

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
Laender Governments



European Technical Assessment

ETA-06/0232
of 2 October 2018

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General Part

Technical Assessment Body issuing the
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

"HANSE-HAUS"

Product family
to which the construction product belongs

Timber building kits

Manufacturer

Hanse Haus GmbH & Co. KG
Ludwig-Weber-Straße 18
97789 Oberleichtersbach
DEUTSCHLAND

Manufacturing plant

Herstellwerk 1

This European Technical Assessment
contains

74 pages including 2 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

ETAG 007, Juli 2013,
used as EAD according to Article 66 Paragraph 3 of
Regulation (EU) No 305/2011.

This version replaces

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Specific part

1 Technical description of the product

"HANSE-HAUS" is a timber building kit.

The building kit consists of pre designed and prefabricated building components such as walls, roofs and floors in varying numbers according to the scope of application (building project). Depending on the building project the kit is put together at the factory and mounted on site.

The main load-bearing structure is a timber frame with planking.

The prefabricated building components and the relevant components are shown in Annex A. Essential construction details including their joints are described in Annex B.

The brick facing, the internal linings, roofing materials, stairs, service installations and other building components which are needed for a complete building are not part of this European Technical Assessment, hereinafter referred to as ETA.

Floor lining is also not subject of this ETA.

This also applies to additional load-bearing components (e.g. joists or steel girders for concentrated loads / point loads) which according to its structural analysis are required for each individual construction works.

Windows and doors are not part of the kit. No used wood shall be used for this kit.

The substructure of the building is not part of this European technical approval.

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

The range of application of "HANSE-HAUS" is:

- residential building (single-storey, multi-storey)
- commercial buildings (hotel complexes, office buildings, industrial buildings)

The kit can be used for separate building works or be placed as a heightening on an existing building. The tolerances of the surface of the substructure amount to ± 10 mm.

The performance given in section 3 is only valid if the timber building kit is used in compliance with the specifications and conditions given in Annex A and B. The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the timber building kit of at least 50 years and of at least 25 years for the exterior wall cladding. 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.

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

3.1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Mechanical resistance and stability for each load-bearing building component (walls, floors and roof structures) and their connections	See Annex A All building components are described with regard to their components and their structure
Resistance against seismic actions	No performance assessed (NPA)

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	The classification for reaction to fire of the components is given in Annex A
Resistance to fire	No performance assessed (NPA)
External fire performance of roof covering	No performance assessed (NPA)

3.3 Hygiene, health and the environment (BWR 3)

Essential characteristic	Performance
Vapour permeability and moisture resistance	See Annex A
Water tightness of the external envelope	See Annex A
Water tightness of the internal surface finish	No performance assessed (NPA)
Content and/or release of dangerous substances	
Biocides	No performance assessed (NPA)
Fire protection agents	No performance assessed (NPA)
Content of active agents for root penetration in bitumen sheets	No performance assessed (NPA)
Biopersistent fibres	The half-life for tested WHO fibres is ≤ 40 days.
Formaldehyde	The wood-based panels tested for its formaldehyde emission and satisfy class E1 in accordance with EN 13986 ¹ and EN 14080 ² .
VOC, SVOC	No performance assessed (NPA)
Release scenarios regarding BWR 3	No performance assessed (NPA)

3.4 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Impact resistance	Wall construction with wood based panels $d \geq 12,5$ mm is appropriate.
Slipperiness of floor	No performance assessed (NPA)

¹ EN 13986:2004 Wood-based panels for use in construction - Characteristics, evaluation of conformity and marking

² EN 14080:2013 Timber structures - Glued laminated timber and glued solid timber - Requirements

3.5 Protection against noise (BWR 5)

Essential characteristic	Performance
airborne sound insulation	No performance assessed (NPA)

3.6 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
Thermal transmittance coefficient	U, R _T and λ-values see Annex A
Air permeability	Airtight in production according to ETA. Measuring according to ISO 9972 ³ or EN 13829 ⁴ , if necessary.
Thermal inertia	No performance assessed (NPA)

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

According to Decision 99/455/EC of the Commission⁵, the system to be applied is 1.

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.

Issued in Berlin on 2 October 2018 by Deutsches Institut für Bautechnik

BD Dipl.-Ing. Andreas Kummerow
Head of Department

beglaubigt:
Baumann

³ EN ISO 9972:2013 Thermal performance of buildings - Determination of air permeability of buildings - Fan pressurization method

⁴ EN 13829:2000 Thermal performance of buildings – Determination of air permeability of buildings - Fan pressurization method (ISO 9972:1996 modified)

⁵ Official Journal of the European Communities L 178/56-57 of 14.07.1999

ANNEX A - DESCRIPTION OF THE BUILDING COMPONENTS

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A.1 Specification of the technical description

Technical description of building elements

The single-wall elements have a width of 1.25 m up to 1.45 m and a height of 2.54 m up to 2.90 m. All walls, external and internal (load bearing and non-load-bearing), are assembled with single-wall elements. The connection between the individual single-wall elements to complete walls is done with static load-bearing connections of the projecting planking with the connection posts (Annex A) by nails or staples. On delivery at the plant the wooden components have a moisture content of $\leq 15\%$. The single-wall elements (external wall, internal wall) are covered on both sides; the covering is glued over the entire surface to the timber frame structure, followed by applying the insulation to the external walls. The gable elements are nailed.

For window and door openings glued single-wall elements with standard openings are used.

The ceiling elements (suspended floor) are manufactured according to statics. The ceiling elements are manufactured with a width of 1.25 of up to 2.50 m maximum. The ceiling beams are arranged in a grid pattern of 62.5 cm. The minimum height of the beams is 22 cm and the maximum 28 cm. The widths of the beams are 7 cm up to 24 cm maximum, and they are a combination of the widths with 7 cm and 10 cm. On delivery to the plant the wooden components have a moisture content of $\leq 18\%$.

The roofing elements are manufactured according to statics. The roofing elements are manufactured with a width of 1.25 of up to 2.50 m maximum. The rafters are arranged in a grid pattern of 1.25 m. The height of the rafters is 22 cm up to 28 cm maximum. The width of the rafters is 7 cm up to 24 cm maximum. On delivery to the plant the wooden components have a moisture content of $\leq 18\%$.

Non-load-bearing internal walls may be arranged in any way.

Exterior wall cladding:

Exterior walls get an external insulation system according to ETA-09/0266 (see description in Annex A).

In individual cases, the walls are cased or clad with suitable materials in accordance with the technical state of the art.

The connections to each other of the individual building components are shown in Annex B.

The anchorage of the external wall building components to the substructure (basement or foundation slab made of concrete) is performed with galvanized angle brackets which are connected with nails with the external walls and with anchors with the foundation slab. The anchorage of the external wall building components to the substructure is shown in Annex B. The verification of the suction safety of the wall building components with the substructure is subject of a separate verification of stability.

Specification of production and manufacturing

The manufacture of a kit is conducted on the basis of a specific structural design for the construction works. The structural design shall comply with the building regulations (regulations concerning construction works).

The factory production of the building components and the temporary storage of the components are done in dry and heatable premises.

A.2 Specification of essential characteristics

Mechanical Resistance and Stability:

The building components are prefabricated and brought to site as assembled elements.

The load-bearing gluing of the wall elements (external wall, internal wall) is performed at the factory with melamine-resin adhesive, type I (the composition is deposited at DIBt) according to EN 301¹/302². The bonding is taken into account in the control plan.

The gypsum board of the "floor slab", the "collar beam ceiling of the purlin roof", the "collar beam ceiling of the rafter roof" and the gypsum board of the "roof" form part of the building kit; however, they are installed on site.

The individual building components are interconnected by corner posts on site. These are made of solid timber according to EN 338³. They are included in the delivery, but are not part of the kit.

Usually plastic-windows (PVC) are used (Annex A). Wooden, aluminum or wood-aluminum windows which fulfil the requirements at the place of use may also be used.

For roof coverings normally concrete tiles according to EN 490⁴/491⁵ or clay tiles according to EN 1304⁶ are used. Other roofings which fulfil the requirements at the place of use may also be used. The roofings are not part of the kit.

All components marked with an asterisk (Annex A) are not part of the kit and are installed on site.

By means of this exactly description of the load-bearing building components may both mechanical resistance and stability for each load-bearing building component and their connections between the components be determined.

Vapour permeability and moisture resistance:

The works are designed such that the building envelope with regards to interstitial and surface condensation meets the general requirements.

The building components of the kit are made such that sweating (condensation) on the inside of building components as well as on the inner surface do not have any harmful effects. The calculation was carried out following EN ISO 13788⁷, with the following boundary conditions:

	warm side	cold side
Condensation period		
Air temperature	20 °C	-10 °C
Relative humidity	50,0 %	80,0 %
Duration of condensation	1440 hours	
Evaporation period		
Air temperature *	12 °C	12 °C
Relative humidity	70 %	70 %
Duration of evaporation	2160 hours	

* On roofs the surface temperature amounts to 20°C.

1	EN 301:2013	Adhesives, phenolic and amino-plastic, for load-bearing timber structures-
2	EN 302-1 to 4	Adhesives for load-bearing timber structures - Test methods – Part 1:2013 Determination of bond strength in longitudinal tensile shear strength Part 2:2013 Determination of resistance to delamination Part 3:2013 Determination of the effect of acid damage to woodfibre by temperature and humidity cycling on the transverse tensile strength Part 4:2013 Determination of the effects of wood shrinkage on the shear strength
3	EN 338:2016	Timber structures - Strength classes
4	EN 490:2012	Concrete roofing tiles and fittings for roof covering and wall cladding – Product specifications
5	EN 491:2011	Concrete roofing tiles and fittings for roof covering and wall cladding – Test methods
6	EN 1304:2013	Clay roofing tiles and fittings – Product definitions and specifications
7	EN ISO 13788:2001	Hygrothermal performance of building components and building elements. Internal surf temperature to avoid critical surface humidity and interstitial condensation - Calculation methods

Water tightness:

Provided the kit is manufactured and assembled according to this ETA the building envelope is resistant to penetrating water (also driving rain-resistant) and snow. In case of ranges of application with extreme conditions of driving rain and snow the intended use shall be assessed in the individual case.

Durability:

Softwood that fulfils the need of natural durability classes 3, 4 or 5 of solid wood according to EN 350⁸ is used as construction wood.

Building components are usually not treated with chemical wood preservatives.

The use of timber without any chemical wood preservatives in areas where termites may attack the kit is not planned.

The fasteners used for this kit meet the requirements of service class 1 in accordance with EN 1995-1-1⁹ as far as no special corrosion conditions exist.

Only technically dried timber with the following moisture content is used:

Building components	Max. moisture content
Interior- and exterior walls, glued	15%
Gables and knee pole walls, sleeper- and frame wood, ceilings and floors	18%

Execution of construction works

The manufacturer presented specific instructions for the installation of the kit into the works to the approval body. The specific instruction covers all important aspects related to the work on site, such as:

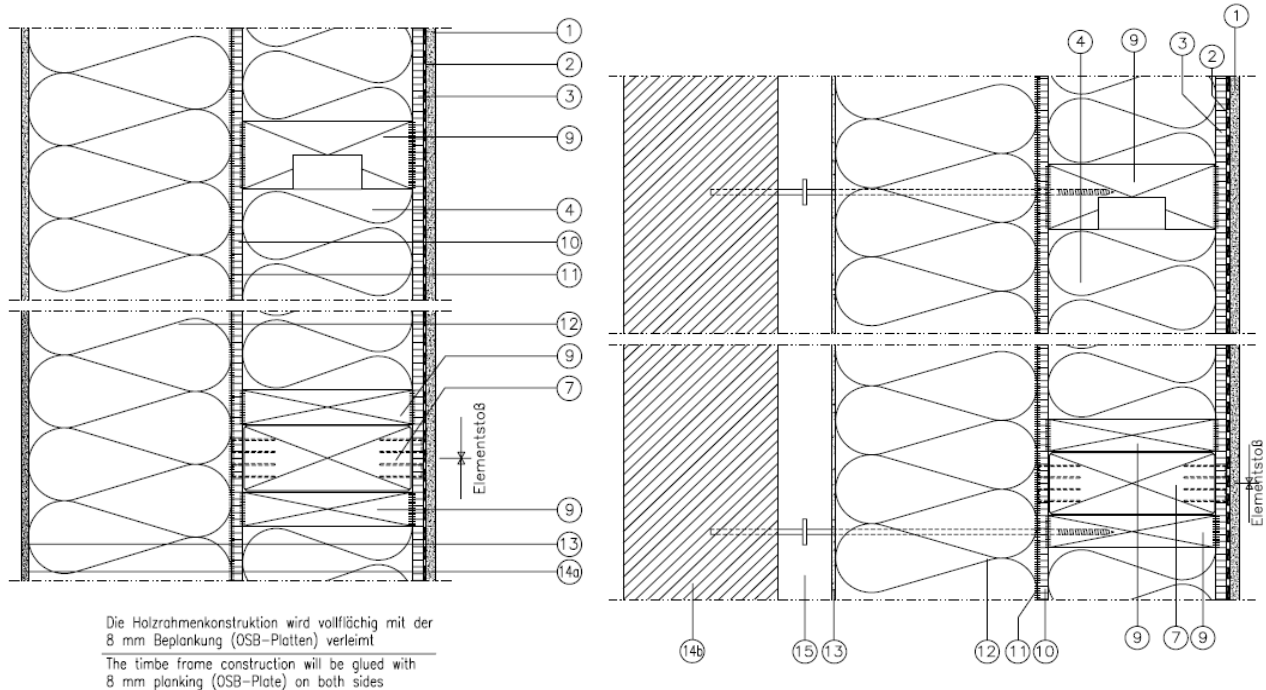
- erection techniques and necessary equipment
- temporary bracing and weather protection
- completion of joints between components of the kit (fixing, sealing against climatic influences, etc.)
- fixing of wind anchorage to the substructure and between building parts
- additional building materials and building components applied on site and which are a precondition for the fitness of use of the kit
- special boundary conditions (e.g. special crane requirements, hoisting strap positions, etc.)

⁸ EN 350:2016 Durability of wood-based products – Testing and classification of the durability to biological agents of wood and wood-based materials

⁹ EN 1995-1-1:2004+AC:2006+A1:2001 Eurocode 5: Design of timber structures – Part 1-1: General – Common rules and rules for buildings

A.3 Specification of building elements

A3.1 External wall, Variant A (horizontal section)



Components

No.	Product	Dimensions [mm]	EN-standard ETA	Reaction to fire
1	Gypsum board Density $\geq 600 \text{ kg/m}^3$	12.5	EN 520	B-s1, d0 (2003/593/EC)
2	Vapour barrier $s_d > 10 \text{ m}$ Alternatively PE-foil $s_d > 100 \text{ m}$	0.2 0,16	EN 13984	E
3	OSB-board alternatively: BFU- board Density $\geq 600 \text{ kg/m}^3$	8 9	EN 300 EN 636	E D-s2, d0 (2003/43/EC)
4	Mineral fibre	124	EN 13162	A1 (96/603/EG, amended by 2000/605/EC)
Annex B	Top chord C 24 Density $\geq 350 \text{ kg/m}^3$	50/125 50/140	EN 338 EN 15497	D-s2, d0 (2003/593/EC)
Annex B	Threshold C 24 Density $\geq 350 \text{ kg/m}^3$	30/140 50/140	EN 338 EN 15497	D-s2, d0 (2003/593/EC)
7	Connection post C 24 Density $\geq 350 \text{ kg/m}^3$	45/122	EN 338 EN 14081	D-s2,d0 (2003/593/EC)
Annex B	Connection post C 24 Density $\geq 350 \text{ kg/m}^3$	23/122	EN 338 EN 14081	D-s2, d0 (2003/593/EC)
9	Framing timber ¹⁰ C 24 Density $\geq 350 \text{ kg/m}^3$	25/124 50/124	EN 338 EN 14081	D-s2, d0 (2003/593/EC)
10	OSB- board alternatively: BFU- board Density $\geq 600 \text{ kg/m}^3$	8 9	EN 300 EN 636	E D-s2, d0 (2003/43/EC)

¹⁰ Spacing of the posts: $e = 300 \text{ mm}$ (according to Annex B)

Exterior wall cladding:				
11	Glue: according to ETA-09/0266	full-surface application	ETA-09/0266	The whole system B-s2, d0
12	Insulation boards according to ETA-09/0266	100 - 300	ETA-09/0266	
13	Plaster with reinforcement according to ETA-09/0266	2.0 - 3.5	ETA-09/0266	
14a	External plaster - Stolit K / R / MP / Effect - StoSillico K / R / MP - StoLotusan K / MP - Sto-Superlit - Sto-Nivellit + StoSillico color	≤ 3.0	ETA-09/0266	
	- prefabricated clinker-like laster part Sto-Flachverblender + Sto- Klebe- und Fugen- mörtel	4.0 - 7.0	ETA-09/0266	
14b ^{*11}	Brick facing	95 - 115	-	-
15	Air layer	40 - 60	-	-

Fasteners

Component	Type	EN-Standard	Spacing [mm]	
			Edge	Middle
Gypsum board	Screws 3.9 x 30	EN 14566	≤ 250	≤ 300 Post spacing
OSB board to connection post	Fasteners according to static calculations; Nails 2.5 x 35 mm alternatively: Staples d=1.52, galvanised length according to static calculations	EN 14592 EN 14592	≤ 80 ≤ 150	-
OSB board to timber frame structure	two component glue	EN 301/ EN 302	full surface	

Data of physics relating to construction according to EN ISO 6946 taking account of all components stated above:

Thermal transmittance coefficient

$$U = 0,17 \text{ (W/m}^2\text{K)} \text{ to } U = 0,08 \text{ (W/m}^2\text{K)}$$

Thermal resistance:

$$R_T = 5,76 \text{ (m}^2\text{K/W)} \text{ to } R_T = 12,35 \text{ (m}^2\text{K/W)}$$

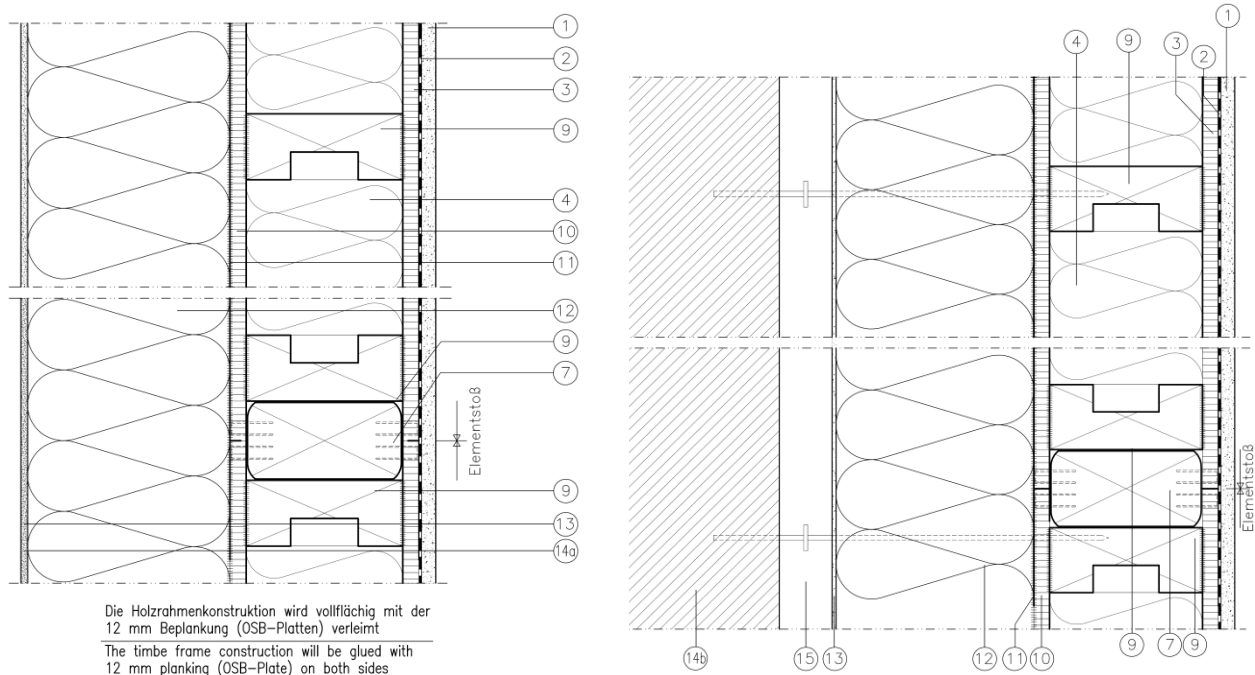
Boundary conditions:

$$R_{si} = 0,13 \text{ (m}^2\text{K/W)}$$

$$R_{se} = 0,04 \text{ (m}^2\text{K/W)}$$

¹¹ All components marked with an asterisk are not part of the kit, they are however necessary for the building components and will be installed on site (place of use).

A3.2. External wall, Variant B (horizontal section):



Components

No.	Product	Dimensions [mm]	EN-standard ETA	Reaction to fire
1	Gypsum board Density $\geq 600 \text{ kg/m}^3$	12.5	EN 520	B-s1, d0 (2003/593/EC)
2	Vapour barrier $s_d > 10 \text{ m}$ Alternatively PE-foil $s_d > 100 \text{ m}$	0.2 0,16	EN 13984	E
3	Wood-based-panels OSB-board alternatively: BFU- board alternatively: Particle board Density $\geq 600 \text{ kg/m}^3$	12	EN 13986 EN 300 EN 636 EN 312	D-s2, d0 (2003/43/EC)
4	Mineral fibre	116	EN 13162	A1 (96/603/EG, amended by 2000/605/EC)
Annex B	Top chord C 24 Density $\geq 350 \text{ kg/m}^3$	50/125 50/140	EN 338 EN 15497	D-s2, d0 (2003/593/EC)
Annex B	Threshold C 24 Density $\geq 350 \text{ kg/m}^3$	30/140 50/140	EN 338 EN 15497	D-s2, d0 (2003/593/EC)
7	Connection post C 24 Density $\geq 350 \text{ kg/m}^3$	58/114	EN 338 EN 14081	D-s2,d0 (2003/593/EC)
Anxex B	Connection post C 24 Density $\geq 350 \text{ kg/m}^3$	29/114	EN 338 EN 14081	D-s2, d0 (2003/593/EC)
9	Framing timber ¹² C 24 Density $\geq 350 \text{ kg/m}^3$	50/116	EN 338 EN 14081	D-s2, d0 (2003/593/EC)
10	Wood-based-panels OSB-board alternatively: BFU- board alternatively: Particle board Density $\geq 600 \text{ kg/m}^3$	12	EN 13986 EN 300 EN 636 EN 312	D-s2, d0 (2003/43/EC)

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¹² Spacing of the posts: e = 570 mm (according to Annex B)

Exterior wall cladding:				
11	Glue: according to ETA-09/0266	full-surface application	ETA-09/0266	The whole system B-s2, d0
12	Insulation boards according to ETA-09/0266	100 - 300	ETA-09/0266	
13	Plaster with reinforcement according to ETA-09/0266	2.0 - 3.5	ETA-09/0266	
14a	External plaster - Stolit K / R / MP / Effect - StoSillico K / R / MP - StoLotusan K / MP - Sto-Superlit - Sto-Nivellit + StoSillico color	≤ 3.0	ETA-09/0266	
	- prefabricated clinker-like laster part: Sto-Flachverblender + Sto- Klebe- und Fugen- mörtel	4.0 - 7.0	ETA-09/0266	
14b ^{*13}	Brick facing	95 - 115	-	-
15	Air layer	40 - 60	-	-

Fasteners

Component	Type	EN-Standard	Spacing [mm]	
			Edge	Middle
Gypsum board	Screws 3.9 x3 0	EN 14566	≤ 250	≤ 625 Post spacing
Wood-based-panels to connection post	Fasteners according to static calculations; Nails 2.5 x 35 mm alternatively: Staples d=1.52, galvanised length according to static calculations	EN 14592 EN 14592	≤ 80 ≤ 150	-
Wood-based-panels to timber frame structure	two component glue	EN 301/ EN 302	full surface	

Data of physics relating to construction according to EN ISO 6946 taking account of all components stated above:

Thermal transmittance coefficient

$U = 0,17 \text{ (W/m}^2\text{K)}$ to $U = 0,08 \text{ (W/m}^2\text{K)}$

Thermal resistance:

$R_T = 5,78 \text{ (m}^2\text{K/W)}$ to $R_T = 12,35 \text{ (m}^2\text{K/W)}$

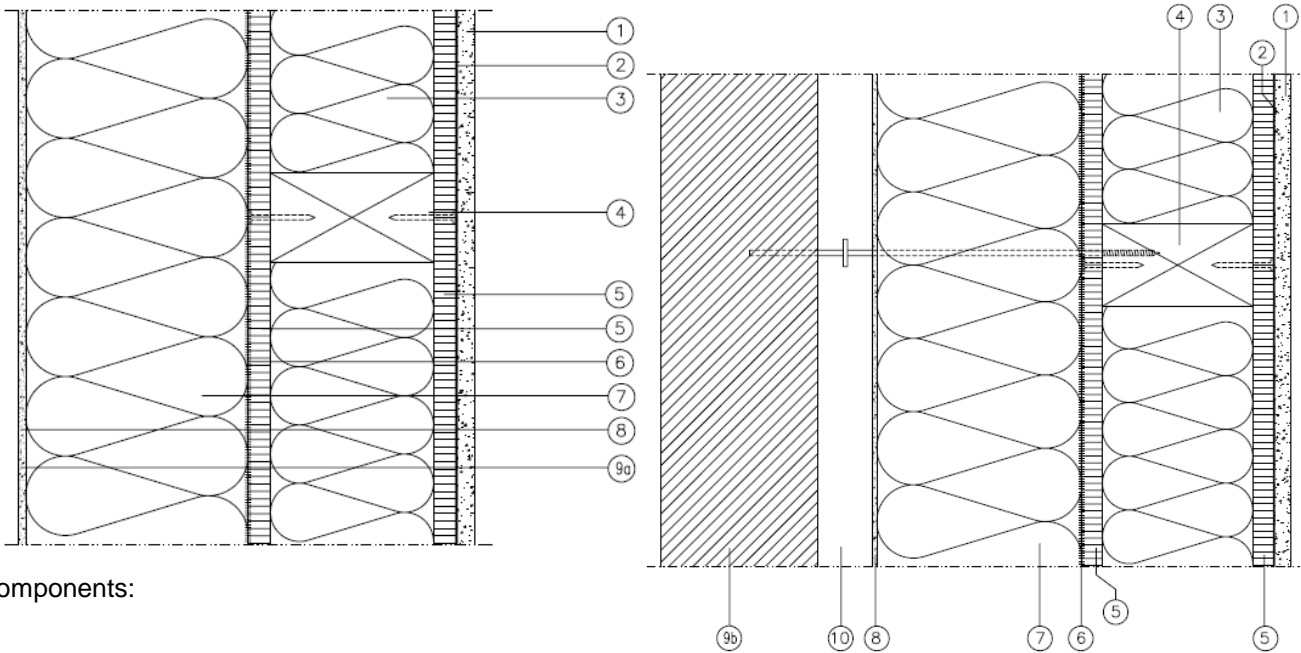
Boundary conditions:

$R_{si} = 0,13 \text{ (m}^2\text{K/W)}$

$R_{se} = 0,04 \text{ (m}^2\text{K/W)}$

¹³ All components marked with an asterisk are not part of the kit, they are however necessary for the building components and will be installed on site (place of use).

