Deutsches Institut für Bautechnik

Zulassungsstelle für Bauprodukte und Bauarten

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Authorised and notified according to Article 10 of the Council Directive of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products (89/106/EEC)

Deutsches Institut für Bautechnik

DIBt

Mitglied der EOTA
Member of EOTA

European Technical Approval ETA-06/0232

English translation prepared by DIBt - Original version in German language

Handelsbezeichnung *Trade name*		"HANSE-HAUS"
Zulassungsinhaber *Holder of approval*		HANSE-Haus GmbH Ludwig-Weber-Straße 18 97789 Oberleichtersbach
Zulassungsgegenstand und Verwendungszweck *Generic type and use of construction product*		Bausatz für den Holzrahmenbau für Wohngebäude und ähnliche Konstruktionen *Timber frame building kits for dwelling-houses and similar structures*
Geltungsdauer: *Validity:*	vom *from* bis *to*	3 September 2007 30 September 2012
verlängert *extended*	vom *from* bis *to*	28 June 2013 28 June 2018
Herstellwerk *Manufacturing plant*		Herstellwerk 1

Diese Zulassung umfasst *This Approval contains*	52 Seiten einschließlich 2 Anhänge *52 pages including 2 annexes*

I LEGAL BASES AND GENERAL CONDITIONS

1 This European technical approval is issued by Deutsches Institut für Bautechnik in accordance with:

- Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products[1], modified by Council Directive 93/68/EEC[2] and Regulation (EC) N° 1882/2003 of the European Parliament and of the Council[3];
- *Gesetz über das In-Verkehr-Bringen von und den freien Warenverkehr mit Bauprodukten zur Umsetzung der Richtlinie 89/106/EWG des Rates vom 21. Dezember 1988 zur Angleichung der Rechts- und Verwaltungsvorschriften der Mitgliedstaaten über Bauprodukte und anderer Rechtsakte der Europäischen Gemeinschaften (Bauproduktengesetz - BauPG) vom 28. April 1998[4], as amended by Article 2 of the law of 8 November 2011[5];*
- Common Procedural Rules for Requesting, Preparing and the Granting of European technical approvals set out in the Annex to Commission Decision 94/23/EC[6];
- Guideline for European technical approval of "Timber building kits", ETAG 007.

2 Deutsches Institut für Bautechnik is authorized to check whether the provisions of this European technical approval are met. Checking may take place in the manufacturing plant. Nevertheless, the responsibility for the conformity of the products to the European technical approval and for their fitness for the intended use remains with the holder of the European technical approval.

3 This European technical approval is not to be transferred to manufacturers or agents of manufacturers other than those indicated on page 1, or manufacturing plants other than those indicated on page 1 of this European technical approval.

4 This European technical approval may be withdrawn by Deutsches Institut für Bautechnik, in particular pursuant to information by the Commission according to Article 5(1) of Council Directive 89/106/EEC.

5 Reproduction of this European technical approval including transmission by electronic means shall be in full. However, partial reproduction can be made with the written consent of Deutsches Institut für Bautechnik. In this case partial reproduction has to be designated as such. Texts and drawings of advertising brochures shall not contradict or misuse the European technical approval.

6 The European technical approval is issued by the approval body in its official language. This version corresponds fully to the version circulated within EOTA. Translations into other languages have to be designated as such.

1 Official Journal of the European Communities L 40, 11 February 1989, p. 12
2 Official Journal of the European Communities L 220, 30 August 1993, p. 1
3 Official Journal of the European Union L 284, 31 October 2003, p. 25
4 *Bundesgesetzblatt Teil I 1998*, p. 812
5 *Bundesgesetzblatt Teil I 2011*, p. 2178
6 Official Journal of the European Communities L 17, 20 January 1994, p. 34

II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of the product and intended use

1.1 Definition of the construction product

"HANSE-HAUS" is a timber frame 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.

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 approval.

Floor lining is also not subject of this European technical approval.

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.

1.2 Intended use

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

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

The intended use shall be evaluated in each individual case depending on the climatic boundary conditions.

The provisions made in this European technical approval are based on an assumed working life of "Hanse-Haus" of at least 50 years and of at least 25 years for the exterior wall cladding, provided that the conditions laid down in sections 4.2 / 5.1 / 5.2 are met. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

2 Characteristics of product and methods of verification

2.1 Characteristics of product

ER 1 Mechanical Resistance and Stability

All building components (external walls, internal walls, floors and roofs) which are necessary for the mechanical resistance and stability of the building or serve the space enclosure are listed in Annex A and are described with regard to their components and their structure.

The building components are prefabricated and are brought on 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 according to EN 301[7]/302[8]. The bonding is taken into account in the control plan.

The gypsum board of the "floor slab" forms part of the building kit, however, it is installed on site. In the case of the "collar beam ceiling of the purlin roof" having a width of ≤ 3.50 m the gypsum board is installed on site, but it is part of the kit. With a width of > 3.50 m the moisture barrier, the battens and the gypsum board are installed on site but they are part of the kit. The "collar beam ceiling of the rafter roof" is mounted on site, all components, however, are part of the kit. The gypsum board of the "roof" is part of the kit but is mounted on site.

The individual building components are interconnected by corner posts on site. These are made of solid timber according to EN 338[9]. They are included in the delivery, but are not part of the kit.

Normally plastic-windows (PVC) are used (Annex A). Wooden windows which fulfil the requirements at the place of use may also be used.

For roof coverings normally concrete tiles according to EN 490[10]/491[11] or clay tiles according to EN 1304[12] 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 description of the load-bearing building components both mechanical resistance and stability for each load-bearing building component and their connections between the components shall be determined. When calculating, the relevant requirements prevailing in the respective member state shall be taken into account.

ER 2 Reaction to fire

Reaction to fire

The classification for reaction to fire of the components is given in Annex A.

Resistance to fire

No performance determined.

External fire performance (of the roof covering)

No performance determined.

The roof covering is not part of the kit; the external fire performance shall be checked on a case-by-case basis, depending on the roof covering.

7	EN 301:2006	Adhesives, phenolic and aminoplastic, for load-bearing timber structures – Classification and performance requirements
8	EN 302-1 bis 4	Adhesives for load-bearing timber structures - Test methods – Part 1:2004 Determination of bond strength in longitudinal tensile shear strength Part 2:2004 Determination of resistance to delamination Part 3:2004 + A1:2005 Determination of the effect of acid damage to wood fibres by temperature and humidity cycling on the transverse tensile strength Part 4:2004 Determination of the effects of wood shrinkage on the shear strength
9	EN 338:2009	Timber structures - Strength classes
10	EN 490:2011	Concrete roofing tiles and fittings for roof covering and wall cladding – Product specifications
11	EN 491:2011	Concrete roofing tiles and fittings for roof covering and wall cladding – Test methods
12	EN 1304:2005	Clay roofing tiles and fittings – Product definitions and specifications

ER 3 Hygiene, health and the environment

Vapour permeability and moisture resistance

The works shall be 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 13788, 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.

Water tightness

Provided the kit is properly manufactured and assembled 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.

"No performance determined" applies to the surface of internal building components, because these are not part of the kit.

Content and/or release of dangerous substances

Specific stipulations for the components of the kit:

Timber components may be treated with wood preservatives. Therefor the wood preservative products "Diffusit Holzbau" produced by Wolman or "impralit-B1 flüssig" produced by Rüttgers are to be used. Generally applies that only such wood preservatives may be used which are marketable according to the Directive 98/8/EC[13] or Regulation (EU) N°528/2012[14] from 1. September 2013.

The treatment of the kit and/or of components of the kit with fire protection agents is not subject of this European technical approval.

As far as components of the kit in this European technical approval are specified via an hEN the requirements stated in the respective hEN shall be met and the supplementary implemented national legal and administrative provisions shall be observed.

The wood based components satisfy class E1 according to EN 13986[15].

Note: The mineral fibre used for thermal and impact sound insulation are according to the Derectrive 97/69/EC[16]

13 Official Journal of the European Union L 123, 16 February 1989, p. 1

14 Official Journal of the European Union L 167, July 2012

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

16 Note: take into account "GefStoffV", Annex IV, N 22 and "ChemVerbotsV section 23, annex to § 1- in Germany

Note: In addition to the specific clauses relating to dangerous substances contained in this European technical approval, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the EU Construction Products Directive, these requirements need also to be complied with, when and where they apply.

ER4 Safety in use

Due to technical experience the impact resistance is sufficient. The complete wall construction with a gypsum board having a thickness of at least 12.5 mm is sufficiently shock-proof.

No performance has been determined for the slipperness of floor finishes.

ER 5 Protection against noise

No rating determined.

ER 6 Energy economy and heat retention

Thermal transmittance coefficient

The thermal transmittance coefficient U and the thermal resistance R_T have been determined in accordance to EN ISO 6946[17] for external building components and are given in Annex A for the respective building component. The mineral fibrous insulation materials are according to EN 13162[18] and the expanded polystyrene boards are according to EN 13163[19]. The λ values of the other building (components) materials were taken from EN ISO 10456[20].

Air transmission

When the kit has been properly manufactured and assembled the building envelope is sufficiently airtight. The measuring was performed according to ISO 9972/EN 13829[21].

Thermal inertia

No performance determined.

Aspects of durability, serviceability and identification

Durability

Building components are usually not treated with chemical wood preservatives.

The sleepers (solid timber) of external and internal walls of the ground floor conform to hazard class 2 in accordance with EN 335[22] and are treated with wood preservative products.

17	EN ISO 6946:2007	Building components and building elements – Thermal resistance and thermal transmittance – Calculation method
18	EN 13162:2008	Thermal insulation products for buildings – Factory made mineral wool (MW) products – Specification
19	EN 13163:2008	Thermal insulation products for buildings – Factory made expanded polystyrene (EPS) products – Specification
20	EN ISO 10456:2007 + AC:2009	Building materials and products – Hygrothermal properties – Tabulated design values and procedures for determining declared and design thermal values
21	EN 13829:2000	Thermal performance of buildings – Determination of air permeability of buildings – Fan pressurization method
22	EN335-1:2006	Durability of wood and wood-based products – Definition of use classes – Part 1: Genera

The carried out wood preservation – the treatment with the wood preservative and the wood preservative itself – shall meet the local regulations at the place of use. The use of timber without any chemical wood preservatives in areas were termites may attack the kit is not allowed.

All other wooden and wood-based components conform to hazard class 1 according to EN 335 and are untreated.

The durability of the exterior wall cladding was assessed by Deutsches Institut für Bautechnik in the framework of a national approval for Germany.

The fasteners used for this kit meet the requirements of service class 2 in accordance with EN 1995-1-1[23] as far as no special corrosion conditions exist.

When the kit is properly executed and set up followed by proper maintenance the durability for the intended working life of the kit is guaranteed.

Serviceability

For the serviceability of the kit it shall be ensured that suspended floors have sufficient stiffness to avoid unacceptable vibration through normal use.

Identification

The kit is identified with the CE marking in accordance with chapter 3.3. All individual components are listed and specified in Annex A.

2.2 Methods of verification

The assessment of the fitness of use of the kit was perfomed according to ETAG 007 "Timber building kits".

3 Evaluation and attestation of conformity and CE marking

3.1 System of attestation of conformity

According to the Decision 99/455/EC of the European Commission[24] system 1 of the attestation of conformity applies.

This system of attestation of conformity is defined as follows:

System 1: Certification of the conformity of the product by an approved certification body on the basis of:

(a) Tasks for the manufacturer:
  (1) factory production control;
  (2) further testing of samples taken at the factory by the manufacturer in accordance with a prescribed test plan;

(b) Tasks for the approved body:
  (3) initial type-testing of the product;
  (4) initial inspection of factory and of factory production control;
  (5) continuous surveillance, assessment and approval of factory production control.

Note: Approved bodies are also referred to as "notified bodies".

[23] EN 1995-1-1:2010 Eurocode 5: Design of timber structures – Part 1-1: General – Common rules and rules for buildings

[24] Official Journal of the European Communities L 178/56 of 14/07/1999

3.2 Responsibilities

3.2.1 Tasks for the manufacturer

3.2.1.1 Factory production control

The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed.

This production control system shall insure that the product is in conformity with this European technical approval.

The manufacturer may only use components stated in the technical documentation of this European technical approval.

The factory production control shall be in accordance with the Control plan which is part of the technical documentation of this European technical approval. The control plan is laid down in the context of the factory production control system operated by the manufacturer and deposited with Deutsches Institut für Bautechnik.[25]

The results of factory production control shall be recorded and evaluated in accordance with the provisions of the control plan.

3.2.1.2 Other tasks for the manufacturer

The manufacturer shall, on the basis of a contract, involve a body/bodies which is/are approved for the tasks referred to in section 3.1 in the field of timber frame building kits in order to undertake the actions laid down in section 3.2.2. For this purpose, the control plan referred to in sections 3.2.1.1 and 3.2.2 shall be handed over by the manufacturer to the approved body/bodies involved.

The manufacturer shall make a declaration of conformity, stating that the construction product is in conformity with the provisions of the European technical approval ETA-06/0232 issued on 28 June 2013.

3.2.2 Tasks for the approved bodies

The approved body/bodies shall perform the

- initial type-testing of the product,
- initial inspection of factory and of factory production control,
- continuous surveillance, assessment and approval of factory production control

in accordance with the provisions laid down in the control plan.

The approved body/bodies shall retain the essential points of its/their actions referred to above and state the results obtained and conclusions drawn in a written report/written reports.

The approved certification body involved by the manufacturer shall issue an EC certificate of conformity of the product stating the conformity with the provisions of this European technical approval.

In cases where the provisions of the European technical approval and its control plan are no longer fulfilled the certification body shall withdraw the certificate of conformity and inform Deutsches Institut für Bautechnik without delay.

[25] The control plan is a confidential part of the European technical approval and only handed over to the approved body/bodies involved in the procedure of attestation of conformity. See section 3.2.2.

3.3 CE marking

The CE marking shall be affixed on the label attached to it, the packaging or the accompanying commercial document. The letters "CE" shall be followed by the identification number of the approved certification body and be accompanied by the following additional information:

- the name and address of the producer (legal entity responsible for the manufacture),
- the last two digits of the year in which the CE marking was affixed,
- the number of the EC certificate of conformity for the product,
- the number of the European technical approval,
- the number of the guideline for European technical approval
- trade name of the kit
- indication of the intended use
- specification of the kit[26]
- statement of dangerous substances.

In case of preservative treatment the following information shall be added (see EN 15228):

- Treated component,
- Name of the wood preservative,
- Penetration class,
- Retention value,
- Method of treatment with wood preservative,
- Target biological agents,
- Kind of wood/moisture of the wood in case of treatment.

4 Assumptions under which the fitness of the product for the intended use was favourably assessed

4.1 Local building regulations

As basis for the manufacture and dimensioning of the kit a specification of the relevant requirements for the structural design, reaction to fire and the resistance to fire, protection against noise, the thermal insulation and the heat retention shall be drafted.

The verifications shall correspond to the intended methods and requirements including the verification of the stability of the building prevailing in the Member States where the building is to be erected.

4.2 Manufacture and planning and design

The manufacture of a kit shall be 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) applicable in the Member States in which the building is to be constructed.

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

[26] Each specific kit shall be identified according to the specific design made for each kit. The complete structural design and/or dimensioning of all components of the kit shall be included to every kit, but it is not part of the European technical approval.

The single-wall elements have a width of 1.25 m and a height of 2.54 m. All walls, external and internal walls (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 constructive stapling of the projecting planking with the connection posts (Annex A). On delivery at the plant the wooden components have a moisture content of ≤ 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 26 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 ≤ 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 ≤ 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-11/0505 (see description in Annex A) where the insulation boards are glued over the entire surface onto the OSB-boards. The insulation boards can additionally be fixed with suitable mechanical fasteners. Insulation boards shall be used with the designation EN 13163 T2-L2-W2-S2-P4-DS(70,-)2-DS(N)2, a tensile strength according to EN 1607 of at least 100 kPa[27] and a shear modulus G_m according to EN 12090 of 1.0 MPa ≤ G_m ≤ 3,0 MPa shall be used. The surface of the wall shall be flat, dry, free of grease and dust-free and shall have a bond strength of at least 0.08 N/mm².

The insulation boards are coated with plaster. The composition of the plaster is deposited with Deutsches Institut für Bautechnik. It is a cement-free, paste-like synthetic resin dispersion. The reinforcement is worked into the outer third of base coat. The reinforcement consists of coated glass fibre mash. Additional information just like the composition of the external plaster is deposited with Deutsches Institut für Bautechnik.

