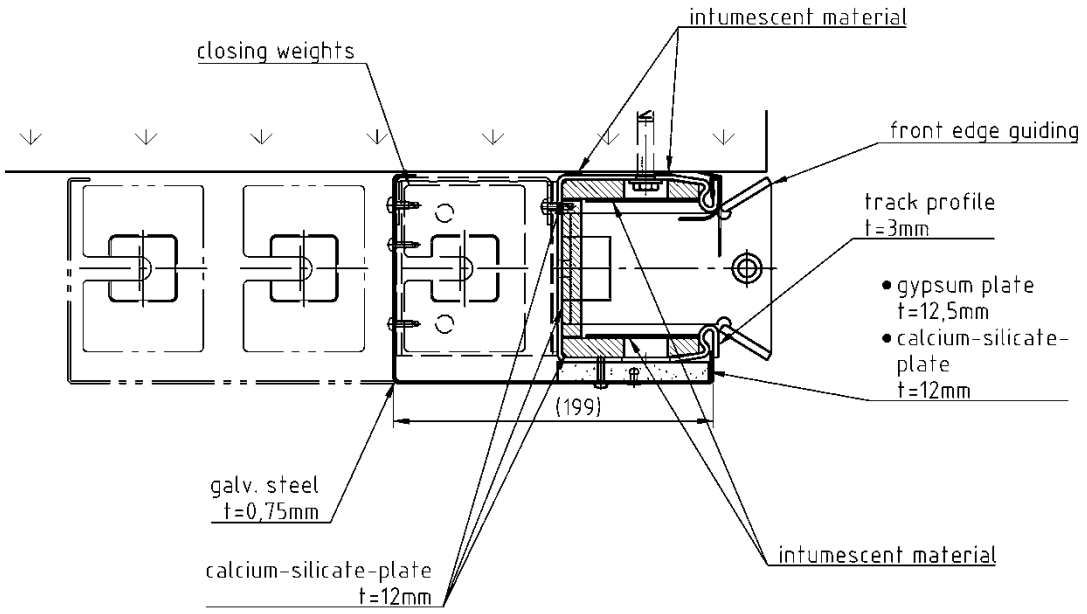


Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	Annex 3
Wall connections	

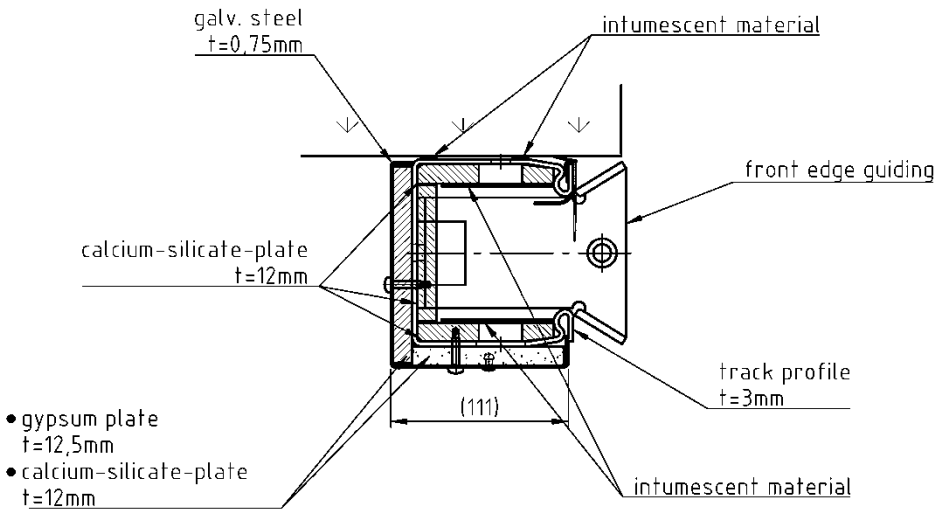


Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	Annex 4
Sliding gate, single leaf, one element Overview drawing	

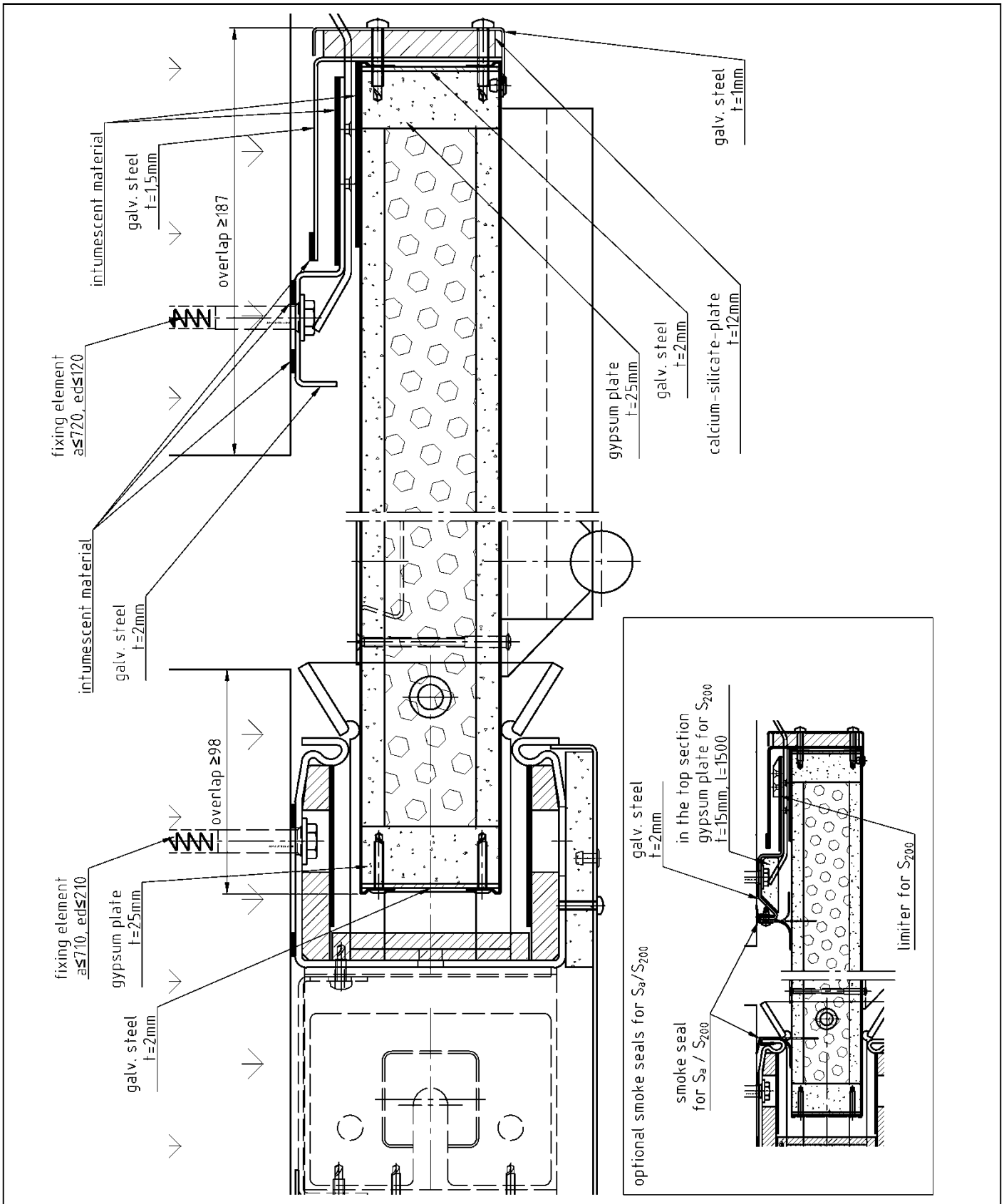
front edge with weight box



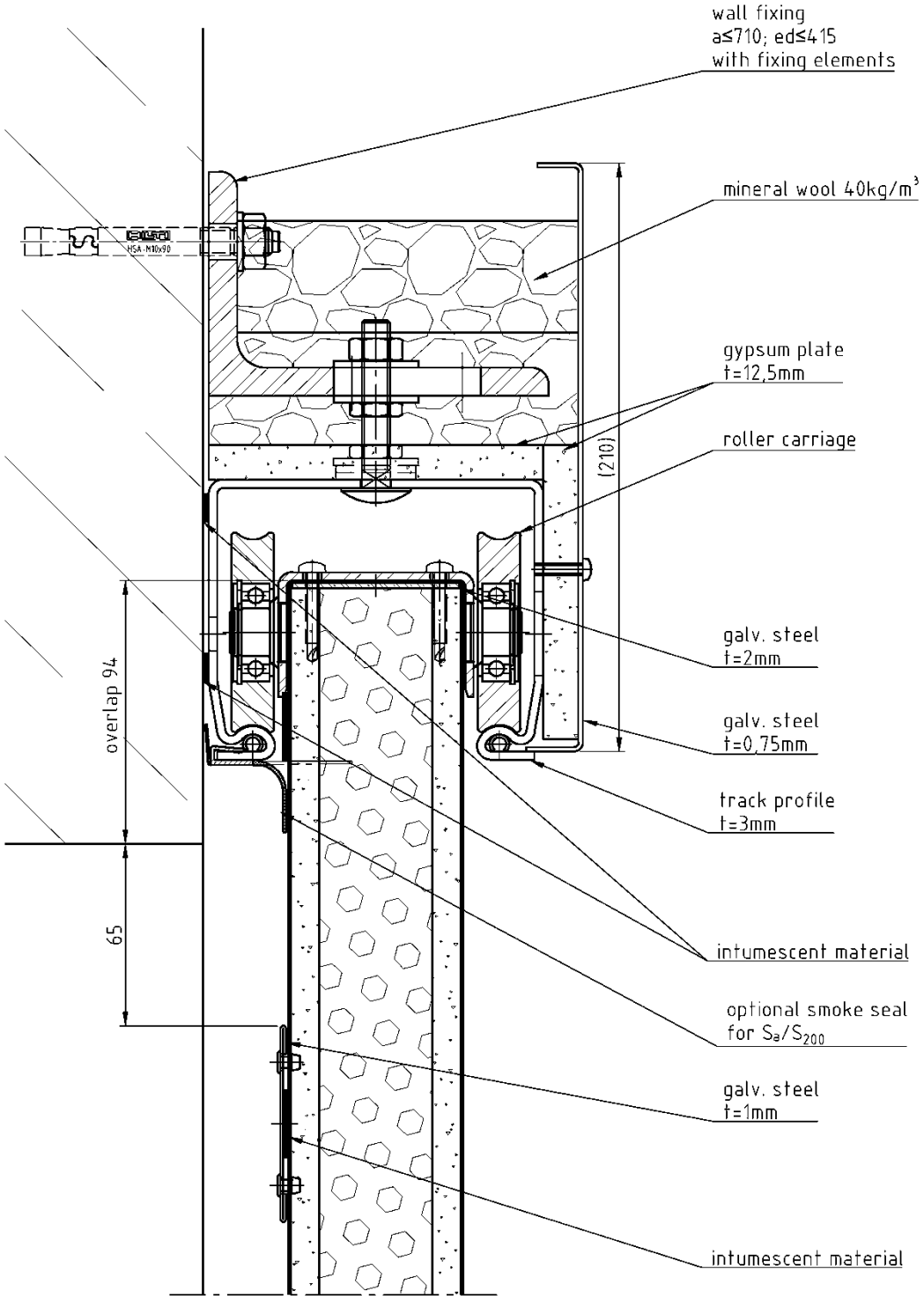
front edge without weight box



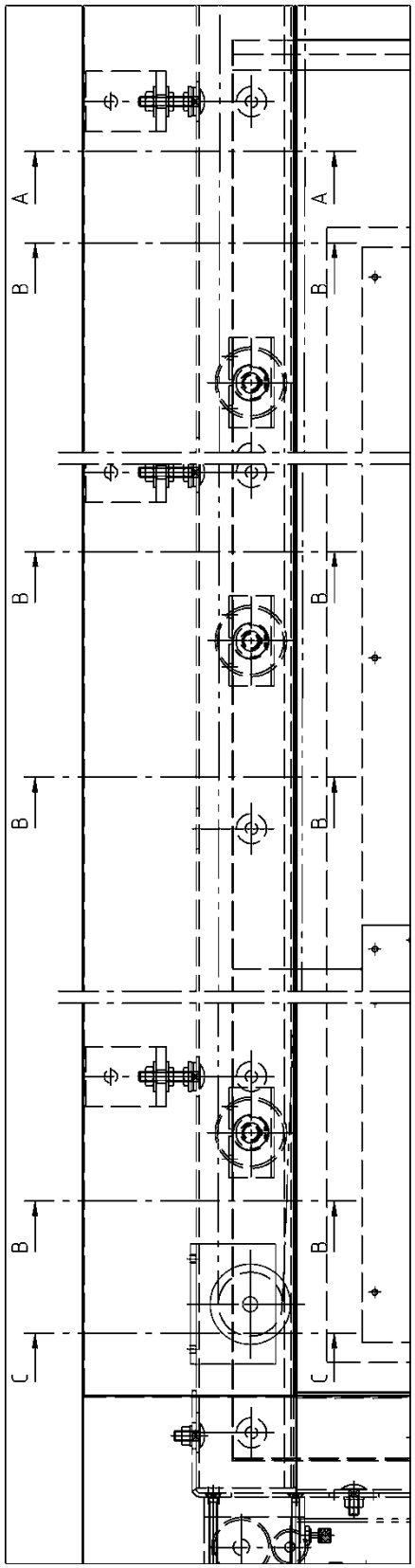
Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	Annex 5
Sliding gate, single leaf, one element Basic structure / design of the inlet side	