A3.3 Gable external wall (horizontal section)



Components:

No.	Product	Dimensions [mm]	EN-standard ETA	Reaction to fire
1	Gypsum board Density $\geq 600 \text{ kg/m}^3$	12.5	EN 520	B-s1, d0 (2006/673/EC)
2	Vapour barrier $s_d > 10 \text{ m}$ Alternatively PE-foil $s_d > 100 \text{ m}$	0.2 0.16	EN 13984	E
3	Mineral fibre	110	EN 13162	A1 (96/603/EC, amended by 2000/605/EC)
4	Framing timber ¹⁴ C 24 Density $\geq 350 \text{ kg/m}^3$	60/110	EN 338 EN 15497	D-s2, d0 (2003/593/EC)
5	Wood-based-panels OSB-board alternatively: BFU- board alternatively: Particle board Density $\geq 600 \text{ kg/m}^3$	15 12 12	EN 13986 EN 300 EN 636 EN 312	D-s2, d0

¹⁴ Spacing of the posts: $e = 570 \text{ mm}$ (according to Annex B)

Exterior wall cladding:				
6	Glue: according to ETA-09/0266	vollflächiger Auftrag	ETA-09/0266	The whole system B-s2, d0
7	Insulation boards according to ETA-09/0266	100 - 300	ETA-09/0266	
8	Plaster with reinforcement according to ETA-09/0266	2.0 - 3.5	ETA-09/0266	
9a	External plaster - Stolit K / R / MP / Effect - StoSillico K / R / MP - StoLotusan K / MP - Sto-Superlit - Sto-Nivellit + StoSilico color	≤ 3.0	ETA-09/0266	
	- prefabricated clinker-like laster part: Sto-Flachverblender + Sto- Klebe- und Fugen- mörtel	4.0 - 7.0	ETA-09/0266	
9b ^{*15}	Brick facing	95 - 115	-	-
10	Air layer	40 - 60		-

Fasteners

Component	Type	EN-Standard	Spacing [mm]	
			Edge	Middle
Gypsum board	Screws 3.9 x 30	EN 14566	≤ 250	≤ 625 post spacing
Wood-based-panels to timber frame structure	Nails 2.5 x 50	EN 14592	≤ 80	≤ 225

Data of physics relating to construction according to EN ISO 6946 taking account of all components stated above:

Thermal transmittance coefficient:

$U = 0,16$ (W/m²K) to $U = 0,08$ (W/m²K)

Thermal resistance:

$R_T = 5,98$ (m²K/W) to $R_T = 12,53$ (m²K/W)

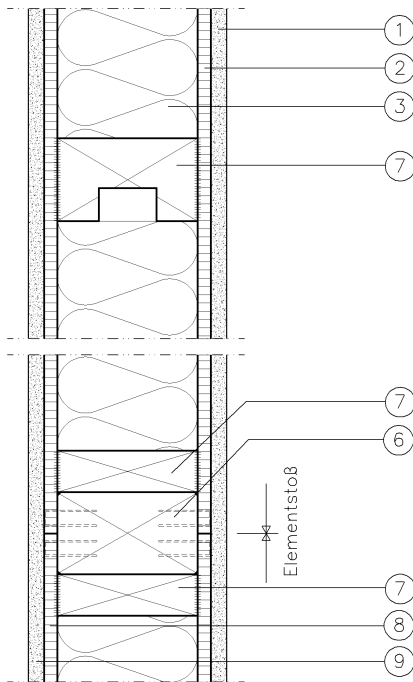
Boundary conditions:

$R_{si} = 0,13$ (m²K/W)

$R_{se} = 0,04$ (m²K/W)

¹⁵ All components marked with an asterisk are not part of the kit, they are however necessary for the building components and will be installed on site (place of use).

A3.4 Internal wall Variant A (horizontal section)



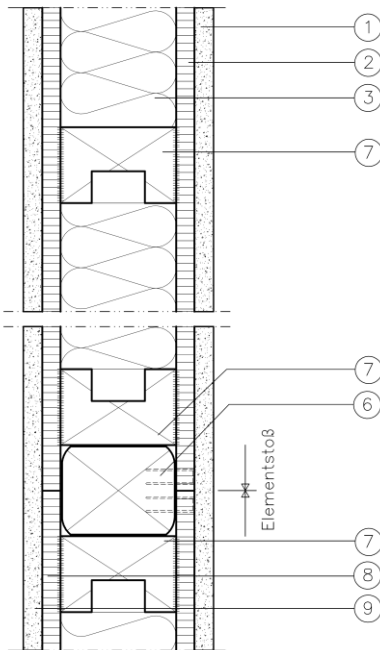
Components:

No.	Product	Dimensions [mm]	EN-standard ETA	Reaction to fire
1	Gypsum board Density $\geq 600 \text{ kg/m}^3$	12.5	EN 520	B-s1, d0 (2003/593/EC)
2	OSB-board alternatively: BFU- board Density $\geq 600 \text{ kg/m}^3$	8 9	EN 300 EN 636	E D-s2,d0
3	Mineral fibre insulation	85	EN 13162	A1 (96/603/ EC, amended by 2000/605/ EC)
Annex B	Top chord C 24 Density $\geq 350 \text{ kg/m}^3$	25/100 50/100	EN 338 EN 15497	D-s2, d0 (2003/593/ EC)
Annex B	Bottom chord C 24 Density $\geq 350 \text{ kg/m}^3$	30/100 50/100	EN 338 EN 15497	D-s2, d0 (2003/593/ EC)
6	Connection post C 24 Density $\geq 350 \text{ kg/m}^3$	45/82	EN 338 EN 14081	D-s2, d0 (2003/593/ EC)
7	Framing timber ¹⁶ C 24 Density $\geq 350 \text{ kg/m}^3$	25/84 50/84	EN 338 EN 14081	D-s2, d0 (2003/593/ EC)
8	OSB-board alternatively: BFU- board Density $\geq 600 \text{ kg/m}^3$	8 9	EN 300 EN 636	E D-s2,d0
9	Gypsum board Density $\geq 600 \text{ kg/m}^3$	12,5	EN 520	B-s1, d0 (2003/593/ EC)

Fasteners

Component	Type	EN-Standard	Spacing [mm]	
			Edge	Middle
Gypsum board	Screws 3.9 x 30	EN 14566	≤ 250	≤ 300 post spacing
OSB board to connection post	Fasteners according to static calculations; Nails 2.5 x 35 mm alternatively: Staples d=1.52, galvanised length according to static calculations	EN 14592 EN 14592	≤ 80 ≤ 150	-
OSB board to timber frame structure	two componet glue	EN 301/ EN 302	full surface	

A3.5 Internal wall Variant B (horizontal section)



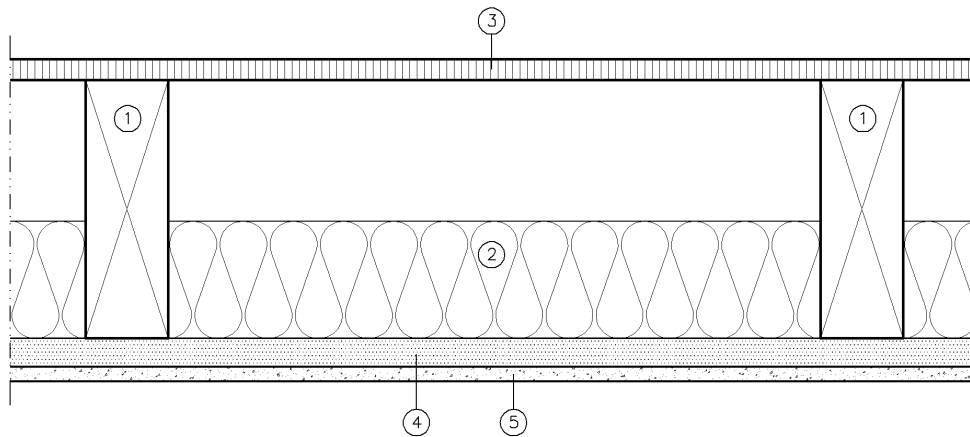
Components:

No.	Product	Dimensions [mm]	EN-standard ETA	Reaction to fire
1	Gypsum board Density $\geq 600 \text{ kg/m}^3$	12.5	EN 520	B-s1, d0 (2003/593/EC)
2	Wood-based-panels OSB-board alternatively: BFU- board alternatively: Particle board Density $\geq 600 \text{ kg/m}^3$	12	EN 13986 EN 300 EN 636 EN 312	D-s2, d0 (2003/43/EC)
3	Mineral fibre insulation	76	EN 13162	A1 (96/603/EG, amended by 2000/605/EC)
Anhang B	Top chord C 24 Density $\geq 350 \text{ kg/m}^3$	25/100 50/100	EN 338 EN 15497	D-s2, d0 (2003/593/EC)
Anhang B	Bottom chord C24 Density $\geq 350 \text{ kg/m}^3$	30/100 50/100	EN 338 EN 15497	D-s2, d0 (2003/593/EC)
6	Connection post C 24 Density $\geq 350 \text{ kg/m}^3$	58/74	EN 338 EN 14081	D-s2, d0 (2003/593/EC)
Anhang B	Connection post C 24 Density $\geq 350 \text{ kg/m}^3$	29/74	EN 338 EN 14081	D-s2, d0 (2003/593/EC)
7	Framing timber ¹⁷ C 24 Density $\geq 350 \text{ kg/m}^3$	50/76	EN 338 EN 14081	D-s2, d0 (2003/593/EC)
8	Wood-based-panels OSB-board alternatively: BFU- board alternatively: Particle board Density $\geq 600 \text{ kg/m}^3$	12	EN 13986 EN 300 EN 636 EN 312	D-s2, d0 (2003/43/EC)
9	Gypsum board Density $\geq 600 \text{ kg/m}^3$	12.5	EN 520	B-s1, d0 (2003/593/EC)

Fasteners

Component	Type	EN-Standard	Spacing [mm]	
			Edge	Middle
Gypsum board	Screws 3.9 x 30	EN 14566	≤ 250	≤ 625 post spacing
Wood-based-panels to connection post	Fasteners according to static calculations; Nails 2.5 x 35 mm alternatively: Staples d=1.52, galvanised length according to static calculations	EN 14592 EN 14592	≤ 80 ≤ 150	-
Wood-based-panels to timber frame structure	Two componet glue	EN 301/ EN 302	full surface	

A.3.6 Suspended floor (floor slab)



Components

No.	Product	Dimensions [mm]	EN-standard ETA	Reaction to fire
1	Beam** Density $\geq 350 \text{ kg/m}^3$	width 70 or 100 and height 220/240/260/280 according to static calculations	EN 338/EN 15497	D-s2, d0 (2003/593/EC)
2	Mineral fibre insulation	100*** to 280	EN 13162	A1 (96/603/EC, amended by 2000/605/EC)
3	Wood-based-panels OSB-board alternatively: Particle board Density $\geq 600 \text{ kg/m}^3$	≥ 18	EN 300 EN 312	D-s2, d0 (2003/43/EC)
4	Battens	24/48 to 80/30	EN 338/EN 14081	D-s2,d0 (2003/593/EC)
5	Gypsum board Density $\geq 600 \text{ kg/m}^3$	12.5	EN 520	B-s1, d0 (2003/593/EC)

**beam width: 2x70=140mm, 70+100=170mm, 2x100=200mm, 2x70+100=240 according to statics

***The mineral fibre with d = 100 mm is used for ceilings adjoining a warm section; it is used for the reasons of sound insulation.

Fasteners

Component	Type	EN-Standard	Spacing [mm]	
			Edge	Middle
Gypsum board to battens	Screws 3.9 x 30	EN 14566	≤ 170	≤ 417 lathing spacing
Battens on beams	Nails 3.1 x 90	EN 14592	≤ 625	≤ 417 lathing spacing
Wood-based-panels to beams	Staples 1.8 x 65, galvanized and resin coated	EN 14592	≤ 130	≤ 625 beam spacing

Data of physics relating to construction according to EN ISO 6946 taking account of all components stated above:

Thermal transmittance coefficient:

$$U = 0,18 \text{ (W/m}^2\text{K) (beam height=220 mm)}$$

$$U = 0,16 \text{ (W/m}^2\text{K) (beam height=260 mm)}$$

Thermal resistance:

$$R_T = 5,46 \text{ (m}^2\text{K/W) (beam height=220 mm)}$$

$$R_T = 6,34 \text{ (m}^2\text{K/W) (beam height=260 mm)}$$

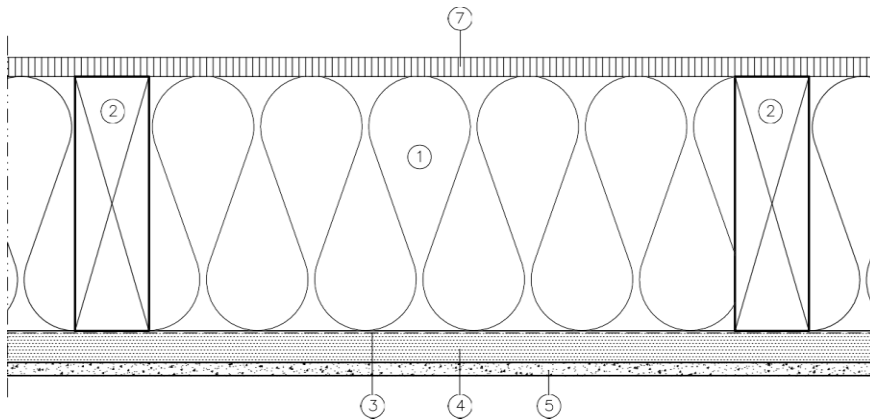
Boundary conditions:

$$R_{si} = 0,10 \text{ (m}^2\text{K/W)}$$

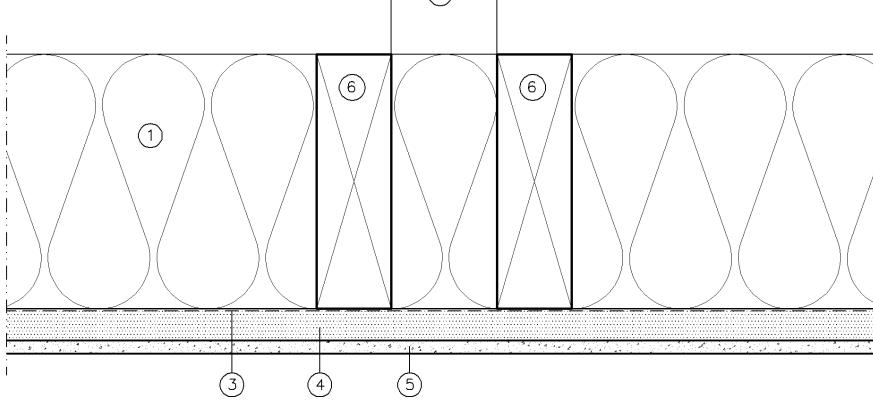
$$R_{se} = 0,08 \text{ (m}^2\text{K/W)}$$

A.3.7 Collar beam ceiling

Purlin roof



Rafter roof



Components

No.	Product	Dimensions [mm]	EN-standard ETA	Reaction to fire
1	Mineral fibre	≥ 220	EN 13162	A1 (96/603/EC, amended by 2000/605/EC)
2	Collar beam/rafter**** Density ≥ 350 kg/m ³	width: ≥ 60 height: ≥ 220 according to statics	EN 338 EN 15497	D-s2, d0 (2003/593/EC)
3	Vapour barrier s _d > 10m alternatively PE foil s _d > 100 m	0.20 0.16	EN 13984	E
4	Battens	24/48 to 80/30	EN 338	D-s2, d0 (2003/593/EC)
5	Gypsum board*****	12,5	EN 520	B-s1, d0 (2003/593/EC)
6	Collar transverse beam (for rafter roof) Density ≥ 600 kg/m ³	width: ≥ 40 height: ≥ 220 according to statics	EN 338 EN 15497	D-s2, d0 (2003/593/EC)
7	Wood-based-panels OSB-board alternatively: BFU- board alternatively: Particle board Density ≥ 600 kg/m ³	≥ 18	EN 300 EN 636 EN 312	D-s2, d0 (2003/43/EC)

**** beam/rafter width: 2x70=140mm, 70+100=170mm, 2x100=200mm

***** The plasterboard also fulfils the requirements of DIN 18180

Fasteners

Component	Type	EN-Standard	Spacing [mm]	
			Edge	Middle
Gypsum board to battens	Screws 3.9 x 30	EN 14566	≤ 170	≤ 170
Battens on beams	Nails 3.1 x 90	EN 14592	≤ 415 Batten spacing.	≤ 1250

Data of physics relating to construction according to EN ISO 6946 taking account of all components stated above:

Thermal transmittance coefficient:

$$U = 0,17 \text{ (W/m}^2\text{K) (beam height=220 mm)}$$

$$U = 0,15 \text{ (W/m}^2\text{K) (beam height=260 mm)}$$

Thermal resistance:

$$R_T = 5,82 \text{ (m}^2\text{K/W) (beam height=220 mm)}$$

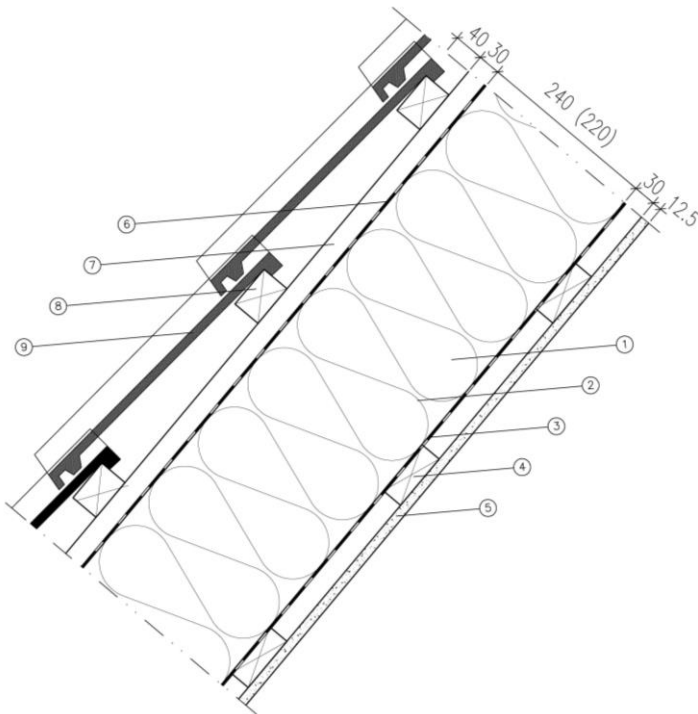
$$R_T = 6,81 \text{ (m}^2\text{K/W) (beam height=260 mm)}$$

Boundary conditions:

$$R_{si} = 0,10 \text{ (m}^2\text{K/W)}$$

$$R_{se} = 0,08 \text{ (m}^2\text{K/W)}$$

A.3.8 Roof



Components

No.	Product	Dimensions [mm]	EN-standard ETA	Reaction to fire
1	Rafters C 24***** Density $\geq 350 \text{ kg/m}^3$	width: ≥ 70 height: ≥ 220 according to static calculation	EN 338 EN 15497	D-s2, d0 (2003/593/EC)
2	Mineral fibre	≥ 220	EN 13162	A1 (96/603/EC, amended by 2000/605/EC)
3	Vapour barrier sd > 10m alternatively PE foil sd > 100 m	0.2 0.16	EN 13984	E
4	Battens Density $\geq 350 \text{ kg/m}^3$	24/48 to 80/30	EN 338 EN 14081	D-s2, d0 (2003/593/EC)
5	Gypsum board	12.5	EN 520	B-s1, d0 (2003/593/EC)
6	Sealing foil sd $\leq 0.1 \text{ m}$	0.2	-	E
7	Counter-batten Density $\geq 350 \text{ kg/m}^3$	50/30 40/60	EN 338 EN 14081	D-s2, d0 (2003/593/EC)
8	Roofing batten Density $\geq 350 \text{ kg/m}^3$	40/60	EN 338 EN 14081	D-s2, 0 (2003/593/EC)
9* ¹⁸	Roof covering	-		
10* ¹⁸	Wind strap tie band	1.5/40		

*****rafter width: $2 \times 70 = 140 \text{ mm}$, $70 + 100 = 170 \text{ mm}$, $2 \times 100 = 200 \text{ mm}$

¹⁸ All components marked with an asterisk are not part of the kit, they are however necessary for the building components and will be installed on site (place of use).

Fasteners

Component	Type	EN-Standard	Spacing [mm]	
			Edge	Middle
Gypsum board to lathing	Screws 3.9 x 30	EN 14566	≤ 170	≤ 417
Lathings to rafters	Nails 2.8 x 65	EN 14592	≤ 1250	≤ 417 batten spacing
Counter-batten to rafters	Staples 1.8 x 65, galvanized and resin coated	EN 14592	≤ 350	-
Roofing batten to counterbatten	Nails 3.1 x 90	EN 14592	≤ 1250	≤ 345 roofing batten spacing

Data of physics relating to construction according to EN ISO 6946 taking account of all components stated above:

Thermal transmittance coefficient:

$$U = 0,17 \text{ (W/m}^2\text{K) (rafter height=220 mm)}$$

$$U = 0,15 \text{ (W/m}^2\text{K) (rafter height=260 mm)}$$

Thermal resistance:

$$R_T = 5,82 \text{ (m}^2\text{K/W) (rafter height=220 mm)}$$

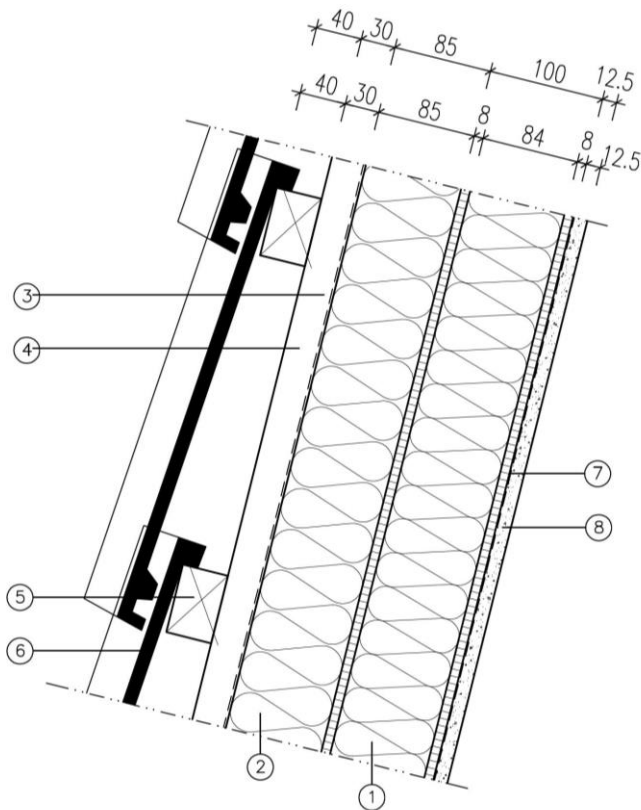
$$R_T = 6,81 \text{ (m}^2\text{K/W) (rafter height=260 mm)}$$

Boundary conditions:

$$R_{si} = 0,13 \text{ (m}^2\text{K/W)}$$

$$R_{se} = 0,04 \text{ (m}^2\text{K/W)}$$

A.3.9 Mansard roof, Variant A



Components

No.	Product	Dimensions [mm]	EN-standard ETA	Reaction to fire
1	Internal wall element Variant A	100	See above	See above
2a	Rafters (doubling timber)	125-150	EN 338 EN 15497	D-s2, d0 (2003/593/EC)
2b	Mineral wool	125-150	EN 13162	A1 (96/603/EC, amended by 2000/605/EC)
3	Sealing foil	0.2	-	E
4	Counter-batten Density $\geq 350 \text{ kg/m}^3$	50/30 40/60	EN 338 EN 14081	D-s2, d0 (2003/593/EC)
5	Roofing batten Density $\geq 350 \text{ kg/m}^3$	40/60	EN 338 EN 14081	D-s2, d0 (2003/593/EC)
6* ¹⁹	Roof covering	-		
7	Vapour barrier $s_d > 10\text{m}$ alternatively PE foil $s_d > 100 \text{ m}$	0.2 0.16	EN 13984	E
8	Gypsum board Density $\geq 600 \text{ kg/m}^3$	12.5	EN 520	B-s1,d0 (2003/593/EC)

¹⁹ All components marked with an asterisk are not part of the kit, they are however necessary for the building components and will be installed on site (place of use).

Fasteners

Component	Type	EN-Standard	Spacing [mm]	
			Edge	Middle
Gypsum board	Screws 3.9 x 30	EN 14566	≤ 250	≤ 300 post spacing
Counter-batten to doubling timber	Nails 2.8 x 65	EN 14592	≤ 350	-
Doubling timber to internal wall element	Screws ≥ 5.0 x 100	EN 14592	≤ 350	≤ 625 post spacing
Roofing batten to counterbatten	Nails 3.1 x 90	EN 14592	≤ 625	≤ 345 roofing batten spacing

Data of physics relating to construction according to EN ISO 6946 taking account of all components stated above:

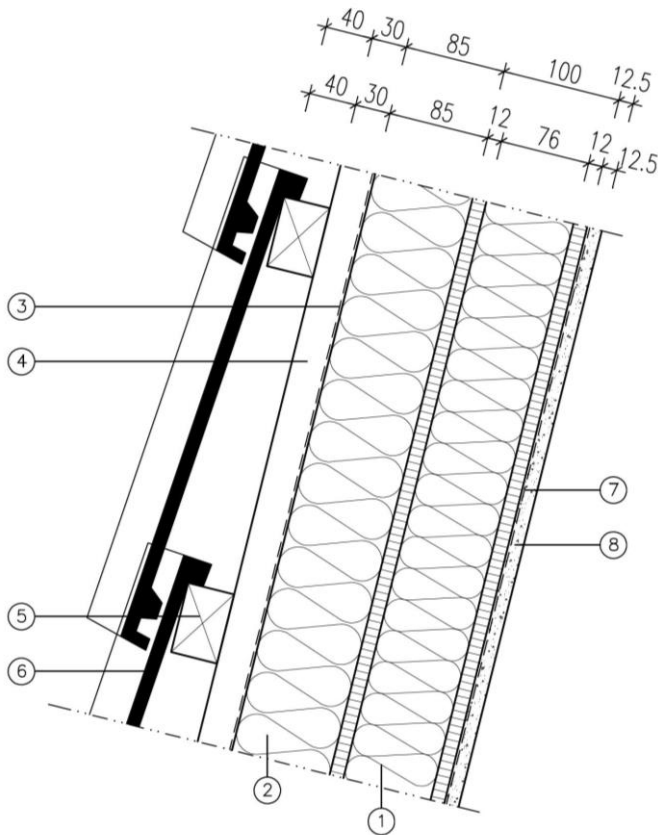
Thermal transmittance coefficient:

$U = 0,24 \text{ (W/m}^2\text{K)}$ to $U = 0,217 \text{ (W/m}^2\text{K)}$

Thermal resistance:

$R_T = 4,18 \text{ (m}^2\text{K/W)}$ to $R_T = 4,61 \text{ (m}^2\text{K/W)}$

A.3.10 Mansard roof, Variant B



Components

No.	Product	Dimensions [mm]	EN-standard ETA	Reaction to fire
1	Internal wall element Variant B	100	See above	See above
2a	Rafters (doubling timber)	125-150	EN 338 EN 15497	D-s2, d0 (2003/593/EC)
2b	Mineral wool	125-150	EN 13162	A1 (96/603/EG, amended by 2000/605/EC)
3	Sealing foil	0.2	-	E
4	Counter-batten Density $\geq 350 \text{ kg/m}^3$	50/30 40/60	EN 338 EN 14081	D-s2, d0 (2003/593/EC)
5	Roofing batten Density $\geq 350 \text{ kg/m}^3$	40/60	EN 338 EN 14081	D-s2, d0 (2003/593/EC)
6* ²⁰	Roof covering	-		
7	Vapour barrier sd > 10m alternatively PE foil sd > 100 m	0.2 0.16	EN 13984	E
8	Gypsum board Density $\geq 600 \text{ kg/m}^3$	12.5	EN 520	B-s1,d0 (2003/593/EC)

²⁰ All components marked with an asterisk are not part of the kit, they are however necessary for the building components and will be installed on site (place of use).