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 necessary characteristic values for structural design can be gathered from Annex A or the standards referred to there, the European technical approvals, etc.

[27] Each individual value of a test result shall include the value given here.
Note: Strength values in CE-marking of European insulation regulations don't proof the required single values because the Regulation only gives arithmetic average values.

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 shall be performed according to the relevant regulations of the Member States.

The building components of the kit are compiled at the manufacturing plant in accordance with this European technical approval.

The European technical approval is issued for the product on the basis of agreed data/information, deposited with Deutsches Institut für Bautechnik, which identifies the product that has been assessed and judged. Changes to the product or production process, which could result in this deposited data/information being incorrect, should be notified to Deutsches Institut für Bautechnik before the changes are introduced. Deutsches Institut für Bautechnik will decide whether or not such changes affect the European technical approval and consequently the validity of the CE marking on the basis of the European technical approval and if so whether further assessment or alterations to the European technical approval shall be necessary.

4.3 Substructure

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

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.

More information as to the dimensions, if necessary and the description of the details (e.g. protective measures against rising moisture) for the manufacture of the substructure will be delivered by the manufacturer of the kit. The substructure shall be designed and built in accordance with the local building regulations.

4.4 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)

The completed building (construction works) shall comply with the building regulations (regulations on the works) applicable in the Member States in which the building is to be constructed. The applicable procedures in the Member State for demonstrating compliance with the building regulations shall also be observed by the entity responsible for this act. An European technical approval for a timber frame building kit does not amend this process in any way.

The provisions for health protection and occupational safety shall be observed.

5 Indications to the manufacturer and user

5.1 Packaging, transport and storage

The instructions of the manufacturer related to packaging, transport and storage shall be observed.

During transport and storage the building elements, the components and materials shall be protected from mechanical damage and detrimental moisture, e.g. from precipitations or moisture.

5.2 Use, maintenance, repair

It is the manufacturer's responsibility to ensure that exact instructions are enclosed to each delivery regarding the use of the kit which includes both the general conditions of this European technical approval as well as the specific installation instructions.

Damaged building elements or components of the kit may neither be used nor installed. Damaged building elements or components of the kit shall be exchanged immediately and replaced by flawless ones.

With regard to the assumed working life regular maintenance is necessary. The manufacturer shall add written documents to the kit which contain descriptions about type and frequency of the maintenance.

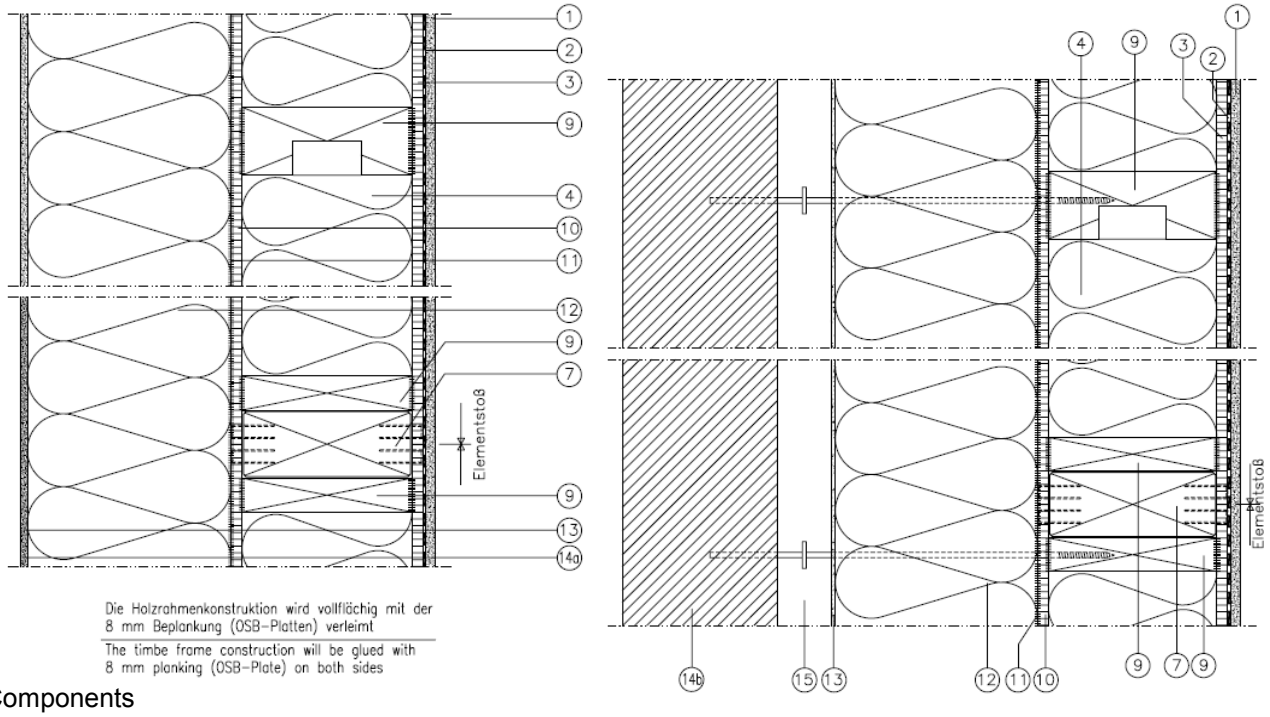
Uwe Bender
Head of Department

beglaubigt:
Baumann

Deutsches Institut für Bautechnik DIBt

ANNEX A - DESCRIPTION OF THE BUILDING COMPONENTS

External wall (horizontal section)



Components

No.	Product	Dimensions [mm]	EN standard ETA	Reaction to fire
1	Gypsum board	12.5	EN 520	B-s1,d0 (2006/673/EC)
2	Vapour barrier sd>10m Alternatively: PE foil s_d > 100 m	0.2 0.16	EN ISO 12572	No performance determined
3	OSB Board Alternatively: BFU Board	8 9	EN 300 EN 13986	D-s2,d0 (2003/43/EC)
4	Mineral fibre 040	125	EN 13162	A1 (96/603/EC, amended by 2000/605/EC)
Annex B	Top chord C 24	50/124	EN 338 EN 14081	D-s2,d0 (2003/593/EC)
Annex B	Threshold C 24	30/140 50/140	EN 338 EN 14081	D-s2,d0 (2003/593/EC)
7	Connection post C 24	45/122	EN 338 EN 14081	D-s2,d0 (2003/593/EC)
Annex B	Connection post C 24	23/122	EN 338 EN 14081	D-s2,d0 (2003/593/EC)
9	Framing timber[1] C 24	25/124 50/124	EN 338 EN 14081	D-s2,d0 (2003/593/EC)
10	OSB Board alternatively: BFU Board	8 9	EN 300 EN 636	No performance determined[2]

1 Spacing of the posts: e = 300 mm (according to Annex B)

2 The CWFT Decision (2003/43/EC) does not contain information on the installation instructions and/or the end use of insulation boards which are glued on wood-based panels. A separate evaluation is necessary for this.

Exterior wall cladding:

11	Glue: according to ETA- 11/0505	full-surface application	ETA-11/0505	the whole system C-s2, d0
12	Insulation boards according to ETA-11/0505	100 up to 300	ETA-11/0505	
13	Plaster with reinforcement according to ETA-11/0505	2.0 up to 3.5	ETA-11/0505	
14a	External plaster - Stolit K / R / MP / Effect - StoSillico K / R / MP - StoLotusan K / MP - Sto-Superlit - Sto-Nivellit + StoSilico color	≤ 3.0	ETA-11/0505	
	All other configurations with Sto-Klebe- und Fugenmörtel + Sto-Flachverblender	4.0 up to 7.0	ETA-11/0505	-
14b*[3]	Brick facing	95 up to 115	-	-
15	Air layer	40 up to 60	-	-

Fasteners

Component	Type	Spacing [mm]		Description
		Edge	Middle	
Gypsum board	Screws 3.9x30 according to EN 14566	≤ 80	≤ 30 post spacing	last page
OSB board to connection post	Staples 1.15x30 galvanized and resinated according to EN 14592	≤ 150	-	last page
OSB board to timber frame structure	two component clue according to abZ	full surface		EN 301/EN 302

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

Thermal transmittance coefficient: U = 0,17 (W/m²K) up to U = 0,08 (W/m²K)

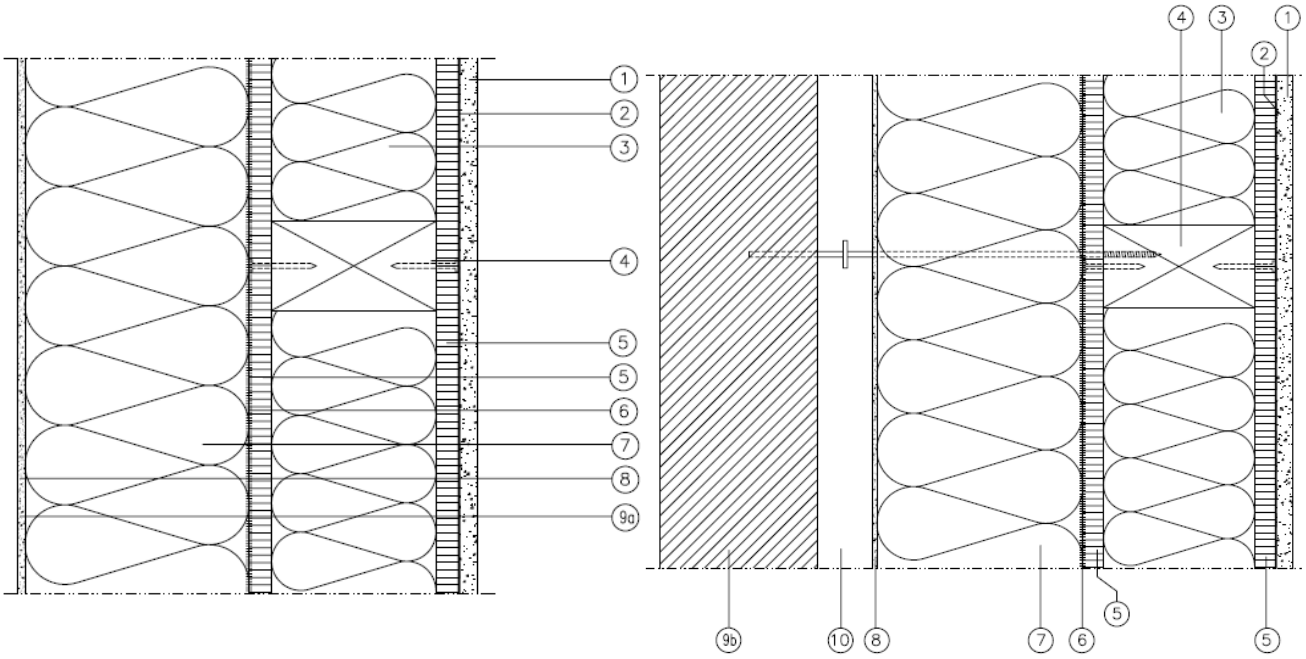
Thermal resistance: R_T = 5,76 (m²K/W) up to R_T=12,35 (m²K/W)

Boundary conditions: R_{si} = 0.13 (m²·K)/W

R_{se} = 0.04 (m²·K)/W

[3] 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).

Gable external wall (horizontal section)



Components

No.	Product	Dimensions [mm]	EN-standard ETA	Reaction to fire
1	Gypsum board	12.5	EN 520	B-s1, d0 (2006/673/EC)
2	Vapour barrier sd>10m Alternatively : PE foil s_d > 100 m	0.2 0.16	EN ISO 12572	No performance determined.
3	Mineral fibre	110	EN 13162	A1 (96/603/EC, amended by 2000/605/EC)
4	Framing timber[14] C 24	60/110	EN 338 EN 14081	D-s2, d0 (2003/593/EC)
5	OSB/4 Board	15	EN 300 EN 13986	No performance determined[12]

14 Spacin of the posts: e = 625 mm (according to Annex B)

12 The CWFT Decision (2003/43/EC) does not contain information on the installation instructions and/or the end use of insulation boards which are glued on wood-based panels. For this a separate evaluation is necessary.

Exterior wall cladding:

6	Glue: according to ETA-11/0505	full-surface application	ETA-11/0505	the whole system C-s2, d0
7	Insulation boards: according toETA-11/0505	100 up to 300	ETA-11/0505	
8	Plaster with reinforcement according to ETA- 11/0505	2.0 up to 3.5	ETA-11/0505	
9a	External plaster - Stolit K / R / MP - StoSillico K / R / MP - StoLotusan K / MP - Sto-Superlit - Sto-Nivellit + StoSilico color	≤ 3.0	ETA-11/0505	
	- klinkerartig vorgefertigtes Putzteil: Sto-Flachverblender mit Sto- Klebe- und Fugen-mörtel	4,0 up to 7,0	ETA-11/0505	-
9b*[13]	Brick facing	95 up to 115	-	-
10	Air layer	40-60		-

Fasteners

Component	Type	Spacing [mm]		Description
		Edge	Middle	
Gypsum board	Screws 3.9x30 according to EN 14566	≤ 80	≤ 625 post spacing	page 26/27
OSB board to timber frame structure	Nails 2.5x50 according to EN 14592	≤ 80	≤ 225	page 26/27

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

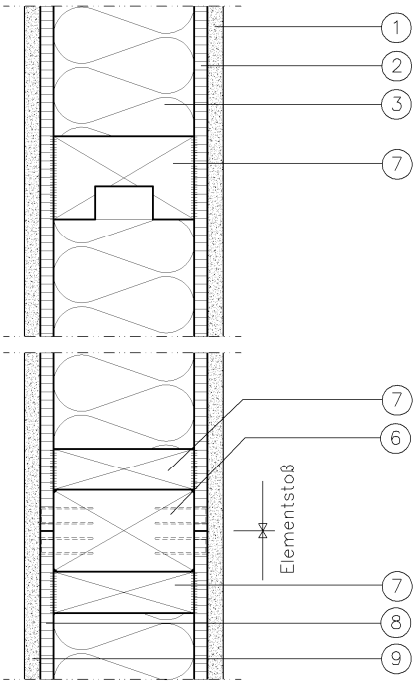
Thermal transmittance coefficient: U = 0,16 (W/m²K) up to U = 0,08 (W/m²K)

Thermal resistance: R_T = 6,18 (m²K/W) bis R_T=12,74 (m²K/W)

Boundary conditions: R_{si} = 0.13 (m²·K)/W

R_{se} = 0.04 (m²·K)/W

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



Internal wall (horizontal section)

Components

No.	Product	Dimensions [mm]	EN standard ETA	Reaction to fire
1	Gypsum board	12.5	EN 520	B-s1, d0 (2003/593/EC)
2	OSB board Alternatively: BFU Board	8 9	EN 300 EN 636	D-s2, d0 (2003/43/EC)
3	Mineral fibre insulation	85	EN 13162	A1 (96/603/EC, amended by 2000/605/EC)
Annex B	Top chord C 24	25/100 50/100	EN 338 EN 14081	D-s2, d0 (2003/593/EC)
Annex B	Bottom chord C 24	30/100 50/100	EN 338 EN 14081	D-s2, d0 (2003/593/EC)
6	Connection post C 24	45/82	EN 338 EN 14081	D-s2, d0 (2003/593/EC)
7	Framing timber[11] C24	25/84 50/84	EN 338 EN 14081	D-s2, d0 (2003/593/EC)
8	OSB board Alternatively: BFU board	8 9	EN 300 EN 636	D-s2,d0 (2003/43/EC)
9	Gypsum board	12.5	EN 520	B-s1,d0 (2003/593/EC)

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Fasteners

Component	Type	Spacing [mm]		Description
		Edge	Middle	
Gypsum board	Screws 3.9x30 according to EN 14566	≤ 80	≤ 300 post spacing	page 26/27
OSB board to connection post	staples 1.15x30, galvanized and resinated according to EN 14502	≤ 150	-	page 26/27
OSB board to timber frame structure	two componet glue according to abZ	full surface		EN 301/EN 302