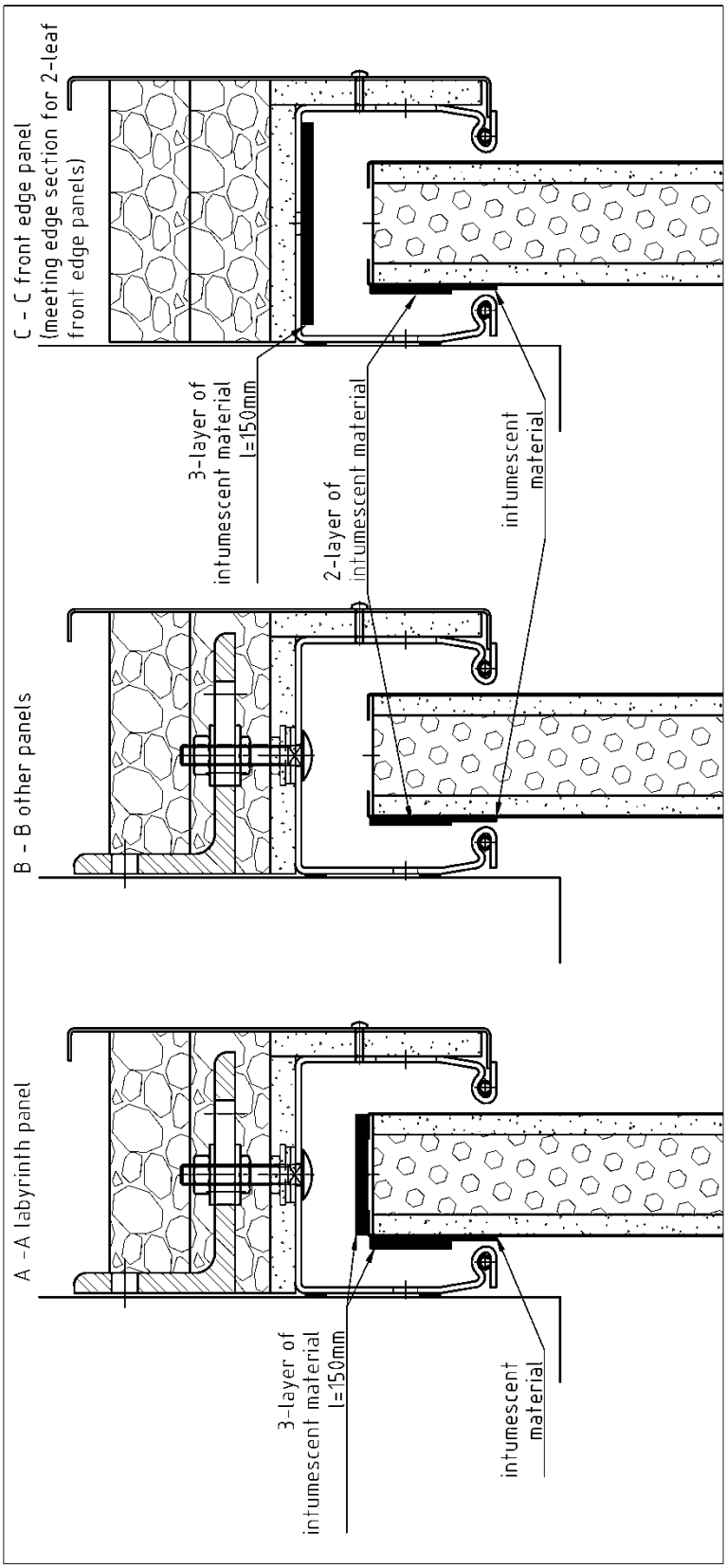


Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	Annex 6
Sliding gate – Horizontal section A-A Inlet, single leaf, one element / opposite inlet, single/double leaf, one to three elements (optional S_a / S_{200})	



Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	Annex 7
Sliding gate, single / double leaf, one element Vertical section B-B – running rail (optional S_a / S_{200})	

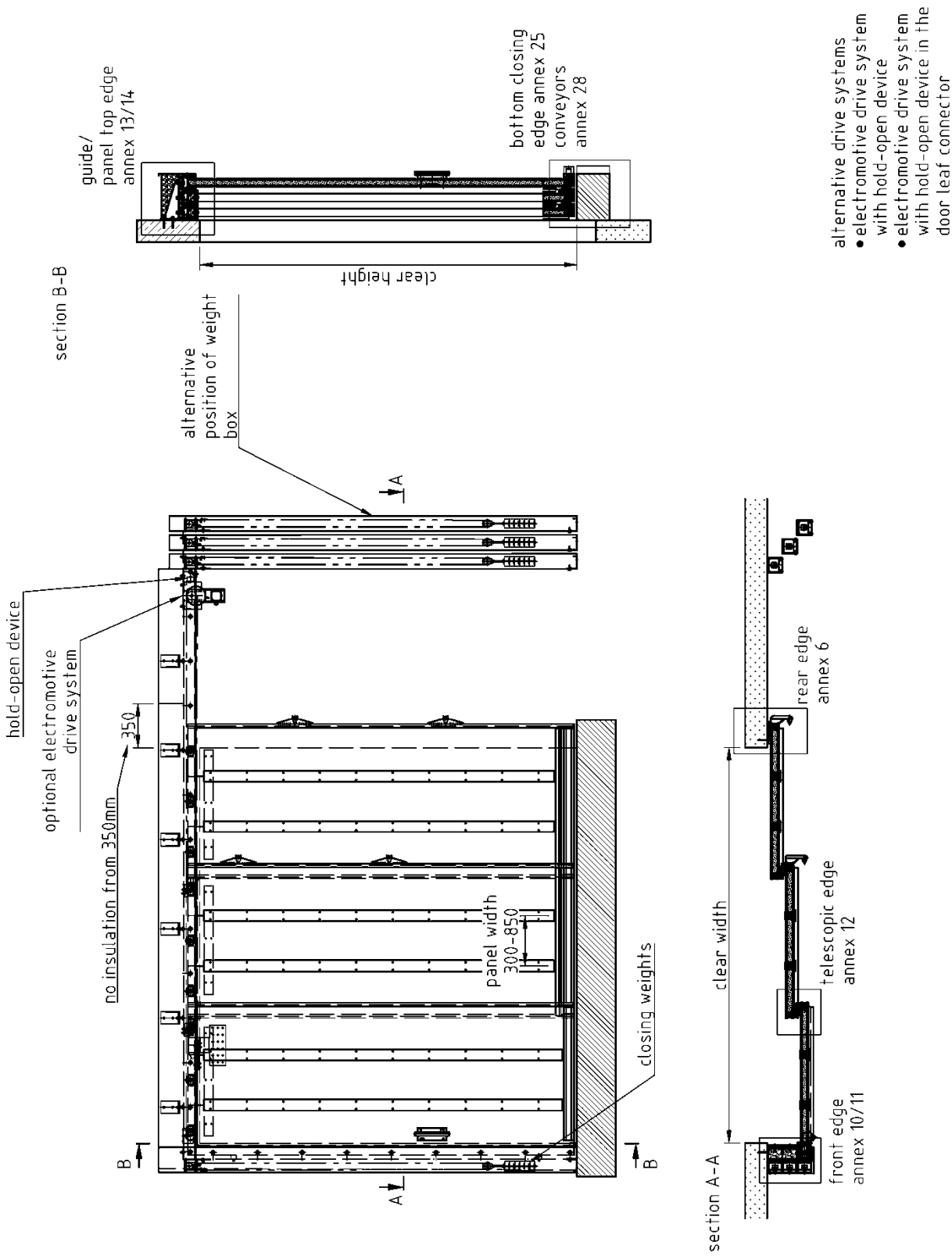




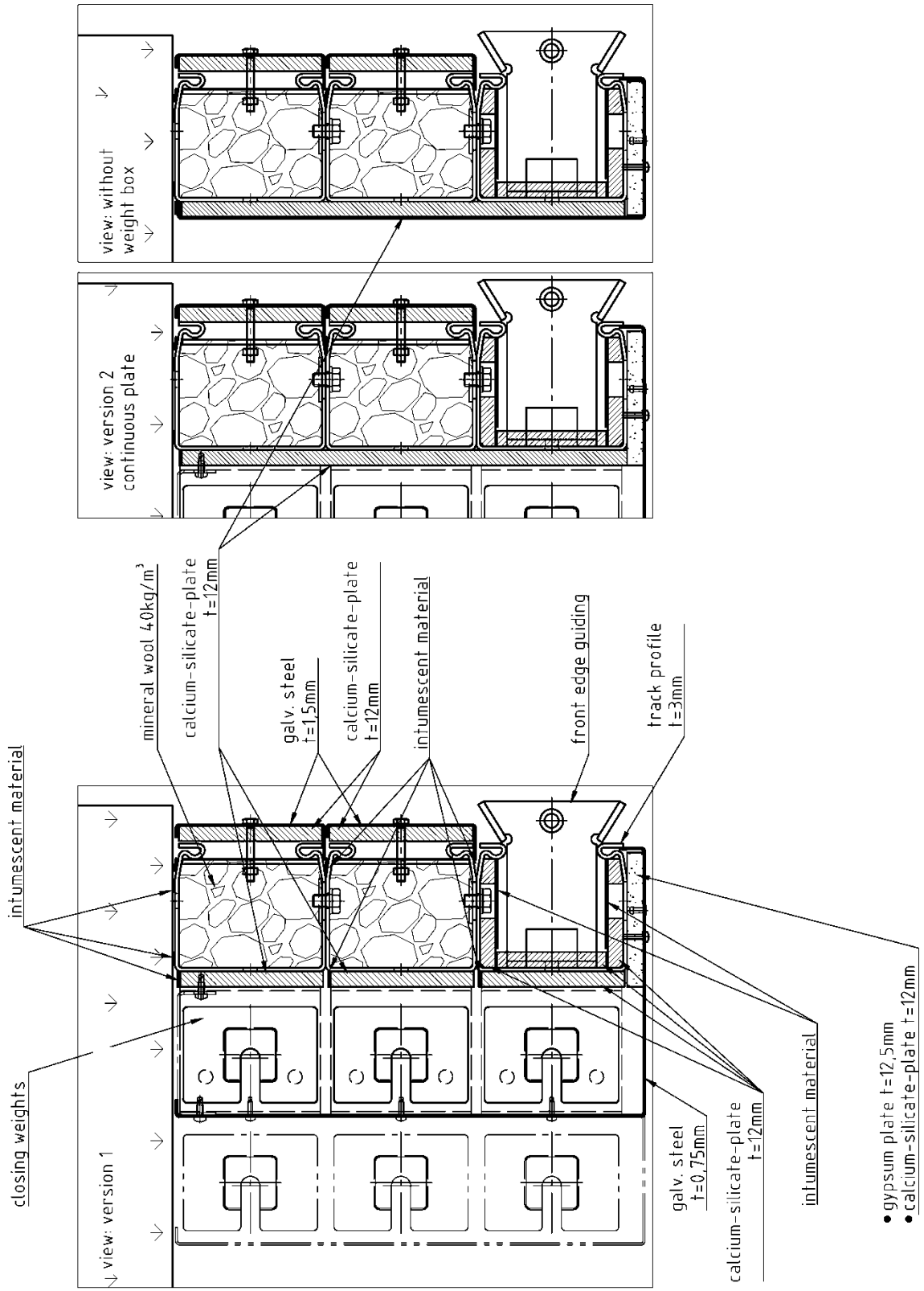
Schiebetor ORPHEUS-FAA
Hubtor APOLLO-FAA