Fasteners

Component	Type	EN-Standard	Spacing [mm]	
			Edge	Middle
Gypsum board	Screws 3.9 x 30	EN 14566	≤ 250	≤ 625 post spacing
Counter-batten to doubling timber	Nails 2.8 x 65	EN 14592	≤ 350	-
Doubling timber to internal wall element	screws ≥ 5.0 x 100	EN 14592	≤ 350	≤ 625 post spacing
Roofing batten to counterbatten	Nails 3.1 x 90	EN 14592	≤ 625	≤ 345 roofing batten spacing

Data of physics relating to construction according to EN ISO 6946 taking account of all components stated above:

Thermal transmittance coefficient:

$$U = 0,24 \text{ (W/m}^2\text{K)} \text{ to } U = 0,211 \text{ (W/m}^2\text{K)}$$

Thermal resistance:

$$R_T = 4,29 \text{ (m}^2\text{K/W)} \text{ to } R_T = 4,75 \text{ (m}^2\text{K/W)}$$

A.3.11 Example of the characteristics of a plastic-window

Air transmission according to EN 12207:

class 4

Driving rain resistance according to EN 12208:

class 5A

Wind resistance according to EN 12210:

class C2

Thermal transmittance coefficient of the frame according to EN 12412-2:

$$U_f = 1,0 \text{ (W/(m}^2\text{K))}$$

Thermal transmittance coefficient of the glass according to EN 673:

$$U_g = 0,5 \text{ (W/(m}^2\text{K))}$$

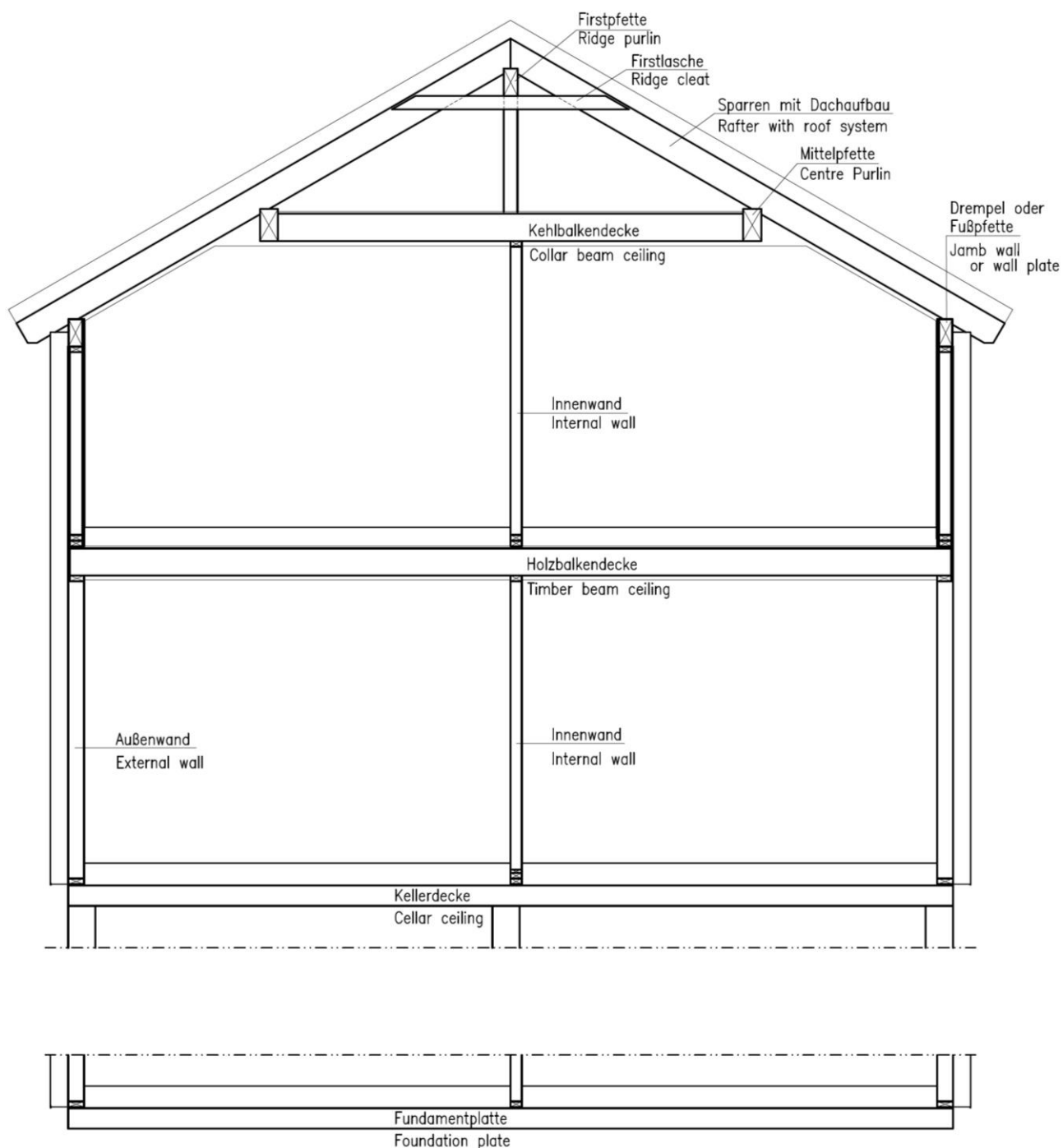
Degree of energy transmittance according to EN 410:

$$g = 37 \%$$

Annex B Construction details

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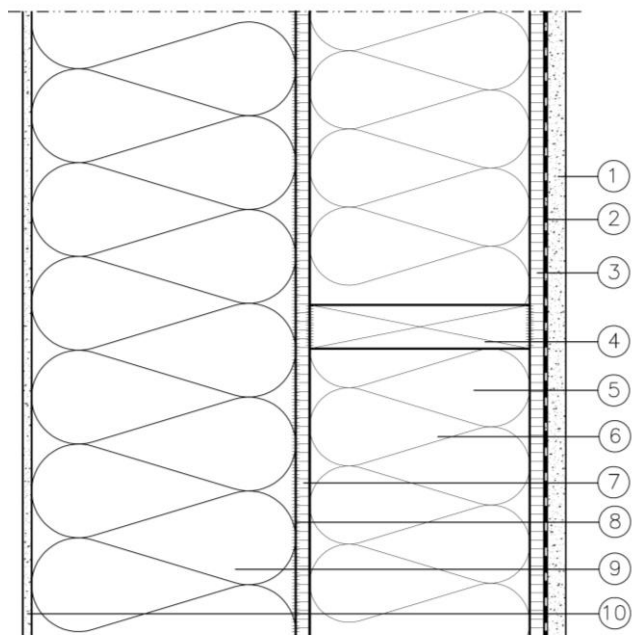
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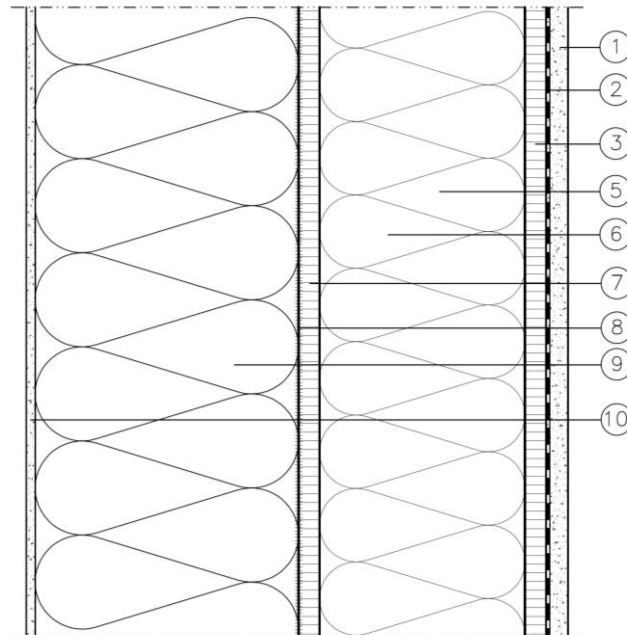
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"HANSE-HAUS"	Annex B.1
Cross section - building	

Variante A (Variant A)



Variante B (Variant B)



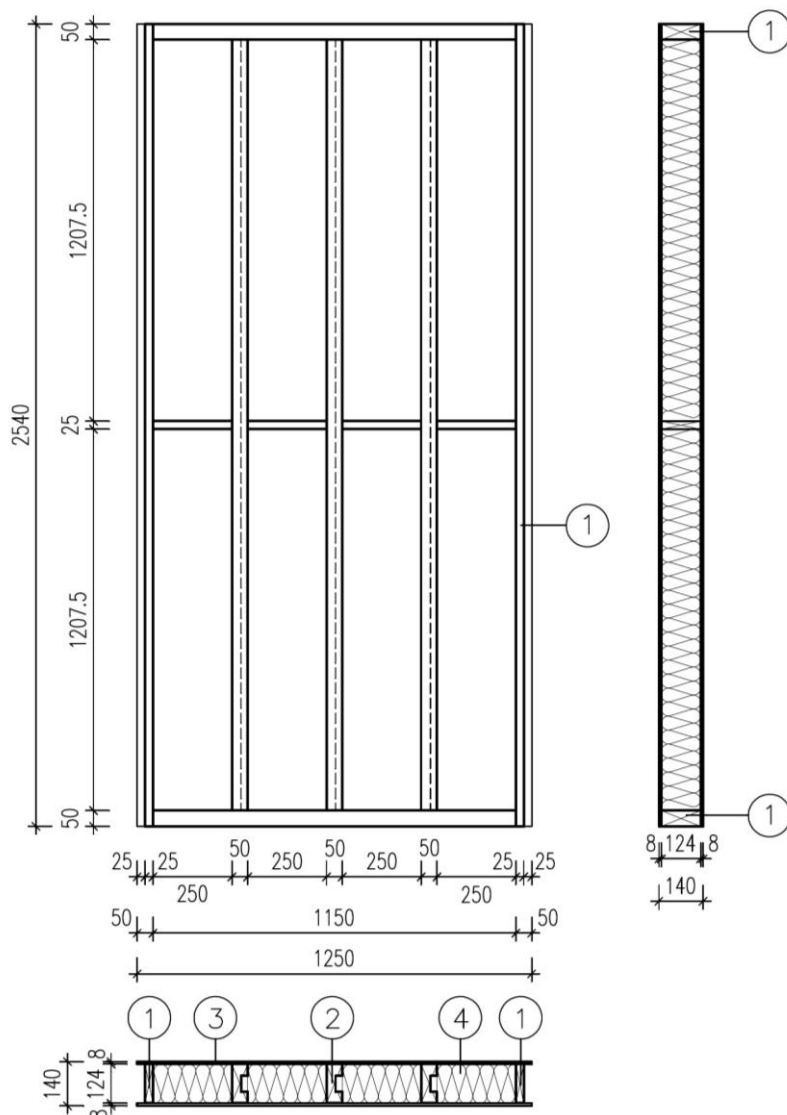
- 1 = Gipskartonplatte
- 2 = Dampfsperre
- 3 = Holzwerkstoffplatte
- 4 = waagerechtes Konstruktionsholz,
nur bei Variante A
- 5 = Mineralfaserdämmung
- 6 = senkrechtes Rahmenholz
mit Kabelkanal
- 7 = Holzwerkstoffplatte
- 8 = Kleber vollflächig
- 9 = Wärmedämmung
- 10 = Unter- und Oberputz

- Gypsum board
- Vapour barrier
- Wood-based-panel
- Horizontal framing timber,
only for variant A
- Mineral wool insulation
- Vertical framing timber with
cable duct
- Wood-based-panel
- Glue full surface
- Thermal insulation
- Floating and finishing coat

Die Holzrahmenkonstruktion wird vollflächig mit der Holzwerkstoffplatte verklebt.

The timber frame construction will be glued to the Wood-based-panel.

Variante A (Variant A)



- | | |
|---------------------------------|--------------------------------|
| 1 = Rahmenhölz | Framing timber |
| 2 = Rahmenhölzer mit Kabelkanal | Framing timber with cable duct |
| 3 = OSB beidseitig | OSB on both sides |
| 4 = Wärme- und Schalldämmung | Thermal and sound insulation |

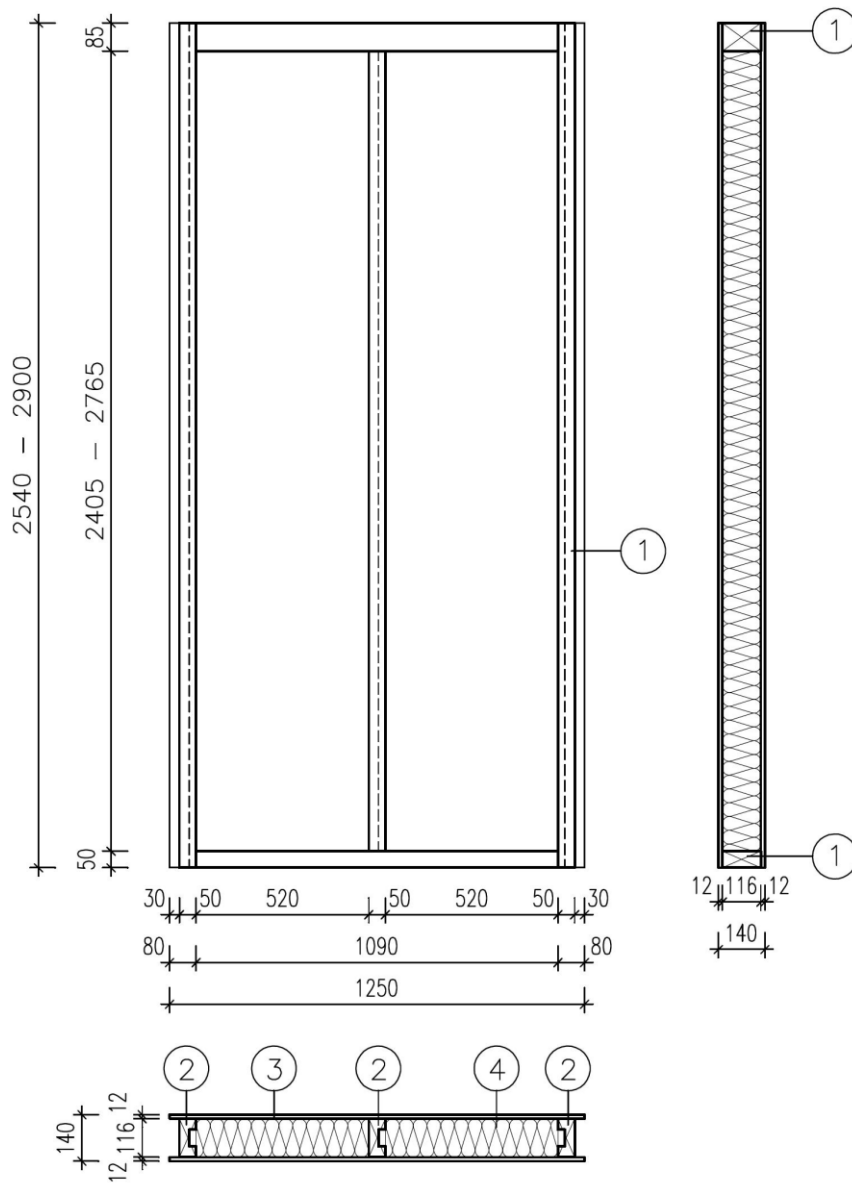
Die Holzrahmenkonstruktion wird vollflächig mit den OSB verklebt.
The timber frame construction will be glued to the OSB.

"HANSE-HAUS"

Standard external wall element, Variant A

Annex B.3

Variante B (Variant B)



- 1 = Rahmenhölzer
- 2 = Rahmenhölzer mit Kabelkanal
- 3 = Holzwerkstoffplatte beidseitig
- 4 = Wärme- und Schalldämmung

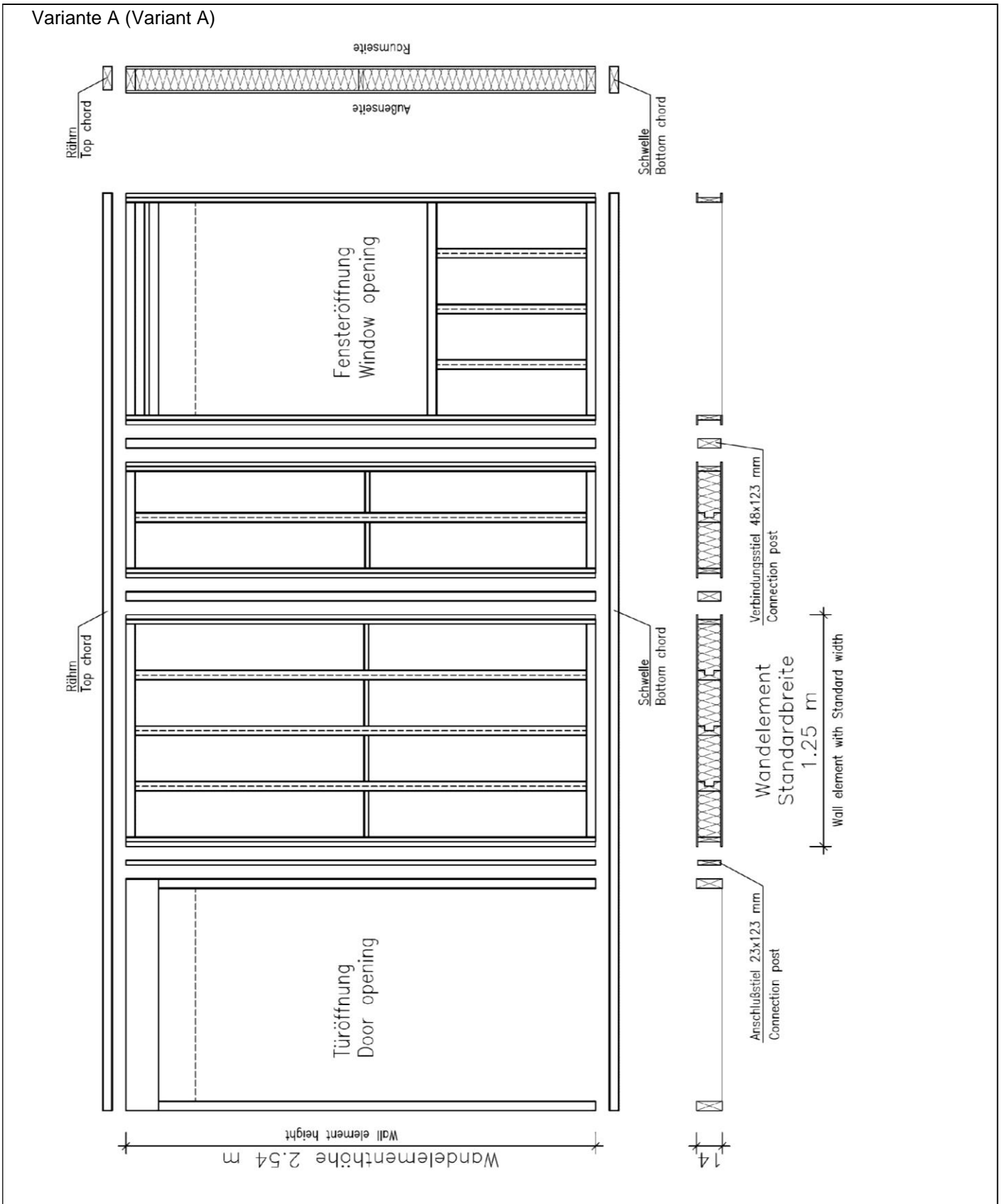
- Framing timber
- Framing timber with cable duct
- Wood-based-panel on both sides
- Thermal and sound insulation

Die Holzrahmenkonstruktion wird vollflächig mit der Holzwerkstoffplatte verklebt.
The timber frame construction will be glued to the Wood-based-panel.

"HANSE-HAUS"

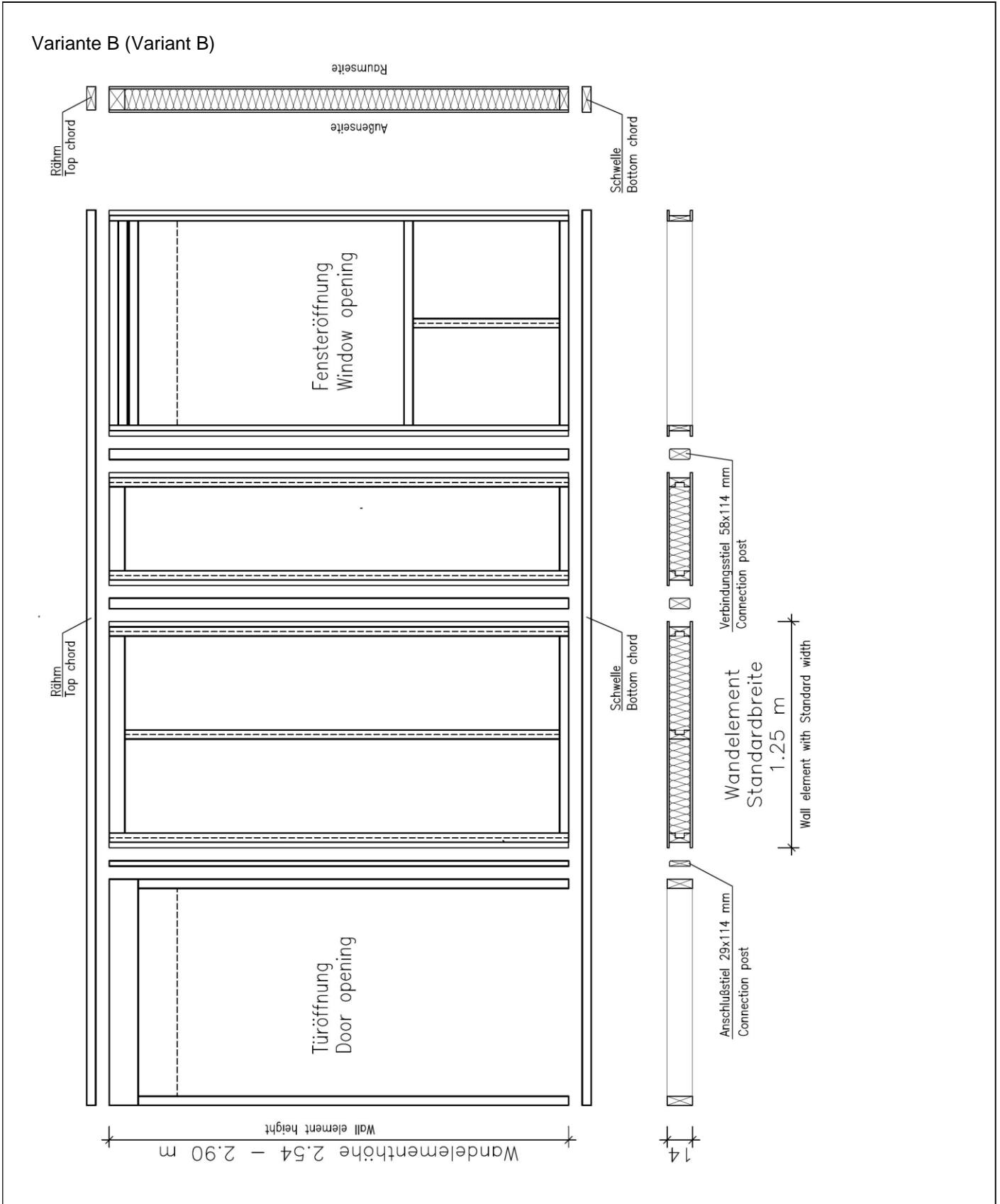
Standard external wall element, Variant B

Annex B.4



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"HANSE-HAUS"	Annex B.5
Exploded drawing – external wall, Variant A	

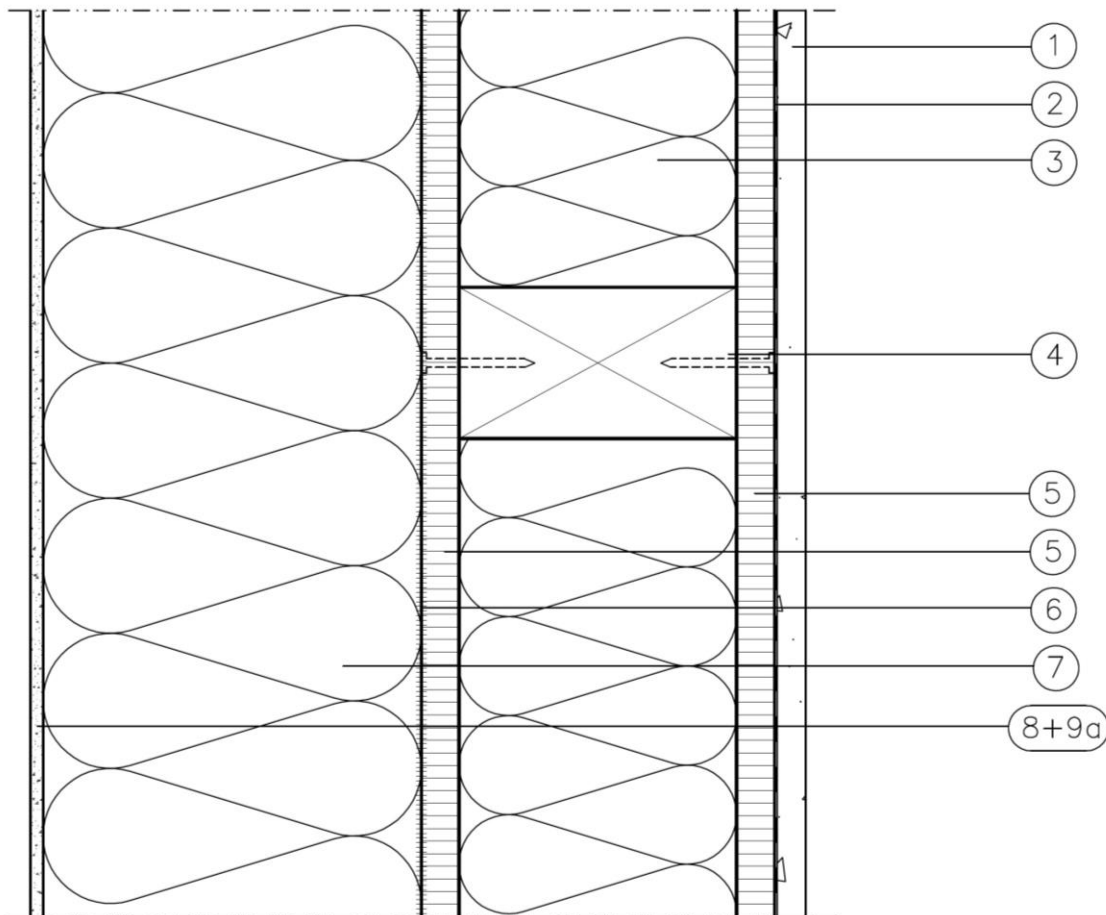


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"HANSE-HAUS"

Exploded drawing – external wall, Variant B

Annex B.6



- 1 = Gipskartonplatte
- 2 = Dampfsperre
- 3 = Mineralfaserdämmung
- 4 = Konstruktionsholz
- 5 = Holzwerkstoffplatte
- 6 = Kleber vollflächig
- 7 = Wärmedämmung
- 8+9a = Unter- und Oberputz

- Gypsum board
- Vapour barrier
- Mineral wool insulation
- Timber frame
- Wood-based-panel
- Glue full surface
- Thermal insulation
- Floating and finishing coat

Das Giebelelement wird komplett im Werk genagelt.
The whole gable element will be nailed in the factory.

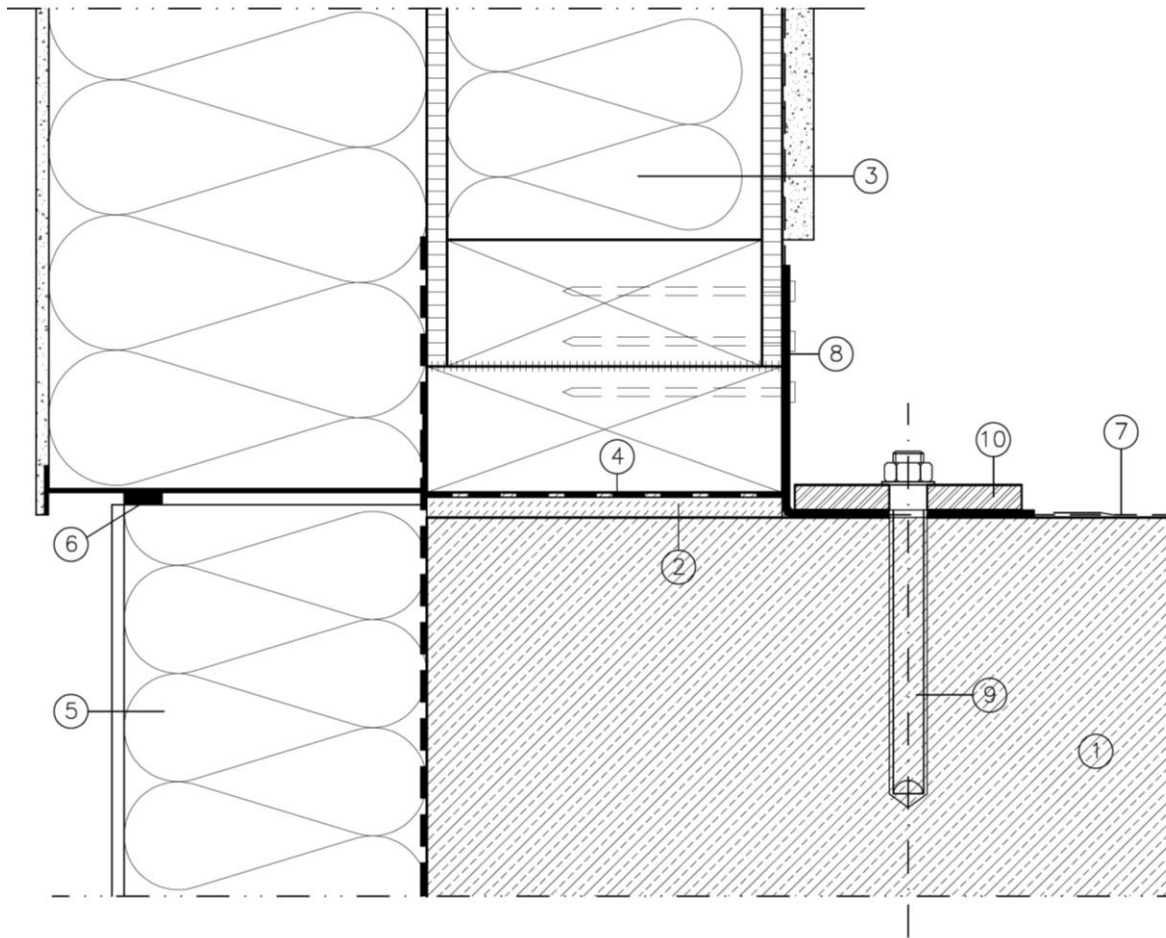
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"HANSE-HAUS"

Horizontal section - gable wall

Annex B.7

Variante A (Variant A)



- 1 = Kellerdecke bzw. Fundamentplatte
- 2 = Unterlegung und Untermörtelung
- 3 = Außenwandkonstruktion Variante A
- 4 = Absperrbahn gem. DIN 18533, sofern erforderlich
- 5 = Sockeldämmung mit Putz, gem. Leistungsumfang
- 6 = Dichtungsband, gem. Leistungsumfang
- 7 = Feuchtesperre gem. DIN 18533, sofern erforderlich
- 8 = Winkel mit Rillennägeln am Wandelement befestigt
- 9 = Schwerlastanker
- 10 = Stahlplatte

- Cellar ceiling resp foundation plate
- Mortarbed
- External wall construction Variant A
- Barrier membrane according DIN 18533, if necessary
- Plinth insulation with plaster made on site, according to scope of services
- Sealing tape made on site, according to scope of services
- Moisture barrier according DIN 18533, if necessary
- Angle fastened to the wall element with threaded nails
- Heavy duty anchor
- Steel plate

Die tragenden Anschlüsse sind nur prinzipiell dargestellt. Sie sind gemäß den technischen Regeln zu bemessen und gemäß der statischen Berechnung auszuführen.