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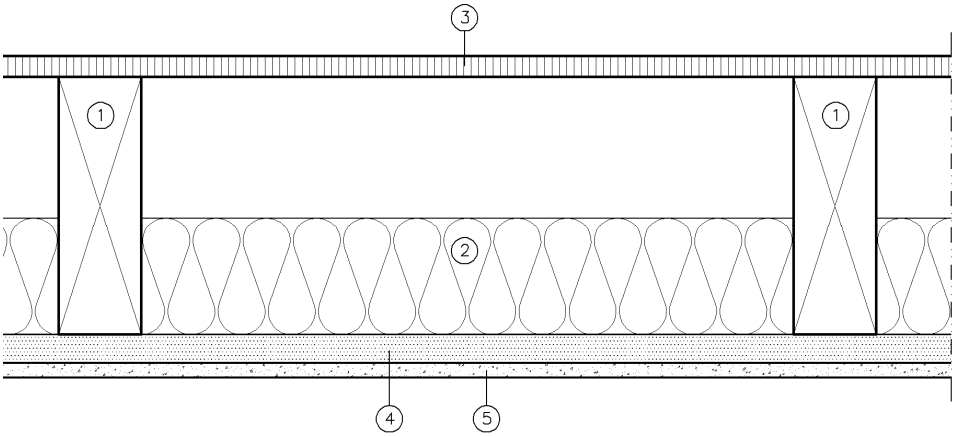
Suspended floor (floor slab)



Components

No.	Product	Dimensions [mm]	EN standard ETA	Reaction to fire
1	Beam**	width 70 or 100 and height 220/240/260 according to statics	EN 338 EN 14081	D-s2,d0 (2003/593/EC)
2	Mineral fibre insulation	100*** to 260	EN 13162	A1 (96/603/EC, amended by 2000/605/EC)
3	OSB board	>18	EN 300	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	12.5	EN 520	B-s1,d0 (2006/673/EC)

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

Fasteners

Component	Type	Spacing [mm]		Description
		Edge	Middle	
Gypsum board to battens	Screws 3.9x30 according to EN 14566	≤ 170	≤ 417 lathing spacing	page 26/27
Battens on beams	Screws 3.1x90 according to EN 14566	≤ 625	≤ 417 lathing spacing	page 26/27
OSB board (particleboard) to beams	staples 1,8x65, galvanized and resinated according to EN 14592	≤ 130	≤ 625 beam spacing	page 26/27

Data of physics relating to construction according to EN ISO 6946 taking account of all components stated above, with mineral fibre d = 220 mm:

Thermal transmittance coefficient: U = 0.18 (W/m²K) (beam height 220 mm)
U = 0.16 (W/m²K) (beam height 260 mm)

Thermal resistance: R_T = 5,46 (m²K/W) (beam height 220 mm)
R_T = 6,34 (m²K/W) (beam height 260 mm)

Boundary conditions: R_{si} = 0,10 (m²·K)/W
R_{se} = 0,08 (m²·K)/W

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

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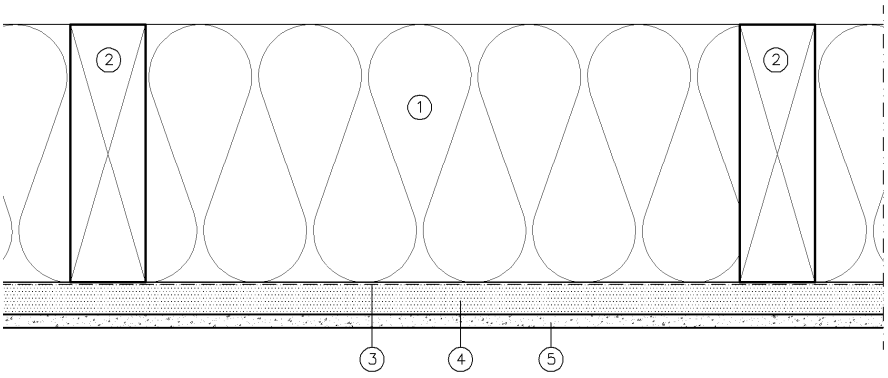
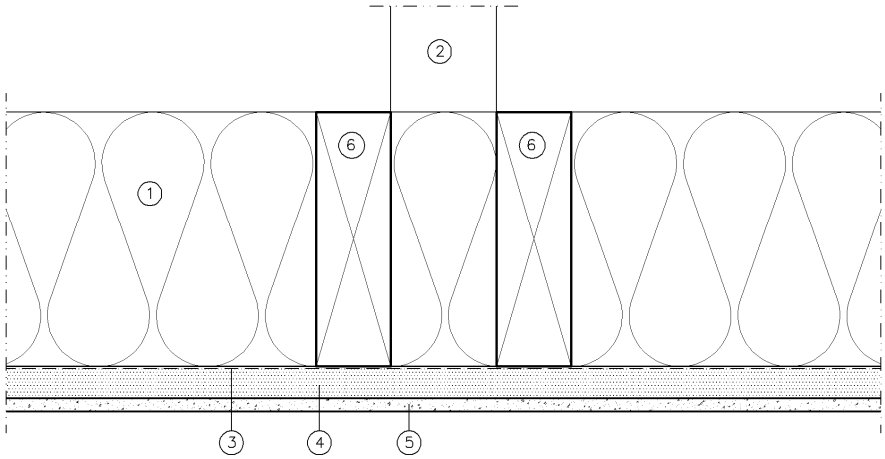
Collar beam ceiling
Purlin roof



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****	width: ≥ 70 height: ≥ 220 according to statics	EN 338 EN 14081	D-s2, d0 (2003/593/EC)
3	Vapour barrier s_d > 10m or PE foil s_d > 100 m	0.2 0.16	EN ISO 12572	No performance determined
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 (2006/673/EC)
6	Collar transverse beam (for rafter roof)	width: ≥ 40 height: ≥ 220 according to statics	EN 338 EN 14081	D-s2,d0 (2003/593/EC)

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

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Fasteners

Component	Type	Spacing [mm]		Description
		Edge	Middle	
Gypsum board to battens	Screws 3.9x30 according to EN 14566	≤ 170	≤ 170	page 26/27
Battens to beams	Nails 3.1x90 according to EN 14592	≤ 415 Batten spacing	≤ 1250	page 26/27

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

Thermal transmittance coefficient: U = 0.17 (W/m²K) (beam height 220 mm)
U = 0.15 (W/m²K) (beam height 260 mm)

Thermal resistance: R_T = 5.82 (m²K/W) (beam height 220 mm)
R_T = 6.81 (m²K/W) (beam height 260 mm)

Boundary conditions: R_{si} = 0.10 (m²·K)/W
R_{se} = 0.08 (m²·K)/W

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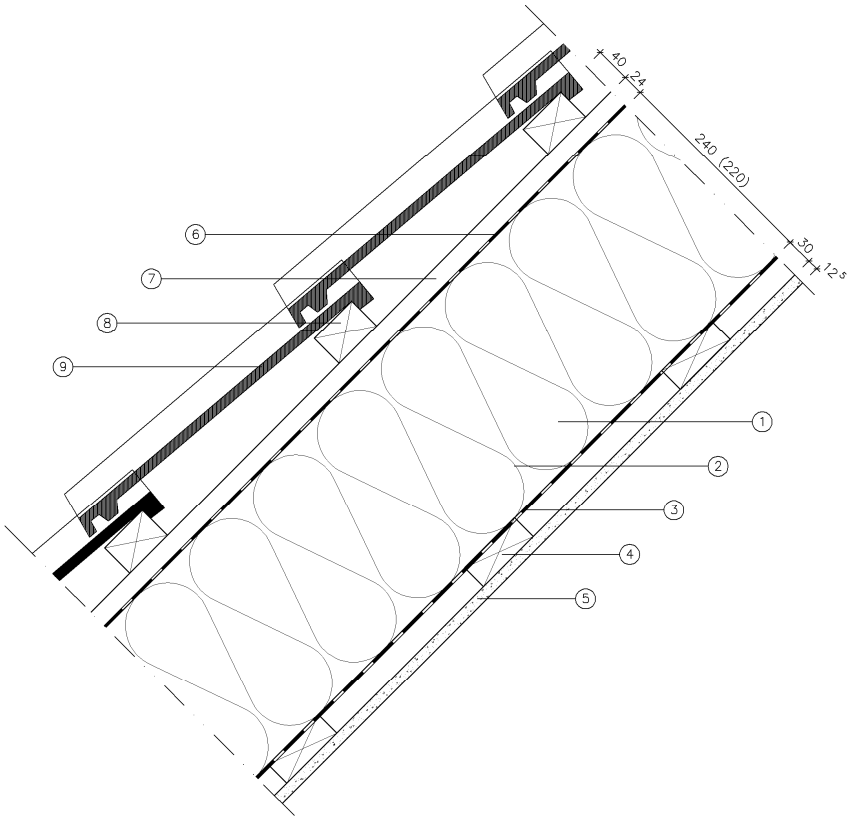
Roof



Components

No.	Product	Dimensions [mm]	EN standard ETA	Reaction to fire
1	Rafters C 24**	width: ≥ 70 height: ≥ 220 according to statics	EN 338 EN 14081	D-s2,d0 (2003/593/EC)
2	Mineral fibre	≥ 220	EN 13162	A1 (96/603/EC, amended by 2000/605/EC)
3	Vapour barrier s_d > 10m or PE foil s_d > 100 m	0.2 0.16	EN ISO 12572	No performance determined
4	Battens	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 (2006/673/EC)
6	Sealing foil $s_d \leq 0.1$ m	0.2	-	No performance determined
7	Counter-batten	48/24 40/60	EN 338 EN 14081	D-s2,d0 (2003/593/EC)
8	Roofing batten	40/60	EN 338 EN 14081	D-s2,d0 (2003/593/EC)
9*[13]	Roof covering	-		
10*	Wind strap tie band	1.5/40		

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

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

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Fasteners

Component	Type	Spacing [mm]		Description
		Edge	Middle	
Gypsum board to lathing	Screws 3.9x30 according to EN 14566	≤ 170	≤ 417	page 26/27
Lathings to rafters	Nails 2.8 x 65 according to EN 14592	≤ 1250	≤ 417 batten spacing	page 26/27
Counter-batten to rafters	staples 1,8x65, galvanized and resinated according to EN 14592	≤ 350	-	page 26/27
Roofing batten to counter-batten	Nails 3.1x90 according to EN 14592	≤ 1250	≤ 345 roofing batten spacing	page 26/27

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

Thermal transmittance coefficient: U = 0.17 (W/m²K) (rafter height 220 mm)
U = 0.15 (W/m²K) (rafter height 260 mm)

Thermal resistance: R_T = 5.82 (m²K/W) (rafter height 220 mm)
R_T = 6.81 (m²K/W) (rafter height 260 mm)

Boundary conditions: R_{si} = 0.13 (m²·K)/W
R_{se} = 0.04 (m²·K)/W

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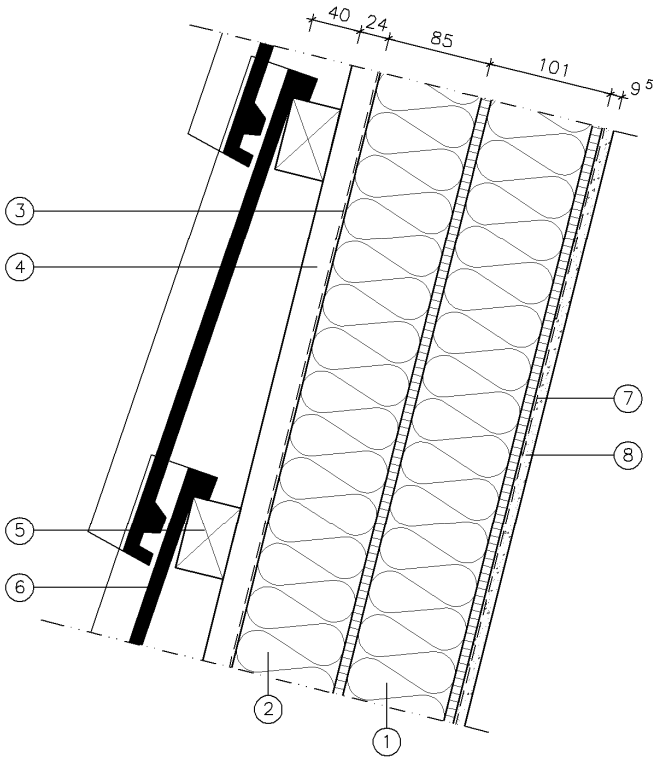
Mansard roof



Components

No.	Product	Dimensions [mm]	EN standard ETA	Reaction to fire
1	Internal wall element	101	see front	see front
2a	Rafters (doubling timber)	125-150	EN 338 EN 14081	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	-	No performance determined
4	Counter-batten	48/24 40/60	EN 338 EN 14081	D-s2,d0 (2003/593/EC)
5	Roofing batten	40/60	EN 338 EN 14081	D-s2,d0 (2003/593/EC)
6*[13]	Roof covering	-		
7	Vapour barrier s_d > 10m or PE foil s_d > 100 m	0.2 0.16	EN ISO 12572	No performance determined
8	Gypsum board	12.5	EN 520	B-s1,d0 (2003/593/EC)

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

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Fasteners

Component	Type	Spacing [mm]		Description
		Edge	Middle	
Gypsum board	Screws 3.9x30 according to 14566	≤ 80	≤ 300 post spacing	page 26/27
Counter-batten to doubling timber	Nails 2.8x65 according to EN 14592	≤ 350	-	page 26/27
Doubling timber to internal wall element	screws ≥ 5.0 x100 according to EN 14592	≤ 350	≤ 625 post spacing	page 26/27
Roofing batten to counter-batten	Nails 3.1x90 according to EN 14592	≤ 625	≤ 345 roofing batten spacing	page 26/27

Data of physics relating to construction according to EN ISO 6946 taking account of all components stated above:
Thermal transmittance coefficient: U = 0.24 (W/m²K) to U = 0.216 (W/m²K)
Thermal resistance: R_T = 4.09 (m²K/W) to R_T = 4.50 (W/m²K)

Example of the characteristics of a plastic-window

Air transmission according to EN 12207: class 3
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 = 1.3 (W/(m²K)
Thermal transmittance coefficient of the glass according to EN 673: U = 0.7 (W/(m²K)
Degree of energy transmittance according to EN 410: g = 48 %

Fasteners

Staples

For all staples the characteristic value of the withdrawal strength is
$f_{ax,k}=40 \bullet 10^{-6} \bullet \rho_k^2$ [N/mm²] (with ρ_k = characteristic value of raw density in kg/m³).

The following staple according to prEN 14592 is made of galvanized (zinc coat ≥ 50 g/m^2) round steel wire with a tensile strength of ≥ 800 N/mm^2 and has the following dimensions:

Type	Shaft length	Minimum length of resin	Back width	Wire diameter
	l_n	l_H	b_R	d_n
	[mm]	[mm]	[mm]	[mm]
Q25BAB	63	$l_n/2$	11.40	1.83

The following staples according to EN 14592 are made of galvanized (zinc coat ≥ 50 g/m²) round steel wire with a tensile strength of ≥ 900 N/mm^2 and have the following dimensions:

Type	Shaft length	Minimum length of resin	Back width	Wire diameter
	l_n	l_H	b_R	d_n
	[mm]	[mm]	[mm]	[mm]
CNK75/45	45	≥ $l_n/2$	11.25	1.57
CNK75/65	65	≥ $l_n/2$	11.25	1.57

The following staples according to EN 14592 are made of galvanized (zinc coat ≥ 50 g/m²) round steel wire, usually rolled to an oval-shaped profile, with a tensile strength of ≥ 950 N/mm^2 and have the following dimensions:

Type	Shaft length	Minimum length of resin	Back width	Wire diameter
	l_n	l_H	b_R	d_n
	[mm]	[mm]	[mm]	[mm]
M13BAB	25.4	$l_n/2$	9.5	1.00
M15BAB	31.8	$l_n/2$	9.5	1.25
CNK525	25.0	$l_n/2$	11.06	1.20

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Nails

The nails are made of round steel with a tensile strength of ≥ 600 N/mm^2 and have the following dimensions:

Diameter d_n x length l_n:

Smooth nails

3.1 x 90

2.8 x 45

3.8 x 130

4.2 x 120

4.5 x 160

4.6 x 160

Ring nails

2.8 x 65

The characteristic value of the withdrawal strength is $f_{ax,k} = 50 \cdot 10^{-6} \cdot \rho_k^2$ [N/mm²]

(with ρ_k = characteristic value of the raw density in kg/m³).

Screws

The screws are made of phosphatized and oiled round steel wire (thread type: double thread) with a failure torque of ≥ 2.8 Nm and have the following dimensions:

3.5x25

3.5x35

The characteristic value of the withdrawal strength is $f_{ax,k} = 70 \cdot 10^{-6} \cdot \rho_k^2$ [N/mm²]

(with ρ_k = characteristic value of the raw density in kg/m³).