Sliding gate, single / double leaf, one element
Upper panel finish

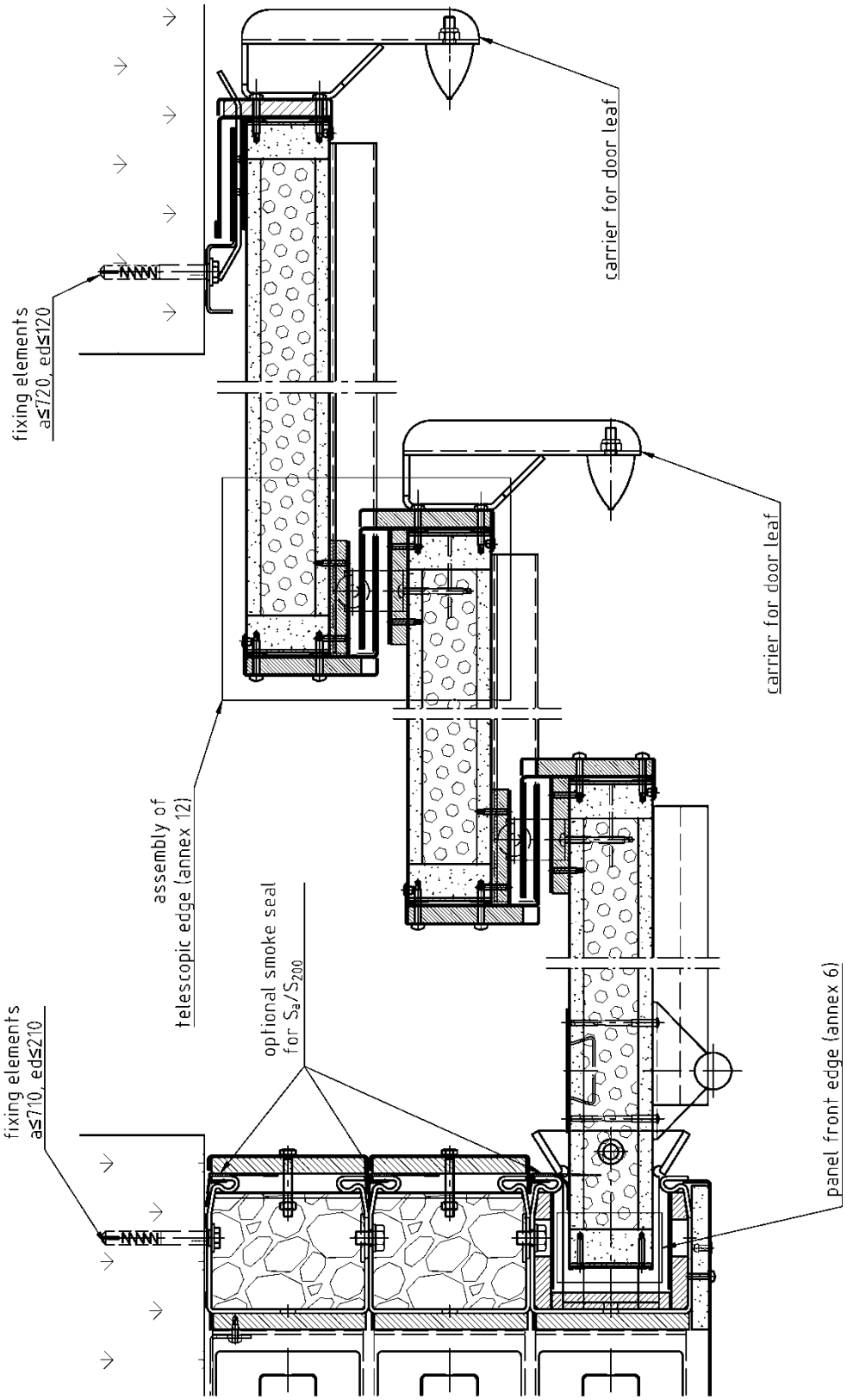
Annex 8



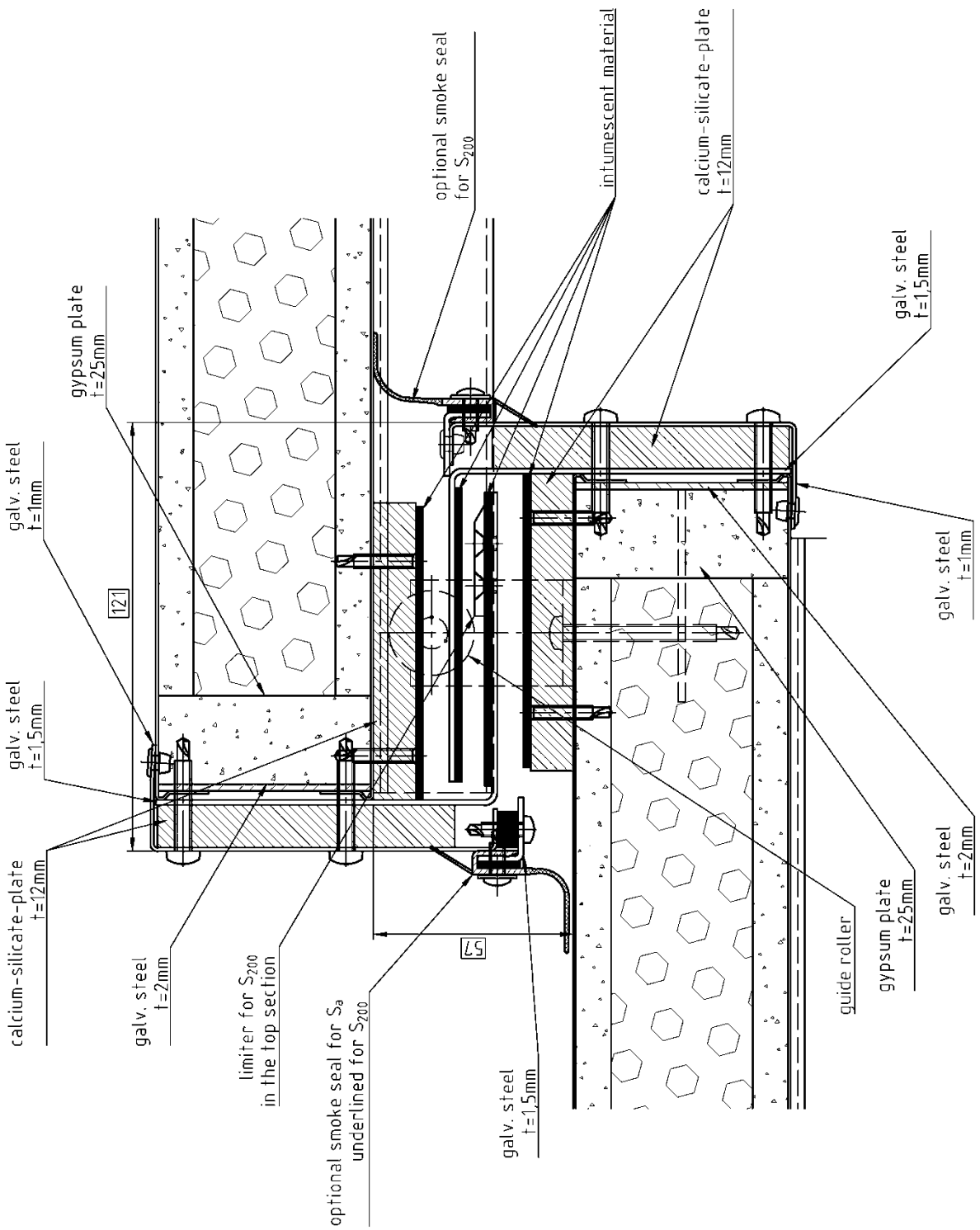
Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	Annex 9
Sliding gate, single leaf, double / triple telescopic Overview drawing	



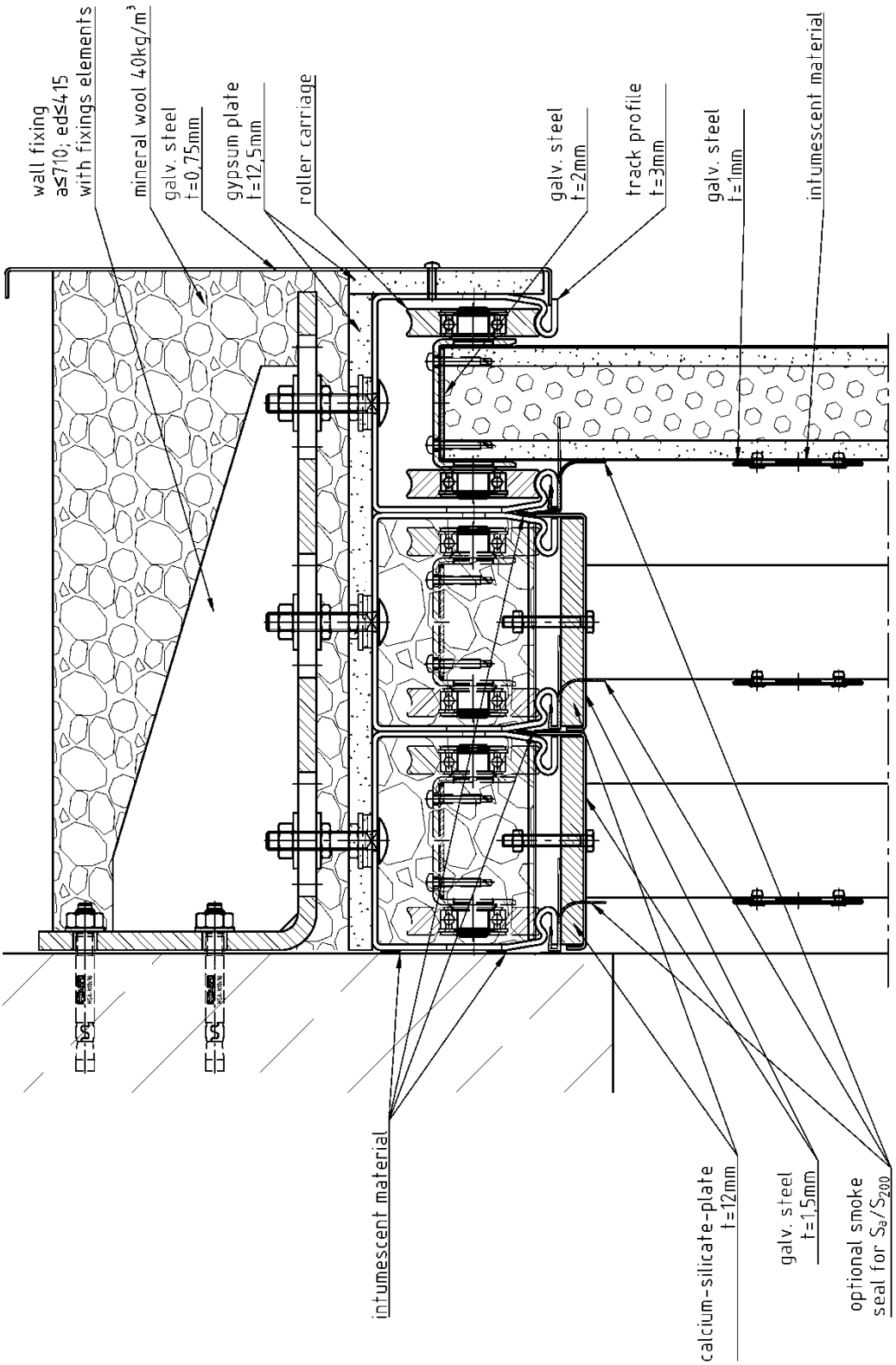
Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	Annex 10
Sliding gate, single leaf, double / triple telescopic Basic structure / Inlet side designs - telescope	



Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	Annex 11
Sliding gate, single leaf, double / triple telescopic – horizontal section A-A Inlet (optional S_a / S_{200}) – connection of the telescopic elements – opposite inlet	



Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	Annex 12
Sliding gate, single / double leaf, double / Triple telescopic – horizontal section A-A Detail connection of the elements (optional S_a / S_{200})	



Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	Annex 13
Sliding gate, single / double leaf, double / triple telescopic Vertical section B-B – running rail (optional S_a / S_{200})	

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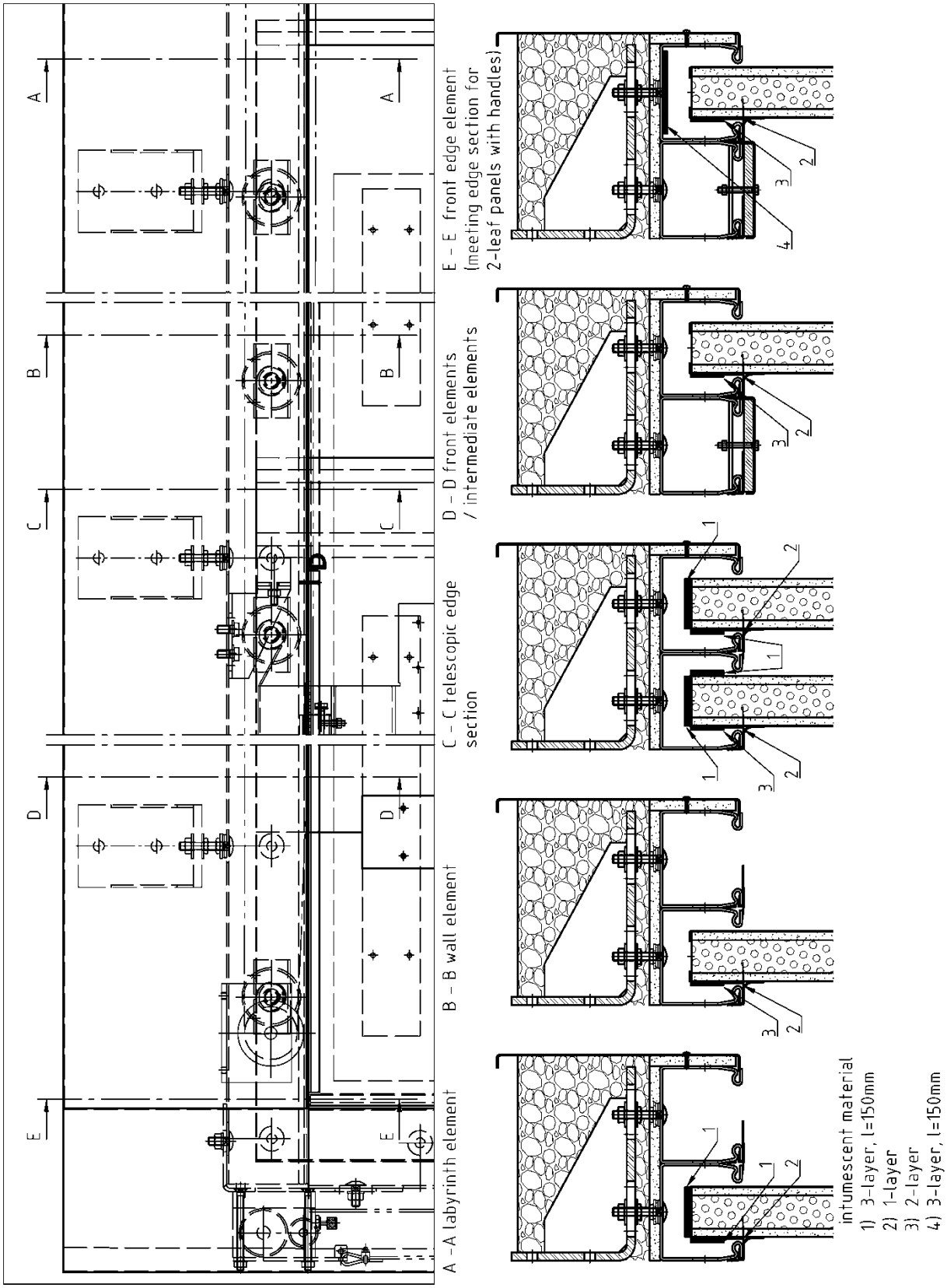
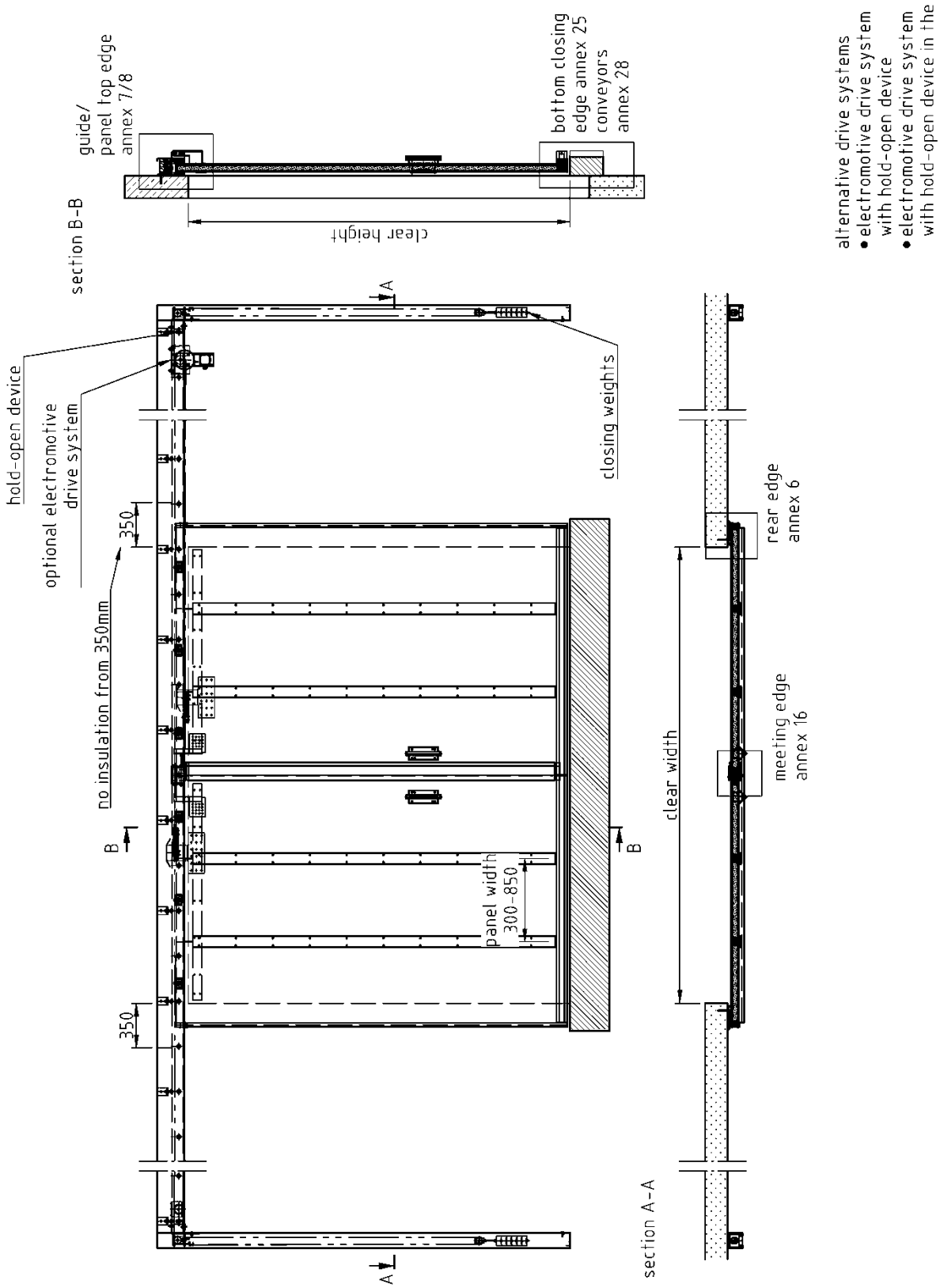
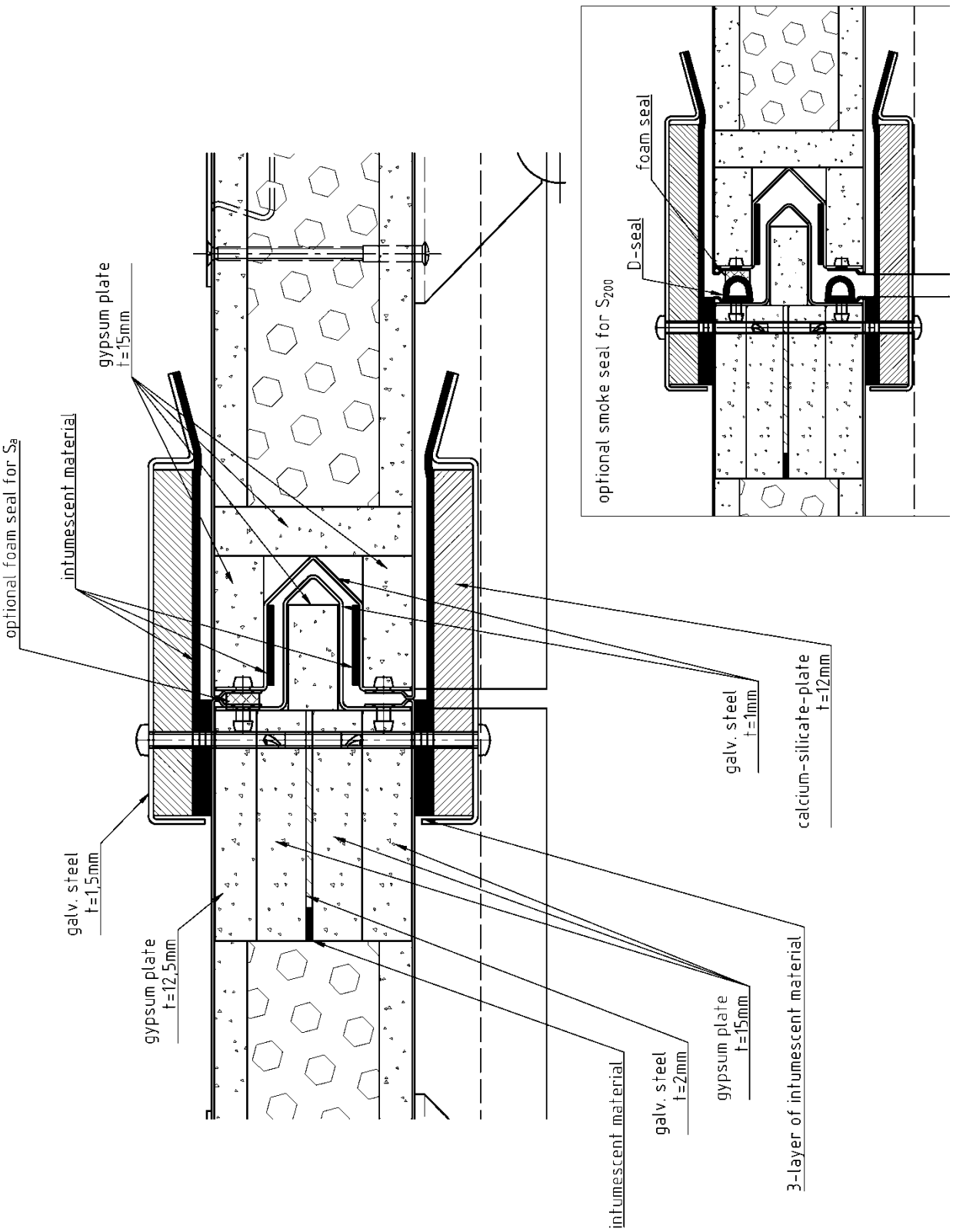