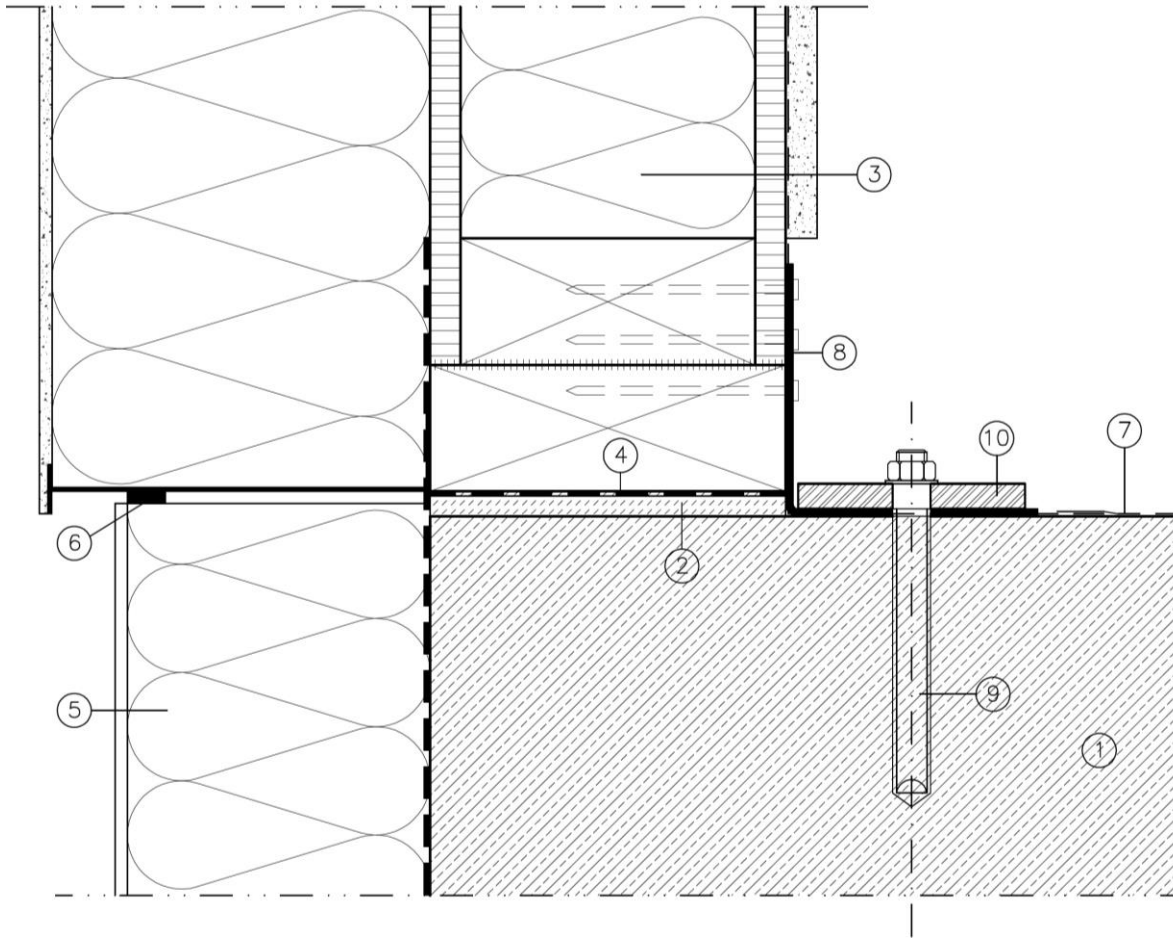
The load-bearing connections are only shown generally. They shall be designed according to technical regulations and executed according to structural design.

"HANSE-HAUS"

Pedestal detail – external wall with anchorage of the Wall, Variant A

Annex B.8

Variante B (Variant B)



- 1 = Kellerdecke bzw. Fundamentplatte
- 2 = Unterlegung und Untermörtelung
- 3 = Außenwandkonstruktion Variante B
- 4 = Absperrbahn gem. DIN 18533, sofern erforderlich
- 5 = Sockeldämmung mit Putz, gem. Leistungsumfang
- 6 = Dichtungsband, gem. Leistungsumfang
- 7 = Feuchtesperre gem. DIN 18533, sofern erforderlich
- 8 = Winkel mit Rillennägeln am Wandelement befestigt
- 9 = Schwerlastanker
- 10 = Stahlplatte

- Cellar ceiling resp foundation plate
- Mortar bed
- External wall construction Variant B
- Barrier membrane according DIN 18533, if necessary
- Plinth insulation with plaster made on site, according to scope of services
- Sealing tape made on site, according to scope of services
- Moisture barrier according DIN 18533, if necessary
- Angle fastened to the wall element with threaded nails
- Heavy duty anchor
- Steel plate

Die tragenden Anschlüsse sind nur prinzipiell dargestellt. Sie sind gemäß den technischen Regeln zu bemessen und gemäß der statischen Berechnung auszuführen.

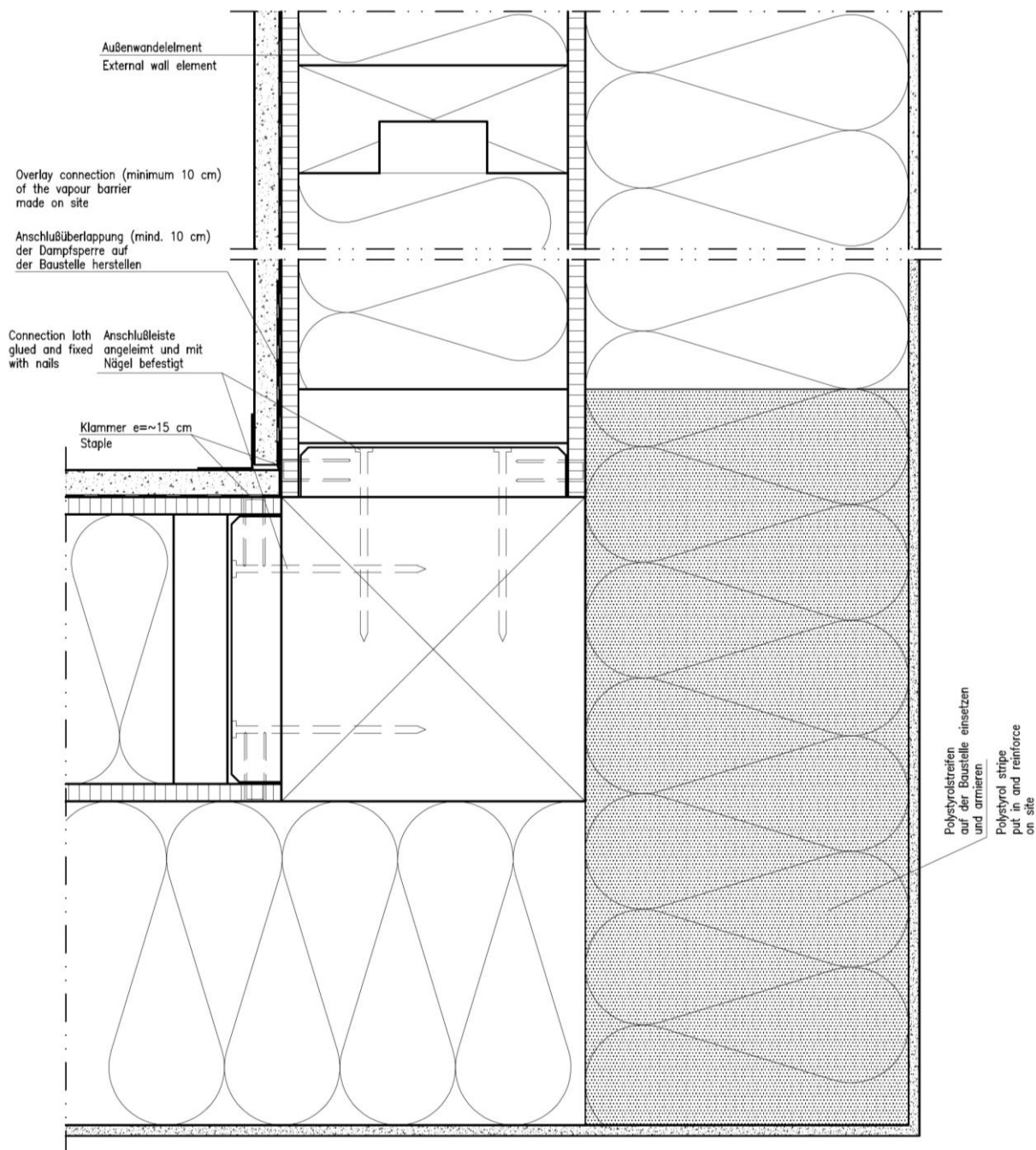
The load-bearing connections are only shown generally. They shall be designed according to technical regulations and executed according to structural design.

"HANSE-HAUS"

Pedestal detail – external wall with anchorage of the Wall, Variant B

Annex B.9

Variante A (Variant A)



Die tragenden Anschlüsse sind nur prinzipiell dargestellt. Sie sind gemäß den technischen Regeln zu bemessen und gemäß der statischen Berechnung auszuführen.

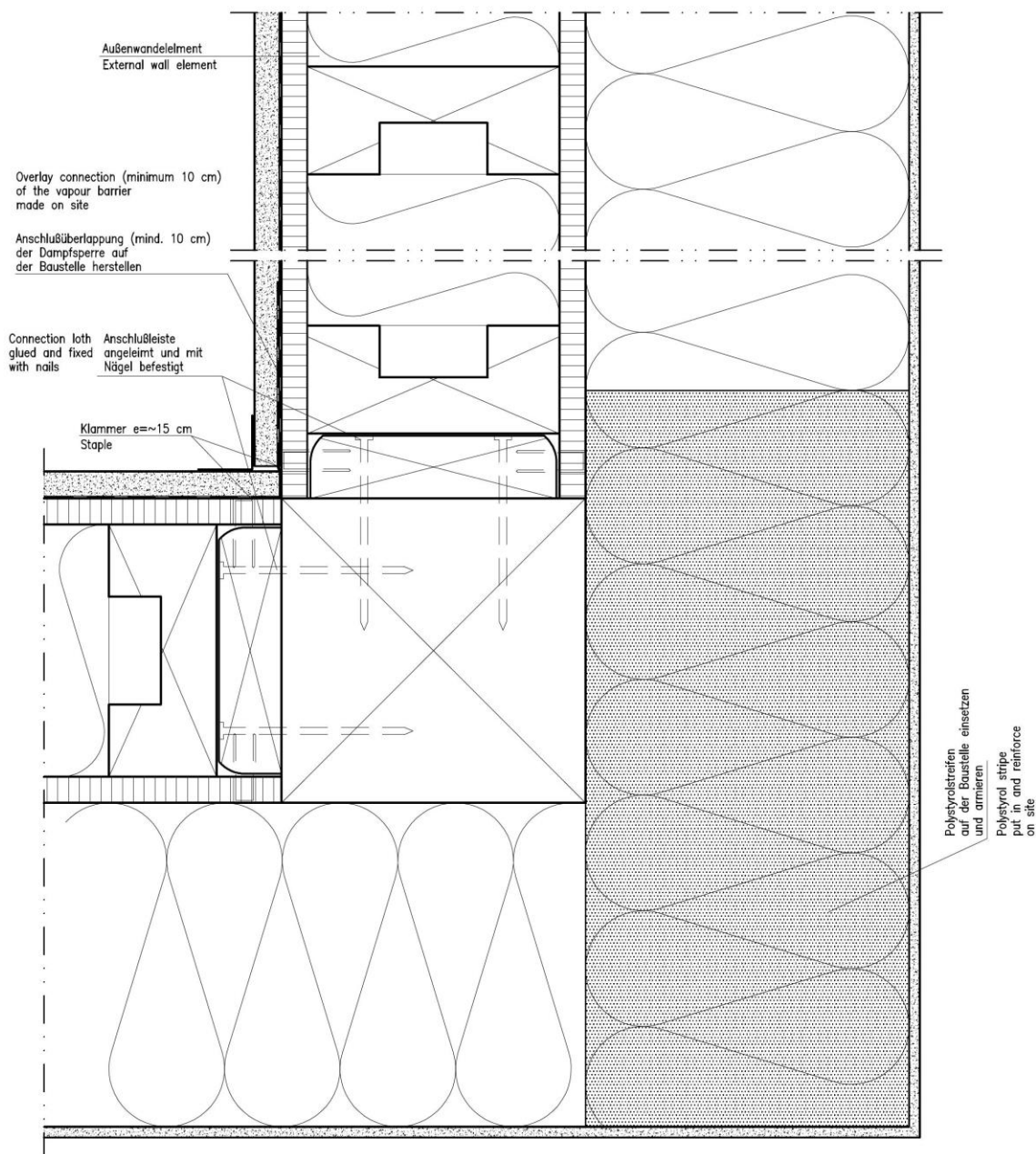
The load-bearing connections are only shown generally. They shall be designed according to technical regulations and executed according to structural design.

"HANSE-HAUS"

Horizontal section – corner detail, Variant A

Annex B.10

Variante B (Variant B)



Die tragenden Anschlüsse sind nur prinzipiell dargestellt. Sie sind gemäß den technischen Regeln zu bemessen und gemäß der statischen Berechnung auszuführen.

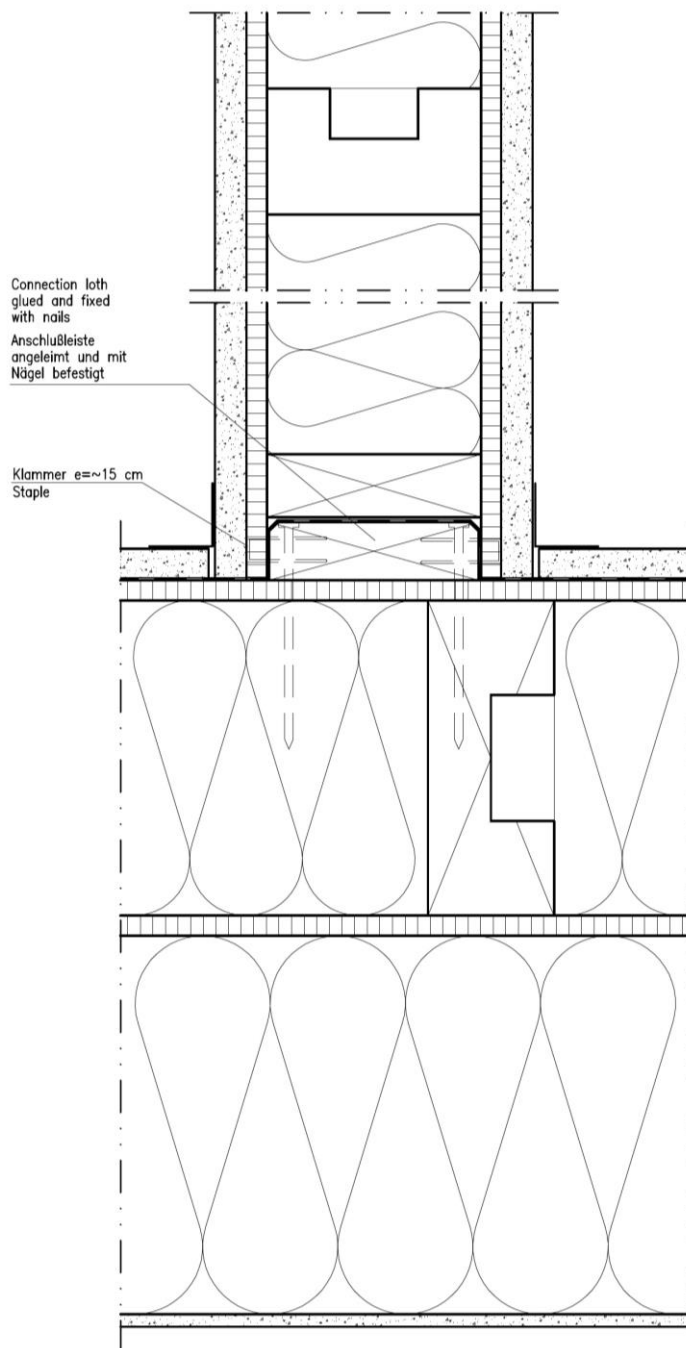
The load-bearing connections are only shown generally. They shall be designed according to technical regulations and executed according to structural design.

"HANSE-HAUS"

Horizontal section – corner detail, Variant B

Annex B.11

Variante A (Variant A)



Die tragenden Anschlüsse sind nur prinzipiell dargestellt. Sie sind gemäß den technischen Regeln zu bemessen und gemäß der statischen Berechnung auszuführen.

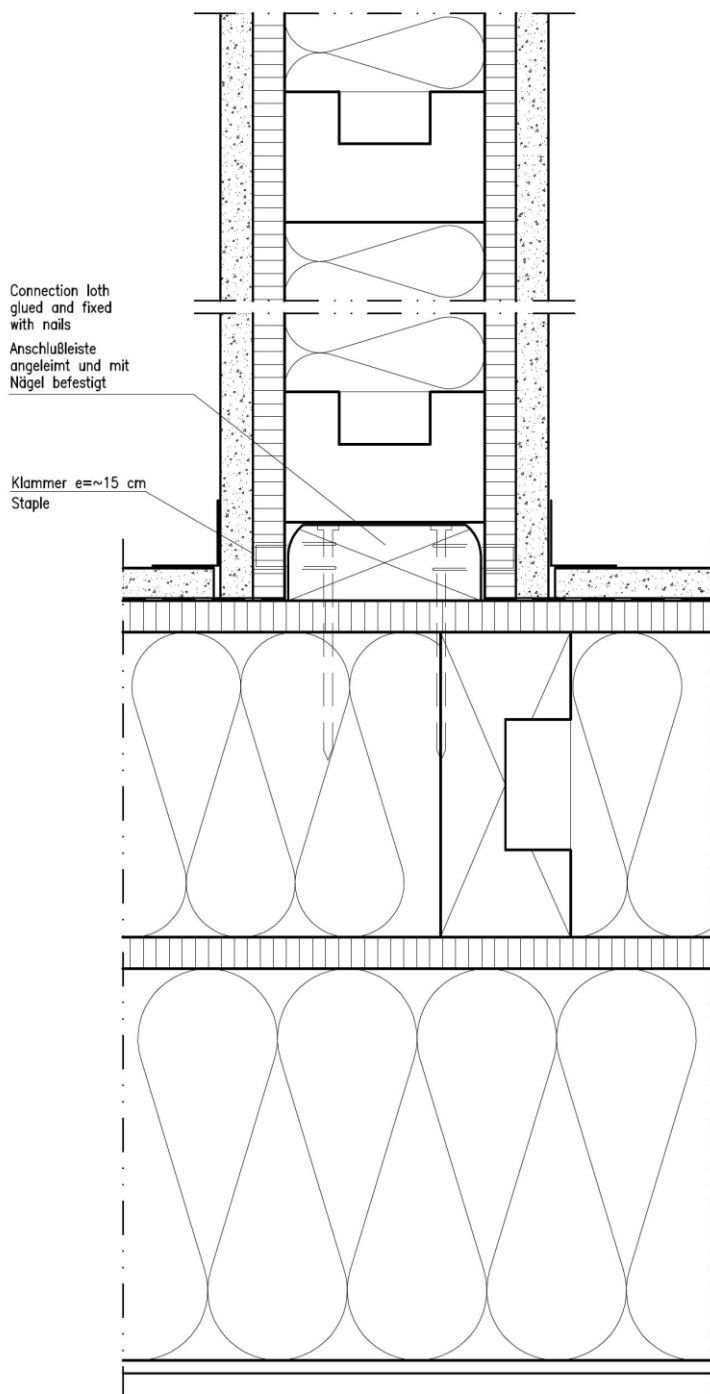
The load-bearing connections are only shown generally. They shall be designed according to technical regulations and executed according to structural design.

"HANSE-HAUS"

Horizontal section – connection internal to external wall, Variant A

Annex B.12

Variante B (Variant B)



Die tragenden Anschlüsse sind nur prinzipiell dargestellt. Sie sind gemäß den technischen Regeln zu bemessen und gemäß der statischen Berechnung auszuführen.

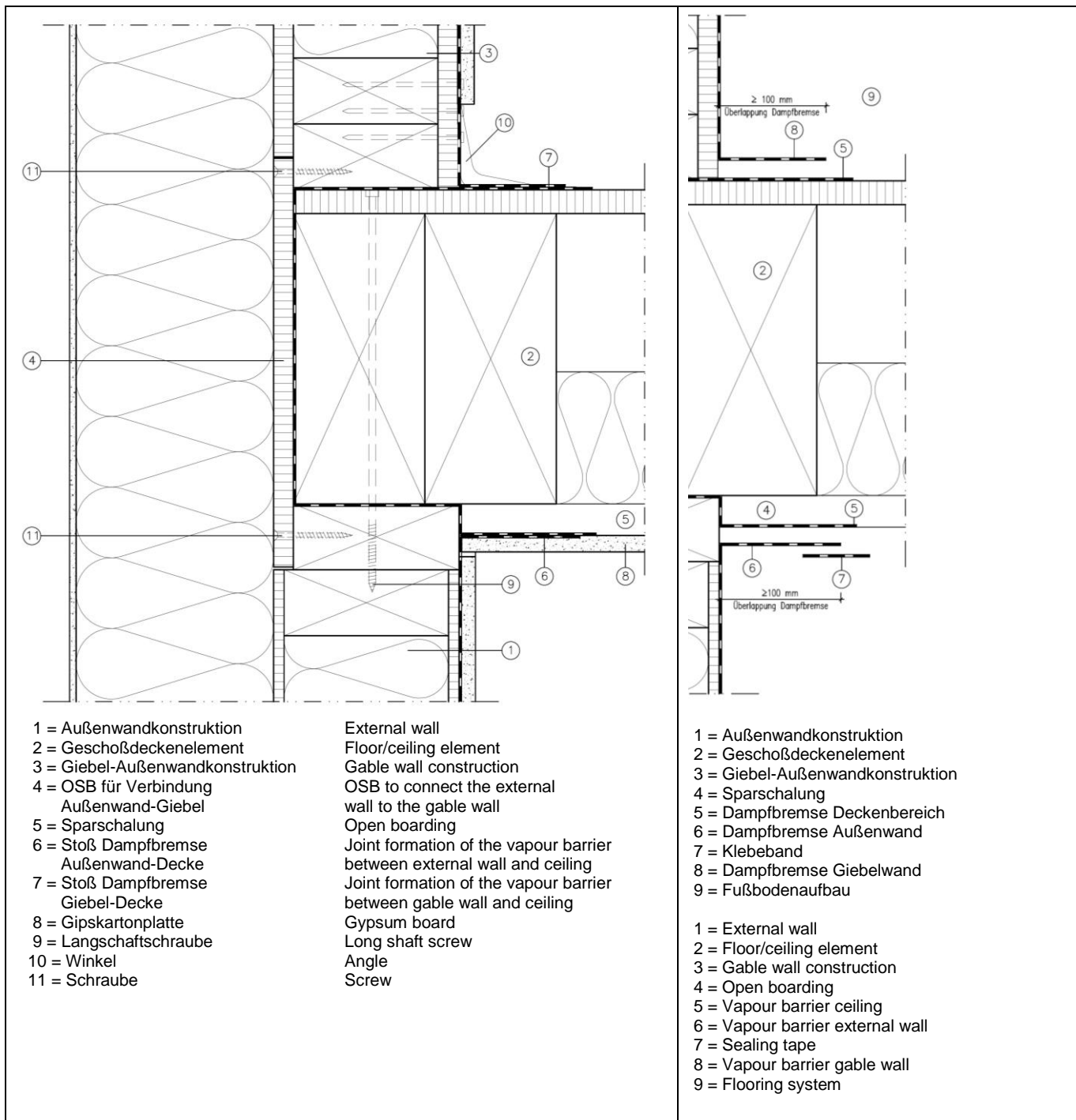
The load-bearing connections are only shown generally. They shall be designed according to technical regulations and executed according to structural design.

"HANSE-HAUS"

Horizontal section – connection internal to external wall, Variant B

Annex B.13

Variante A (Variant A)



Die tragenden Anschlüsse sind nur prinzipiell dargestellt. Sie sind gemäß den technischen Regeln zu bemessen und gemäß der statischen Berechnung auszuführen.

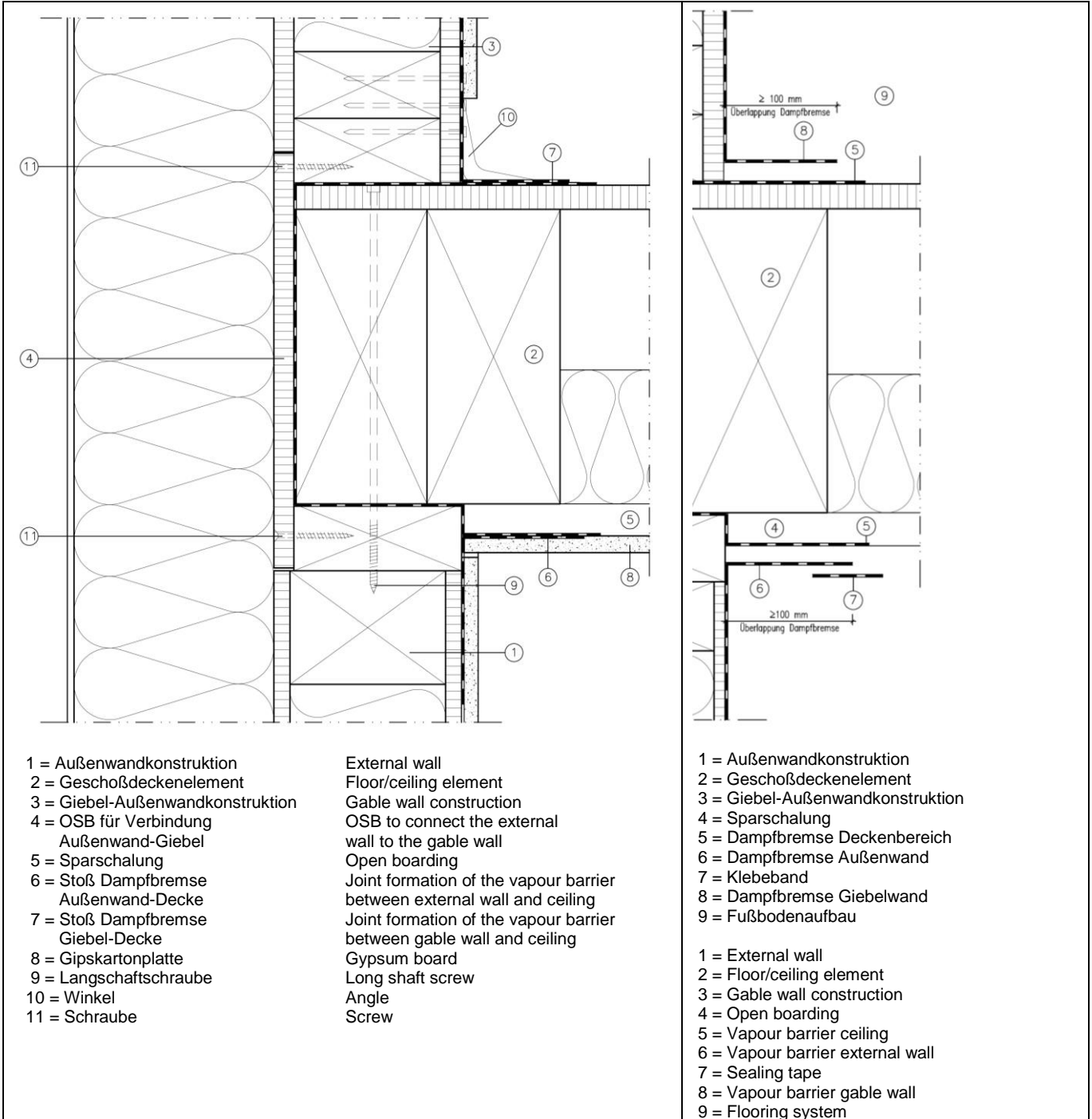
The load-bearing connections are only shown generally. They shall be designed according to technical regulations and executed according to structural design.