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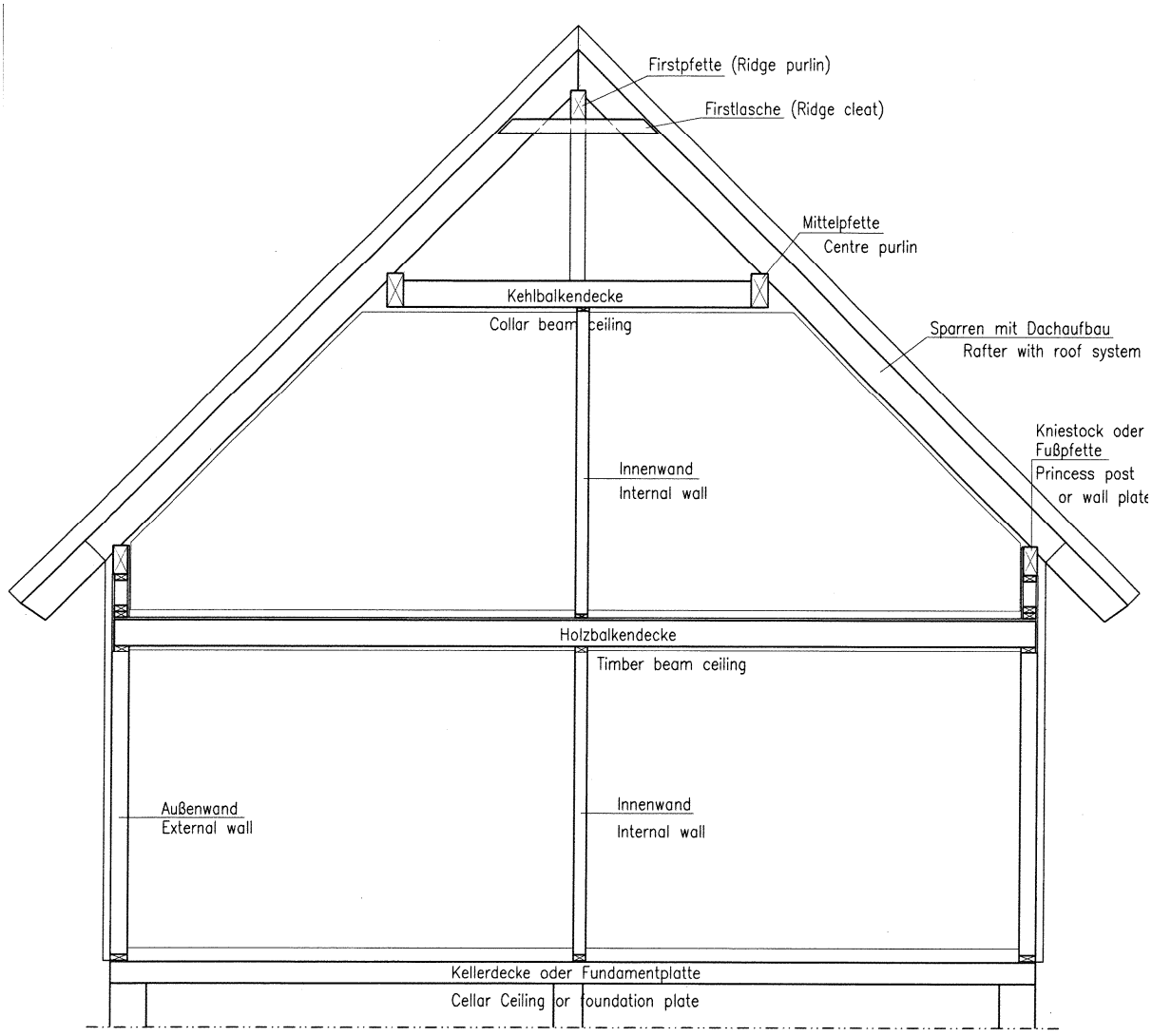
ANNEX B – CONSTRUCTION DETAILS

Gebäudequerschnitt
Cross section - building



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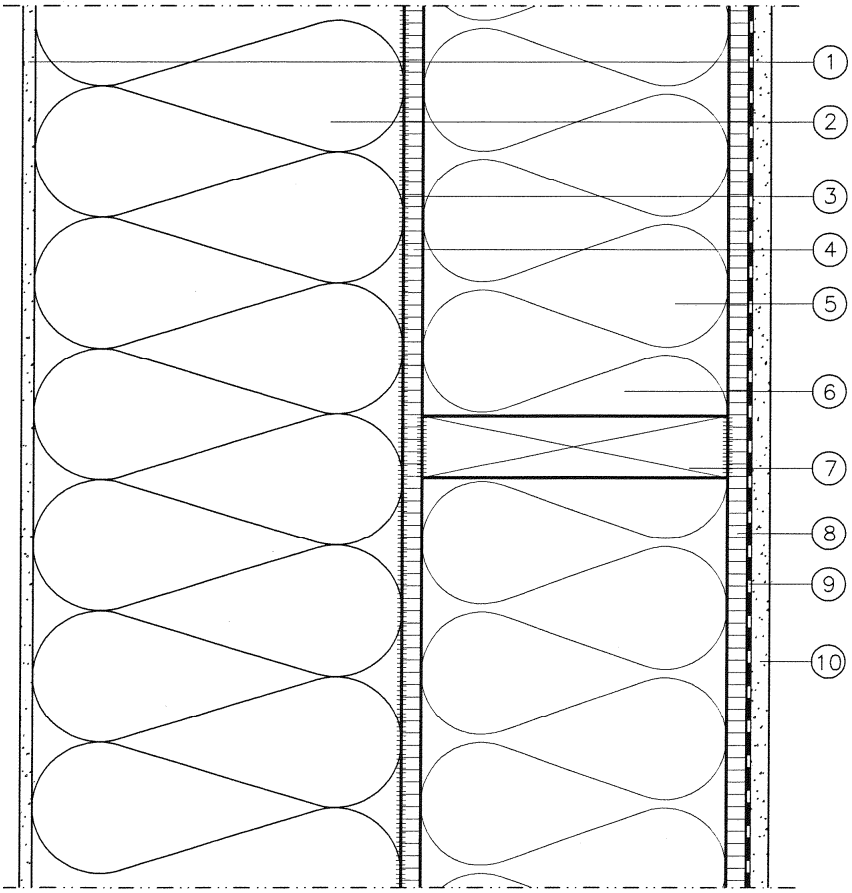
Vertikalschnitt - Außenwand
Vertical section - external wall



1 = Unter- und Oberputz	Floating and finishing coat
2 = Wärmedämmung	Thermal insulation
3 = Kleber vollflächig	Glue full surface
4 = OSB	OSB
5 = senkrechtes Rahmenholz mit Kabelkanal	Vertical framing timber with cable duct
6 = Mineralfaserdämmung	Mineral wool insulation
7 = waagerechtes Konstruktionsholz	Horizontal framing timber
8 = OSB	OSB
9 = Dampfsperre	Vapour barrier
10 = Gipskartonplatte	Gypsum board

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

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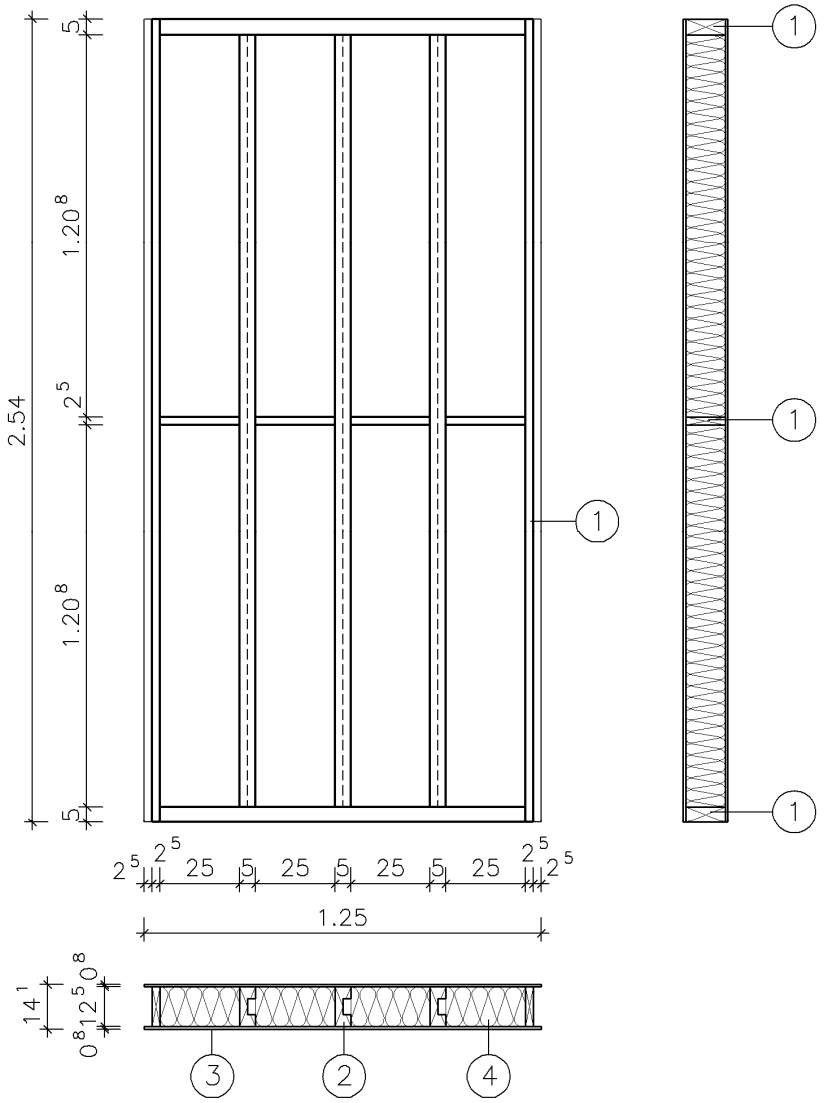
Standard Außenwand-Element
Standard external wall element



1 = Rahmenhölzer	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 verleimt.
The timber frame construction will be glued to the OSB.

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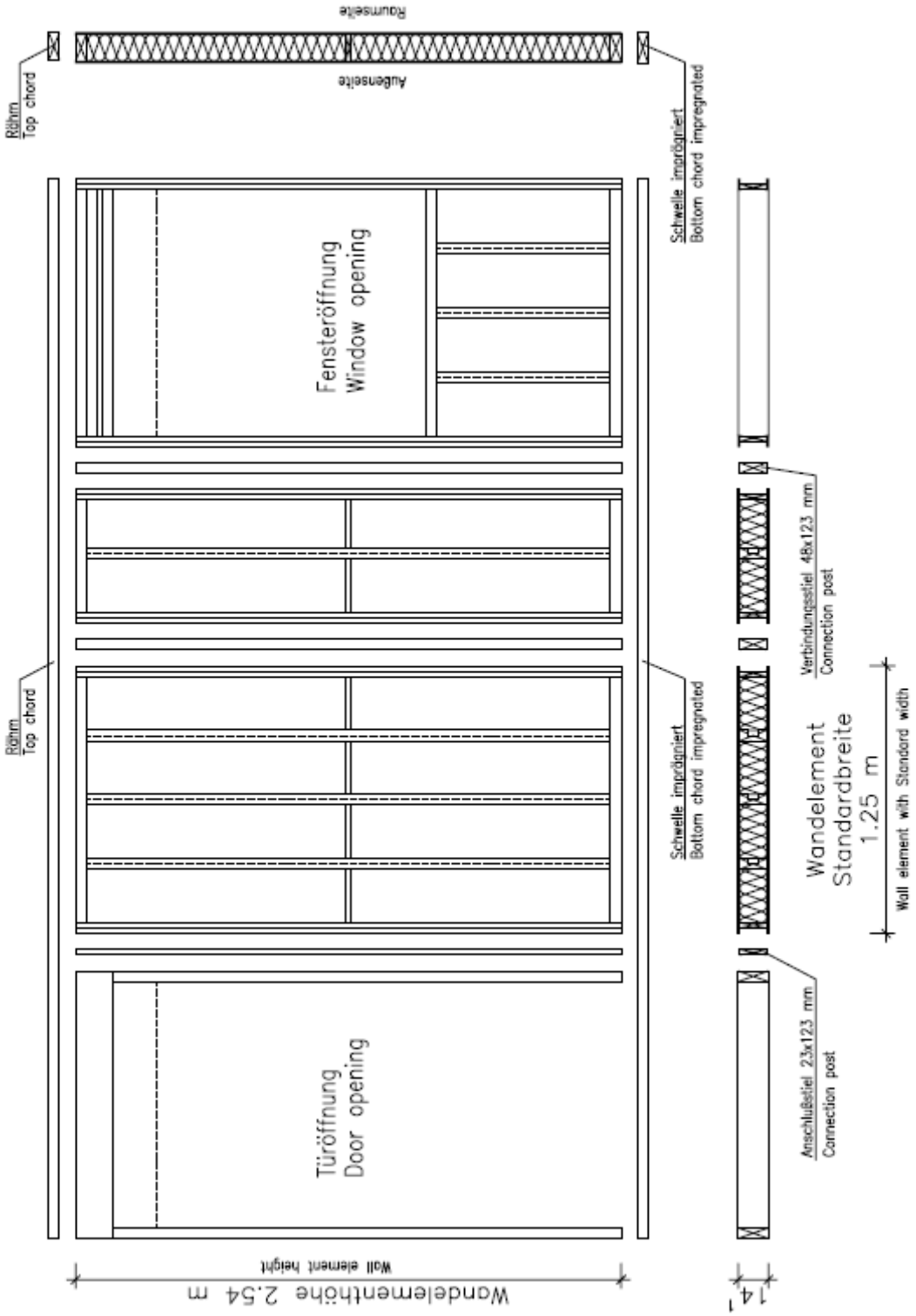
Explosionszeichnung - Außenwand
Exploded drawing - external wall



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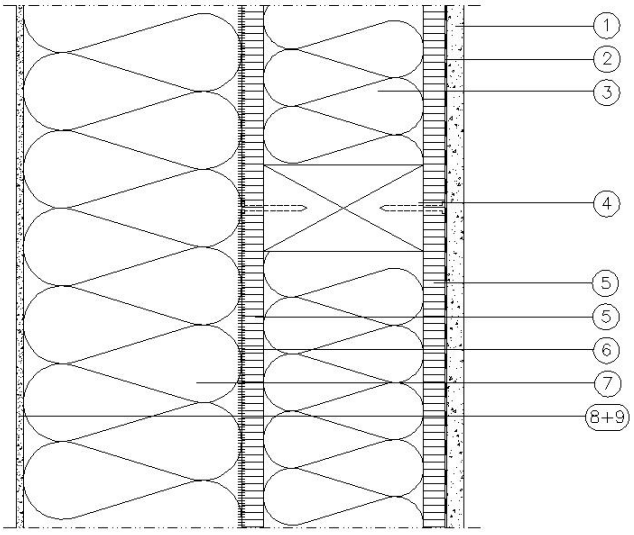
Vertikalschnitt - Giebelwand
Vertical section - gable wall