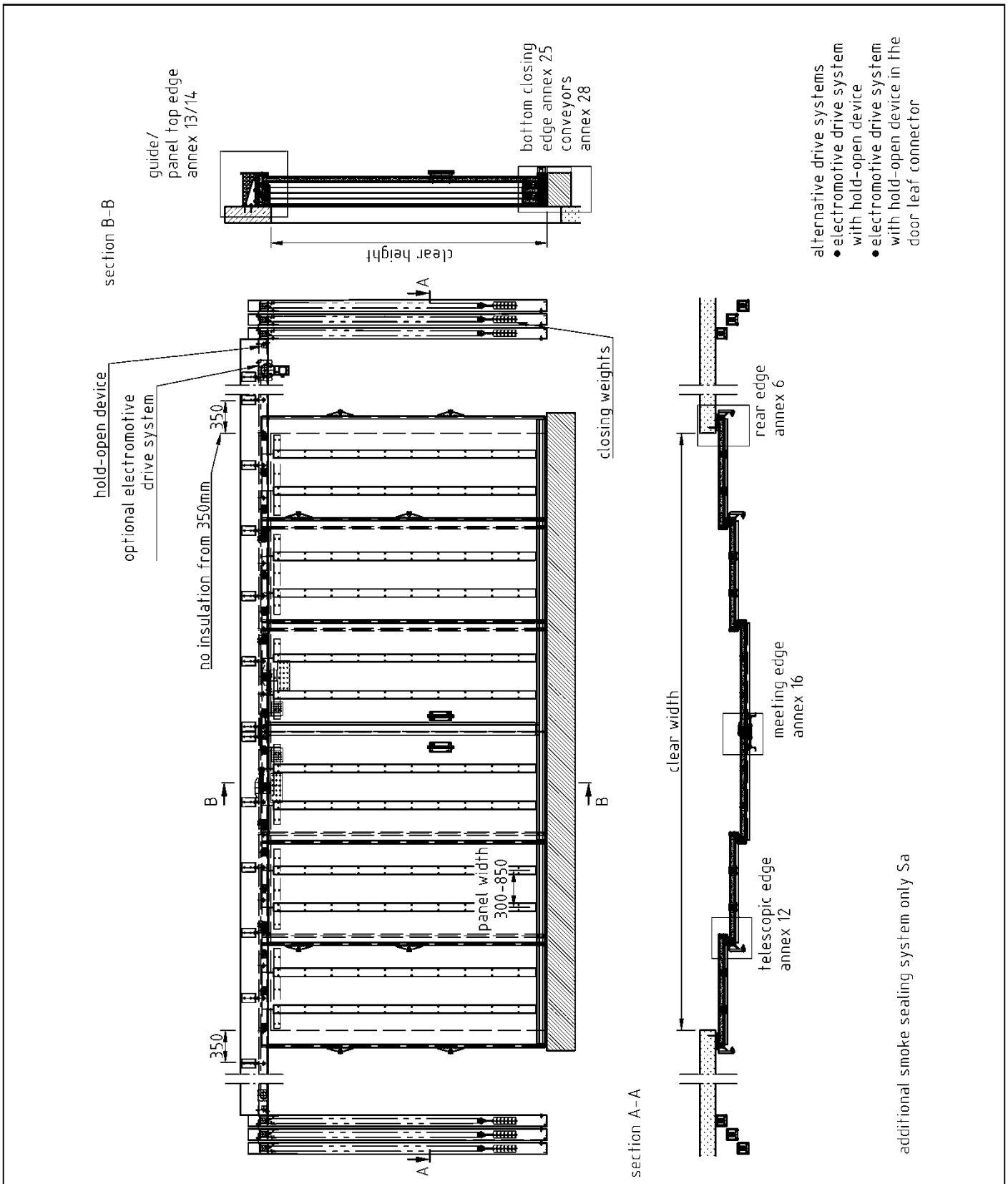
Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	
Sliding gate, single /double leaf, single to triple telescopic Top edge of the panel	Annex 14



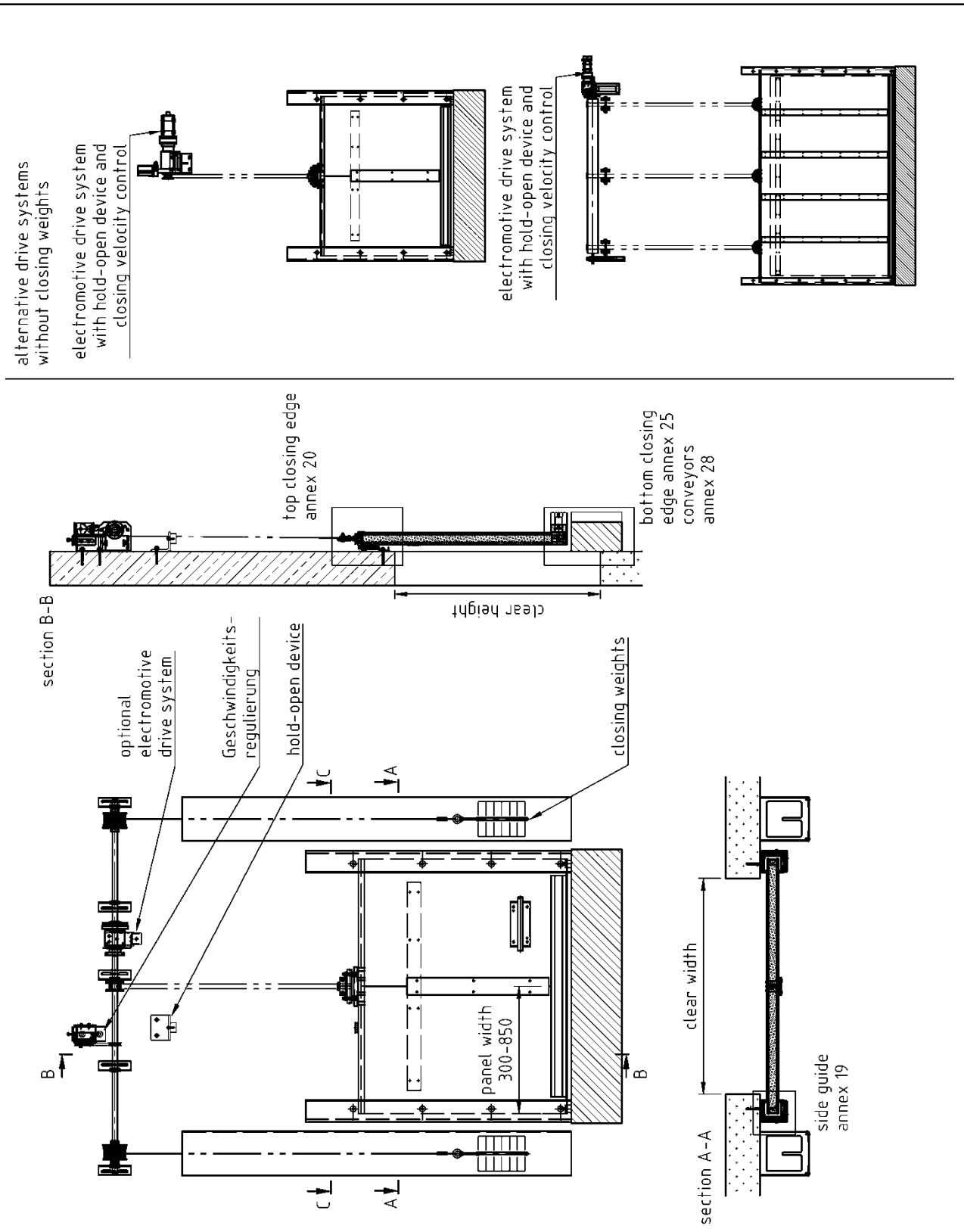
Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	Annex 15
Sliding gate, double leaf, one element Overview drawing	



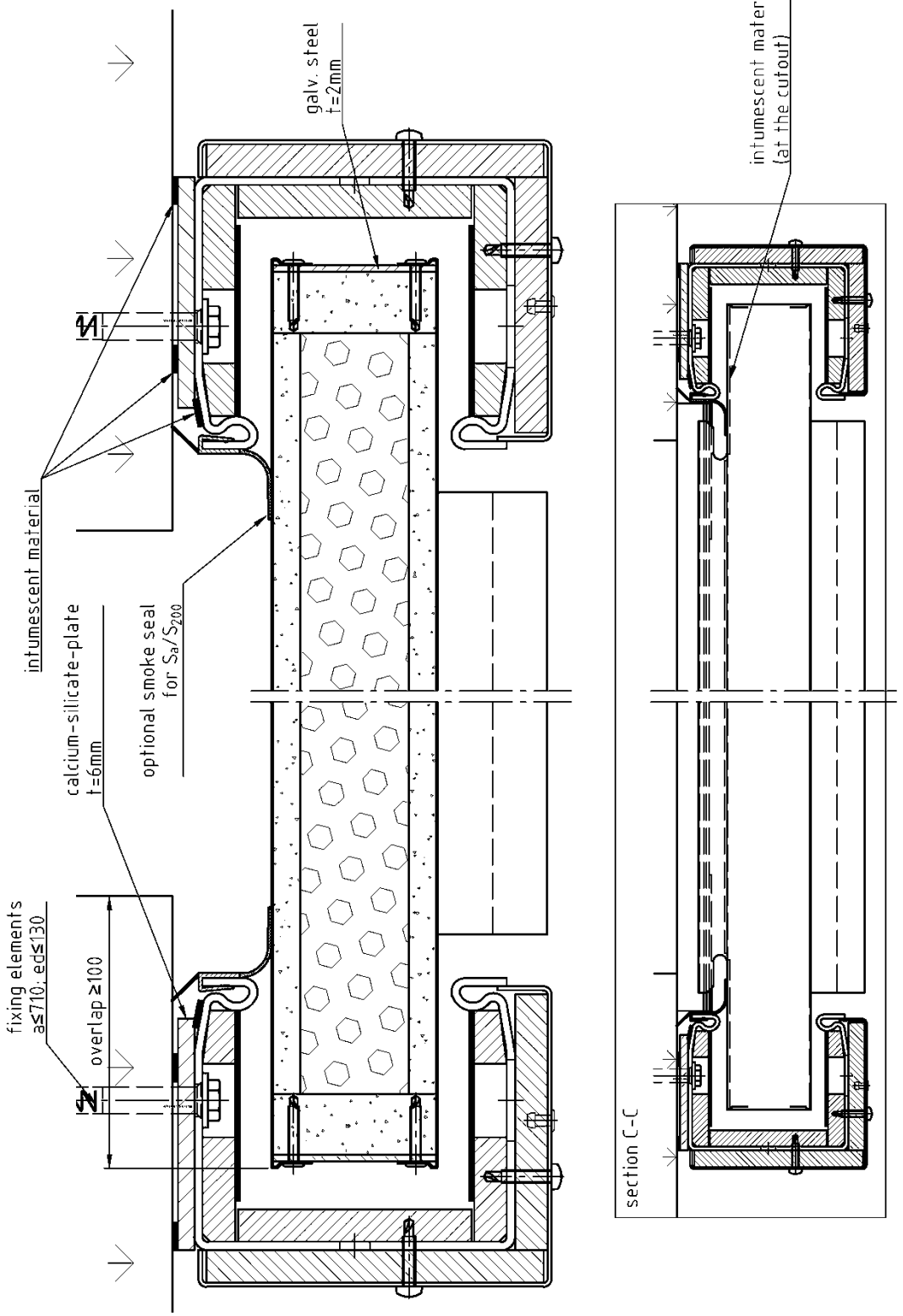
Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	Annex 16
Sliding gate, double leaf, one to three telescopic elements Horizontal section A-A – butt joint in the middle (optional S_a / S_{200})	