"HANSE-HAUS"

Horizontal section – connection internal to external wall, Variant A

Annex B.14

Variante B (Variant B)



Die tragenden Anschlüsse sind nur prinzipiell dargestellt. Sie sind gemäß den technischen Regeln zu bemessen und gemäß der statischen Berechnung auszuführen.

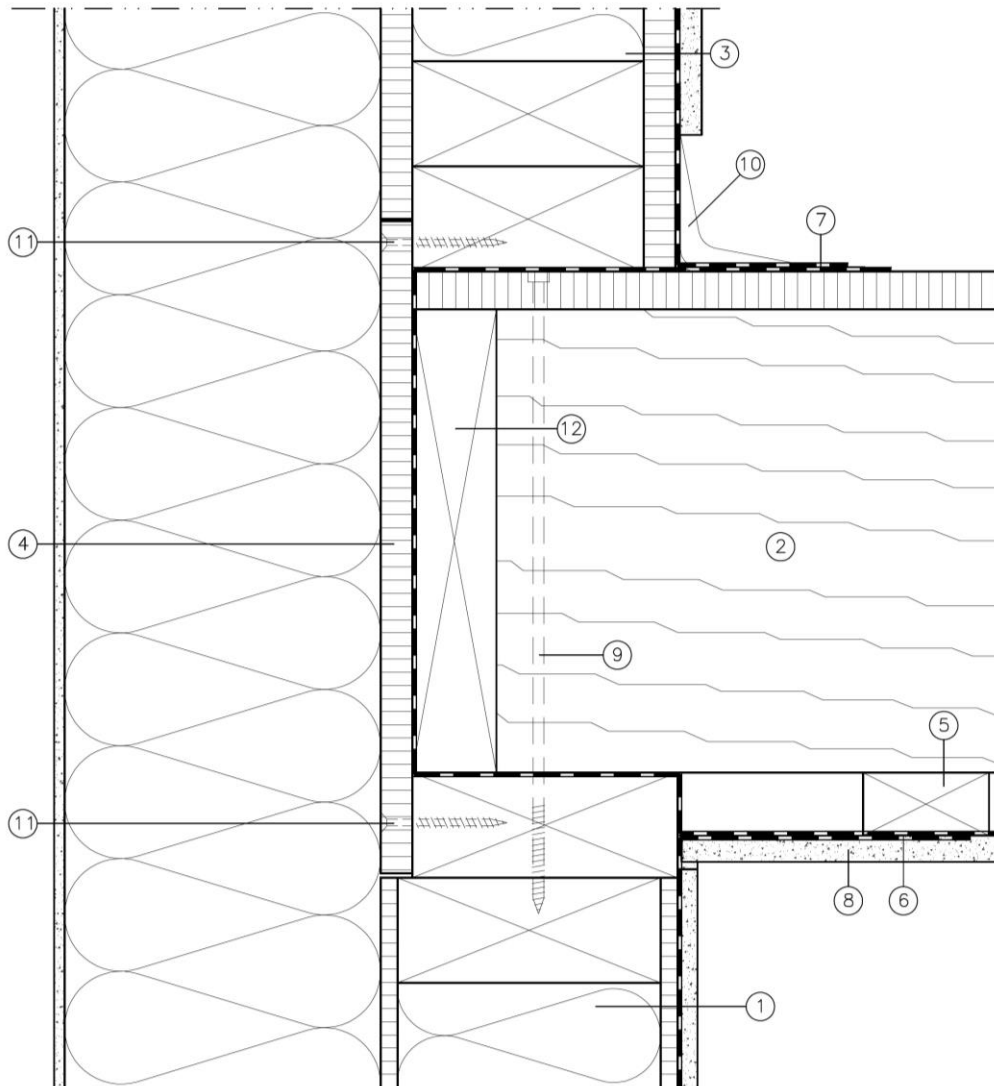
The load-bearing connections are only shown generally. They shall be designed according to technical regulations and executed according to structural design.

"HANSE-HAUS"

Horizontal section – connection internal to external wall, Variant B

Annex B.15

Variante A (Variant A)



- 1 = Außenwandkonstruktion
- 2 = Deckenbalken gem. Statik
- 3 = Giebel-Außenwandkonstruktion
- 4 = OSB-Platte für Verbindung Außenwand-Giebel
- 5 = Sparschalung
- 6 = Stoß Dampfbremse Außenwand-Decke

- 7 = Stoß Dampfbremse Giebel-Decke
- 8 = Gipskartonplatte
- 9 = Langschaftschraube
- 10 = Winkel
- 11 = Schraube
- 12 = Randbohle

- 1 = External wall
- 2 = Ceiling joist according structural analysis
- 3 = Gable external wall construction
- 4 = OSB to connect external wall with gable wall
- 5 = Open boarding
- 6 = Joint formation of the vapour barrier between external wall and ceiling
- 7 = Joint formation of the vapour barrier between gable wall and ceiling
- 8 = Gypsum board
- 9 = Long shaft screw
- 10 = Angle
- 11 = Screw
- 12 = Edge board

Die tragenden Anschlüsse sind nur prinzipiell dargestellt. Sie sind gemäß den technischen Regeln zu bemessen und gemäß der statischen Berechnung auszuführen.

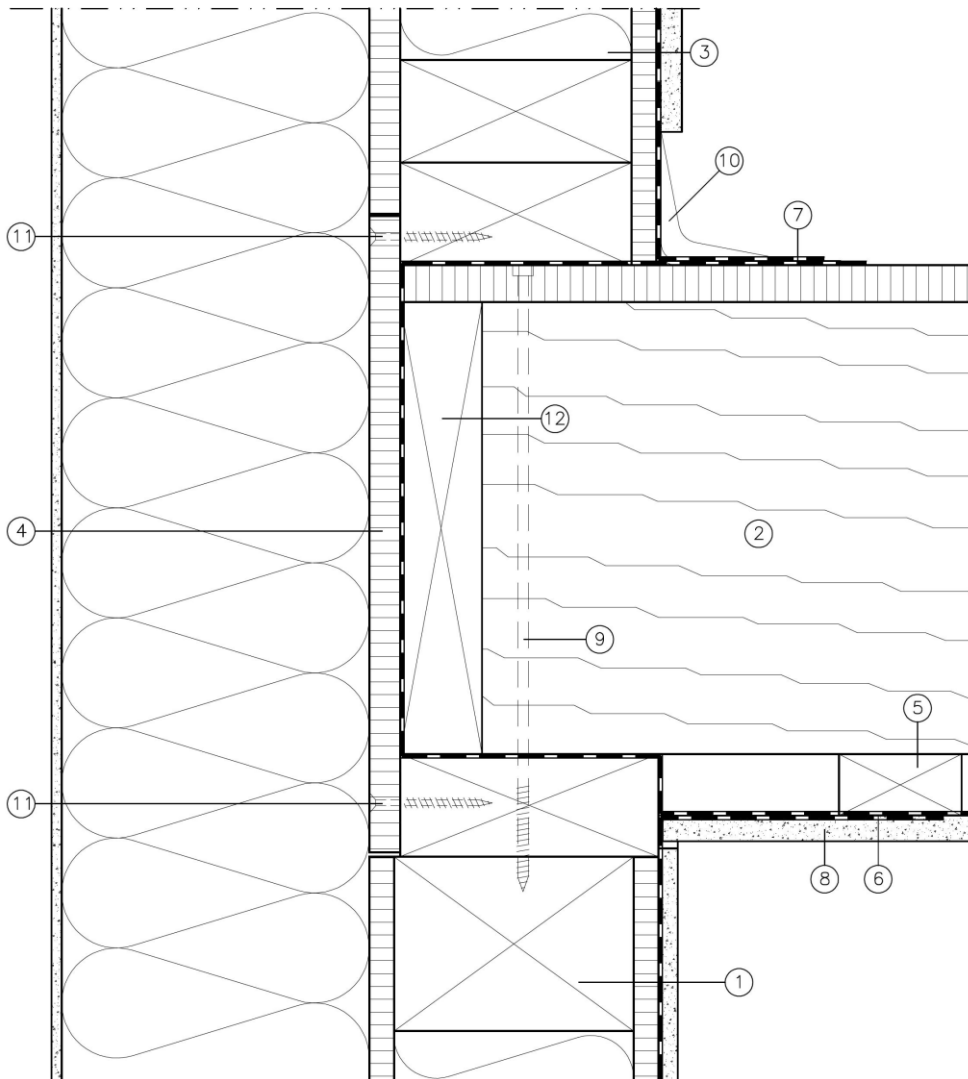
The load-bearing connections are only shown generally. They shall be designed according to technical regulations and executed according to structural design.

"HANSE-HAUS"

Vertical section – support ceiling joist to external wall, Variant A

Annex B.16

Variante B (Variant B)



- | | |
|--|-----------------------------------|
| 1 = Außenwandkonstruktion | 7 = Stoß Dampfbremse Giebel-Decke |
| 2 = Deckenbalken gem. Statik | 8 = Gipskartonplatte |
| 3 = Giebel-Außenwandkonstruktion | 9 = Langschaftschraube |
| 4 = Holzwerkstoff-Platte für Verbindung Außenwand-Giebel | 10 = Winkel |
| 5 = Sparschalung | 11 = Schraube |
| 6 = Stoß Dampfbremse Außenwand-Decke | 12 = Randbohle |

- | | |
|--|---|
| 1 = External wall | 7 = Joint formation of the vapour barrier
between gable wall and ceiling |
| 2 = Ceiling joist according structural analysis | 8 = Gypsum board |
| 3 = Gable external wall construction | 9 = Long shaft screw |
| 4 = Wood-based-panel to connect external
wall with gable wall | 10 = Angle |
| 5 = Open boarding | 11 = Screw |
| 6 = Joint formation of the vapour barrier
between external wall and ceiling | 12 = Edge board |

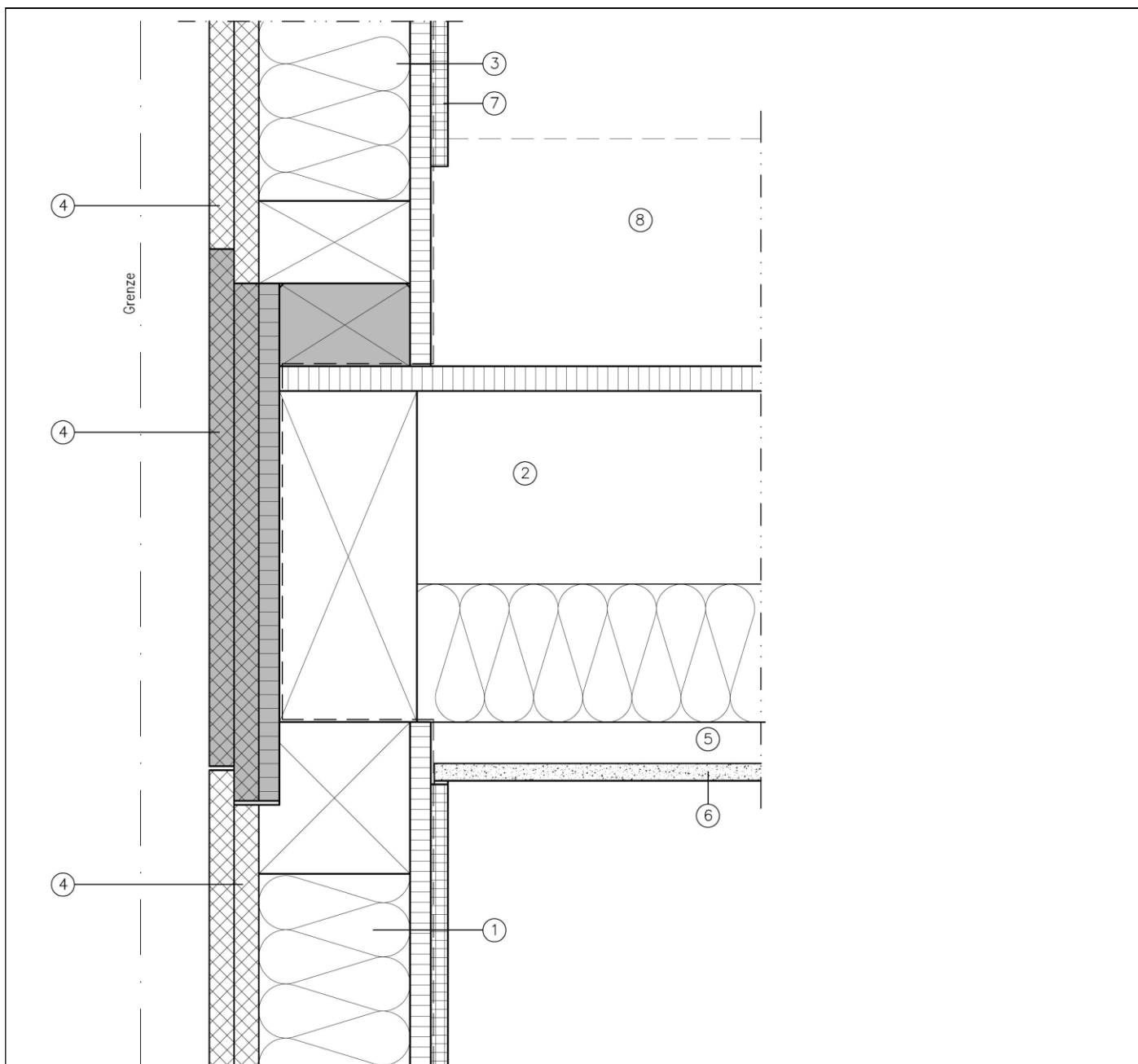
Die tragenden Anschlüsse sind nur prinzipiell dargestellt. Sie sind gemäß den technischen Regeln zu bemessen und gemäß der statischen Berechnung auszuführen.

The load-bearing connections are only shown generally. They shall be designed according to technical regulations and executed according to structural design.

"HANSE-HAUS"

Vertical section – support ceiling joist to external wall, Variant B

Annex B.17



- 1 = genagelte Gebäudeabschlusswand
- 2 = Geschoßdeckenelement
- 3 = genagelte Gebäudeabschlusswand
- 4 = Gipskartonfeuerschutzplatten 2-lagig
- 5 = Sparschalung
- 6 = Gipskartonplatte (GKF)
- 7 = Gipskartonplatte (GKF)
- 8 = Fußbodenaufbau

- External wall (nailed)
- Floor-ceiling element
- Jamb wall (nailed)
- Gypsum fire boards
- Open boarding
- Gypsum board
- Gypsum board
- Floor construction

Die tragenden Anschlüsse sind nur prinzipiell dargestellt. Sie sind gemäß den technischen Regeln zu bemessen und gemäß der statischen Berechnung auszuführen.

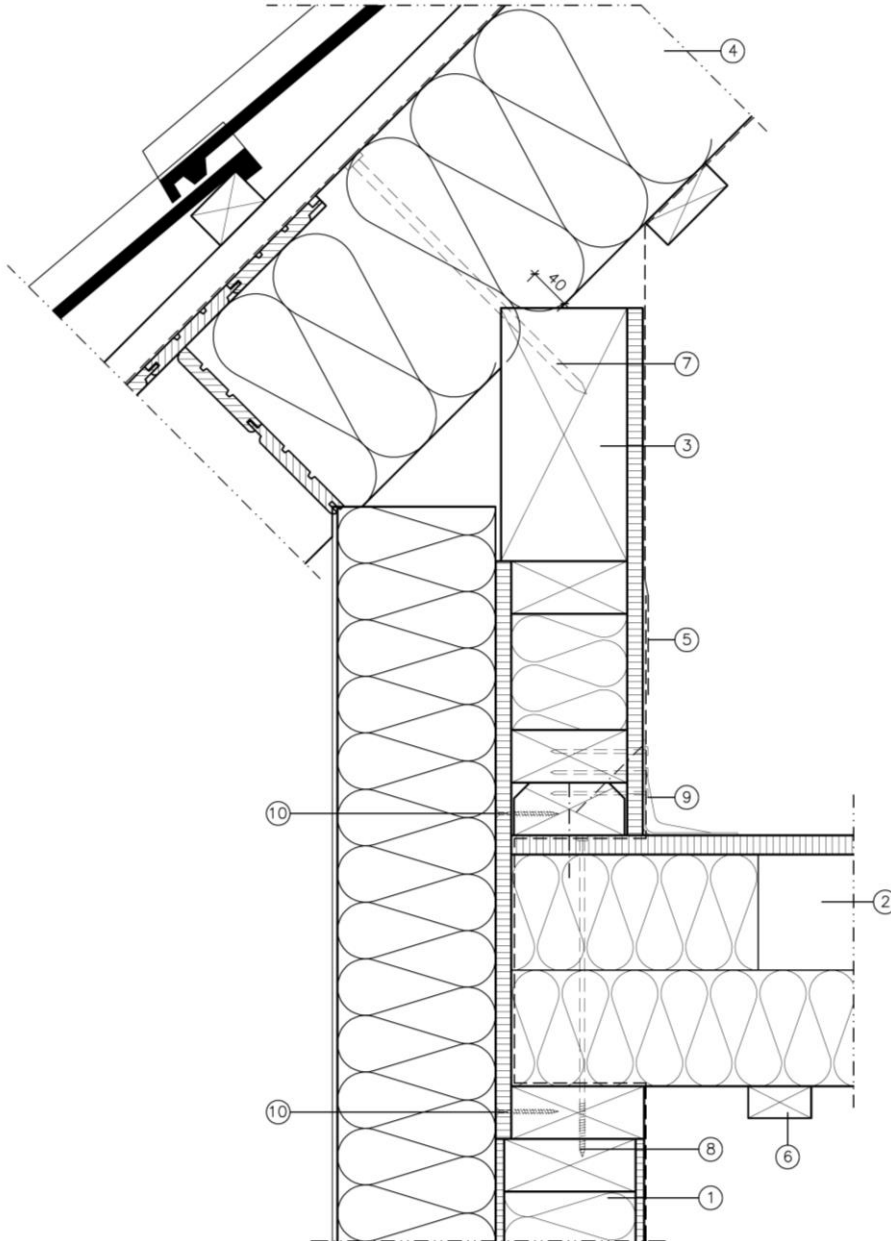
The load-bearing connections are only shown generally. They shall be designed according to technical regulations and executed according to structural design.

"HANSE-HAUS"

Vertical section – external wall to ceiling

Annex B.18

Variante A (Variant A)



- 1 = Außenwandkonstruktion Variante A
- 2 = Geschoßdeckenelement
- 3 = Kniestockelement
- 4 = Dachkonstruktion
- 5 = Stoß Dampfbremse Decke-Dach
- 6 = Sparschalung
- 7 = Langschaftschraube
- 8 = Langschaftschraube
- 9 = Winkel
- 10 = Schraube

- External wall Variant A
- Floor-ceiling element
- Jamb wall element
- Roof structure
- Joint of the vapour barrier between roof and ceiling
- open boarding
- Long shaft screw
- Long shaft screw
- Angle
- Screw

Die tragenden Anschlüsse sind nur prinzipiell dargestellt. Sie sind gemäß den technischen Regeln zu bemessen und gemäß der statischen Berechnung auszuführen.

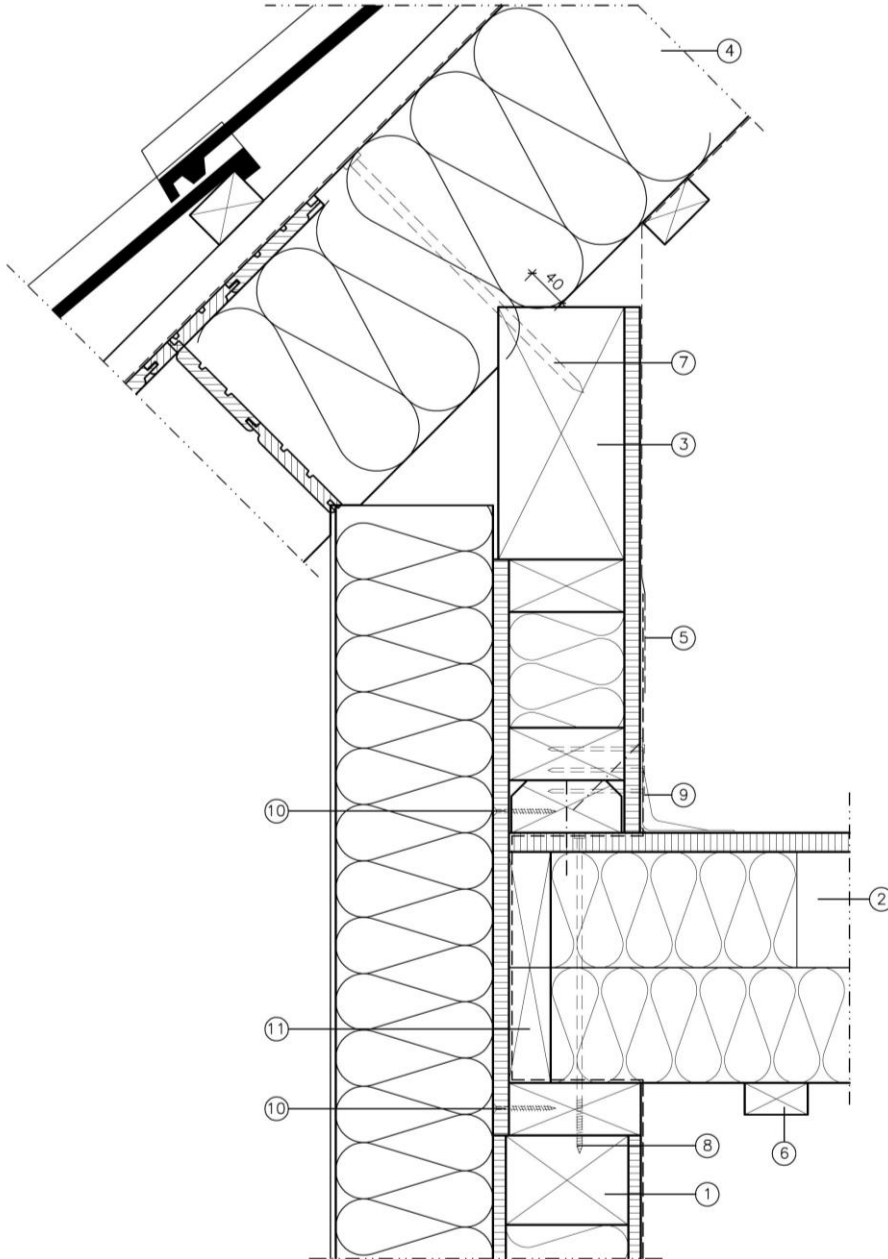
The load-bearing connections are only shown generally. They shall be designed according to technical regulations and executed according to structural design.

"HANSE-HAUS"

Vertical section – connection jamb wall to external wall, Variant A

Annex B.19

Variante B (Variant B)



- 1 = Außenwandkonstruktion Variante B
- 2 = Geschoßdeckenelement
- 3 = Kniestockelement
- 4 = Dachkonstruktion
- 5 = Stoß Dampfbremse Decke-Dach
- 6 = Sparschalung
- 7 = Langschaftschraube
- 8 = Langschaftschraube
- 9 = Winkel
- 10 = Schraube

- External wall Variant B
- Floor-ceiling element
- Jamb wall element
- Roof structure
- Joint of the vapour barrier between roof and ceiling
- open boarding
- Long shaft screw
- Long shaft screw
- Angle
- Screw

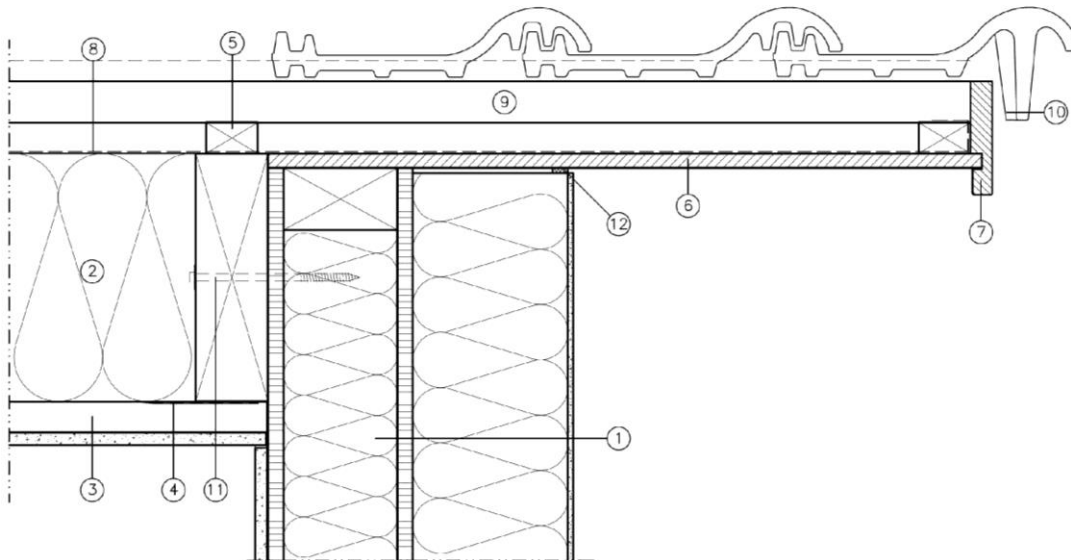
Die tragenden Anschlüsse sind nur prinzipiell dargestellt. Sie sind gemäß den technischen Regeln zu bemessen und gemäß der statischen Berechnung auszuführen.

The load-bearing connections are only shown generally. They shall be designed according to technical regulations and executed according to structural design.

"HANSE-HAUS"

Vertical section – connection jamb wall to external wall, Variant B

Annex B.20



1 = Giebel-Außenwandkonstruktion

2 = Dachkonstruktion

3 = Sparschalung

4 = Stoß Dampfbremse Giebel-Dach

5 = Konterlatte

6 = Profilbretter

7 = Windfeder

8 = dampfdiffusionsoffene Unterspannbahn

9 = Dachlatte

10 = Ortgangziegel

11 = Verschraubung Sparren mit Giebelrahmenkonstruktion

12 = Dichtungsband

Gable external wall construction

Roof structure

Open boarding

Joint formation of the vapour barrier between roof and gable wall

Counter-batten

Profile board

Barge board

Sarking membrane, diffusion open

Roofing lath

Verge tile

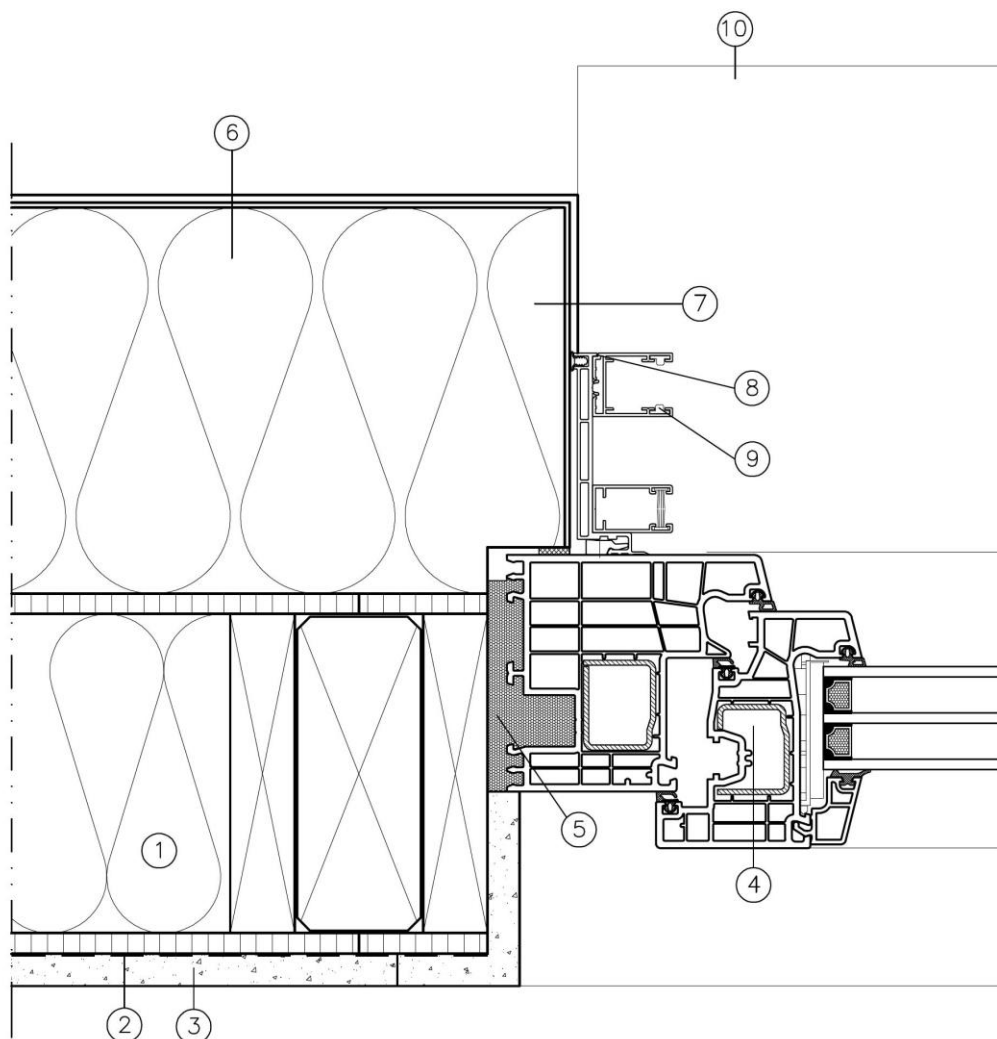
Rafter screwed to gable wall construction

Sealing tape

Die tragenden Anschlüsse sind nur prinzipiell dargestellt. Sie sind gemäß den technischen Regeln zu bemessen und gemäß der statischen Berechnung auszuführen.