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

1 = Gipskartonplatte	Gypsum board
2 = Dampfsperre	Vapour barrier
3 = Mineralfaserdämmung	Mineral wool insulation
4 = Konstruktionsholz	Timber frame
5 = OSB	OSB
6 = Kleber vollflächig	Glue full surface
7 = Wärmedämmung	Thermal insulation
8+9 = Unter- und Oberputz	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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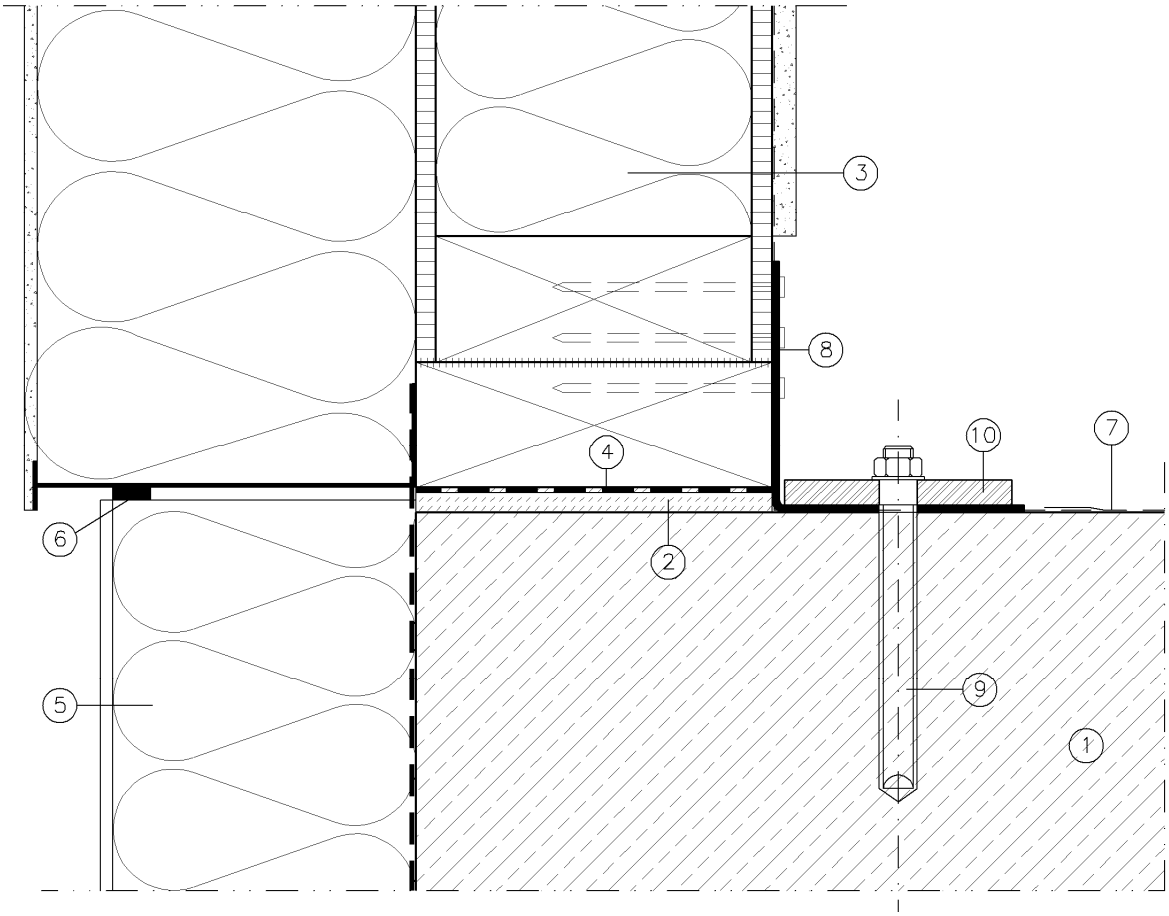
Sockelausbildung - Außenwand mit Wandverankerung
Pedestal detail - external wall with anchorage of the wall



1 = Kellerdecke bzw. Fundamentplatte	Cellar ceiling resp foundation plate
2 = Unterlegung und Untermörtelung	Mortarbed
3 = Außenwandkonstruktion	External wall construction
4 = Absperrbahn gem. DIN 18195	Barrier membrane according DIN 18195
5 = bauseitige Sockeldämmung mit Putz	Plinth insulation with plaster made on site
6 = bauseitiges Dichtungsband	Sealing tape made on site
7 = Feuchtesperre gem. DIN 18195	Moisture barrier according DIN 18195
8 = Winkel mit Rillennägeln am Wandelement befestigt	Angle fastened to the wall element with threated nails
9 = Schwerlastanker	Heavy duty anchor
10 = Stahlplatte	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.

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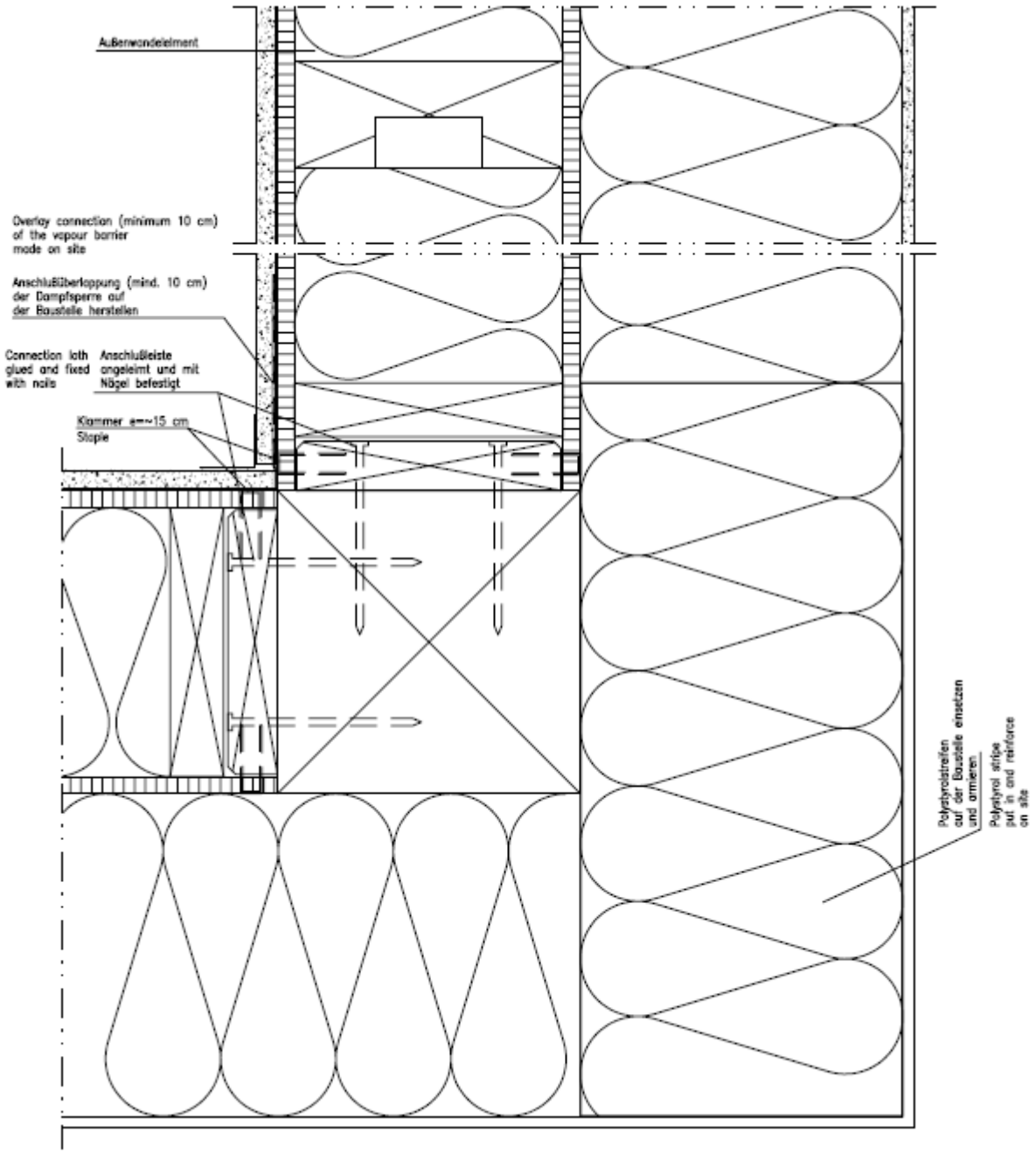
Horizontaler Querschnitt - Eckausbildung

Horizontal section - corner detail



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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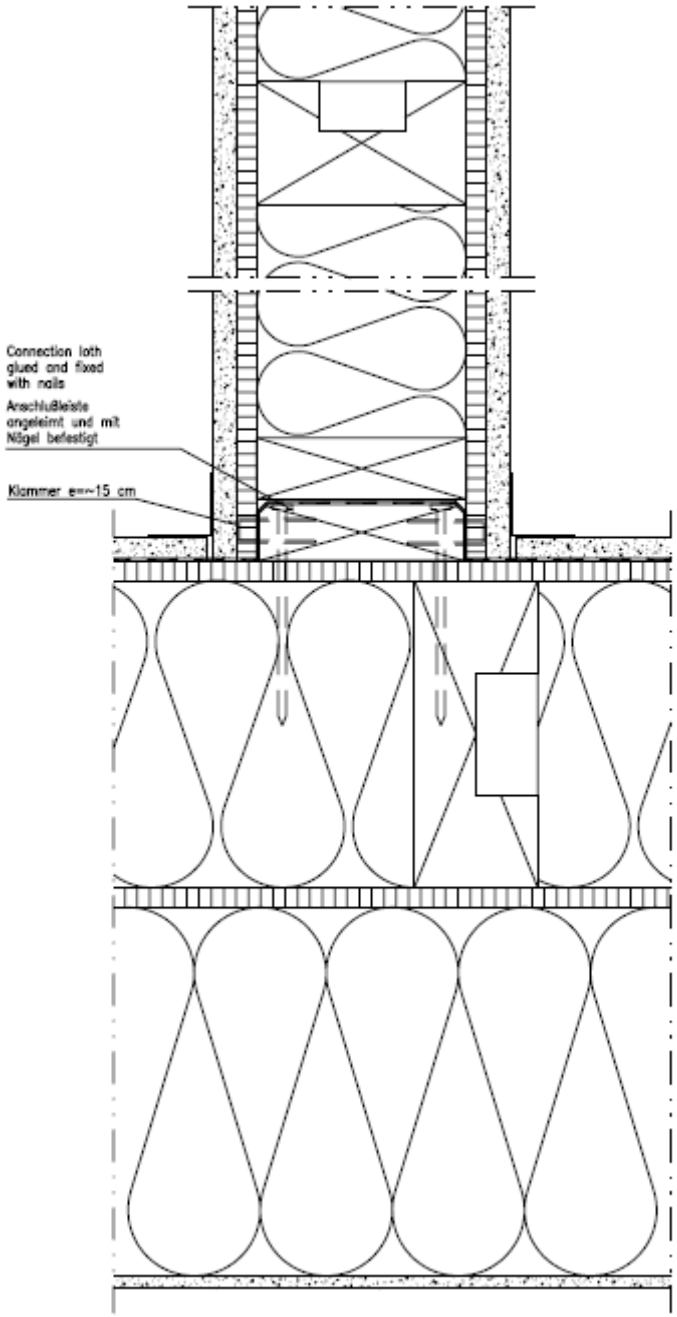
Horizontaler Querschnitt - Anschluss Innenwand an Außenwand
Horizontal section – connection internal to external wall



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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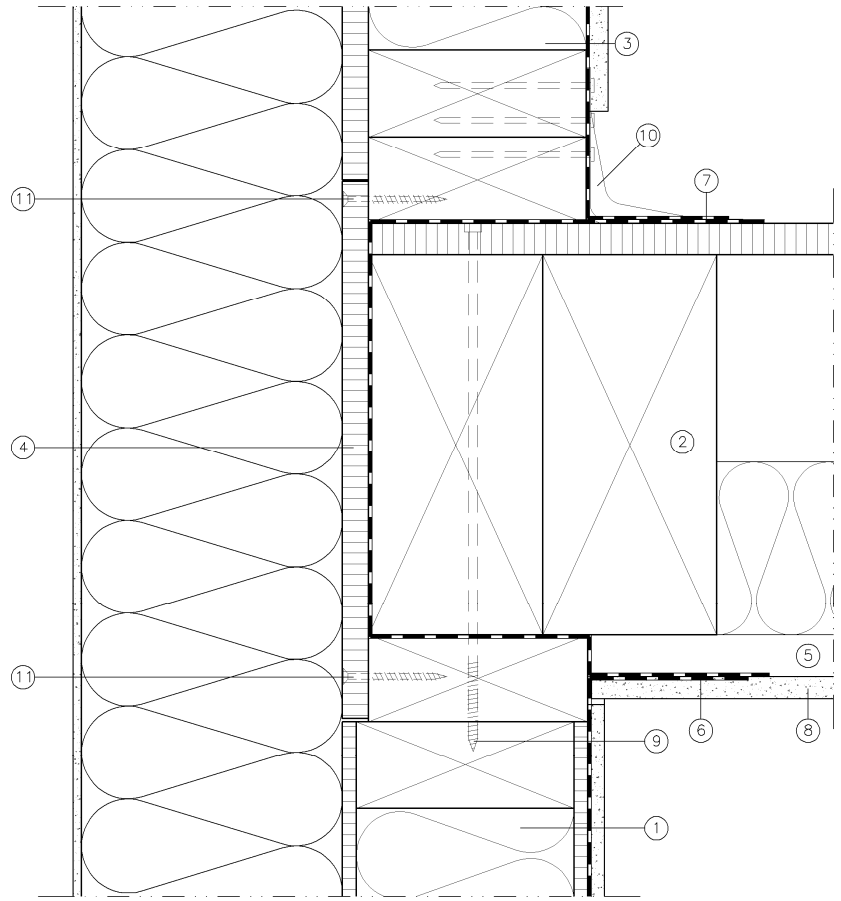
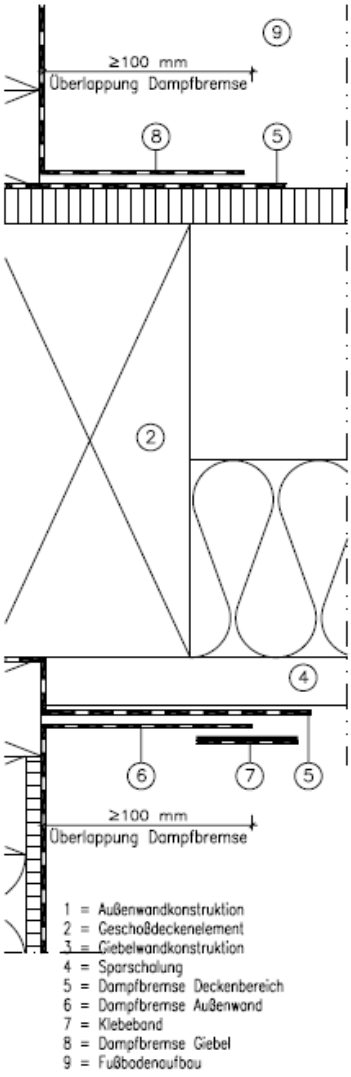
Vertikaler Schnitt – Außenwand an Geschossdecke
Vertical section – external wall to ceiling



1 = Außenwandkonstruktion	External wall
2 = Geschoßdeckenelement	Floor/ceiling element
3 = Giebel-Außenwandkonstruktion	Gable wall construction
4 = OSB für Verbindung Außenwand-Giebel	OSB to connect the external wall to the gable wall
5 = Sparschalung	Open boarding
6 = Stoß Dampfsperre Außenwand-Decke	Joint formation of the vapour barrier between external wall and ceiling
7 = Stoß Dampfsperre Giebel-Decke	Joint formation of the vapour barrier between gable wall and ceiling
8 = Gipskartonplatte	Gypsum board
9 = Langschaftschraube	Long shaft screw
10 = Winkel	Angle
11 = Schraube	Screw



1 = External wall
2 = Floor/ceiling element
3 = Gable wall construction
4 = Sparschalung
5 = Vapour barrier ceiling
6 = Vapour barrier external wall
7 = Sealing tape
8 = Vapour barrier gable wall
9 = Flooring system