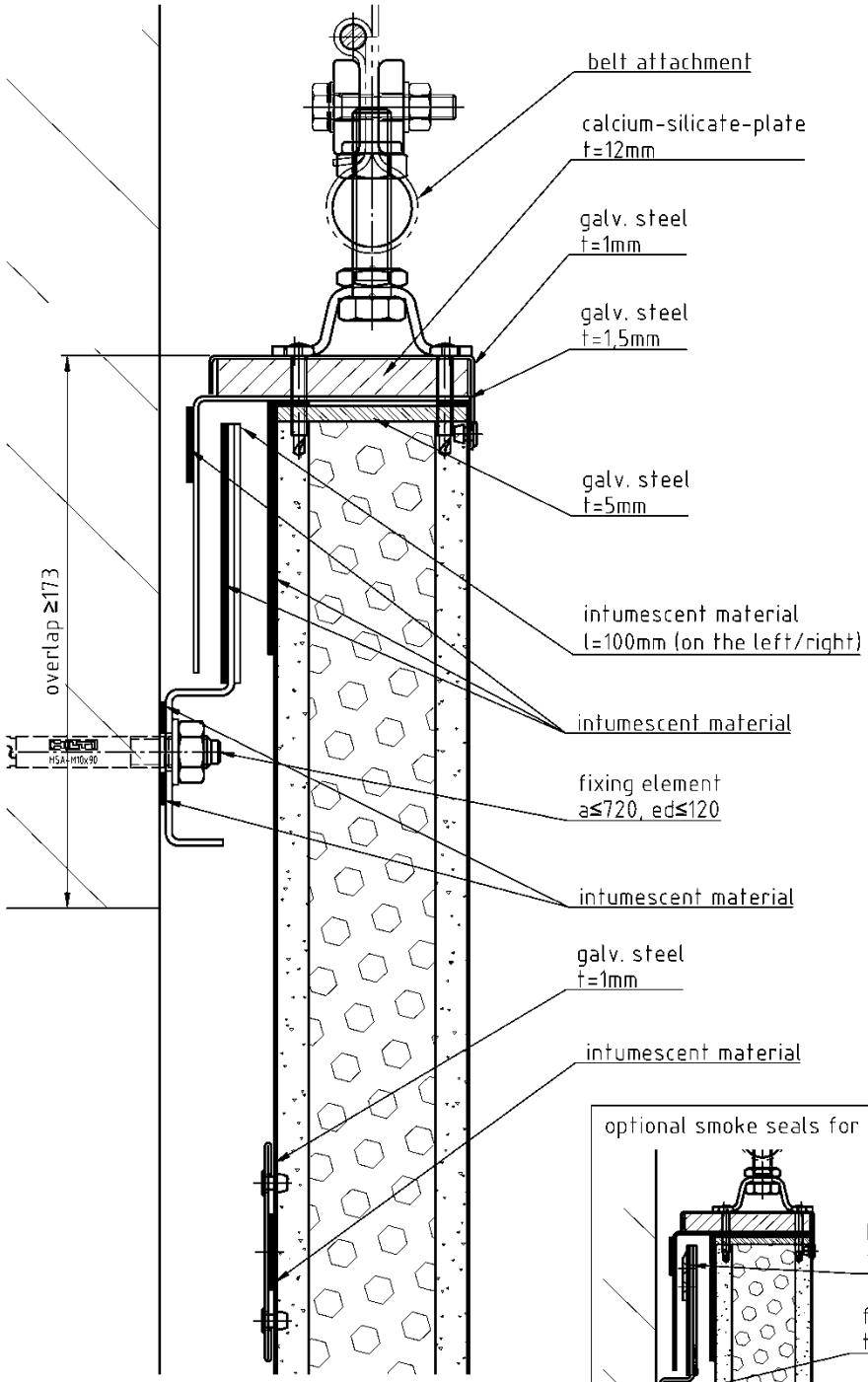
Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	Annex 17
Sliding gate, double leaf, one to three telescopic elements Overview drawing	

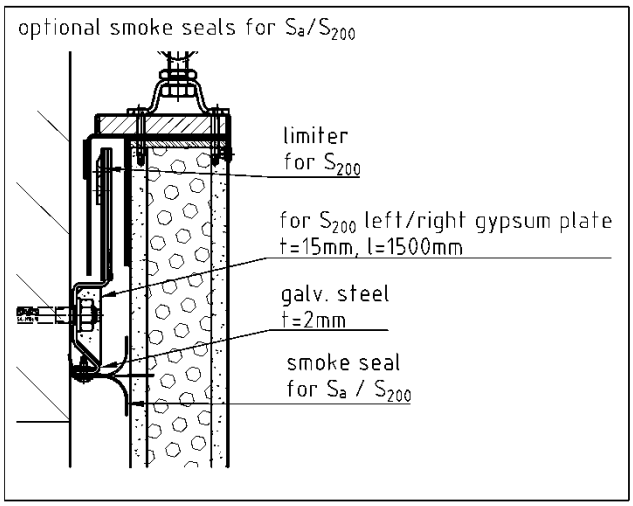


Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	Annex 18
Lifting gate, single leaf, one element Overview drawing	

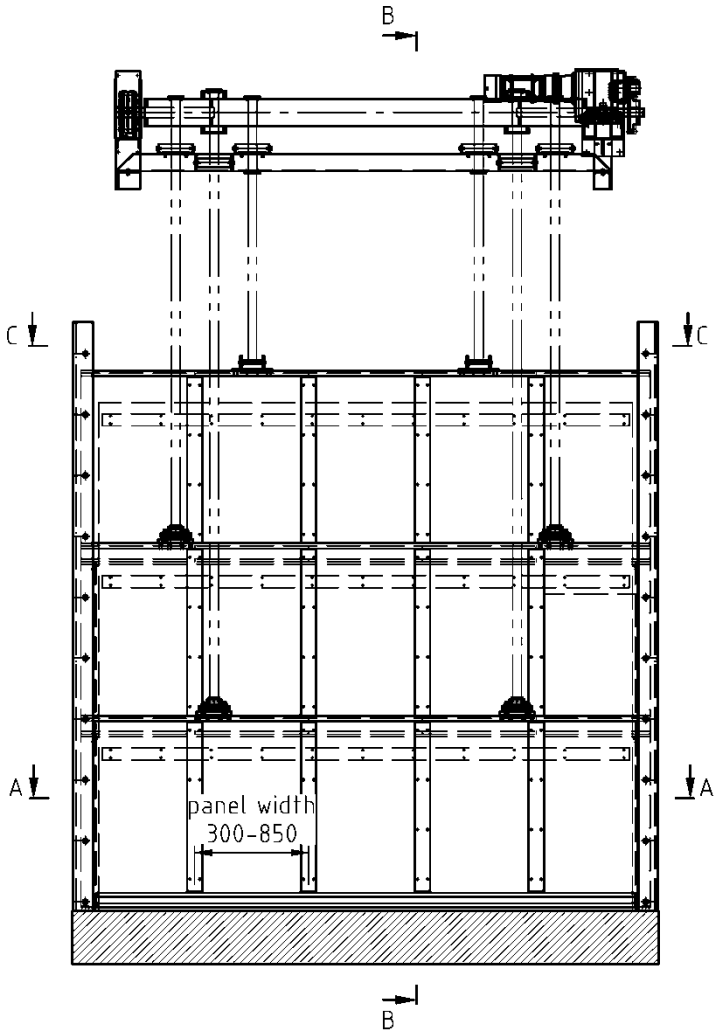


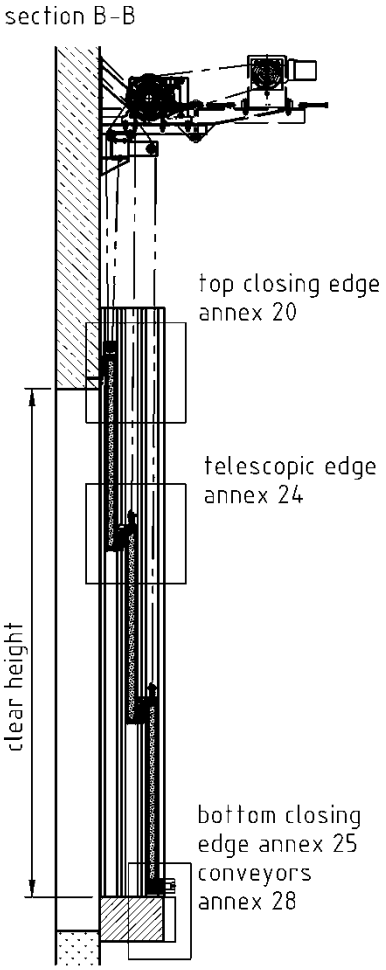
Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	Annex 19
Lifting gate, single leaf, one element – horizontal section A-A Guide rails (optional S_a / S_{200})	

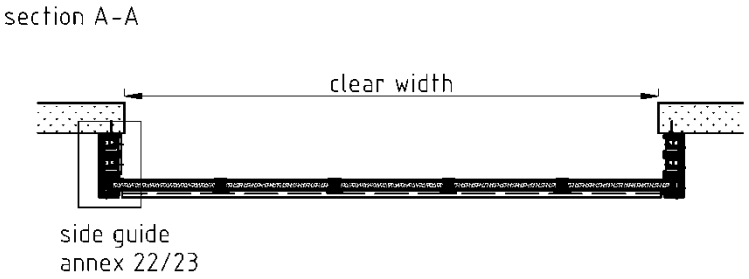




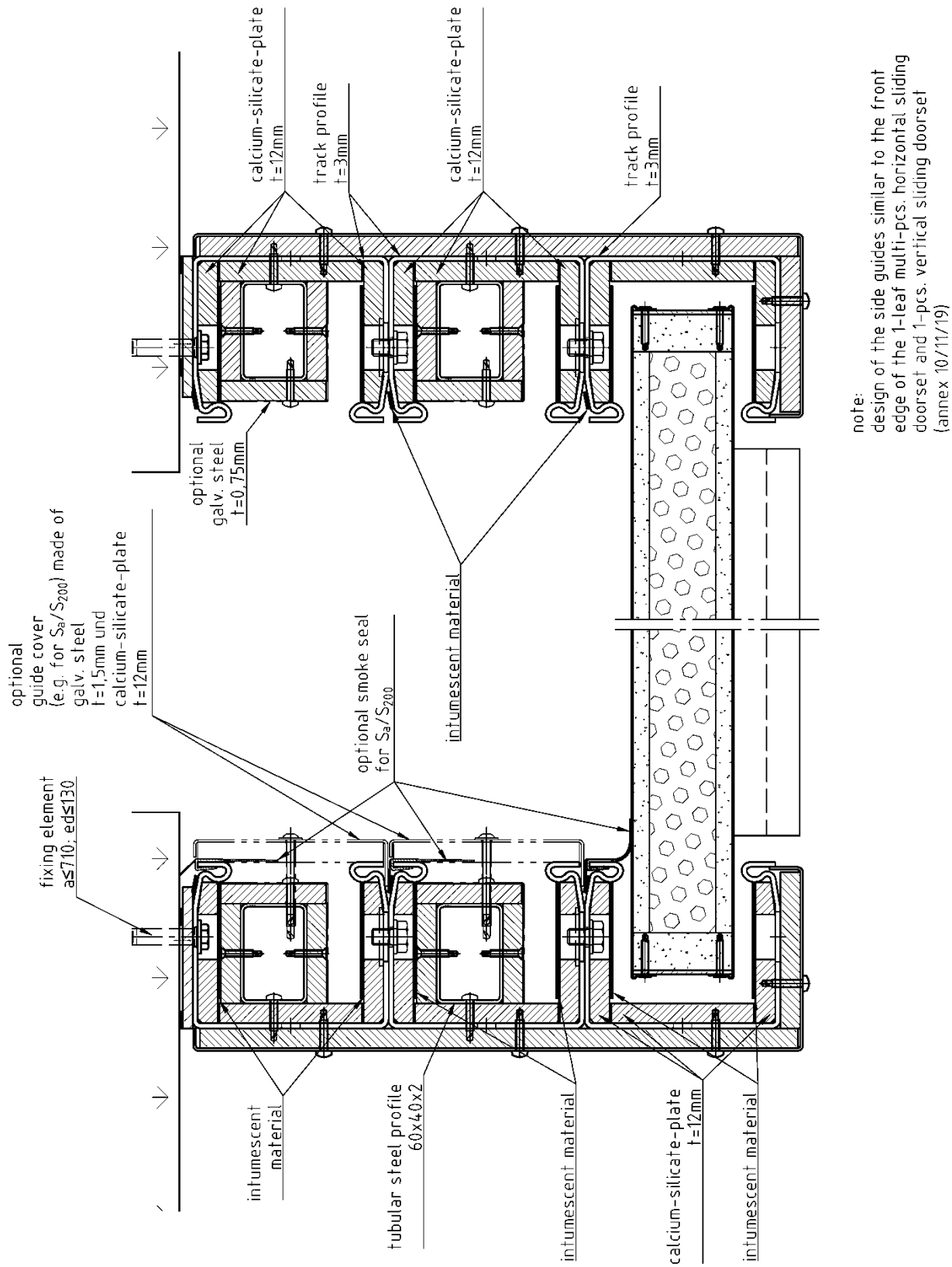
Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	Annex 20
Lifting gate, single leaf, one to three telescopic elements Vertical section B-B – lintel (optional S_a / S_{200})	