The load-bearing connections are only shown generally. They shall be designed according to technical regulations and executed according to structural design.

Variante A (Variant A)



- 1 = Außenwandkonstruktion Variante A
- 2 = Dampfbremse
- 3 = Gipskartonplatte
- 4 = Fenster bzw. Terrassentür
- 5 = Montageschaum
- 6 = Wärmedämmverbundsystem
- 7 = Wärmedämmung in der Leibung
- 8 = Putzanschlussprofil
- 9 = Rollladenschiene
- 10 = Fensterbank

- External wall construction Variant A
- Vapour barrier
- Gypsum board
- Window resp terrace door
- Mounting foam
- Thermal insulation system
- Thermal insulation of reveal
- Plaster connection profile
- Shutter slat
- Window sill

Die tragenden Anschlüsse sind nur prinzipiell dargestellt. Sie sind gemäß den technischen Regeln zu bemessen und gemäß der statischen Berechnung auszuführen.

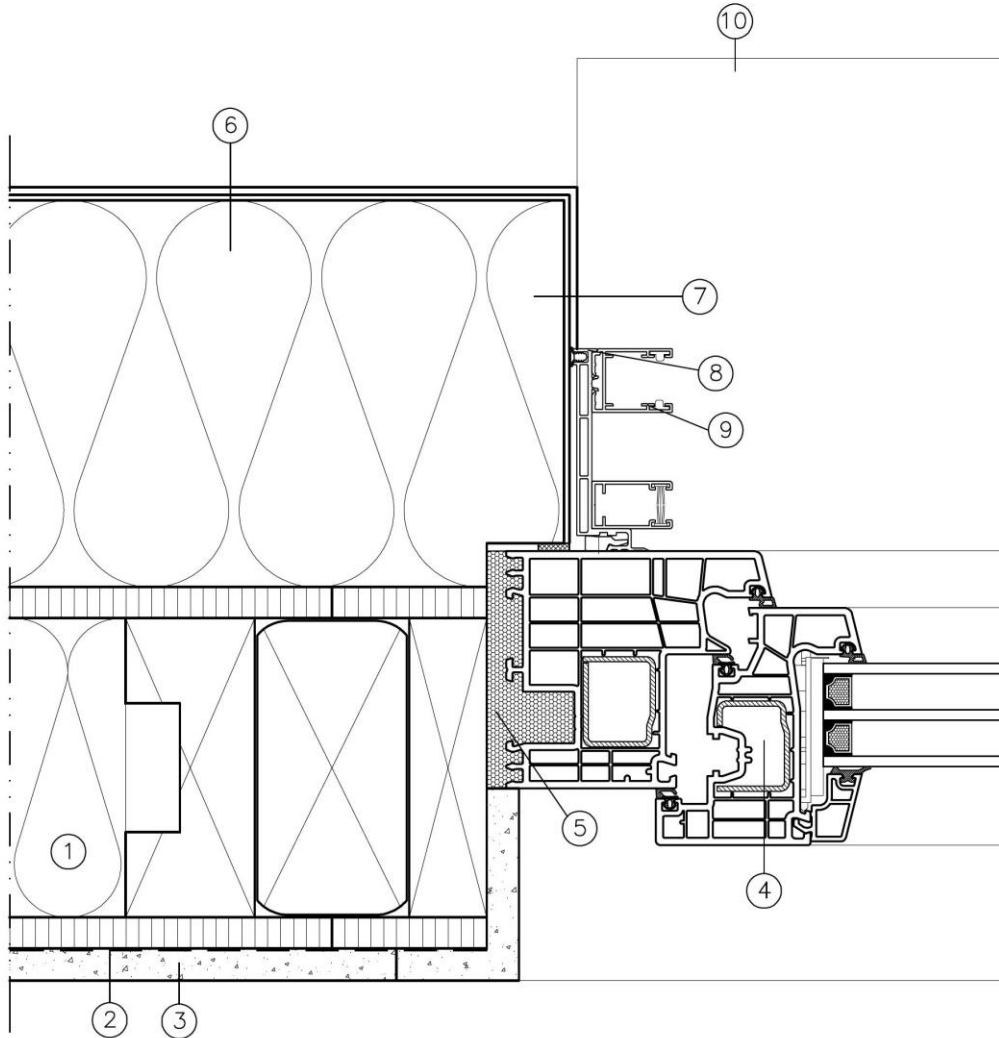
The load-bearing connections are only shown generally. They shall be designed according to technical regulations and executed according to structural design.

"HANSE-HAUS"

Horizontal section – external wall with window, terrace door, Variant A

Annex B.22

Variante B (Variant B)



- 1 = Außenwandkonstruktion Variante B
- 2 = Dampfbremse
- 3 = Gipskartonplatte
- 4 = Fenster bzw. Terrassentür
- 5 = Montageschaum
- 6 = Wärmedämmverbundsystem
- 7 = Wärmedämmung in der Leibung
- 8 = Putzanschlussprofil
- 9 = Rollladenschiene
- 10 = Fensterbank

- External wall construction Variant B
- Vapour barrier
- Gypsum board
- Window resp terrace door
- Mounting foam
- Thermal insulation system
- Thermal insulation of reveal
- Plaster connection profile
- Shutter slat
- Window sill

Die tragenden Anschlüsse sind nur prinzipiell dargestellt. Sie sind gemäß den technischen Regeln zu bemessen und gemäß der statischen Berechnung auszuführen.

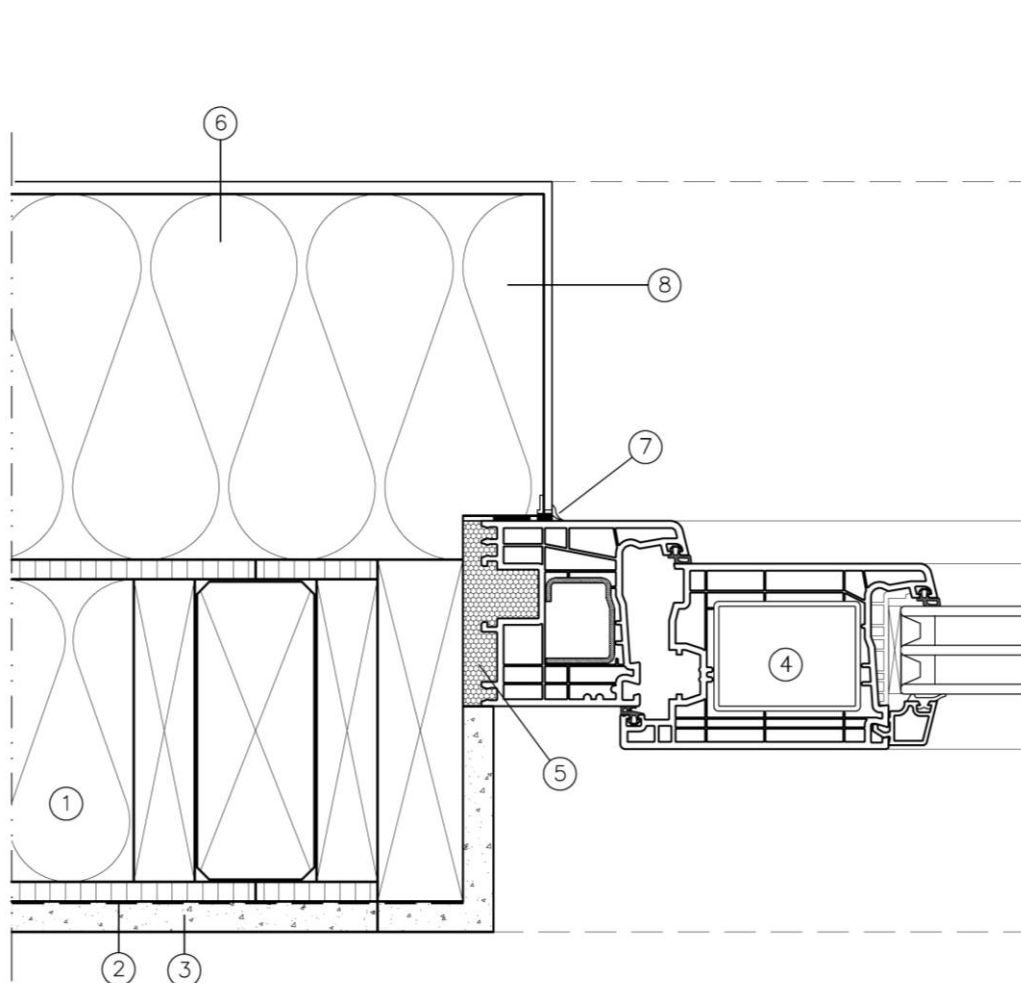
The load-bearing connections are only shown generally. They shall be designed according to technical regulations and executed according to structural design.

"HANSE-HAUS"

Horizontal section – external wall with window, terrace door, Variant B

Annex B.23

Variante A (Variant A)



- 1 = Außenwandkonstruktion Variante A
- 2 = Dampfbremse
- 3 = Gipskartonplatte
- 4 = Haustür
- 5 = Montageschaum
- 6 = Wärmedämmverbundsystem
- 7 = Putzanschlussprofil
- 8 = Wärmedämmung in der Leibung

- External wall construction Variant A
- Vapour barrier
- Gypsum board
- Front door
- Mounting foam
- Thermal insulation system
- Plaster connection profile
- Thermal insulation of reveal

Die tragenden Anschlüsse sind nur prinzipiell dargestellt. Sie sind gemäß den technischen Regeln zu bemessen und gemäß der statischen Berechnung auszuführen.

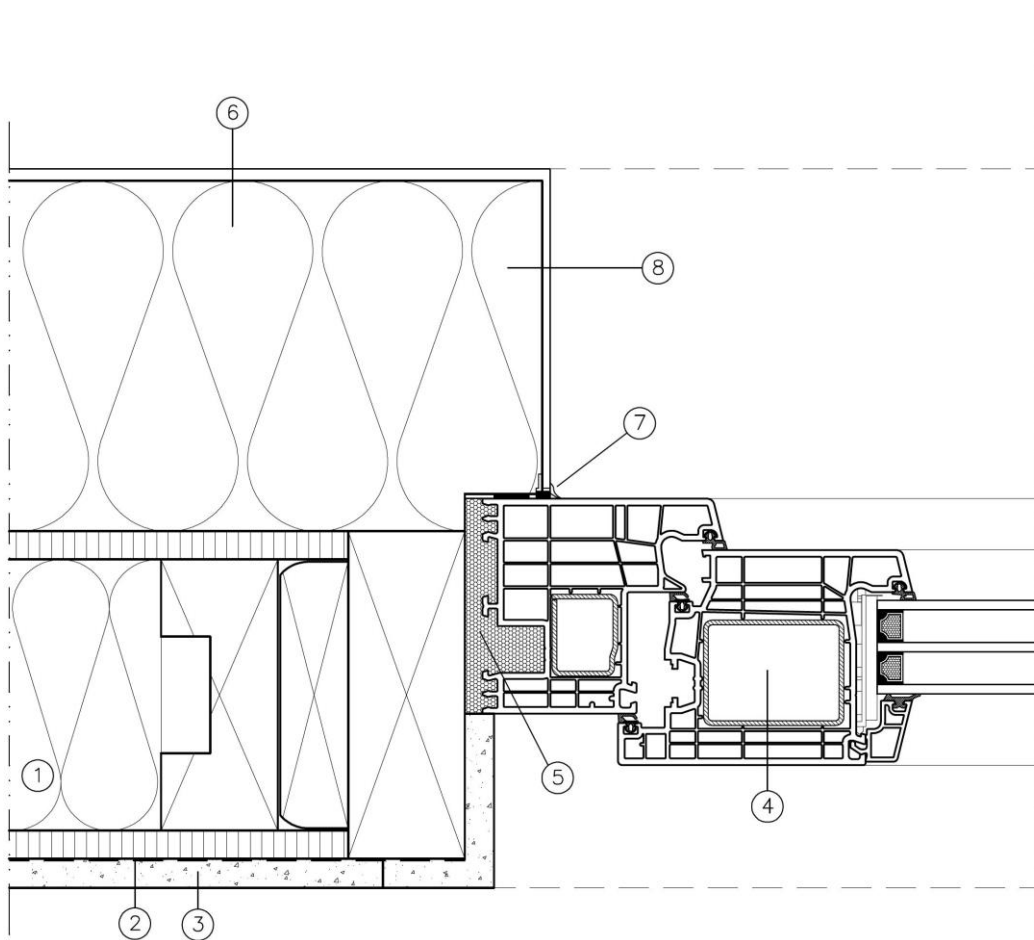
The load-bearing connections are only shown generally. They shall be designed according to technical regulations and executed according to structural design.

"HANSE-HAUS"

Horizontal section – external wall with front door, Variant A

Annex B.24

Variante B (Variant B)



- 1 = Außenwandkonstruktion Variante B
- 2 = Dampfbremse
- 3 = Gipskartonplatte
- 4 = Haustür
- 5 = Montageschaum
- 6 = Wärmedämmverbundsystem
- 7 = Putzanschlussprofil
- 8 = Wärmedämmung in der Leibung

- External wall construction Variant B
- Vapour barrier
- Gypsum board
- Front door
- Mounting foam
- Thermal insulation system
- Plaster connection profile
- Thermal insulation of reveal

Die tragenden Anschlüsse sind nur prinzipiell dargestellt. Sie sind gemäß den technischen Regeln zu bemessen und gemäß der statischen Berechnung auszuführen.

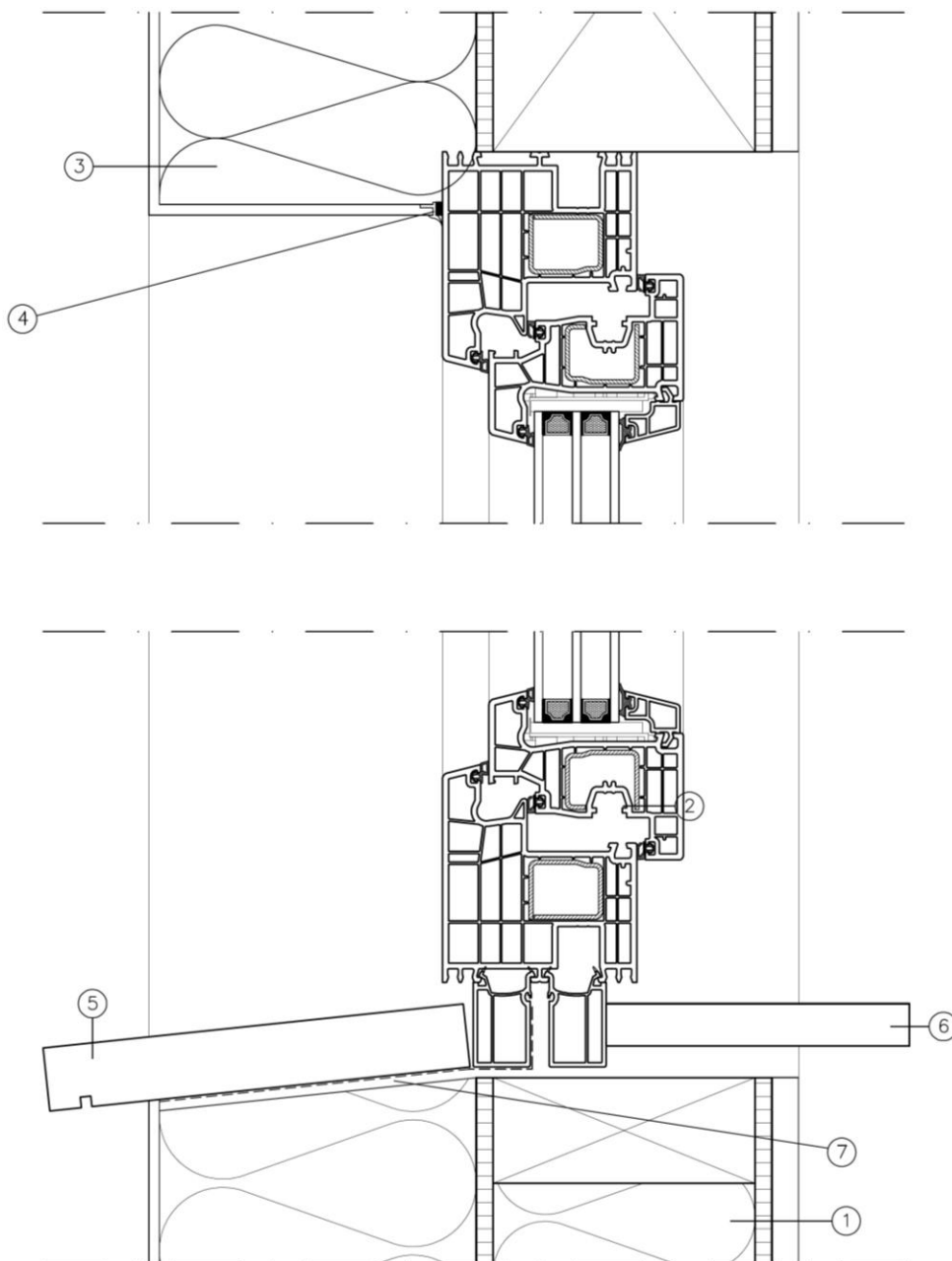
The load-bearing connections are only shown generally. They shall be designed according to technical regulations and executed according to structural design.

"HANSE-HAUS"

Horizontal section – external wall with front door, Variant B

Annex B.25

Variante A (Variant A)



1 = Außenwandkonstruktion Variante A

2 = Fenster

3 = Wärmedämmung in der Leibung

4 = Putzanschlussprofil

5 = Außenfensterbank

6 = Innenfensterbank

7 = Wasserdichtes Foliensystem, diffusionsoffen

External wall construction Variant A

Window

Thermal insulation of reveal

Plaster connection profile

Window sill outside

Window sill inside

Waterproof foil system, diffusion open

Die tragenden Anschlüsse sind nur prinzipiell dargestellt. Sie sind gemäß den technischen Regeln zu bemessen und gemäß der statischen Berechnung auszuführen.

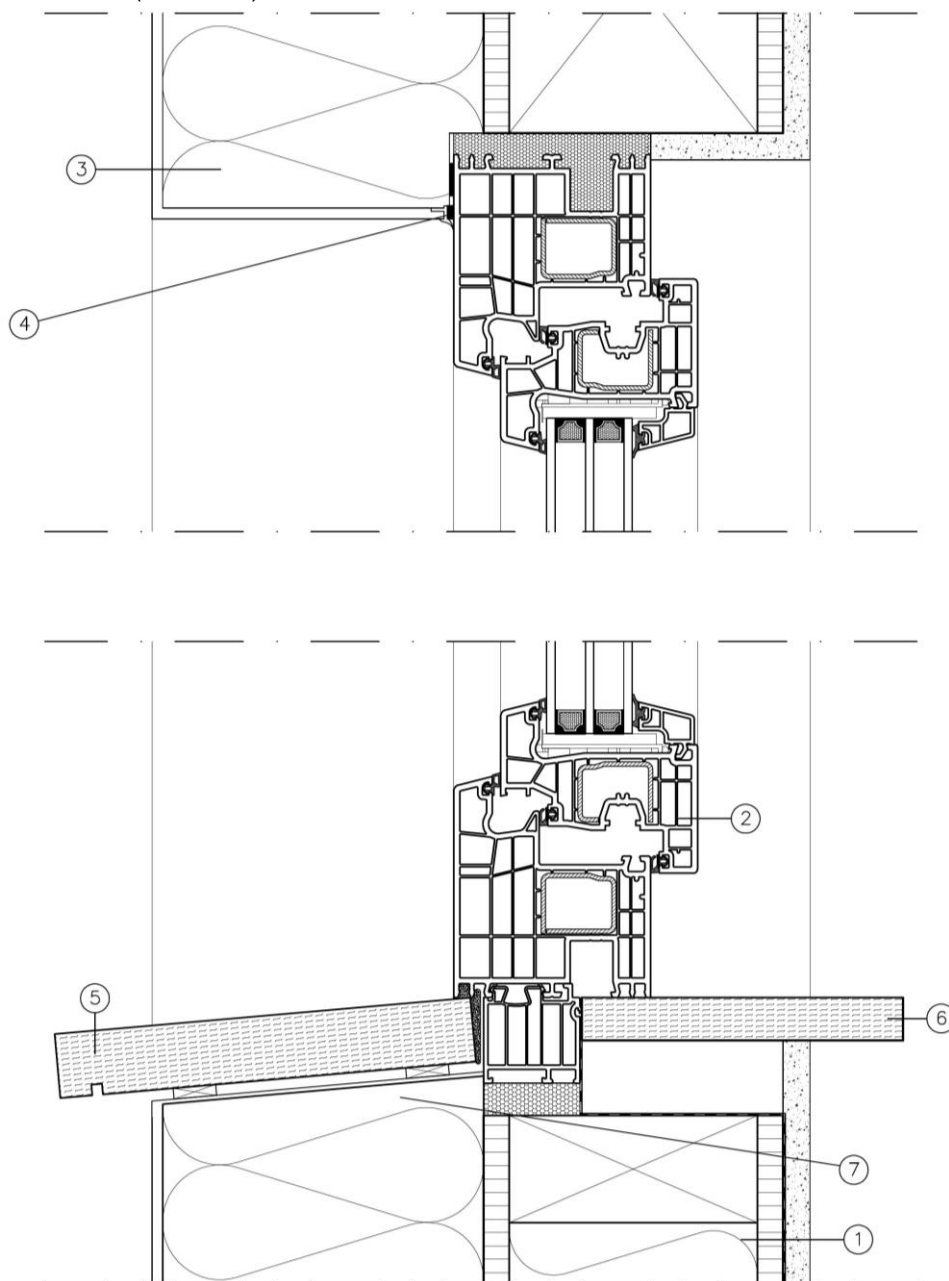
The load-bearing connections are only shown generally. They shall be designed according to technical regulations and executed according to structural design.

"HANSE-HAUS"

Vertical section – external wall with window, Variant A

Annex B.26

Variante B (Variant B)



1 = Außenwandkonstruktion Variante B

2 = Fenster

3 = Wärmedämmung in der Leibung

4 = Putzanschlussprofil

5 = Außenfensterbank

6 = Innenfensterbank

7 = Wasserdichtes Foliensystem, diffusionsoffen

External wall construction Variant B

Window

Thermal insulation of reveal

Plaster connection profile

Window sill outside

Window sill inside

Waterproof foil system, diffusion open

Die tragenden Anschlüsse sind nur prinzipiell dargestellt. Sie sind gemäß den technischen Regeln zu bemessen und gemäß der statischen Berechnung auszuführen.

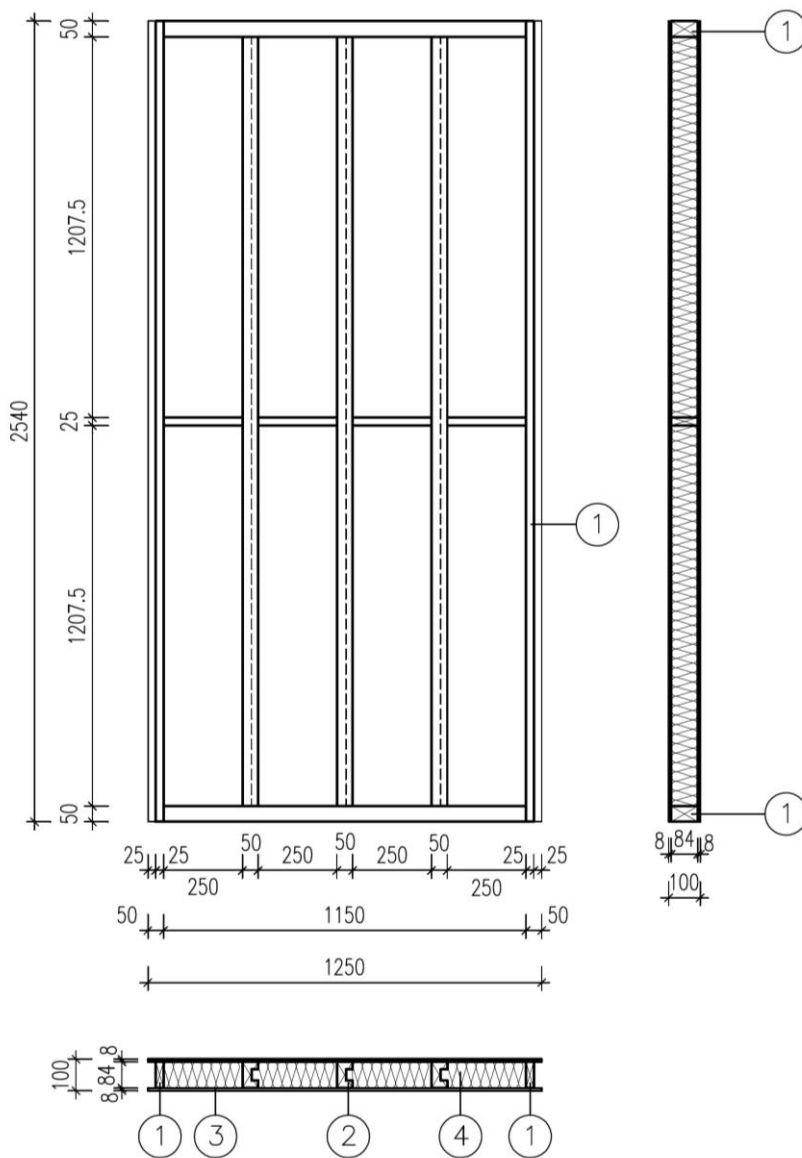
The load-bearing connections are only shown generally. They shall be designed according to technical regulations and executed according to structural design.