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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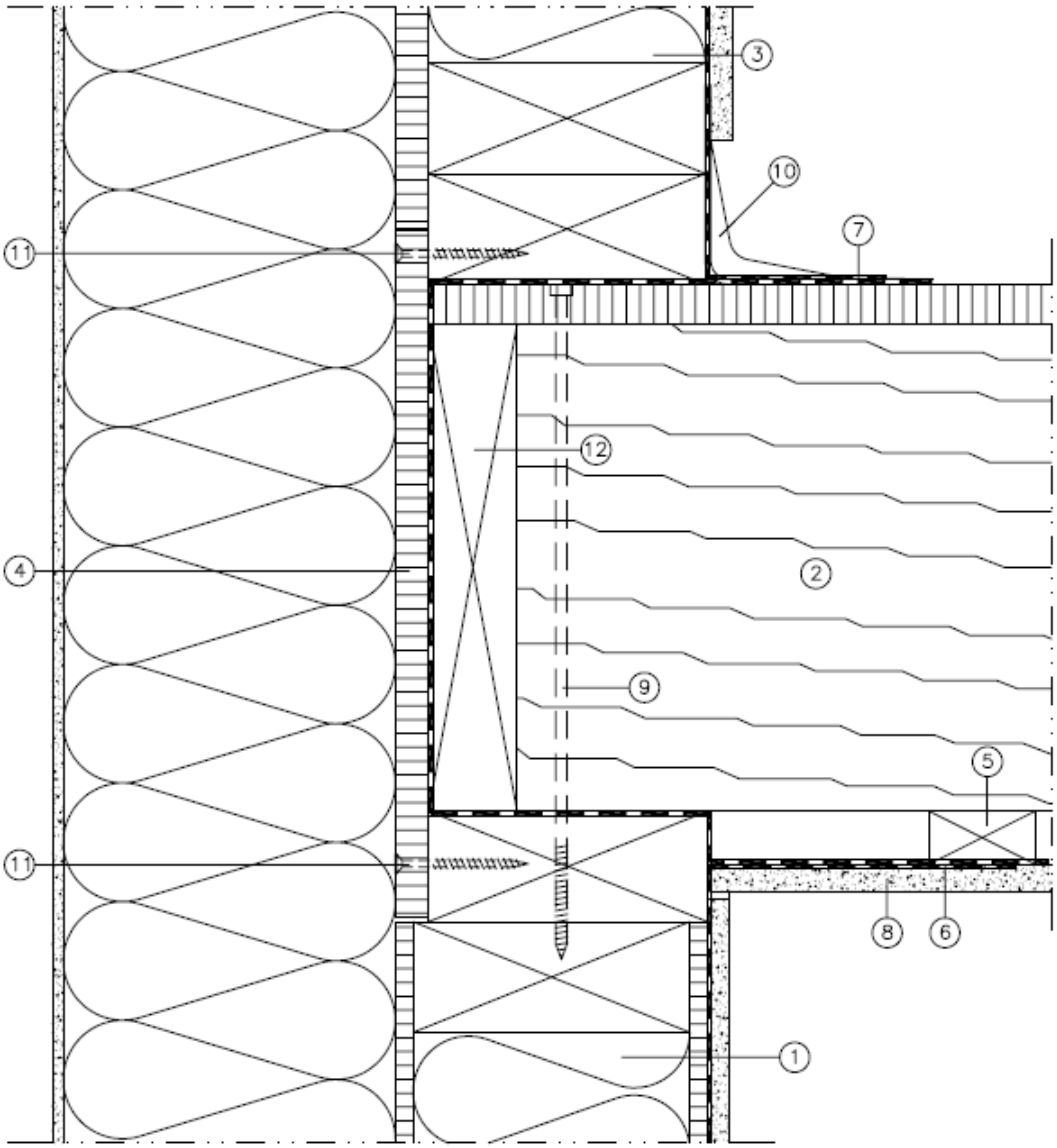
Vertikaler Schnitt – Auflager Deckenbalken an Außenwand

Vertical section – support ceiling joists to external wall



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

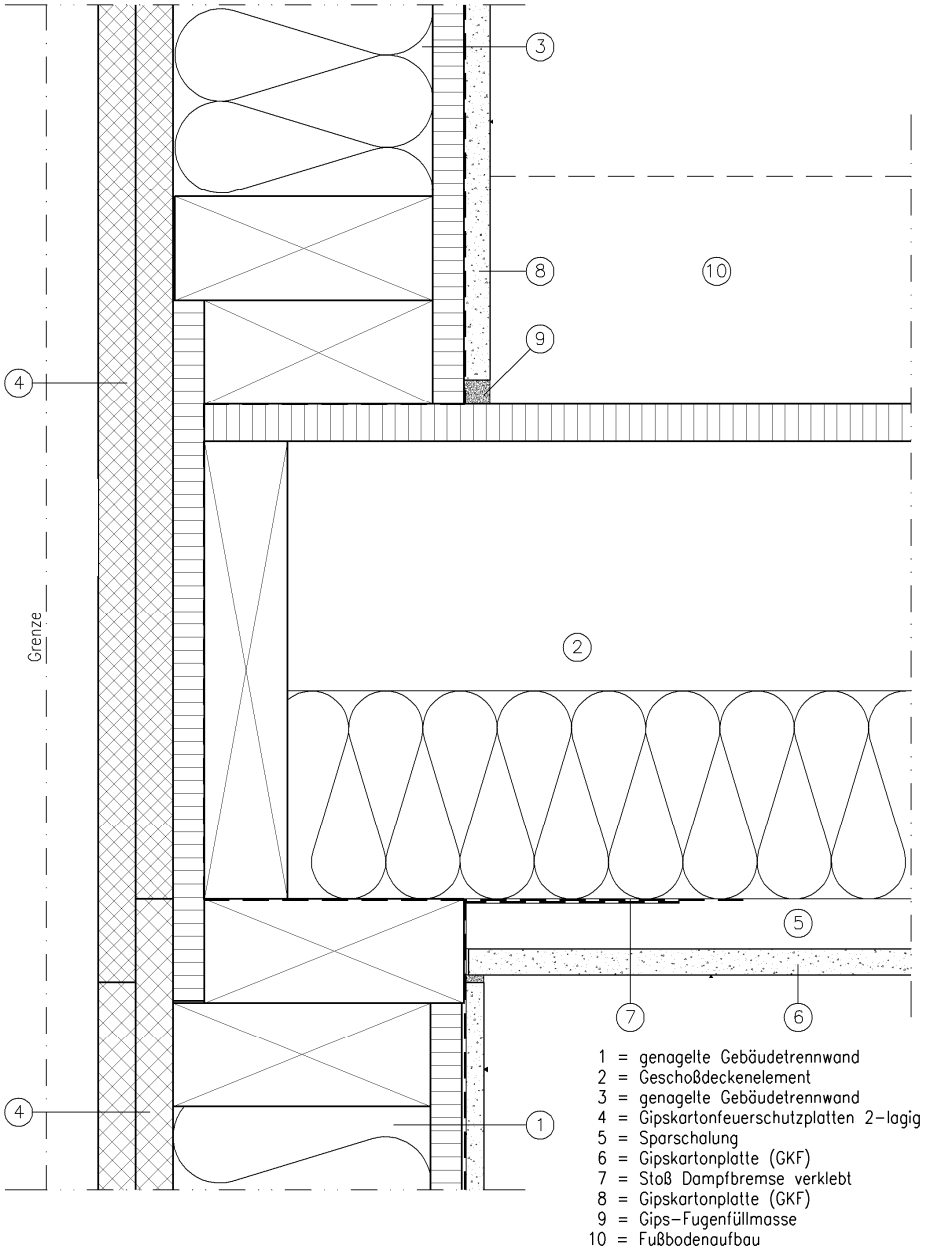
1 = External wall
2 = Ceiling joist according structural analysis
3 = Gable external wall construction
4 = OSB to connect external wall with gable wall
5 = Open boarding
6 = Joint formation of the vapour barrier between external wall and ceiling
7 = Joint formation of the vapour barrier between gable 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.

Vertikaler Schnitt – Außenwand an Geschossdecke

Vertical section – external wall to ceiling



1 = genagelte Gebäudetrennwand
2 = Geschoßdeckenelement
3 = genagelte Gebäudetrennwand
4 = Gipskartonfeuerschutzplatten 2-lagig
5 = Sparschalung
6 = Gipskartonplatte (GKF)
7 = Stoß Dampfbremse verklebt
8 = Gipskartonplatte (GKF)
9 = Gips-Fugenfüllmasse
10 = Fußbodenaufbau

1 = External wall (nailed)
2 = Floor-ceiling element
3 = Jamb wall (nailed)
4 = Gypsum fire boards
5 = Open boarding
6 = Gypsum board
7 = Joint formation of the vapour barrier between external wall and ceiling
8 = Gypsum board
9 = Gypsum filling
10 = Floor construction

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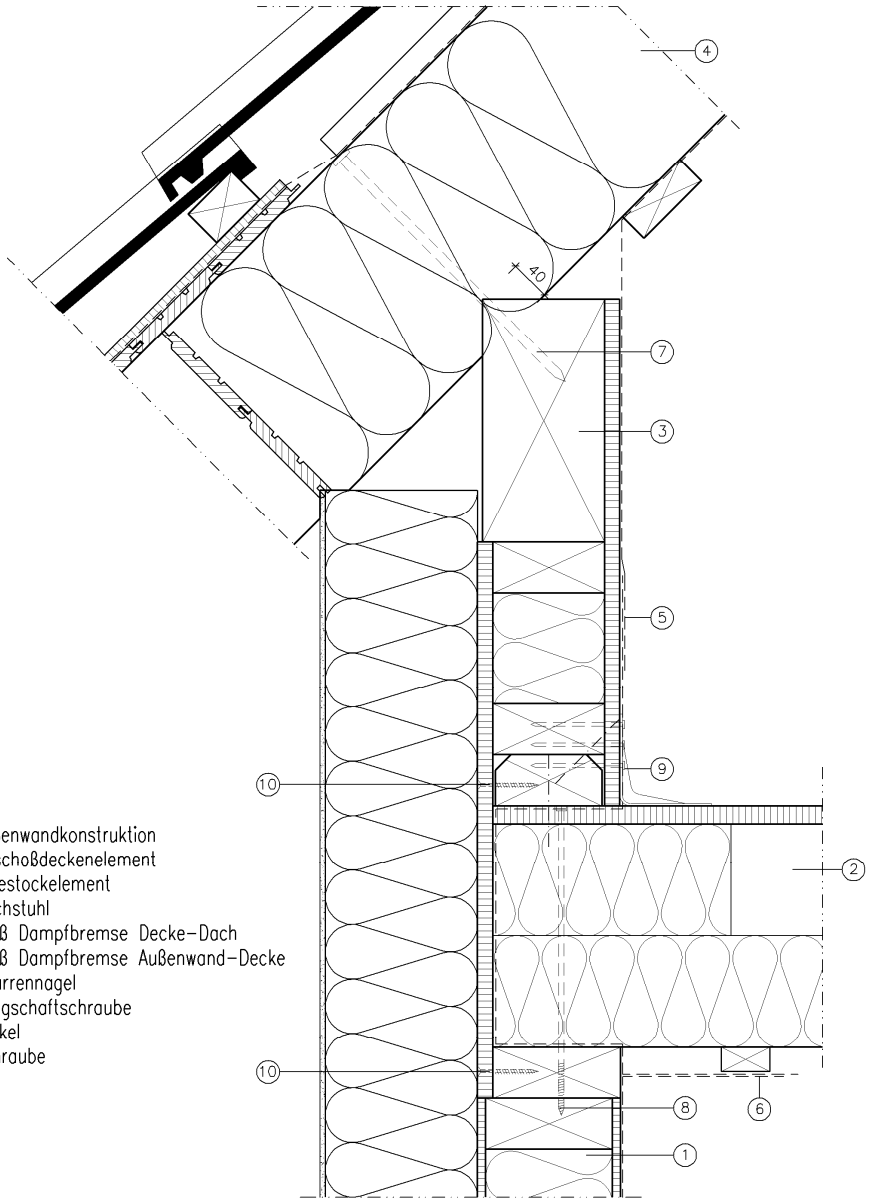
Vertikaler Schnitt – Drempel mit Anschluss Außenwand

Vertical section – connection jamb wall to external wall



1 = Außenwandkonstruktion
2 = Geschoßdeckenelement
3 = Kniestockelement
4 = Dachstuhl
5 = Stoß Dampfbremse Decke–Dach
6 = Stoß Dampfbremse Außenwand–Decke
7 = Sparrennagel
8 = Langschaftschraube
9 = Winkel
10 = Schraube

1 = External wall
2 = Floor-ceiling element
3 = Jamb wall element
4 = Roof structure
5 = Joint of the vapour barrier between roof and ceiling
6 = Joint of the vapour barrier between external wall and ceiling
7 = Rafter nail
8 = Long shaft screw
9 = Angle
10 = Screw

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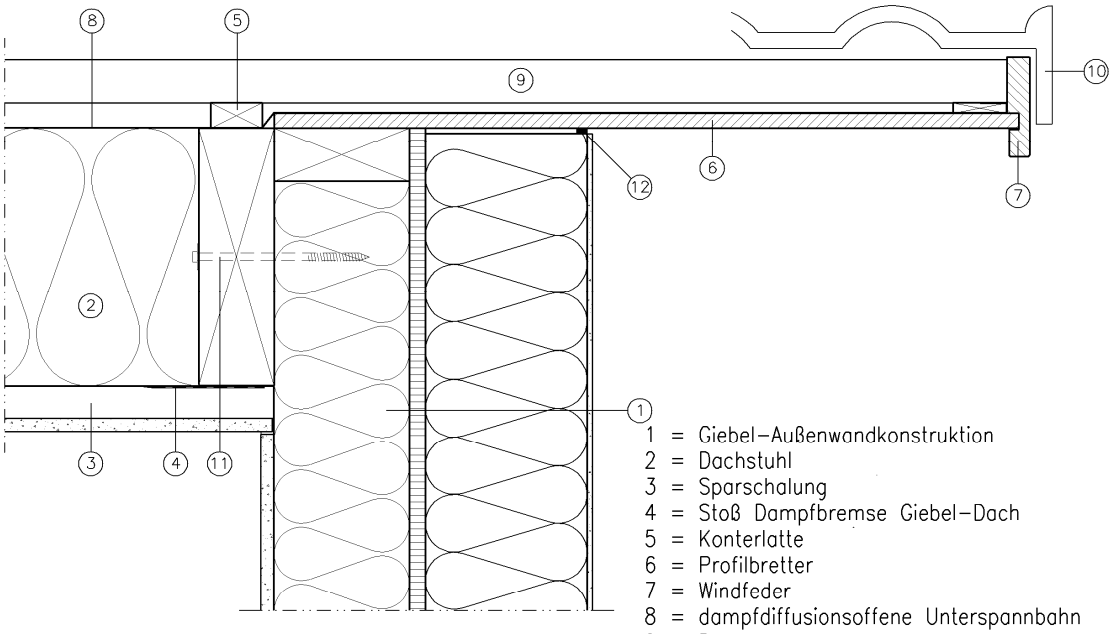
Vertikaler Schnitt - Giebel mit Ortgang
Vertical section - gable and verge



1 = Giebel–Außenwandkonstruktion
2 = Dachstuhl
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

1 = Gable external wall construction
2 = Roof structure
3 = Open boarding
4 = Joint formation of the vapour barrier between roof and gable wall
5 = Counter-batten
6 = Profile board
7 = Barge board
8 = Sarking membrane, diffusion open
9 = Roofing lath
10 = Verge tile
11 = Rafter screwed to gable wall construction
12 = Sealing tape

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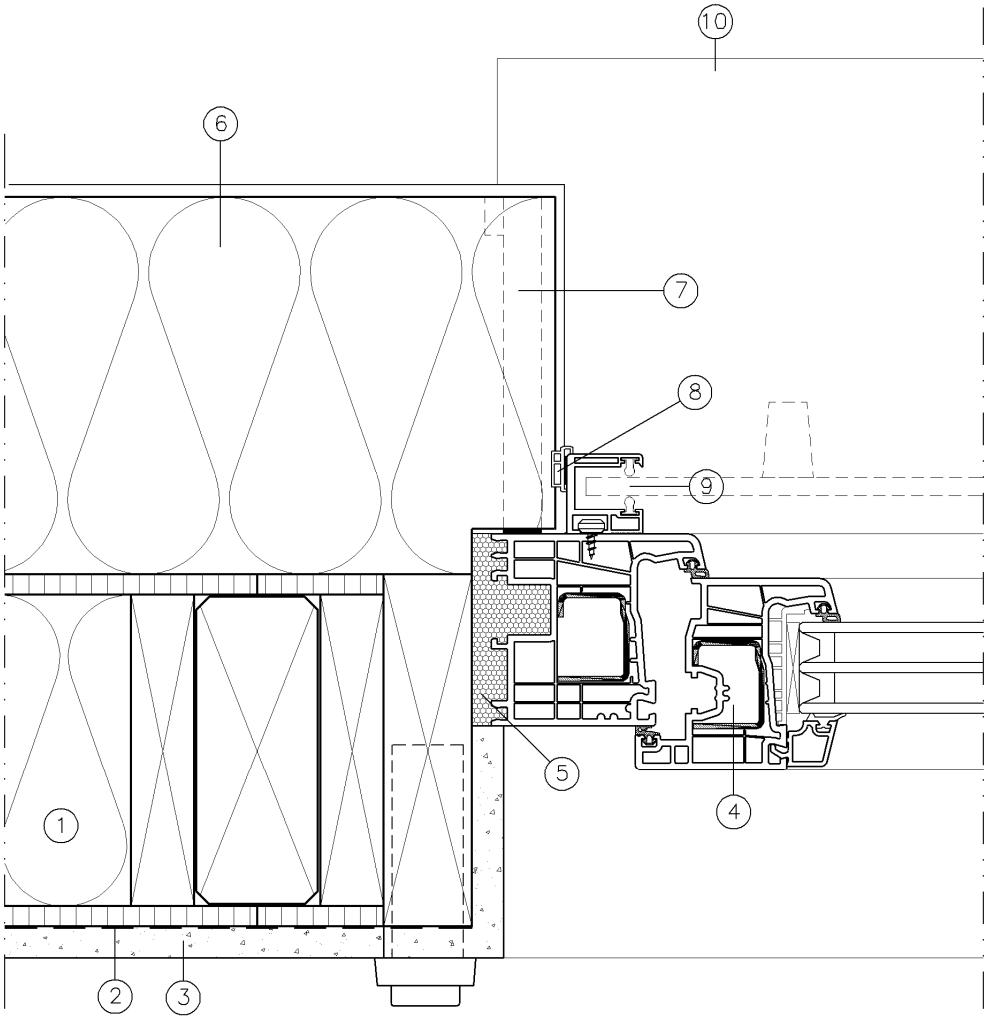
Horizontaler Schnitt – Außenwand mit Fenster, Terrassentür
Horizontal section – external wall with window, terrace door