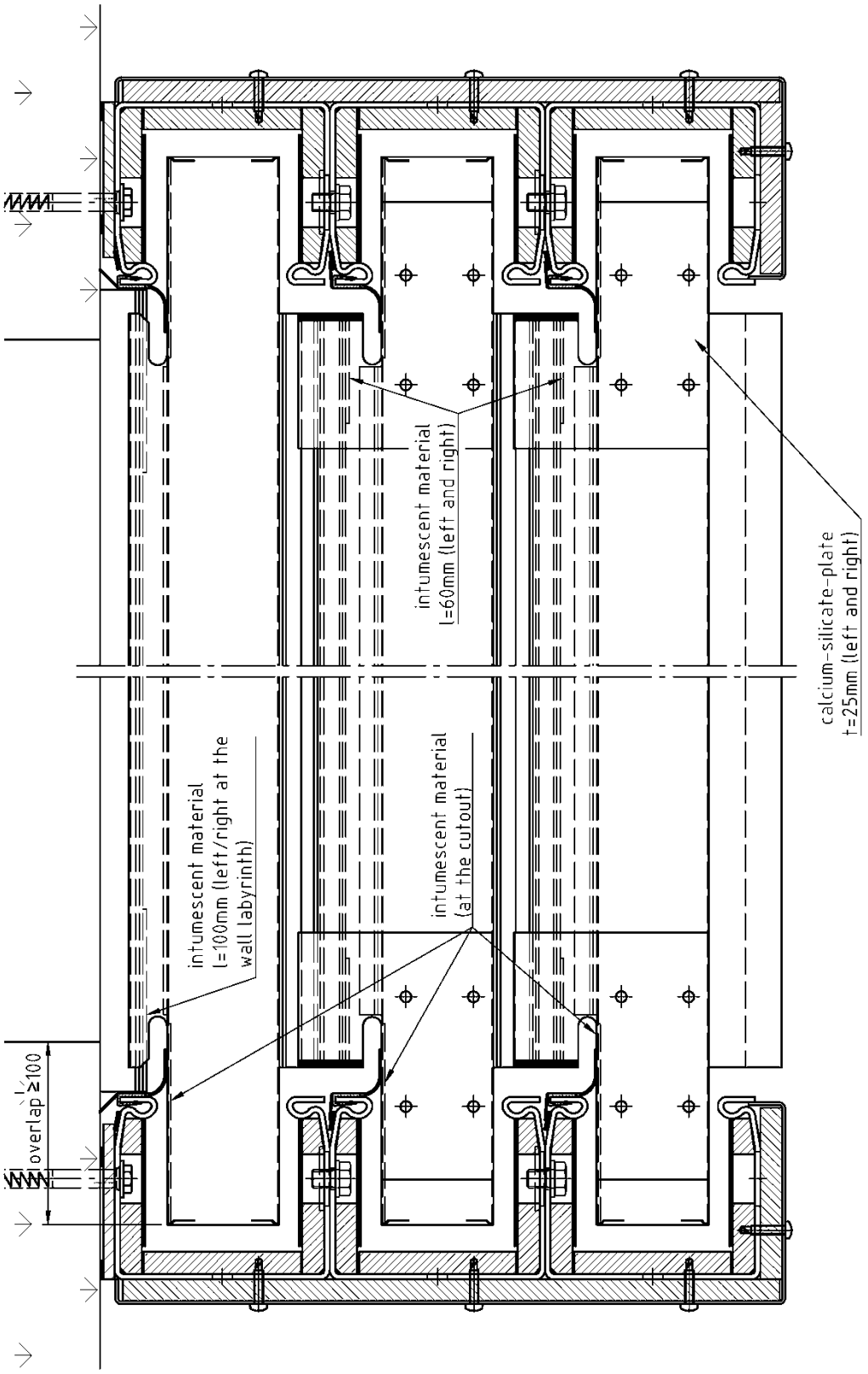




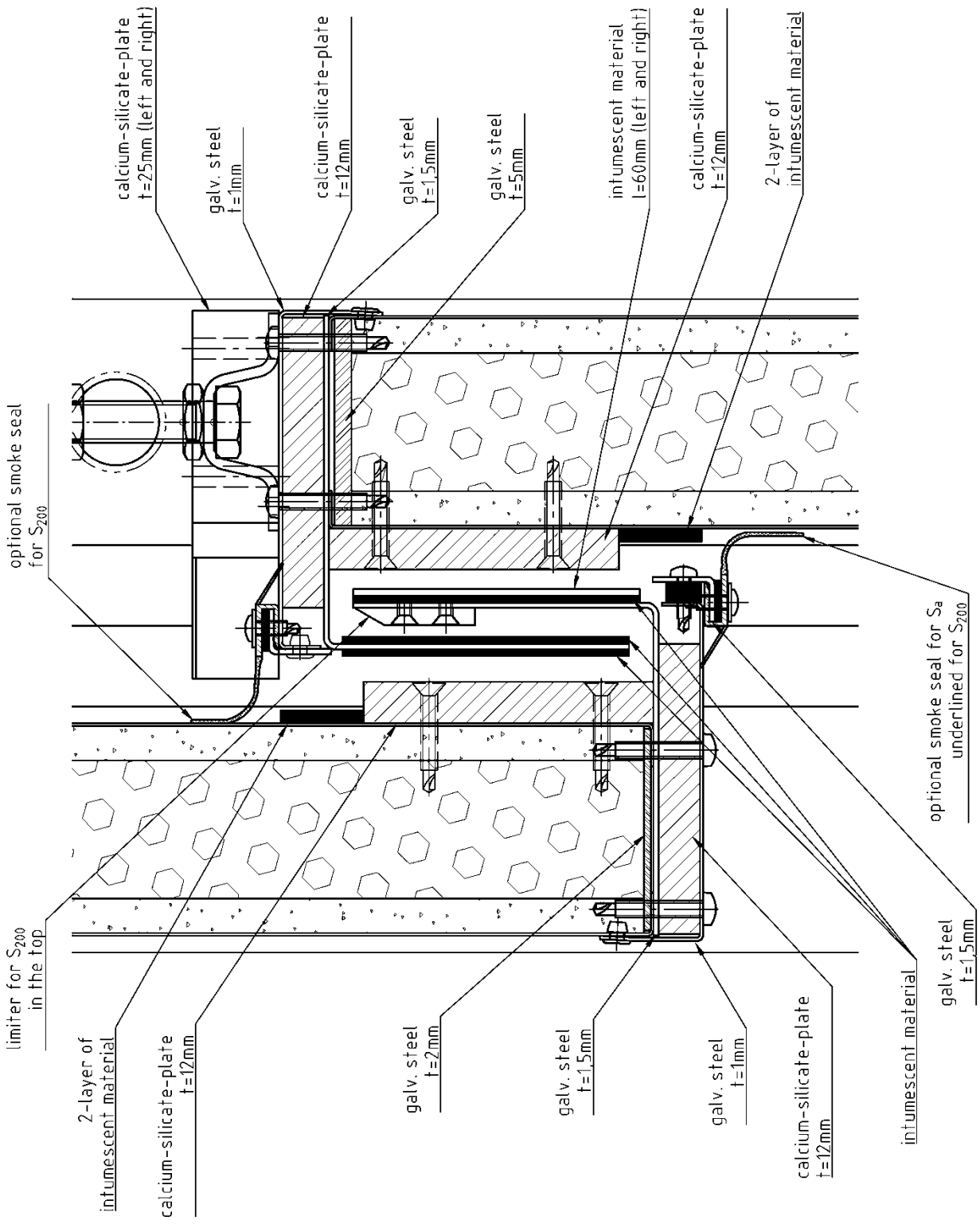
Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	Annex 21
Lifting gate, single leaf, double / triple telescopic Overview drawinig	



Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	Annex 22
Lifting gate, single leaf, double / triple telescopic Horizontal section A-A – guidance (optional S_a / S_{200})	



Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	
Lifting gate, single leaf, double / triple telescopic Horizontal section C-C - guidance	Annex 23



Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	Annex 24
Lifting gate, single leaf, double / triple telescopic Vertical section B-B – detail telescopic edge (optional S_a / S_{200})	

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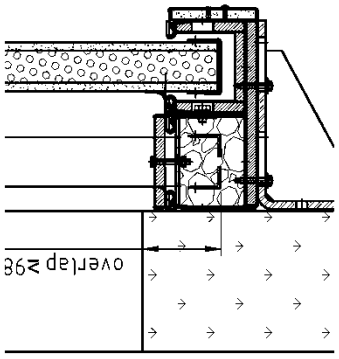
horizontal / vertical multi-pcs. sliding doorsets
track profiles or front closing edge details at the bottom closing edge
optional S_a



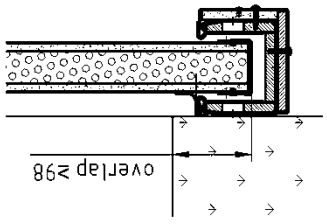
detail of the construction with track profile at the bottom closing edge under annex 10 resp. 22 with wall fixing as support similar to the multi-pcs. track profiles

intumescent material t = 1,9 - 2,5	
gap s	minimum number of layers
0 - 10	1
10 - 20	2

possible installation of conveyor systems with the use of sealing blocks (annex 28 ff.)

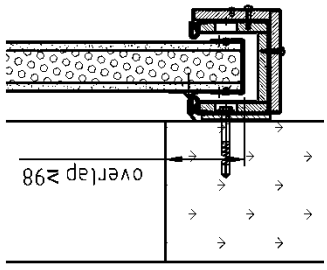
- metal slide (annex 29)
- round belt (annex 30)
- chain (annex 31)
- belt (annex 32)
- roller (annex 33)
- cable penetration seal

horizontal sliding doorsets
track profile or front closing edge detail at the bottom closing edge
optional S_a



detail of the construction with track profile at the bottom closing edge under annex 5

vertical sliding doorsets
track profile detail at the bottom closing edge
optional S_a



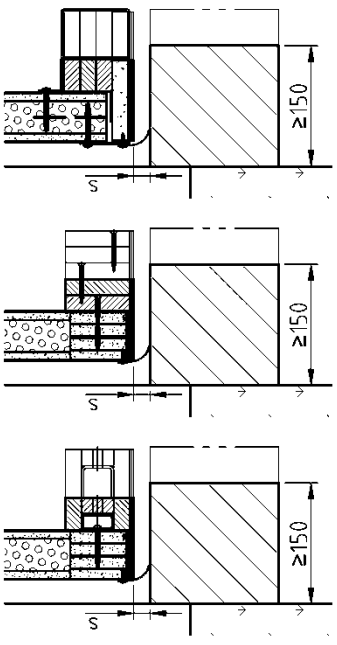
detail of the construction with track profile at the bottom closing edge under annex 19

horizontal / vertical sliding doorsets
sealing block made of calcium-silicate-plates or tubular steel profiles or closing edge profile

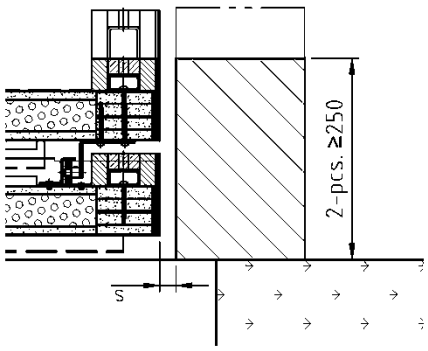
tubular steel profile with covering (annex 26)

calcium-silicate-plates (annex 26)

sealing block with closing edge profile (annex 26)



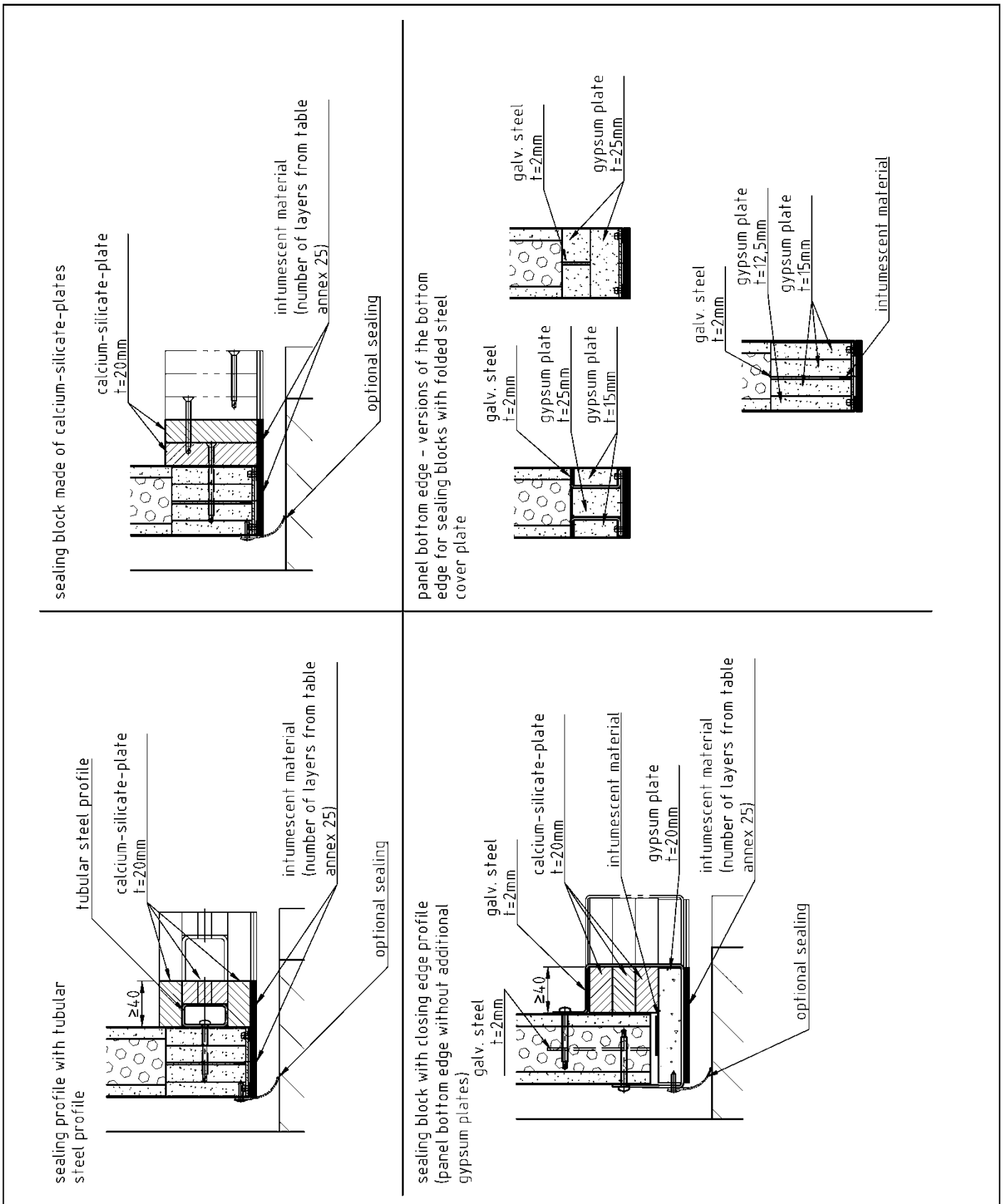
horizontal multi-pcs. sliding doorsets
sealing block made of calcium-silicate-plates or tubular steel profiles or closing edge profile



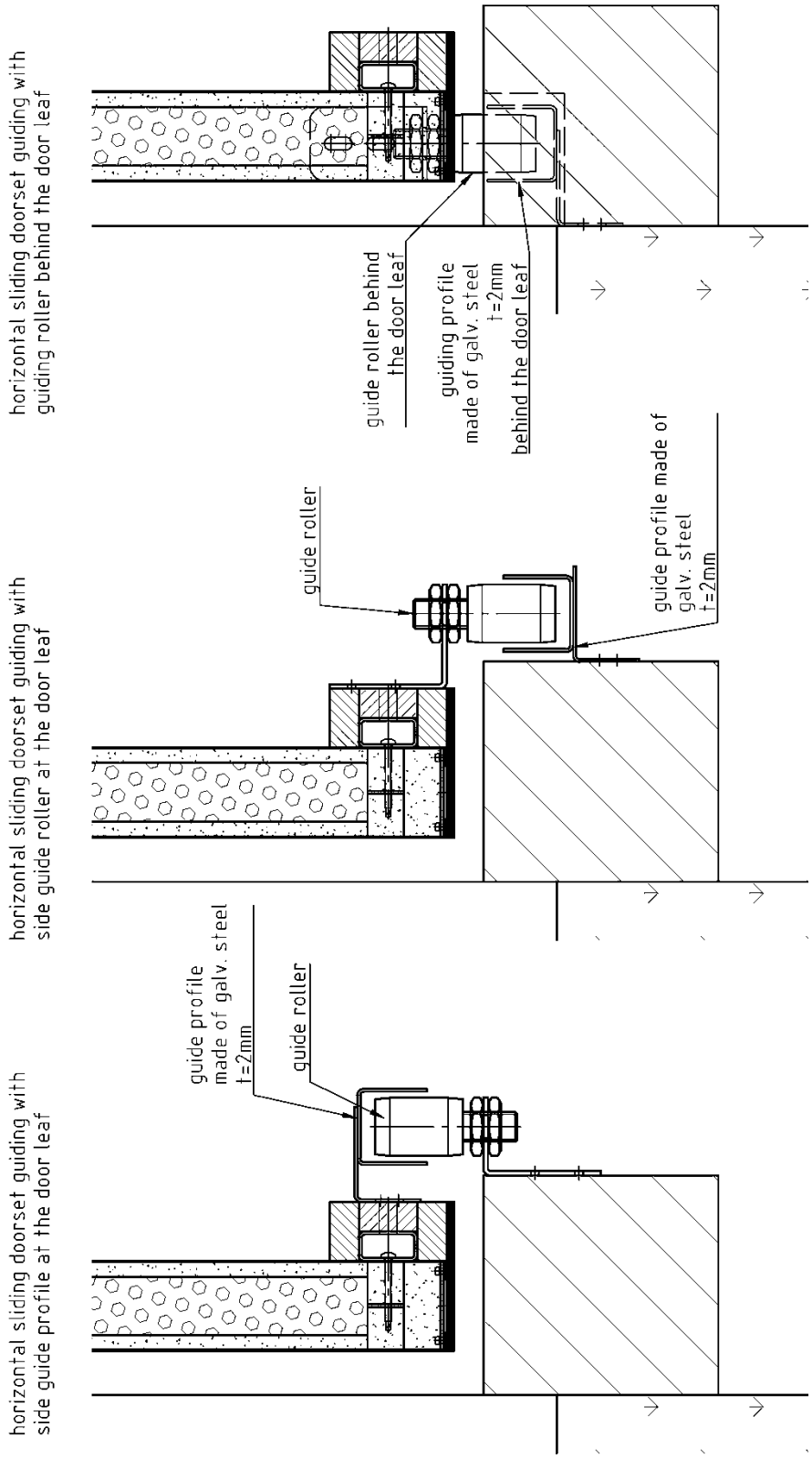
Schiebetor ORPHEUS-FAA
Hubtor APOLLO-FAA