"HANSE-HAUS"

Vertical section – external wall with window, Variant B

Annex B.27

Variante A (Variant A)



- 1 = Rahmenhölzer
- 2 = Rahmenhölzer mit Kabelkanal
- 3 = OSB beidseitig
- 4 = Wärme- und Schalldämmung

- Framing timber
- Framing timber with cable duct
- OSB on both sides
- Thermal and sound insulation

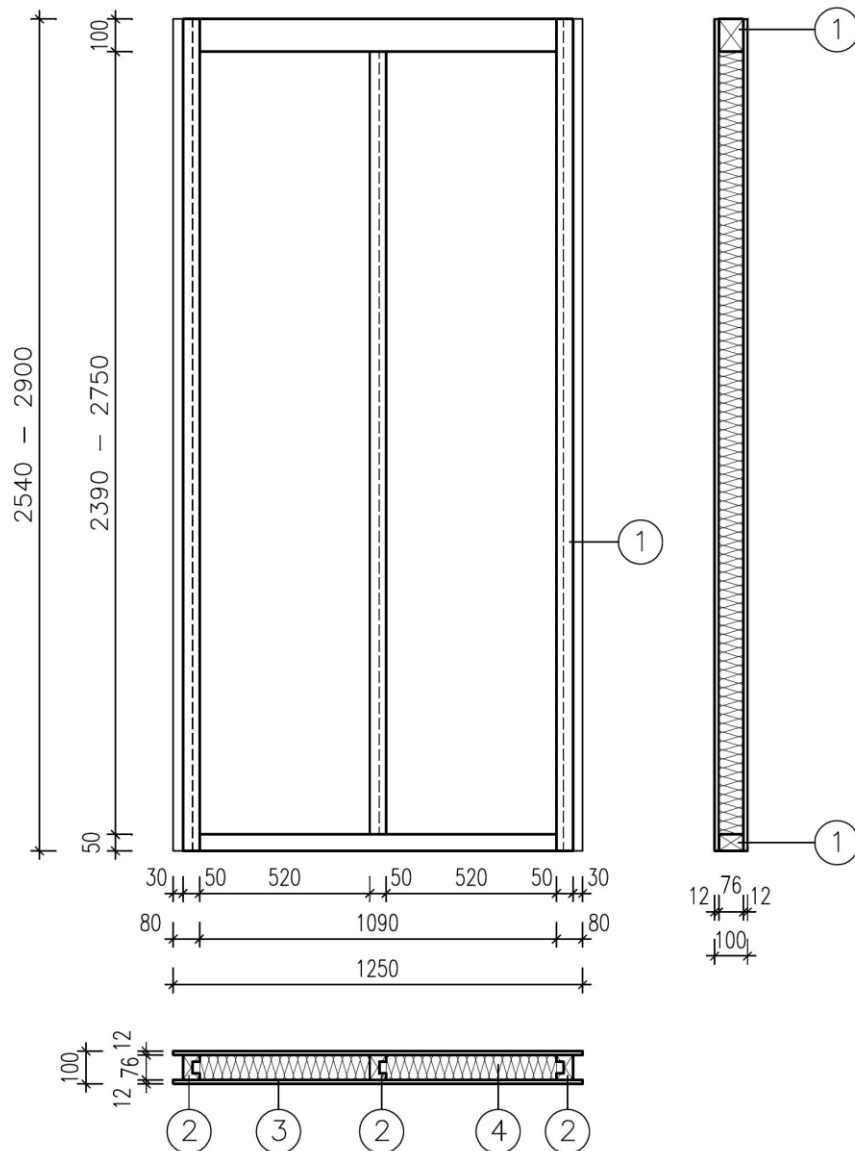
electronic copy of the eta by dibt: eta-06/0232

"HANSE-HAUS"

Standard internal wall element, Variant A

Annex B.28

Variante B (Variant B)



- 1 = Rahmenhölzer
- 2 = Rahmenhölzer mit Kabelkanal
- 3 = Holzwerkstoffplatte beidseitig
- 4 = Wärme- und Schalldämmung

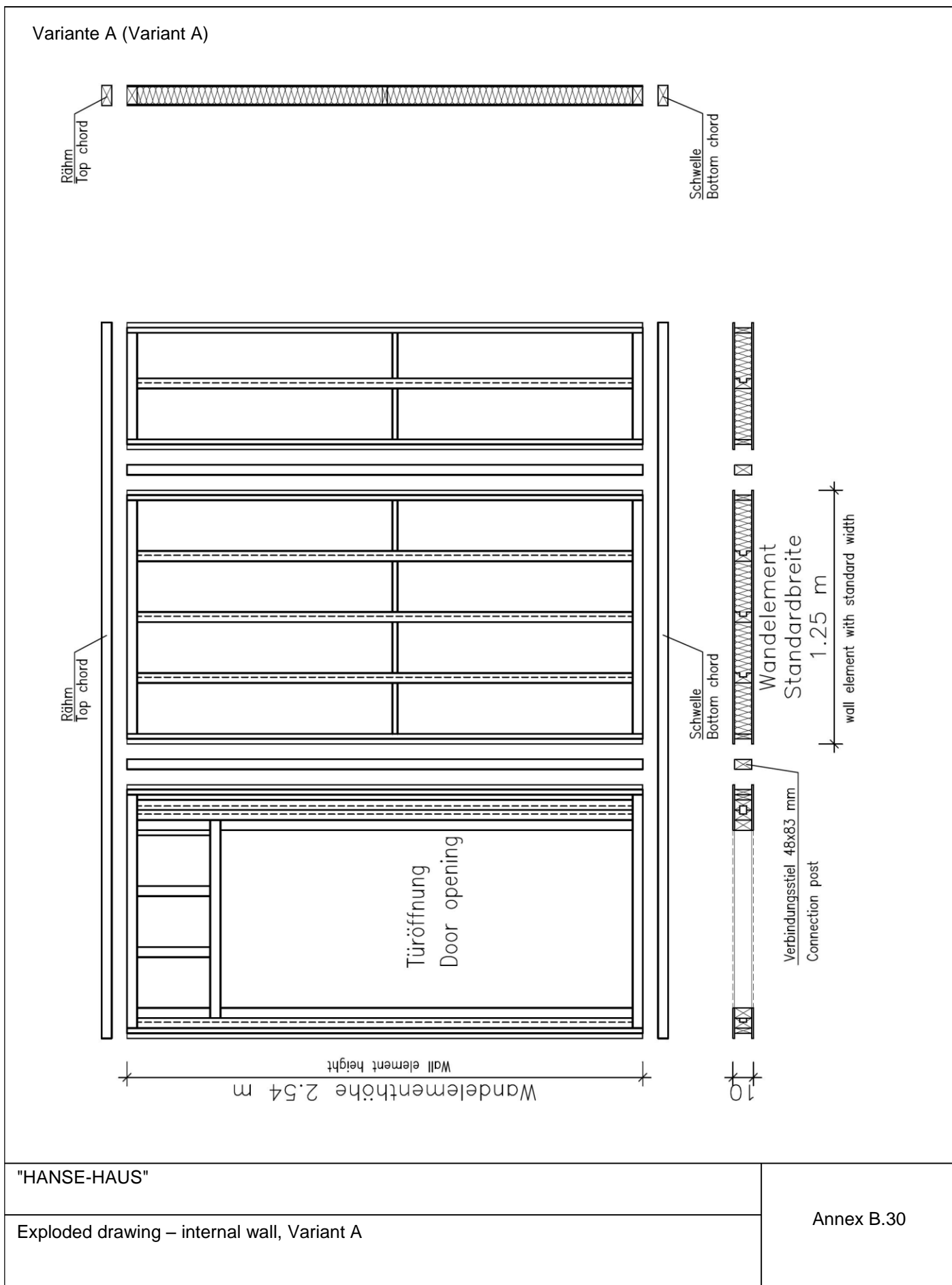
- Framing timber
- Framing timber with cable duct
- Wood-based-panel on both sides
- Thermal and sound insulation

electronic copy of the eta by dibt: eta-06/0232

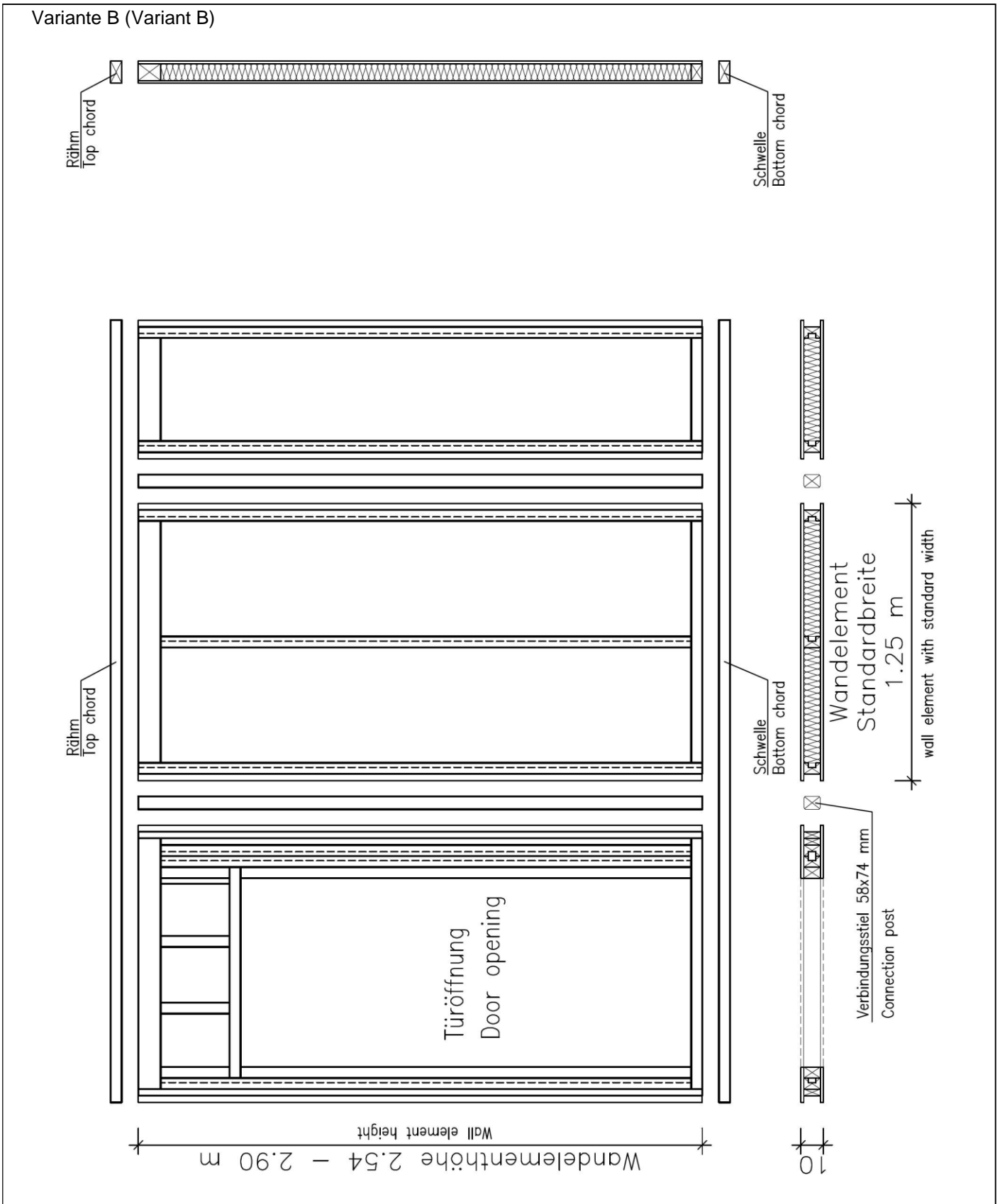
"HANSE-HAUS"

Standard internal wall element, Variant B

Annex B.29



electronic copy of the eta by dibt: eta-06/0232



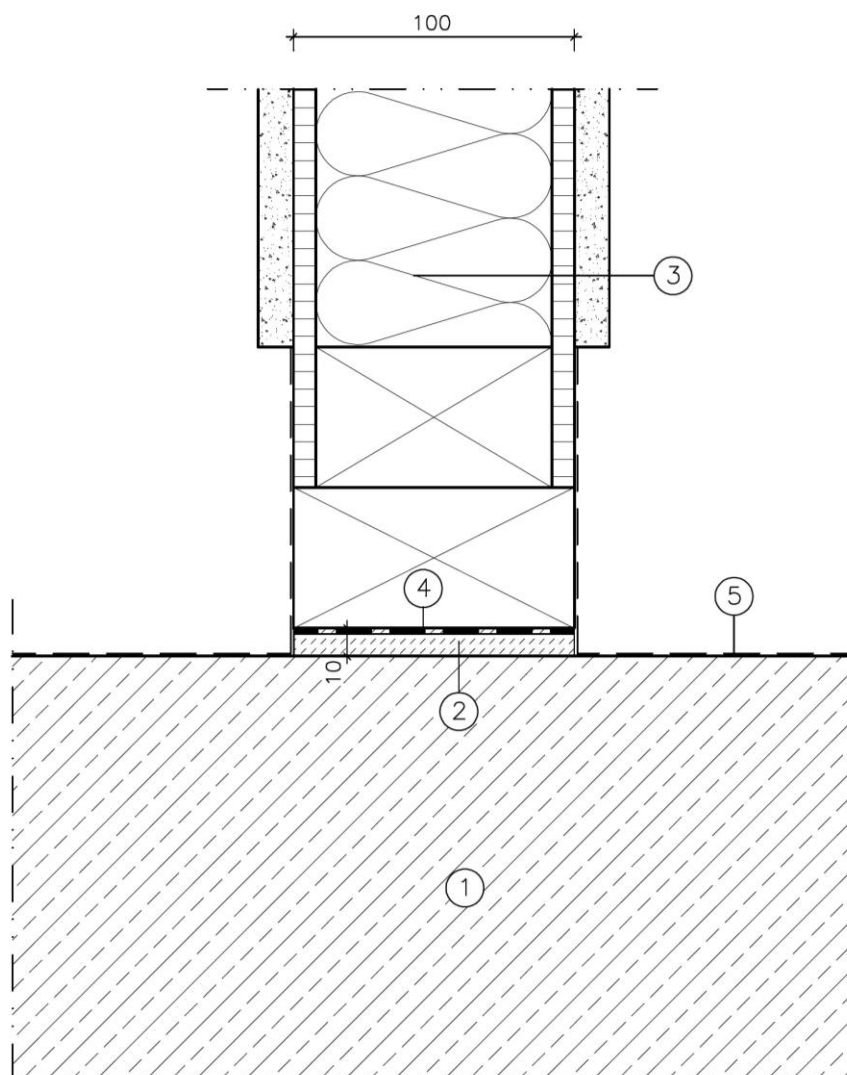
electronic copy of the eta by dibt: eta-06/0232

"HANSE-HAUS"

Exploded drawing – internal wall, Variant B

Annex B.31

Variante A (Variant A)



1 = Kellerdecke bzw. Fundamentplatte
2 = Unterlegung und Untermörtelung
3 = Innenwandkonstruktion Variante A
4 = Absperrbahn, sofern erforderlich
5 = Feuchtesperre, sofern erforderlich

Cellar ceiling resp. foundation plate
Mortarbed
Internal wall construction Variant A
Barrier membrane, if necessary
Moisture barrier, if necessary

Die tragenden Anschlüsse sind nur prinzipiell dargestellt. Sie sind gemäß den technischen Regeln zu bemessen und gemäß der statischen Berechnung auszuführen.

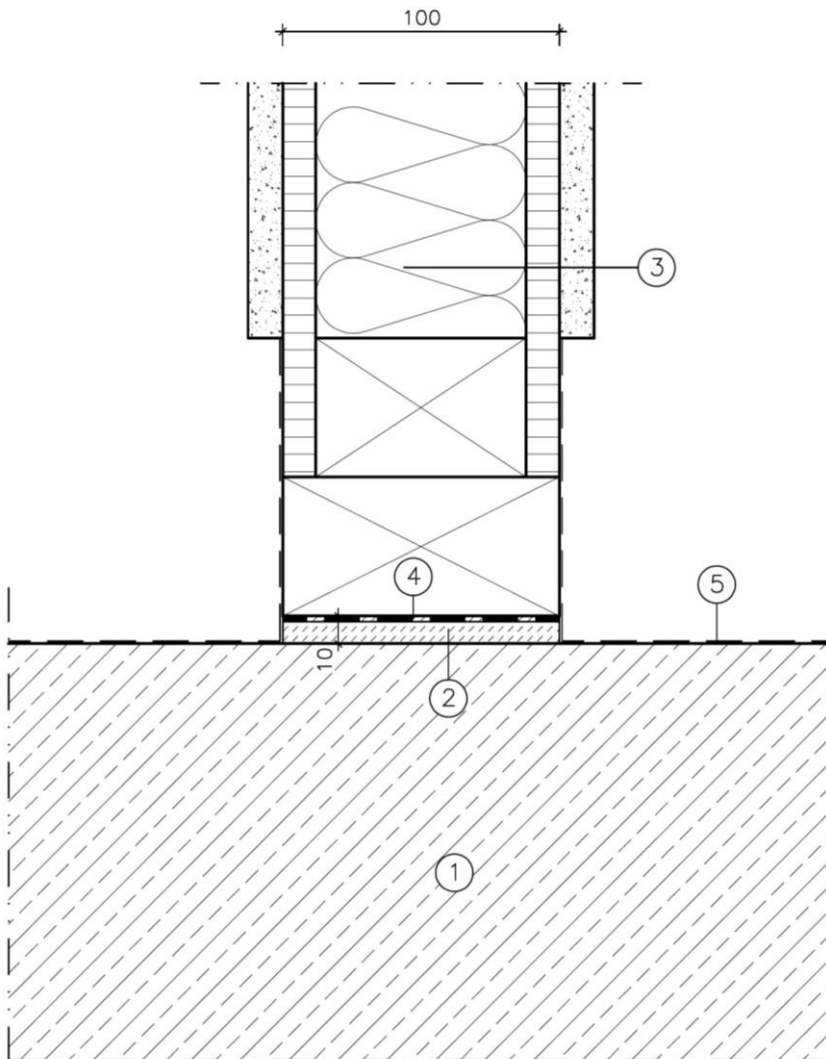
The load-bearing connections are only shown generally. They shall be designed according technical regulations and executed according structural design.

"HANSE-HAUS"

Vertical section – internal wall to foundation resp. basement ceiling, Variant A

Annex B.32

Variante B (Variant B)



- 1 = Kellerdecke bzw. Fundamentplatte
- 2 = Unterlegung und Untermörtelung
- 3 = Innenwandkonstruktion Variante B
- 4 = Absperrbahn, sofern erforderlich
- 5 = Feuchtesperre, sofern erforderlich

- Cellar ceiling resp. foundation plate
- Mortarbed
- Internal wall construction Variant B
- Barrier membrane, if necessary
- Moisture barrier, if necessary

Die tragenden Anschlüsse sind nur prinzipiell dargestellt. Sie sind gemäß den technischen Regeln zu bemessen und gemäß der statischen Berechnung auszuführen.

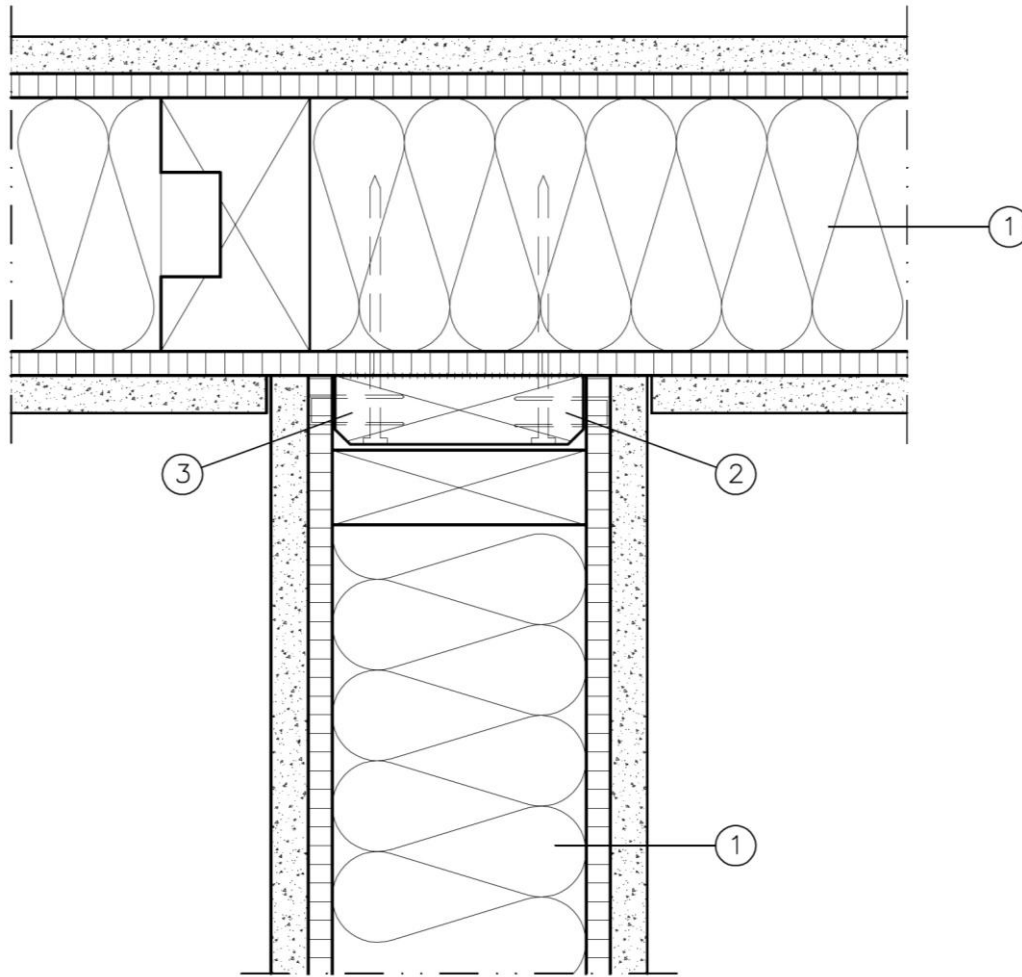
The load-bearing connections are only shown generally. They shall be designed according technical regulations and executed according structural design.

"HANSE-HAUS"

Vertical section – internal wall to foundation resp. basement ceiling, Variant B

Annex B.33

Variante A (Variant A)



1 = Innenwandkonstruktion Variante A
 2 = Anschlussleiste angeklebt und
 mit Nägeln befestigt
 3 = Befestigung mit Klammern auf
 der Baustelle, $e \approx 15$ cm

Internal wall construction Variant A
 Connection lath glued and
 fixed with nails
 Fastening with staples on site,
 $e \approx 15$ cm

Die tragenden Anschlüsse sind nur prinzipiell dargestellt. Sie sind gemäß den technischen Regeln zu bemessen und gemäß der statischen Berechnung auszuführen.

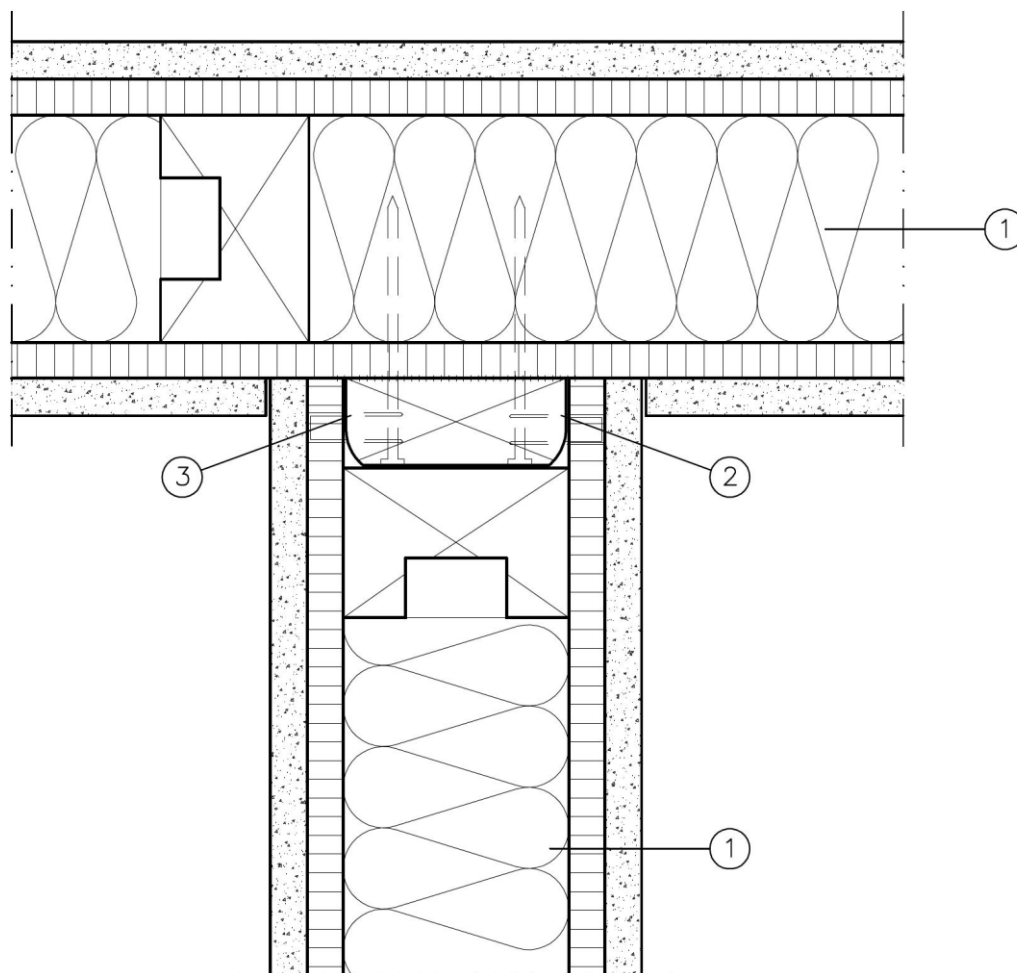
The load-bearing connections are only shown generally. They shall be designed according to technical regulations and executed according to structural design.

"HANSE-HAUS"

Horizontal section – internal wall to internal wall, Variant A

Annex B.34

Variante B (Variant B)

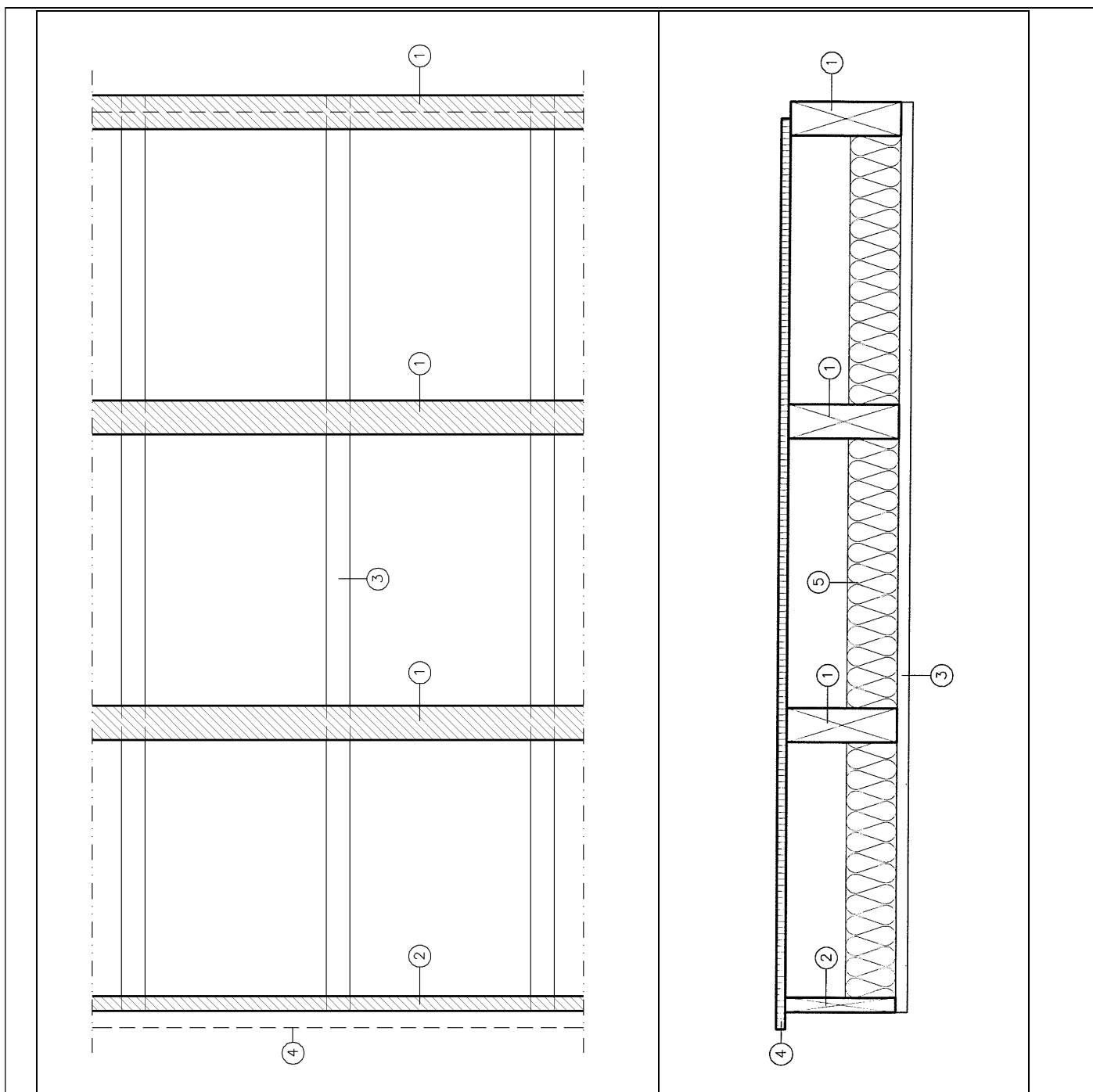


1 = Innenwandkonstruktion Variante B
2 = Anschlussleiste angeklebt und
mit Nägeln befestigt
3 = Befestigung mit Klammern auf
der Baustelle, $e \approx 15$ cm

Internal wall construction Variant B
Connection lath glued and
fixed with nails
Fastening with staples on site,
 $e \approx 15$ cm

Die tragenden Anschlüsse sind nur prinzipiell dargestellt. Sie sind gemäß den technischen Regeln zu bemessen und gemäß der statischen Berechnung auszuführen.