1 = Außenwandkonstruktion	External wall construction
2 = Dampfsperre	Vapour barrier
3 = Gipskartonplatte	Gypsum board
4 = Fenster bzw. Terrassentür	Window resp terrace door
5 = Montageschaum	Mounting foam
6 = Wärmedämmverbundsystem	Thermal insulation system
7 = Wärmedämmung in der Leibung	Thermal insulation of reveal
8 = Putzanschlussprofil	Plaster connection profile
9 = Rollladenschiene	Shutter slat
10 = Fensterbank	Window sill

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

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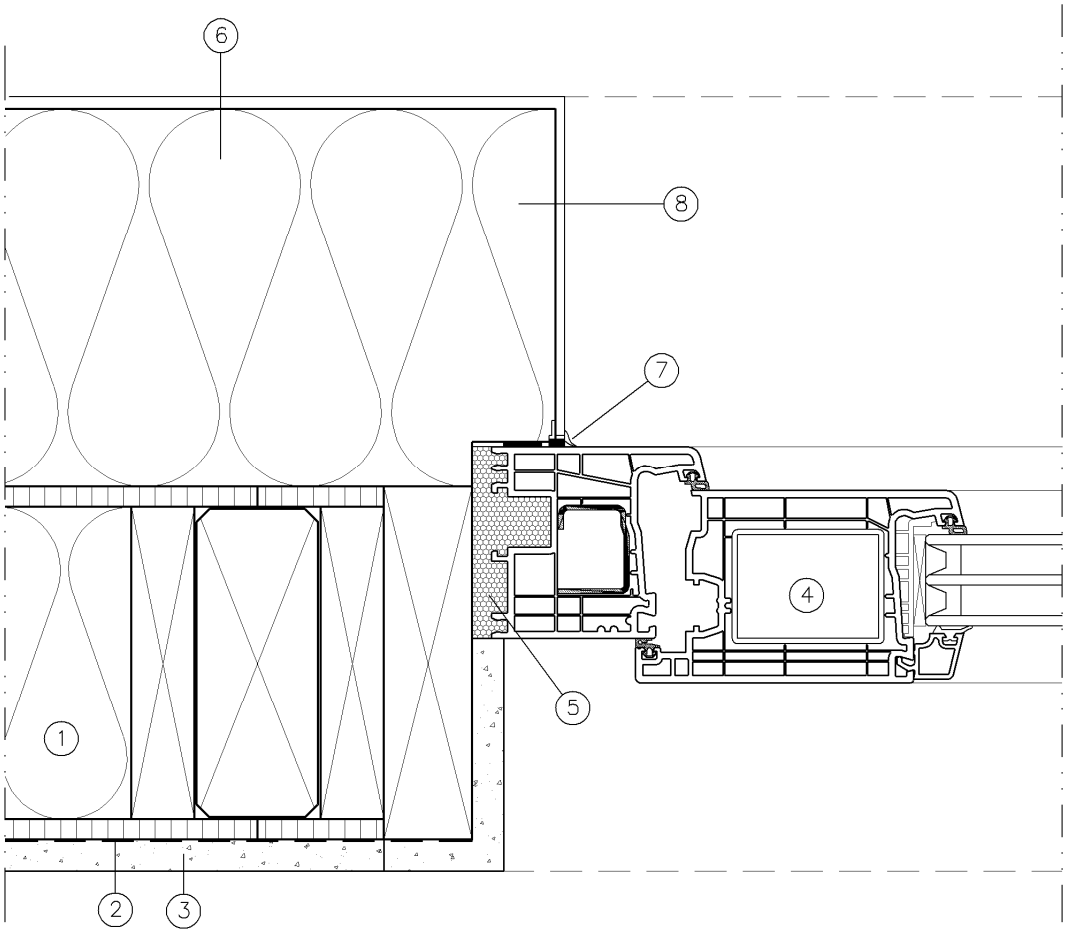
Horizontaler Schnitt – Außenwand mit Haustür
Horizontal section – external wall with front door



1 = Außenwandkonstruktion	External wall construction
2 = Dampfsperre	Vapour barrier
3 = Gipskartonplatte	Gypsum board
4 = Haustür	Front door
5 = Montageschaum	Mounting foam
6 = Wärmedämmverbundsystem	Thermal insulation system
7 = Putzanschlussprofil	Plaster connection profile
8 = Wärmedämmung in der Leibung	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.

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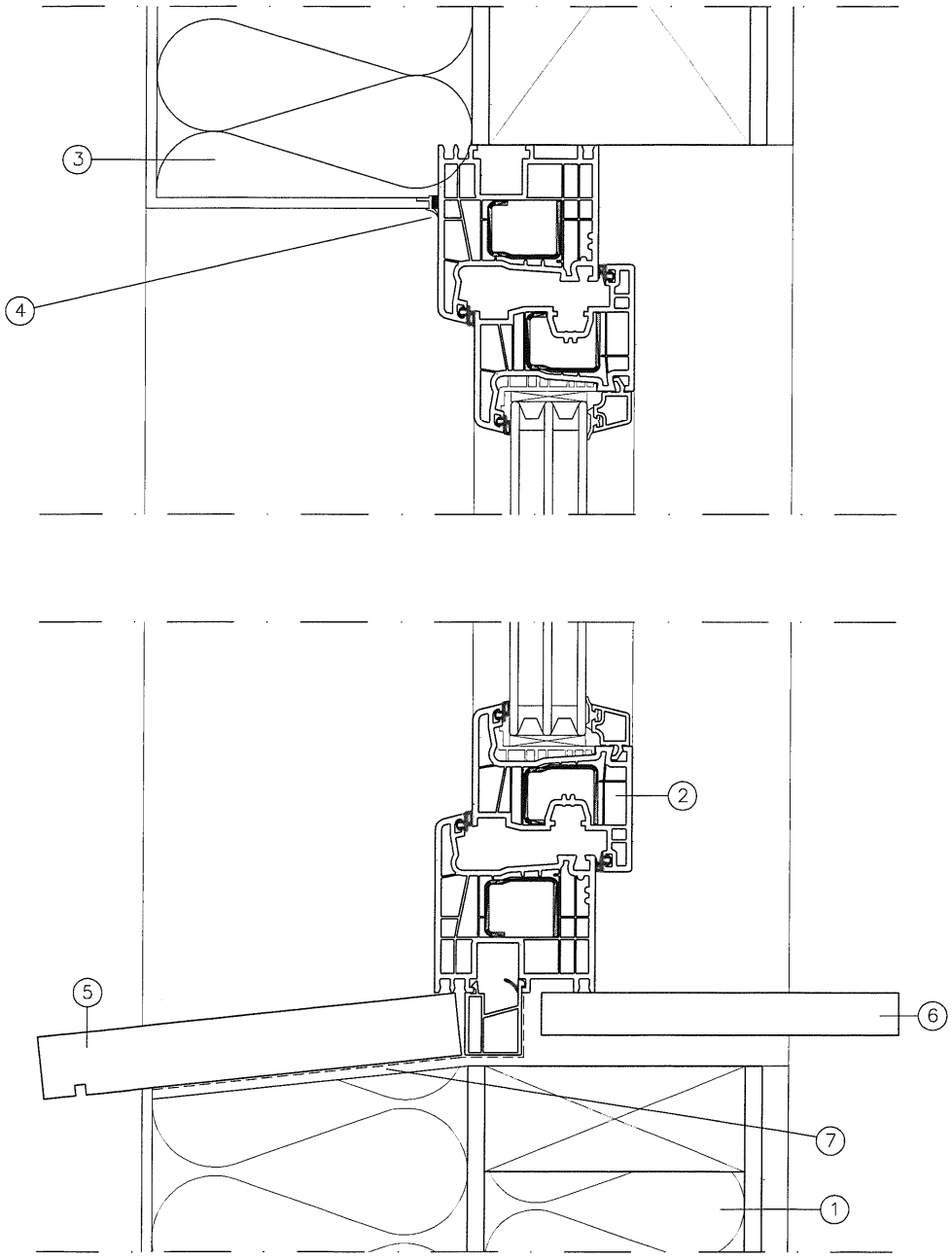
Vertikaler Schnitt – Außenwand mit Fenster
Vertical section – external wall with window



1 = Außenwandkonstruktion	External wall construction
2 = Fenster	Window
3 = Wärmedämmung in der Leibung	Thermal insulation of reveal
4 = Putzanschlussprofil	Plaster connection profile
5 = Außenfensterbank	Window sill outside
6 = Innenfensterbank	Window sill inside
7 = Wasserdichtes Foliensystem, diffusionsoffen	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.

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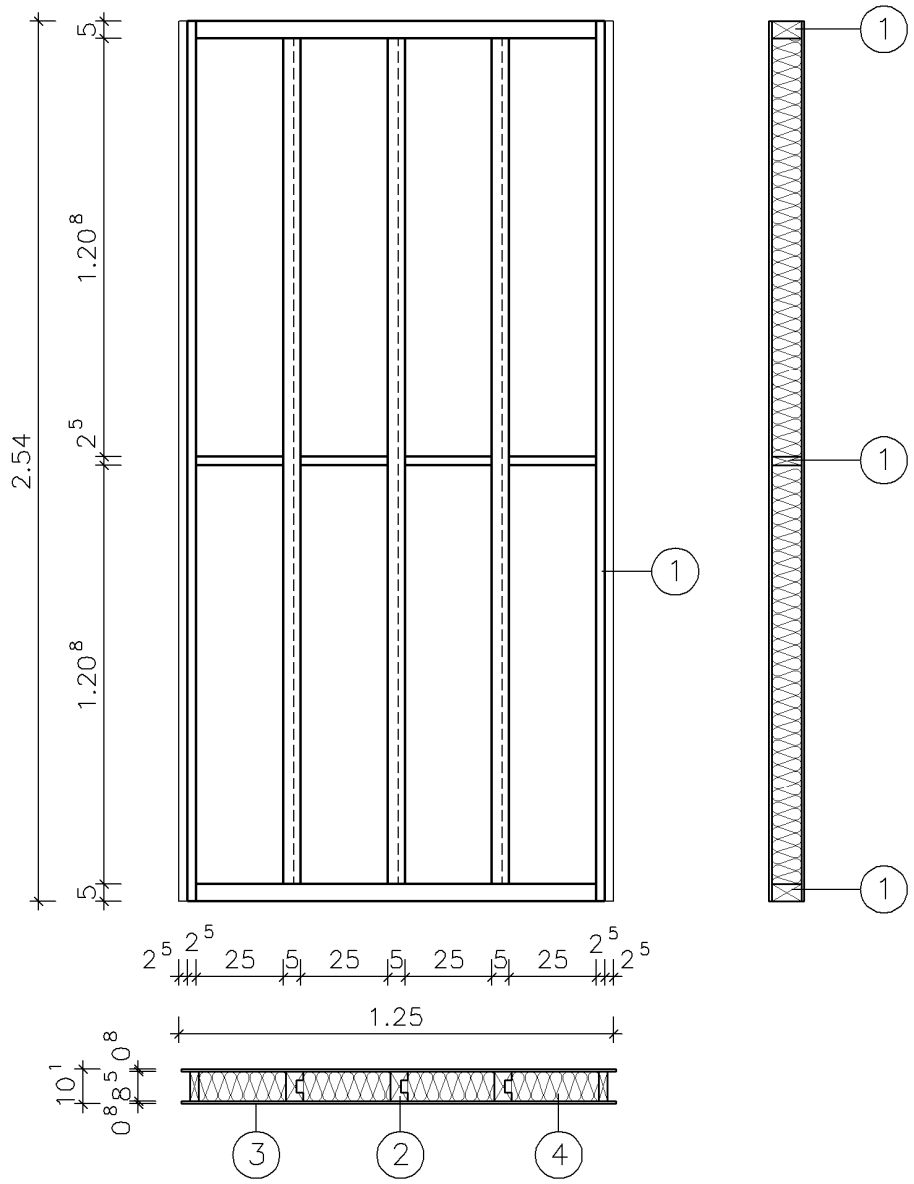
Standard Innenwand-Element
Standard internal wall element



1 = Rahmenhölzer — 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

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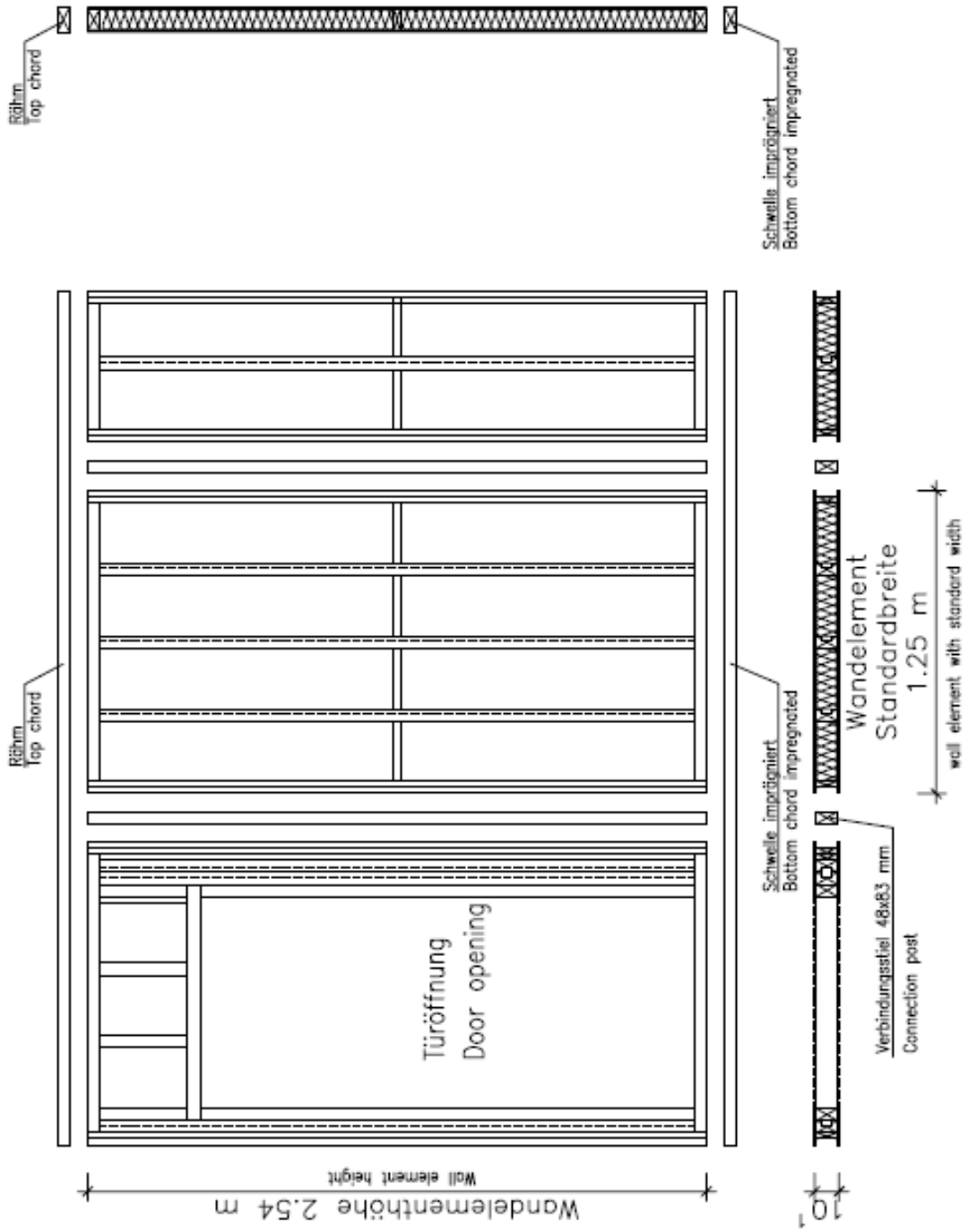
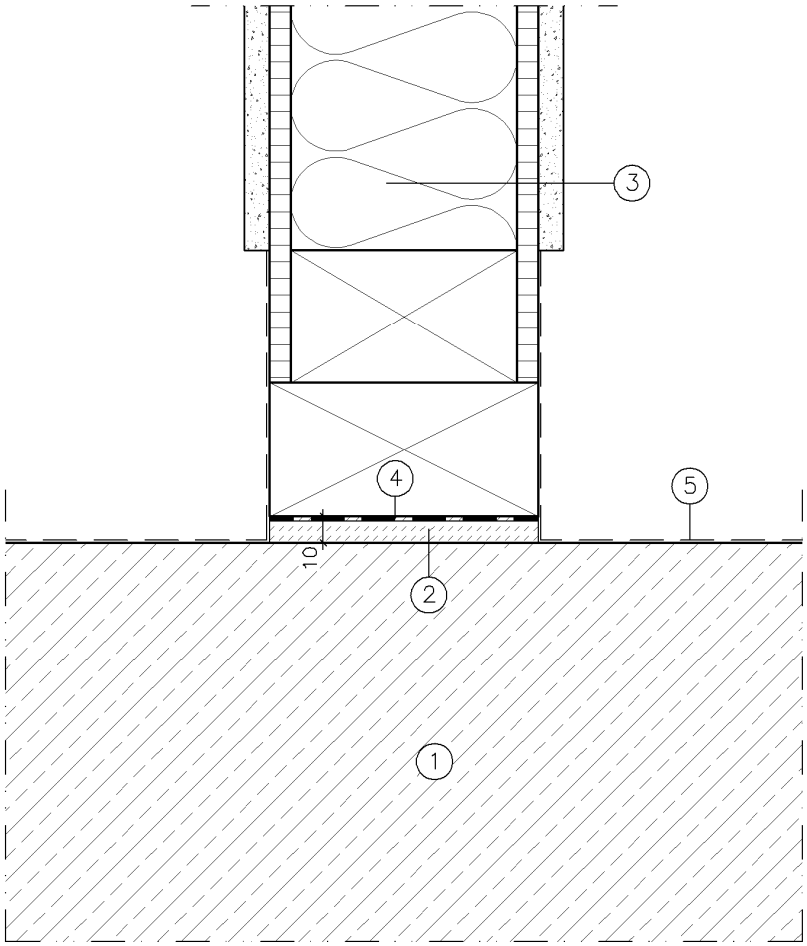
Explosionszeichnung – Innenwand
Exploded drawing – internal wall