Overview of the lower edge of the closure for raised installation position and for installation with conveyor technology

Annex 25



Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	Annex 26
Structure of the sealing blocks Structure of the panel at the bottom	



Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	Annex 27
Gate guide at the opposite side of the inlet	

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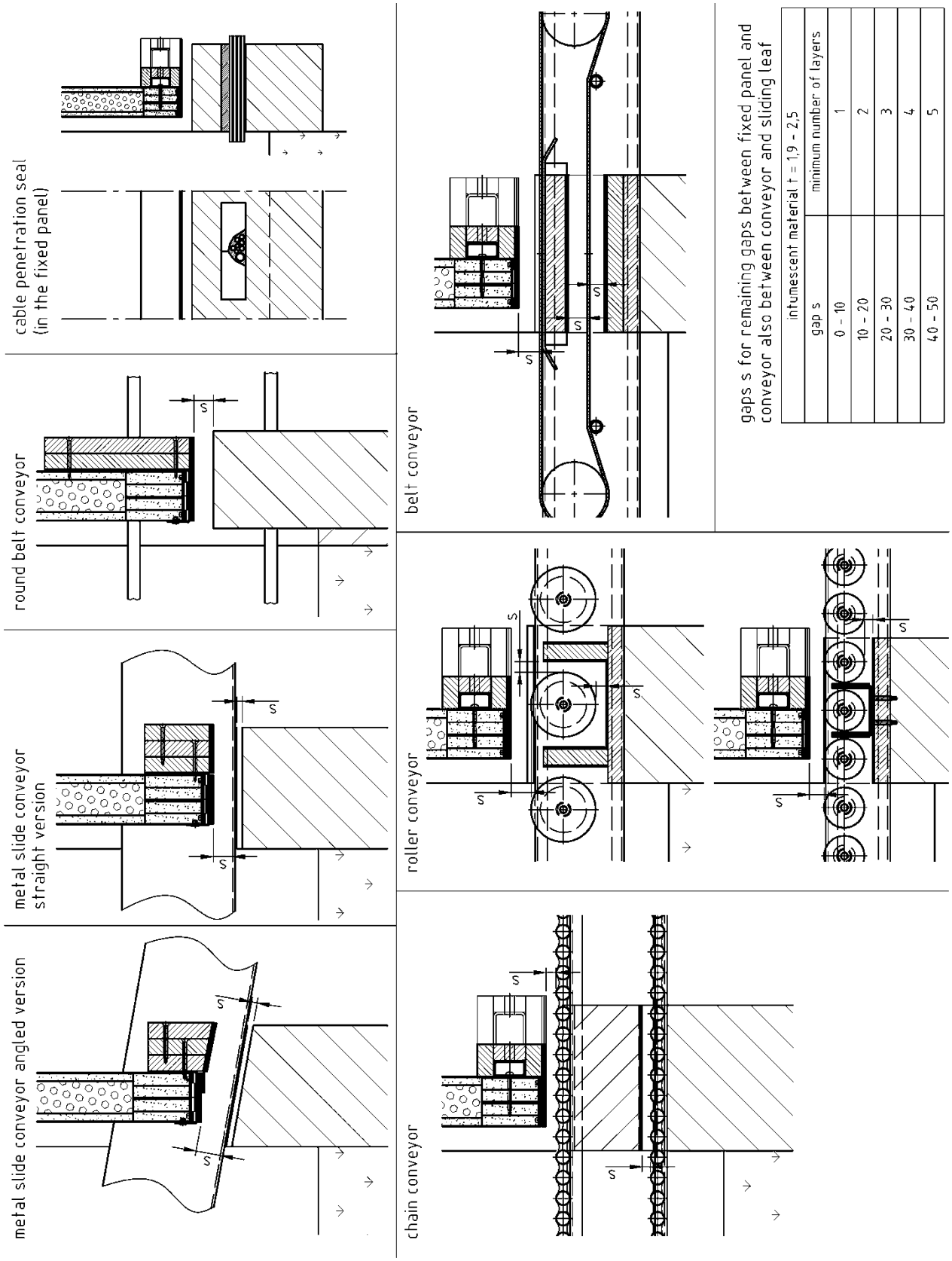


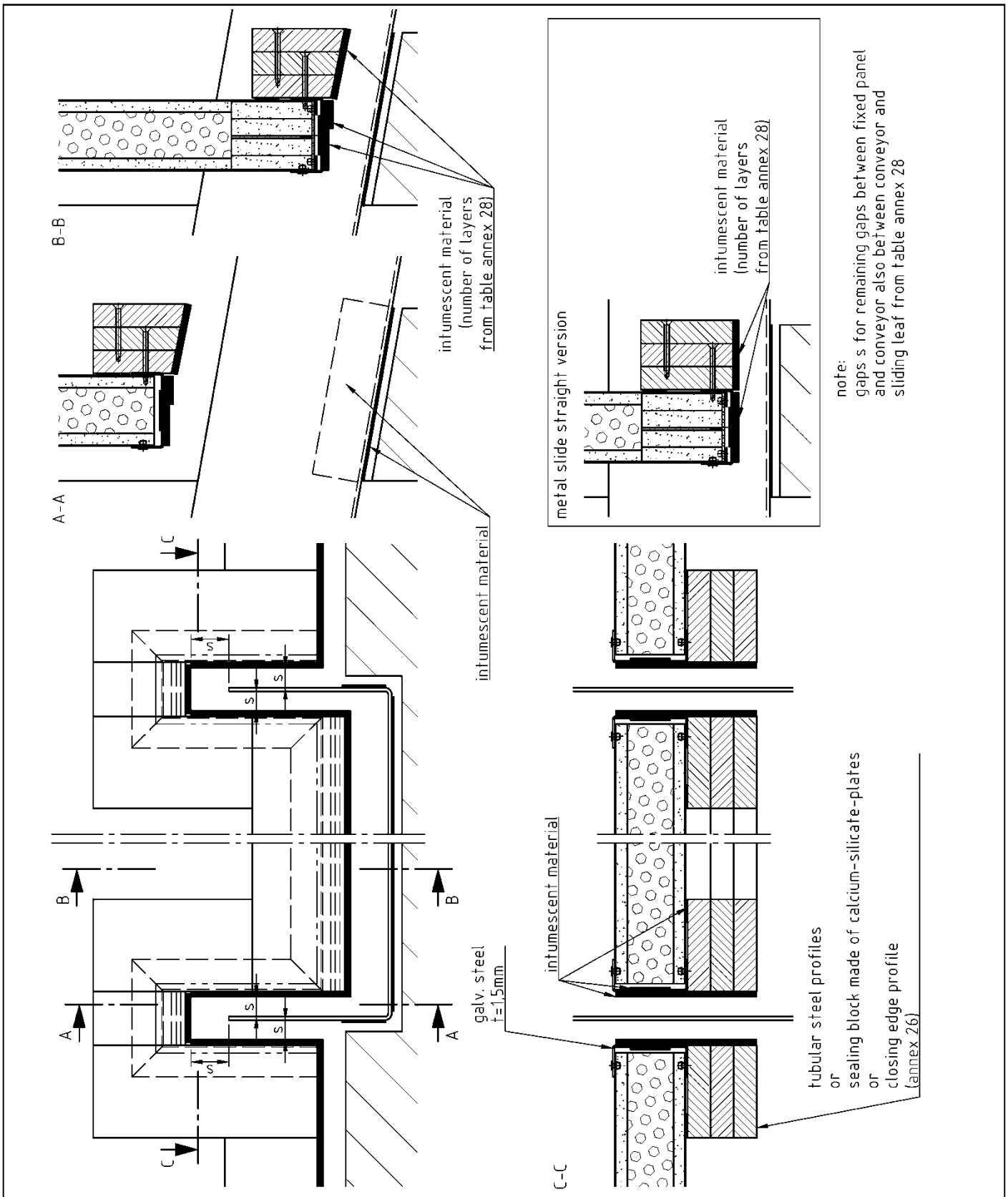
gaps s for remaining gaps between fixed panel and conveyor also between conveyor and sliding leaf

intumescent material t = 1,9 - 2,5	
gap s	minimum number of layers
0 - 10	1
10 - 20	2
20 - 30	3
30 - 40	4
40 - 50	5