The load-bearing connections are only shown generally. They shall be designed according to technical regulations and executed according to structural design.



- 1 = Deckenbalken gem. Statik
- 2 = Bohle
- 3 = Sparschalung, $e \approx 41$ cm
- 4 = Deckenbeplankung mit Holzwerkstoffplatte
- 5 = Schalldämmung

- Ceiling joist according to structural analysis
- Batten
- Open boarding, $e \approx 41$ cm
- Ceiling planking with Wood-based-panel
- Sound insulation

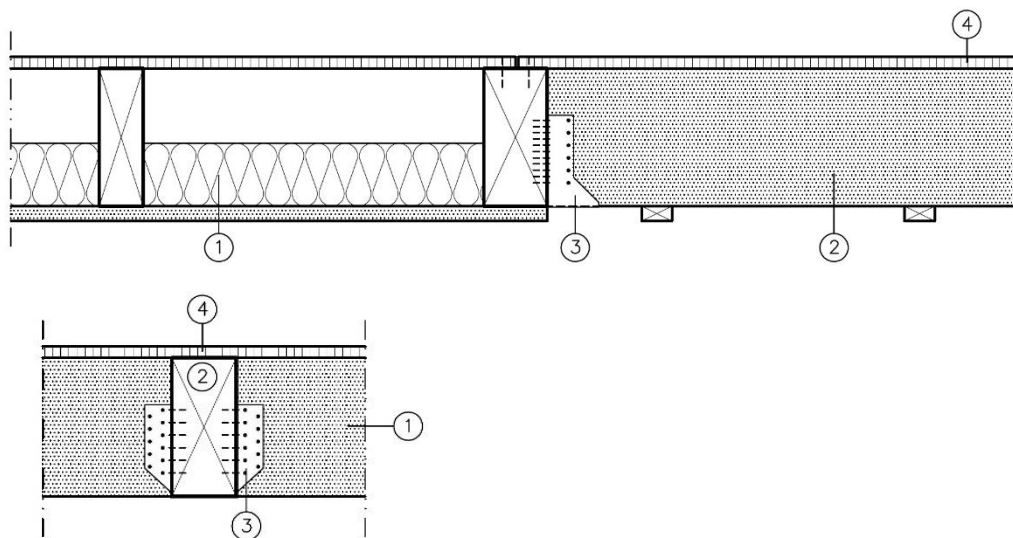
Die tragenden Anschlüsse sind nur prinzipiell dargestellt. Sie sind gemäß den technischen Regeln zu bemessen und gemäß der statischen Berechnung auszuführen.

The load-bearing connections are only shown generally. They shall be designed according to technical regulations and executed according to structural design.

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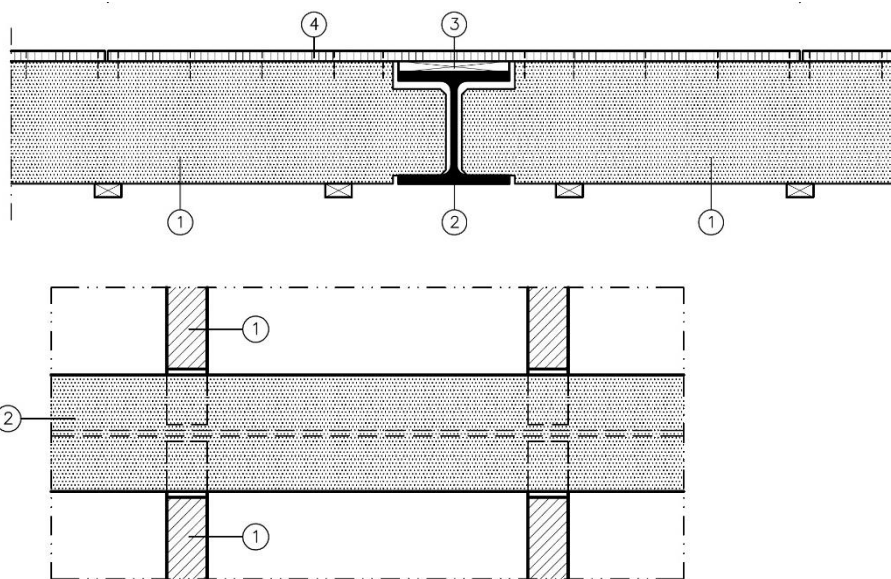
Horizontal section through ceiling element

Annex B.36



- 1 = Deckenelement
- 2 = Deckenbalken
- 3 = Balkenschuh gem. Statik
- 4 = Deckenbeplankung mit Holzwerkstoffplatte

- Ceiling element
- Ceiling joist
- Joist hanger according to structural analysis
- Ceiling planking with Wood-based-panel



- 1 = Deckenelement
- 2 = Stahlträger gem. Statik
- 3 = Füllholz
- 4 = Deckenbeplankung mit Holzwerkstoffplatte

- Ceiling element
- Steel beam according to structural analysis
- Wooden filling elements
- Ceiling planking with Wood-based-panel

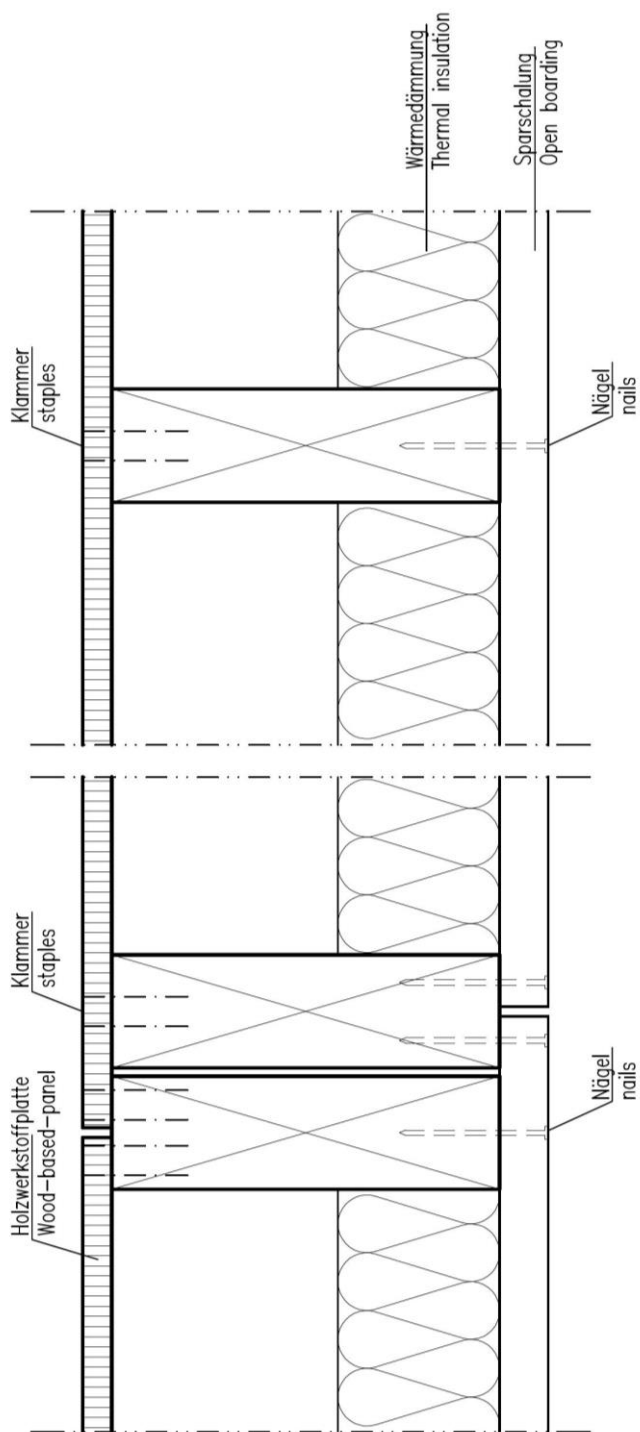
Die tragenden Anschlüsse sind nur prinzipiell dargestellt. Sie sind gemäß den technischen Regeln zu bemessen und gemäß der statischen Berechnung auszuführen.

The load-bearing connections are only shown generally. They shall be designed according to technical regulations and executed according to structural design.

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Connection of ceiling joints

Annex B.37



Die tragenden Anschlüsse sind nur prinzipiell dargestellt. Sie sind gemäß den technischen Regeln zu bemessen und gemäß der statischen Berechnung auszuführen.

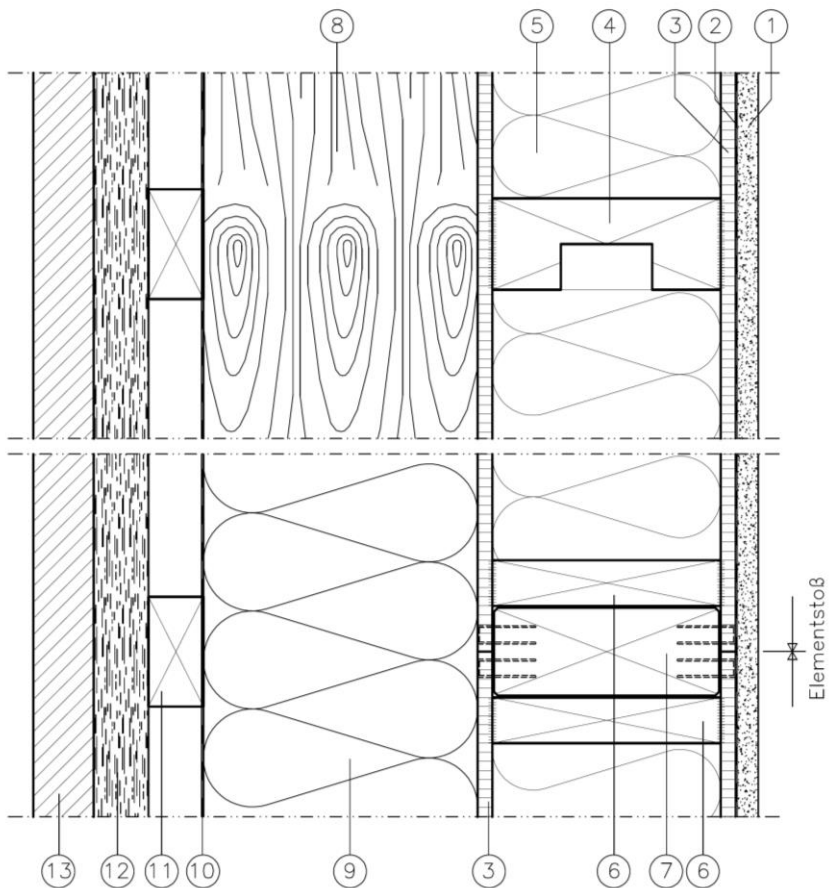
The load-bearing connections are only shown generally. They shall be designed according to technical regulations and executed according to structural design.

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Vertical section – ceiling element joint

Annex B.38

Variante A (Variant A)



- | | |
|-----------------------------------|------------------------------------|
| 1 = Gipskartonplatte | Gypsum board |
| 2 = Dampfbremse | Vapour barrier |
| 3 = OSB | OSB |
| 4 = Rahmenhölzer mit Kabelkanal | Framing timber with cable duct |
| 5 = Mineralfaserdämmung | Mineral wool insulation |
| 6 = Rahmenholz | Framing timber |
| 7 = senkrechtes Konstruktionsholz | Vertical framing timber |
| 8 = Grundkonstruktionsholz | Constructional timber |
| 9 = Wärmedämmung | Thermal insulation |
| 10 = Dampfdiffusionsoffene Bahn | Open vapour diffusion sealing foil |
| 11 = Grundlattung | Basic lathing |
| 12 = Traglattung | Load bearing lathing |
| 13 = Holzbekleidung | Timber cladding |

Die Holzrahmenkonstruktion wird vollflächig mit den OSB verklebt.

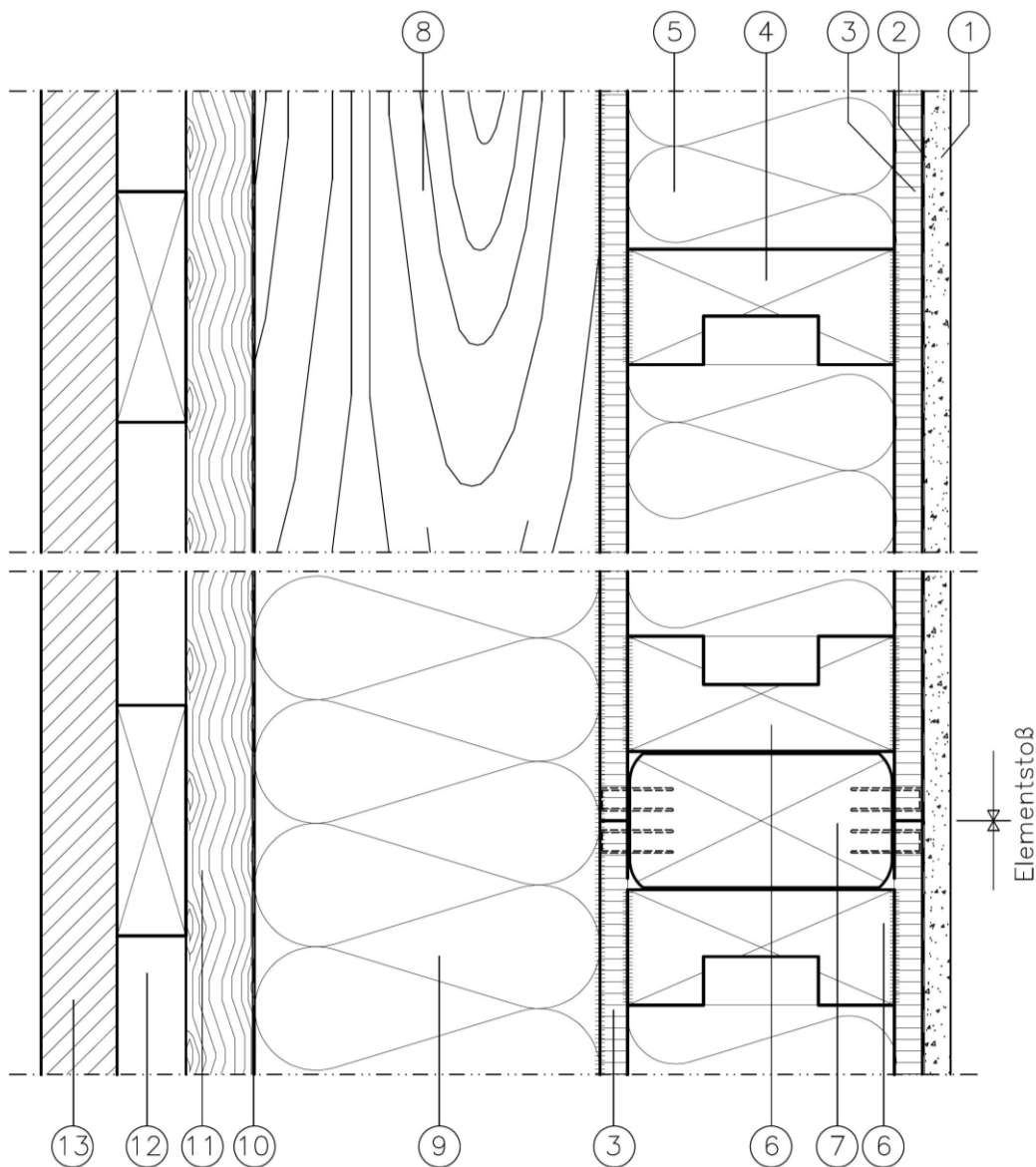
The timber frame construction will be glued to the OSB.

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Vertical section – external wall with timber cladding and wooden substructure, Variant A

Annex B.39

Variante B (Variant B)



- 1 = Gipskartonplatte
- 2 = Dampfbremse
- 3 = Holzwerkstoffplatte
- 4 = Rahmenhölzer mit Kabelkanal
- 5 = Mineralfaserdämmung
- 6 = Rahmenholz
- 7 = senkrechtes Konstruktionsholz
- 8 = Grundkonstruktionsholz
- 9 = Wärmedämmung
- 10 = Dampfdiffusionsoffene Bahn
- 11 = Grundlattung
- 12 = Traglattung
- 13 = Holzbekleidung

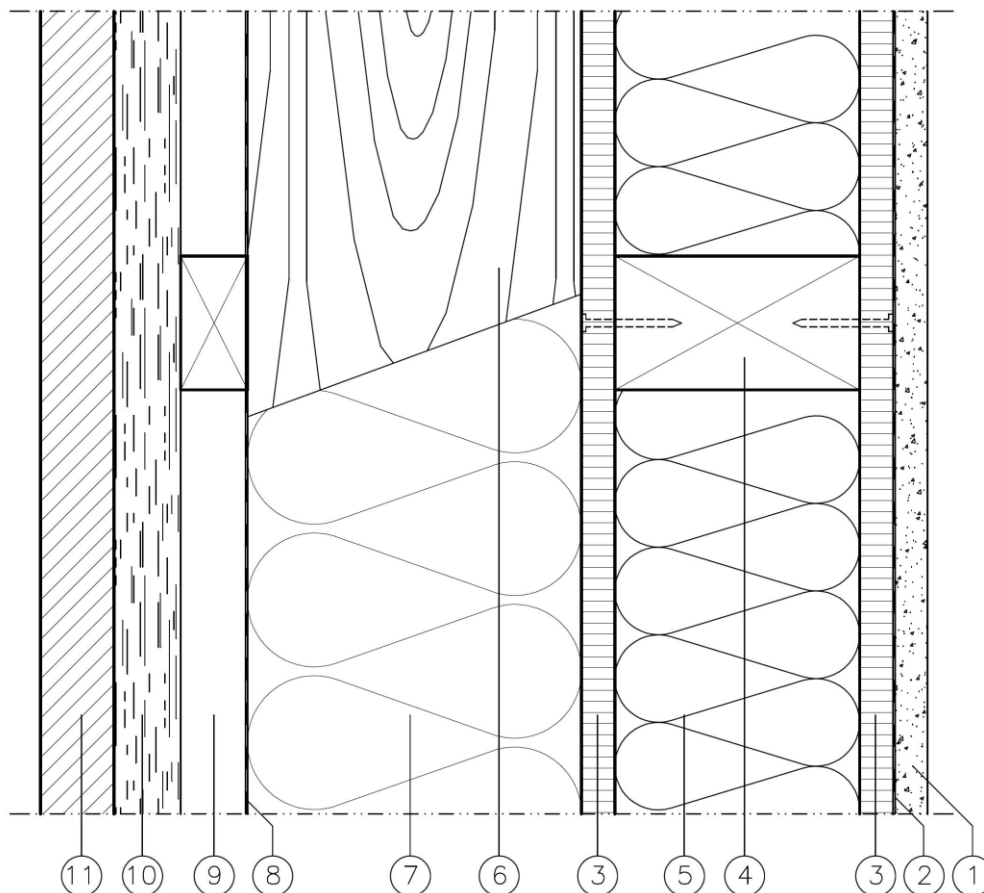
- Gypsum board
- Vapour barrier
- Wood-based-panel
- Framing timber with cable duct
- Mineral wool insulation
- Framing timber
- Vertical framing timber
- Constructional timber
- Thermal insulation
- Open vapour diffusion sealing foil
- Basic lathing
- Load bearing lathing
- Timber cladding

Die Holzrahmenkonstruktion wird vollflächig mit den Holzwerkstoffplatten verklebt.
The timber frame construction will be glued to the Wood-based-panel.

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Vertical section – external wall with timber cladding and wooden substructure, Variant B

Annex B.40



- 1 = Gipskartonplatte
- 2 = Dampfbremse
- 3 = Holzwerkstoffplatte
- 4 = Konstruktionsholz
- 5 = Mineralfaserdämmung
- 6 = Grundkonstruktionsholz
- 7 = Wärmedämmung
- 8 = Dampfdiffusionsoffene Bahn
- 9 = Grundlattung
- 10 = Traglattung
- 11 = Holzbeleidung

- Gypsum board
- Vapour barrier
- Wood-based-panel
- Timber frame
- Mineral wool insulation
- Constructional timber
- Thermal insulation
- Open vapour diffusion sealing foil
- Basic lathing
- Load bearing lathing
- Timber cladding

Das Giebelelement wird komplett im Werk genagelt.

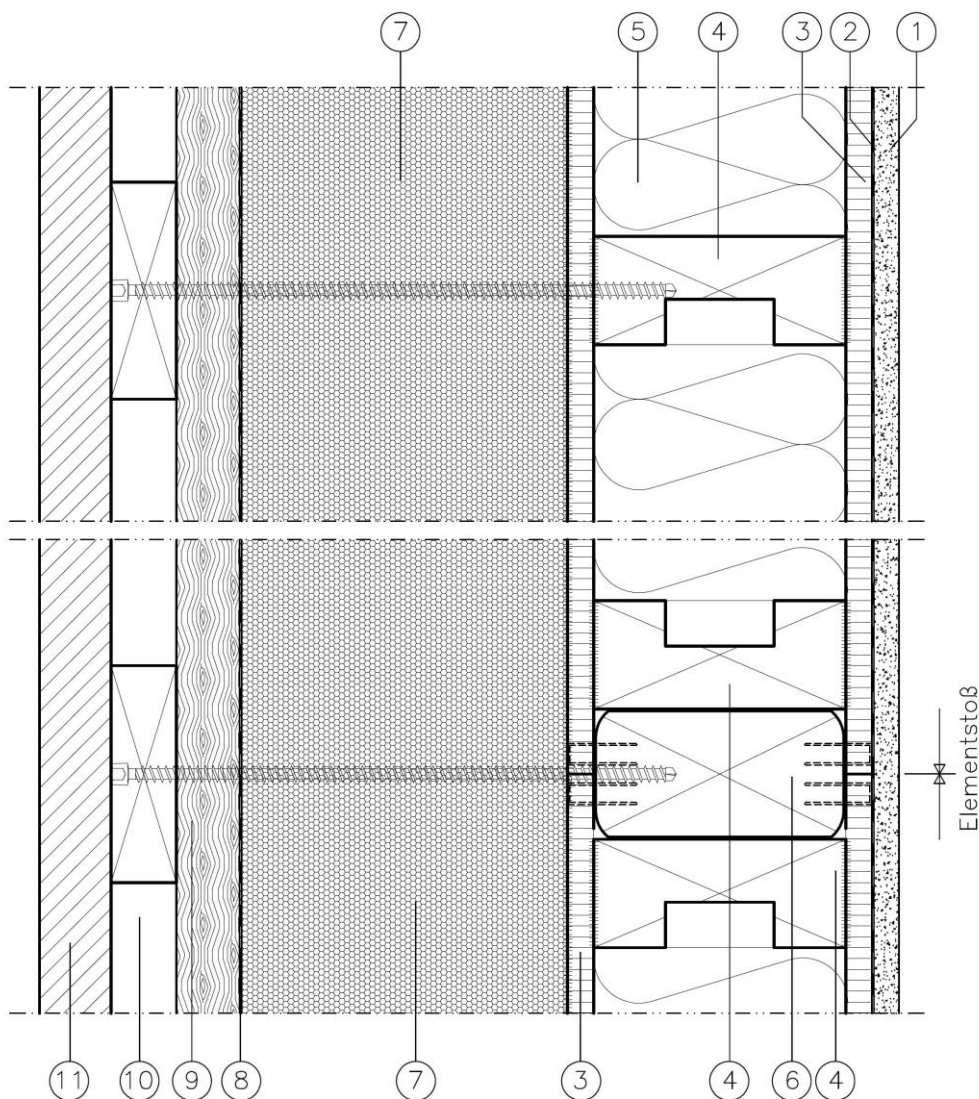
The whole gable element will be nailed in the factory.

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Vertical section – gable wall with timber cladding and wooden substructure

Annex B.41

Variante B (Variant B)



- 1 = Gipskartonplatte
- 2 = Dampfbremse
- 3 = Holzwerkstoffplatte
- 4 = Rahmenhölzer mit Kabelkanal
- 5 = Mineralfaserdämmung
- 6 = senkrechtes Konstruktionsholz
- 7 = Wärmedämmung (Polystyrol)
- 8 = Dampfdiffusionsoffene Bahn
- 9 = Grundlattung
- 10 = Traglattung
- 11 = Holzbekleidung

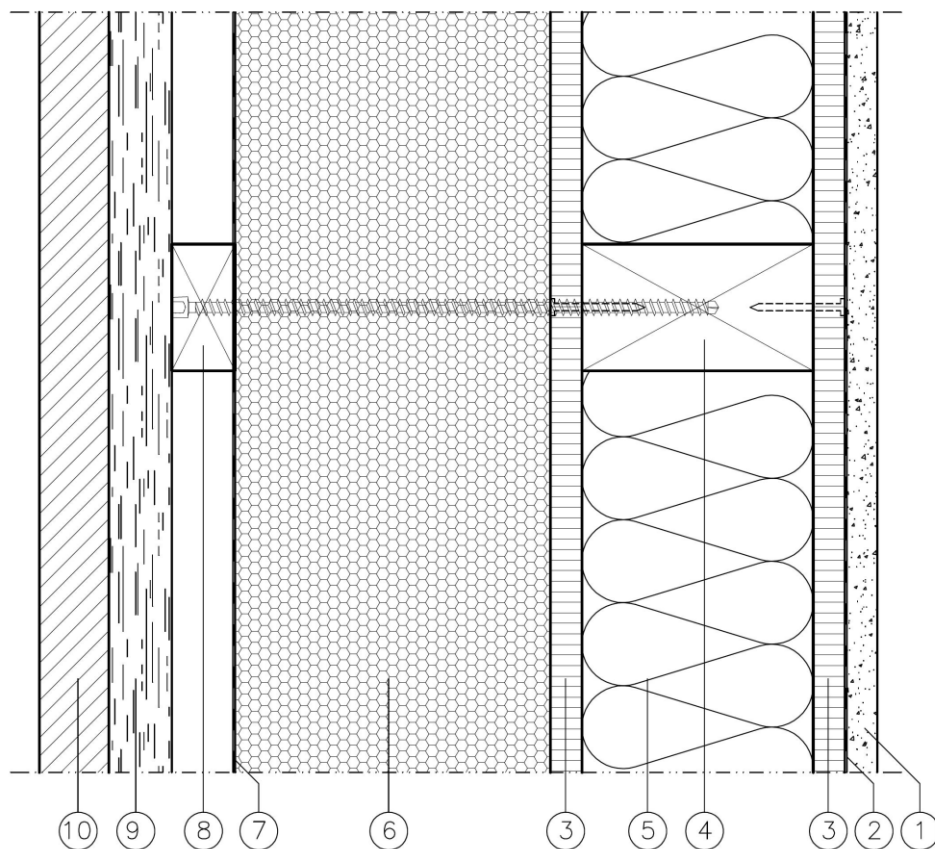
- Gypsum board
- Vapour barrier
- Wood-based-panel
- Framing timber with cable duct
- Mineral wool insulation
- Vertical framing timber
- Thermal insulation (Polystyrene)
- Open vapour diffusion sealing foil
- Basic lathing
- Load bearing lathing
- Timber cladding

Die Holzrahmenkonstruktion wird vollflächig mit den Holzwerkstoffplatten verklebt.
The timber frame construction will be glued to the Wood-based-panel.

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Vertical section – external wall with timber cladding and polystyrene substructure,
Variant B

Annex B.42



- 1 = Gipskartonplatte
- 2 = Dampfbremse
- 3 = Holzwerkstoffplatte
- 4 = Konstruktionsholz
- 5 = Mineralfaserdämmung
- 6 = Wärmedämmung (Polystyrol)
- 7 = Dampfdiffusionsoffene Bahn
- 8 = Grundlattung
- 9 = Traglattung
- 10 = Holzbekleidung

- Gypsum board
- Vapour barrier
- Wood-based-panel
- Timber frame
- Mineral wool insulation
- Thermal insulation (Polystyrene)
- Open vapour diffusion sealing foil
- Basic lathing
- Load bearing lathing
- Timber cladding

Das Giebelelement wird komplett im Werk genagelt.

The whole gable element will be nailed in the factory.

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Vertical section – gable wall with timber cladding and polystyrene substructure

Annex B.43