Schiebetor ORPHEUS-FAA
Hubtor APOLLO-FAA

Overview of the conveyor techniques

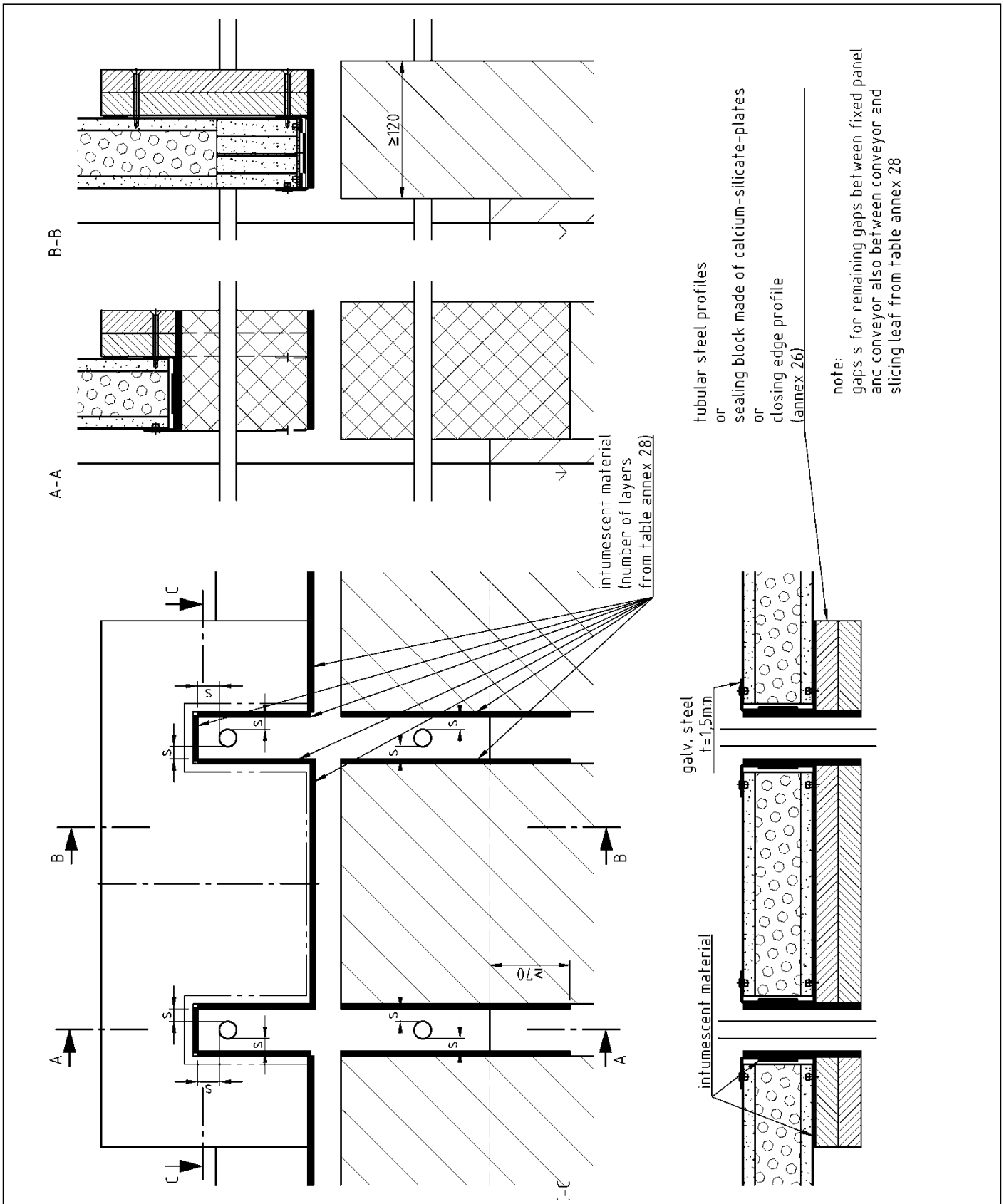
Annex 28



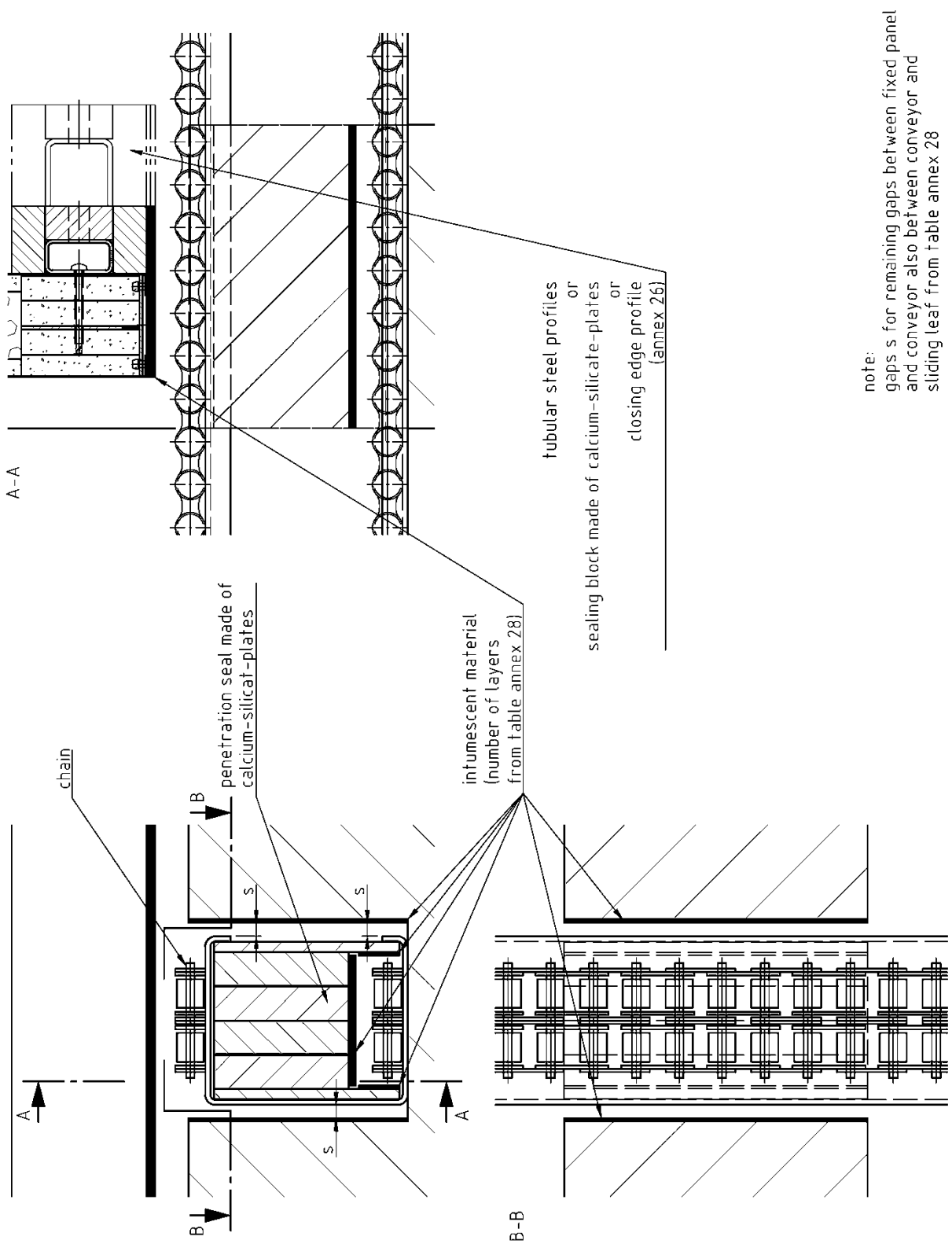
Schiebetor ORPHEUS-FAA
Hubtor APOLLO-FAA

Continuous gravity chute made of sheet steel

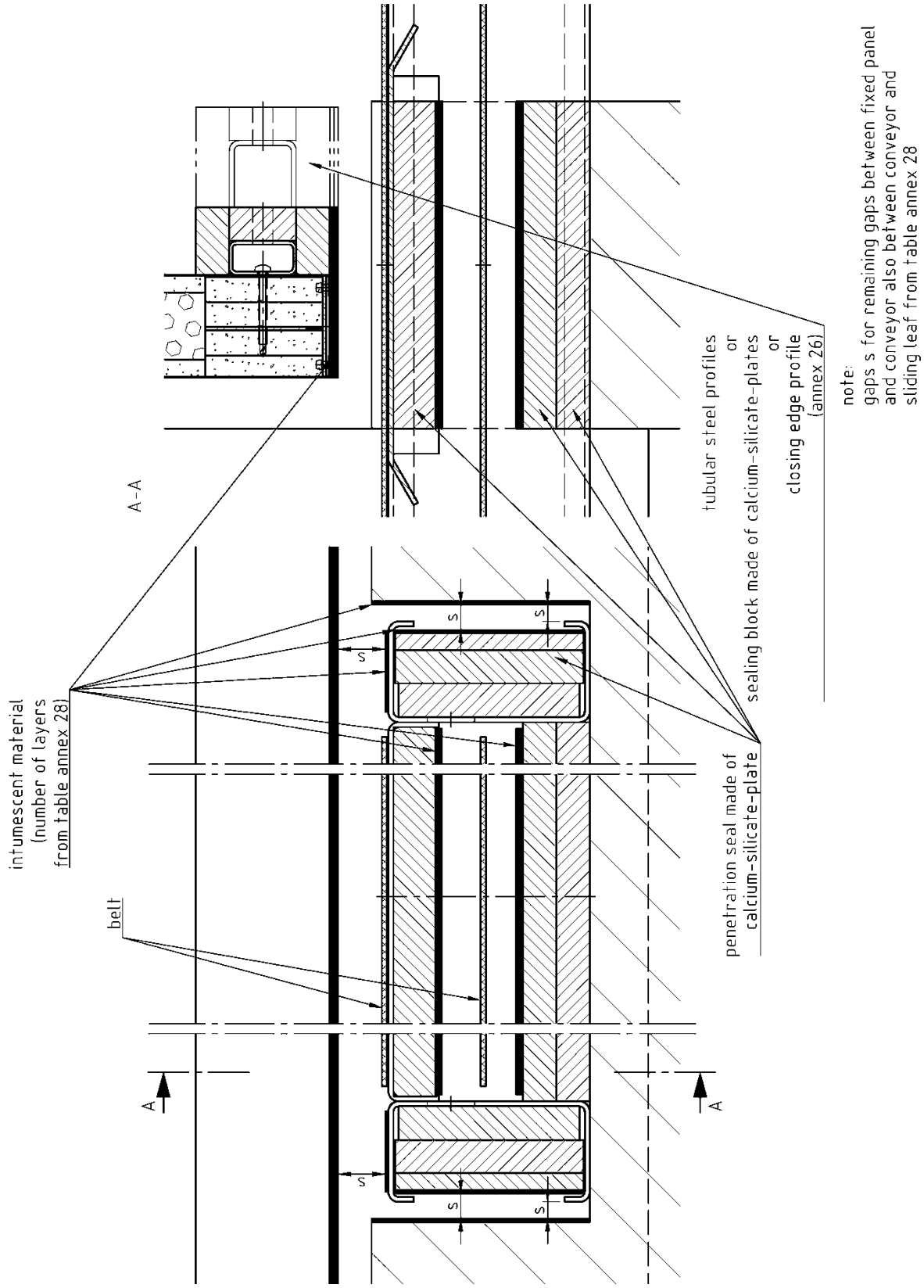
Annex 29



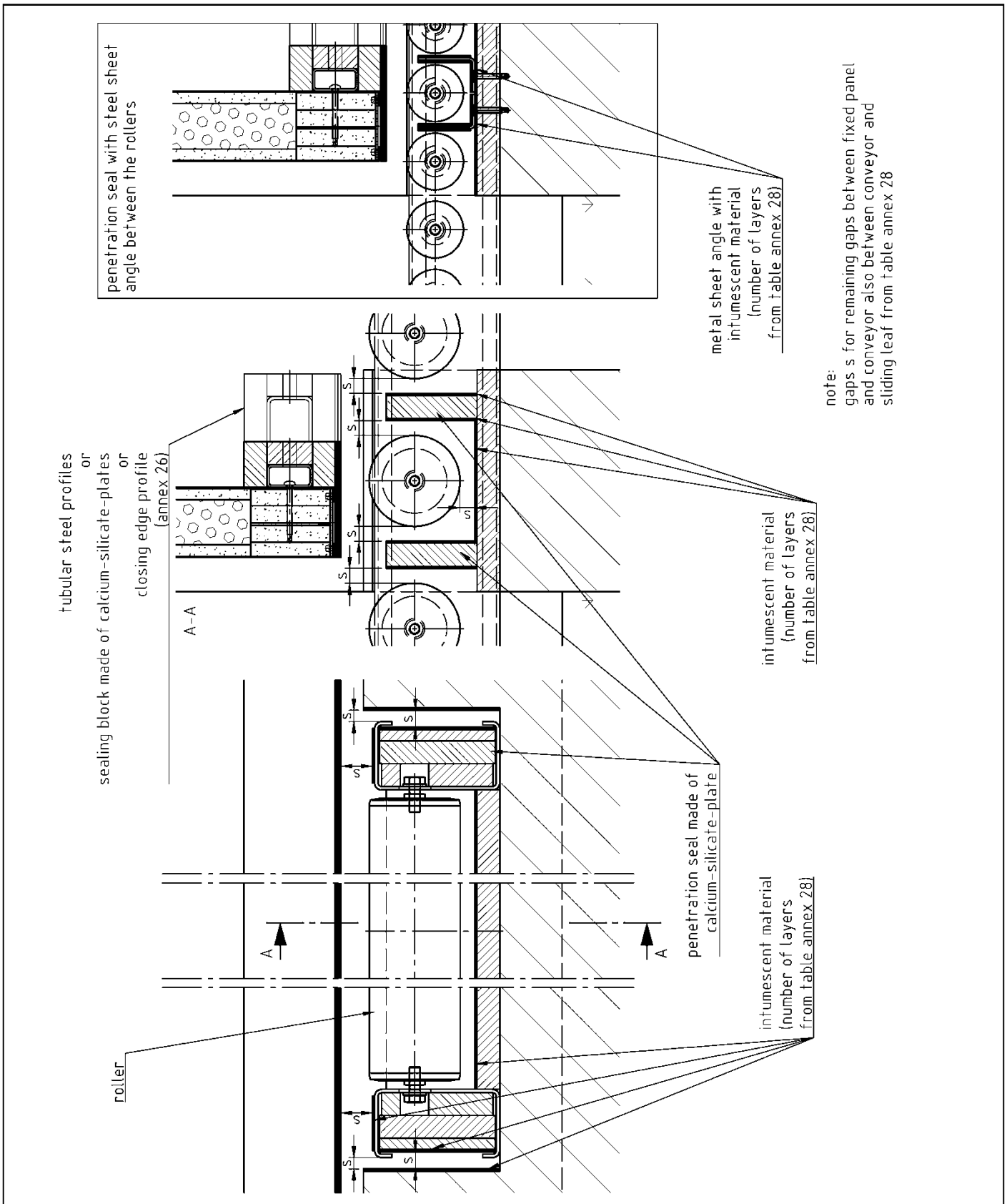
Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	Annex 30
Round belt	



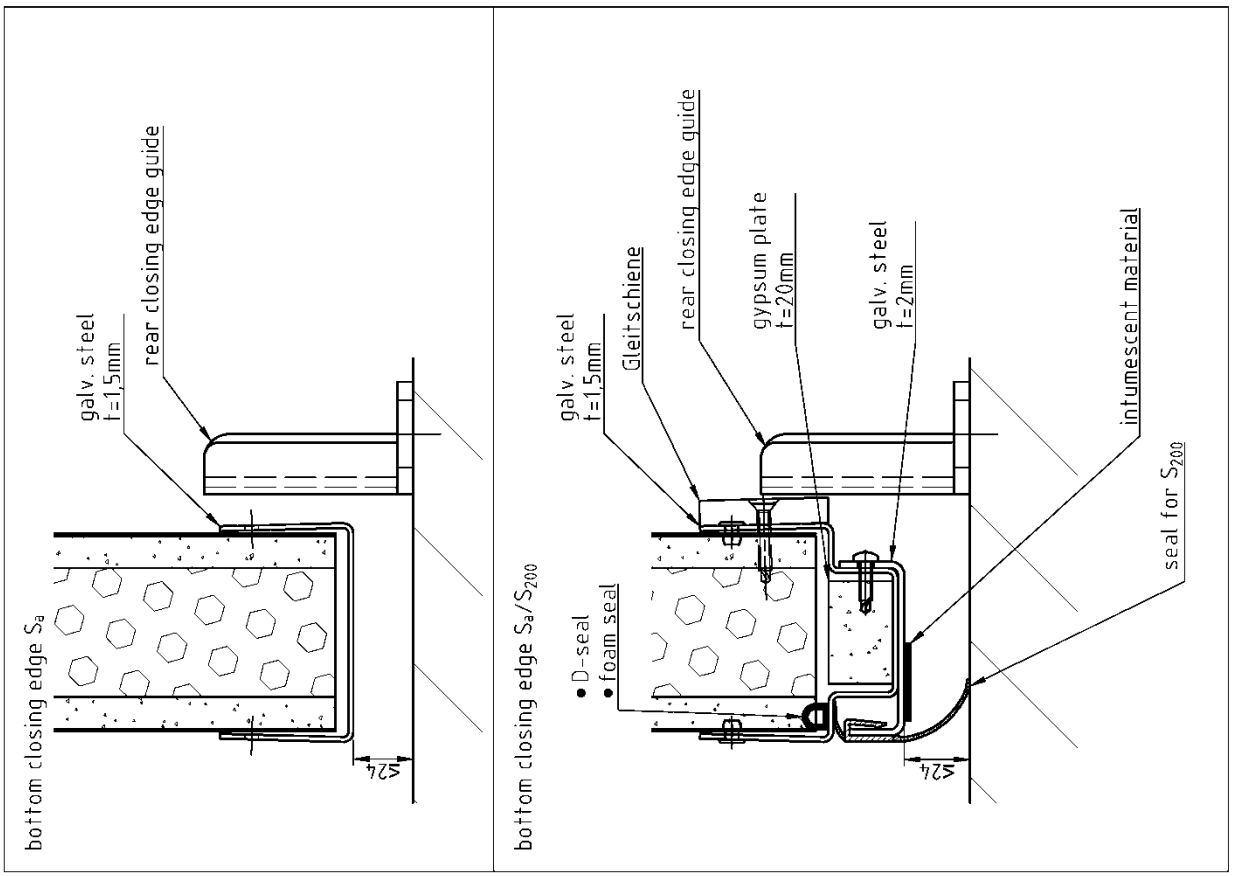
Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	Annex 31
Chain conveyor	

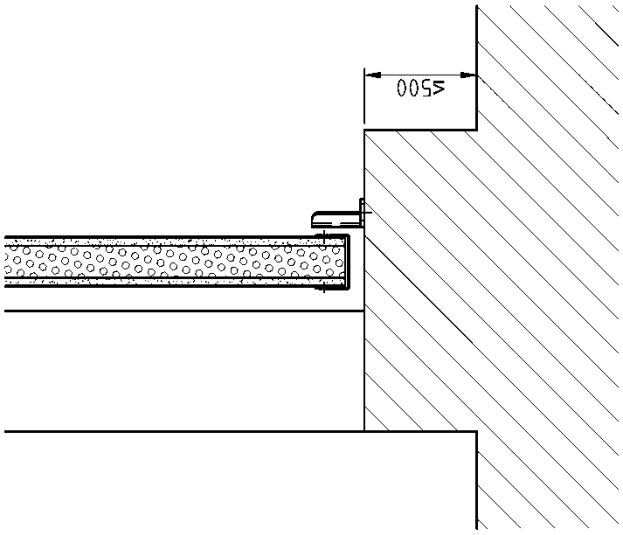


Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	Annex 32
Belt conveyor	



Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	Annex 33
Roller conveyor	





Schiebetor ORPHEUS-FAA Hubtor APOLLO-FAA	Annex 34
Overview of the floor-close-off S_a/S_{200} without raised installation position (≤ 500 mm)	