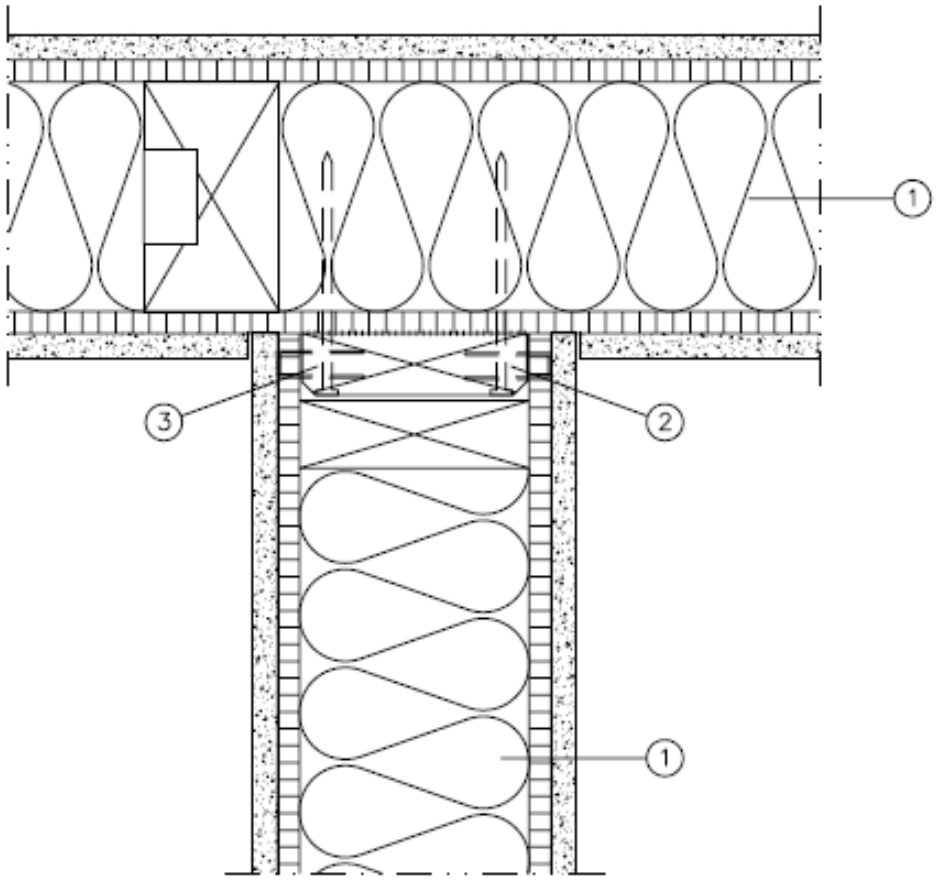
Vertikaler Schnitt – Innenwand an Fundament bzw. Kellerdecke
Vertical section – internal wall to foundation resp basement ceiling



1 = Kellerdecke bzw. Fundamentplatte	Cellar ceiling resp foundation plate
2 = Unterlegung und Untermörtelung	Mortarbed
3 = Innenwandkonstruktion	Internal wall construction
4 = Absperrbahn	Barrier membrane
5 = Feuchtesperre	Moisture barrier

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.

Horizontaler Schnitt – Innenwand an Innenwand
Horizontal section – internal wall to internal wall



1 = Innenwandkonstruktion	Internal wall construction
2 = Anschlussleiste angeklebt und mit Nägeln befestigt	Connection lath glued and fixed with nails
3 = Befestigung mit Klammern auf der Baustelle, e ≈ 15 cm	Fastening with staples on site, e ≈ 15 cm

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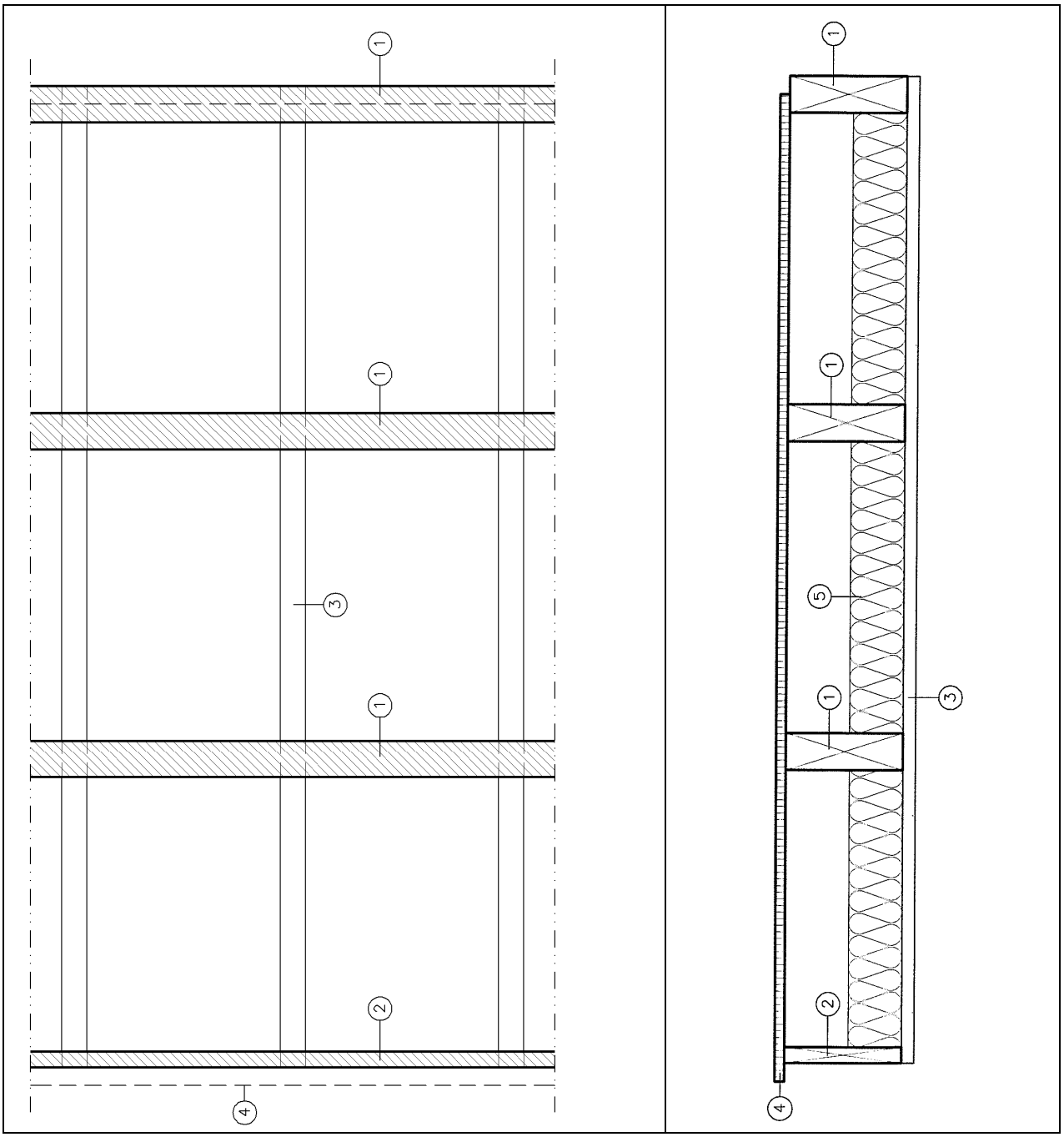
Horizontaler Schnitt durch Deckenelement
Horizontal section through ceiling element



1 = Deckenbalken gem. Statik	Ceiling joist according to structural analysis
2 = Bohle	Batten
3 = Sparschalung, e ≈ 41 cm	Open boarding, e ≈ 41 cm
4 = Deckenbeplankung	Ceiling planking with OSB
5 = Schalldämmung	Sound insulation

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

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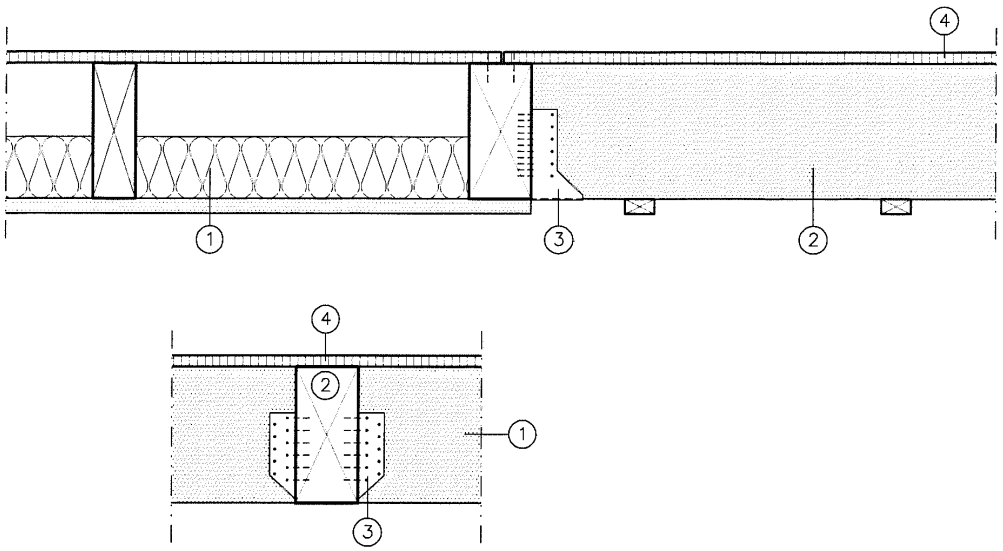
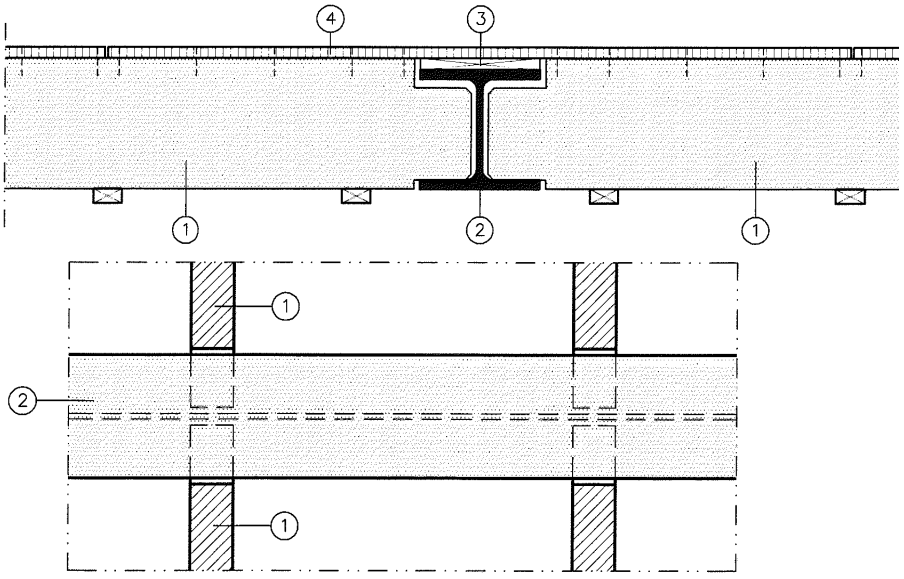
Verbindung der Deckenbalken
Connection of ceiling joists



1 = Deckenelement	Ceiling element
2 = Deckenbalken	Ceiling joist
3 = Balkenschuh gem. Statik	Joist hanger according to structural analysis
4 = Deckenbeplankung	Ceiling planking with OSB



1 = Deckenelement	Ceiling element
2 = Deckenbalken gem. Statik	Ceiling joist according to structural analysis
3 = Füllholz	Wooden filling elements
4 = Deckenbeplankung OSB	Ceiling planking with OSB

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

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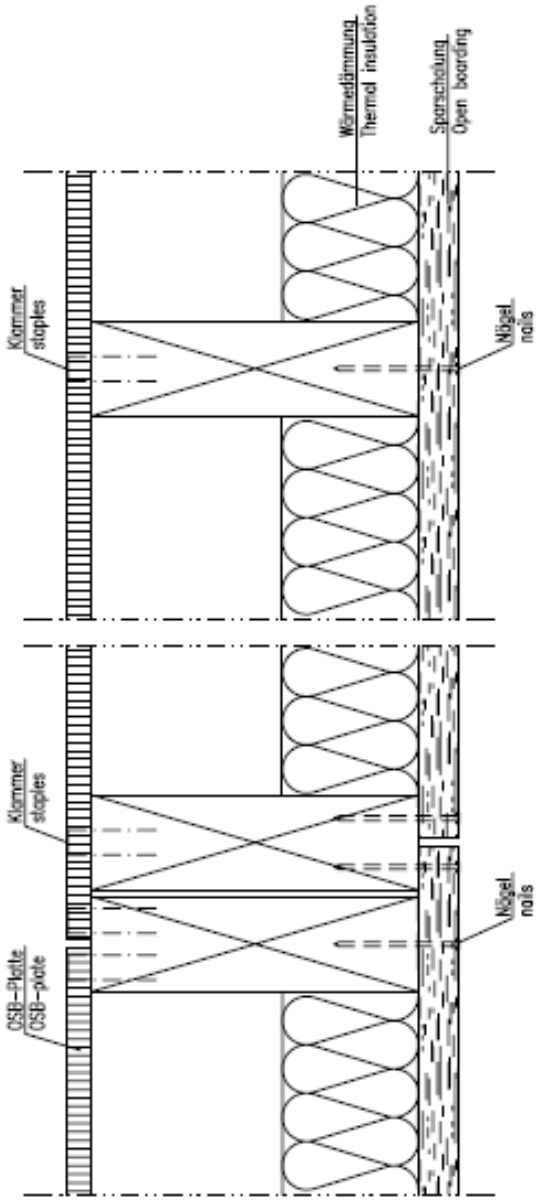
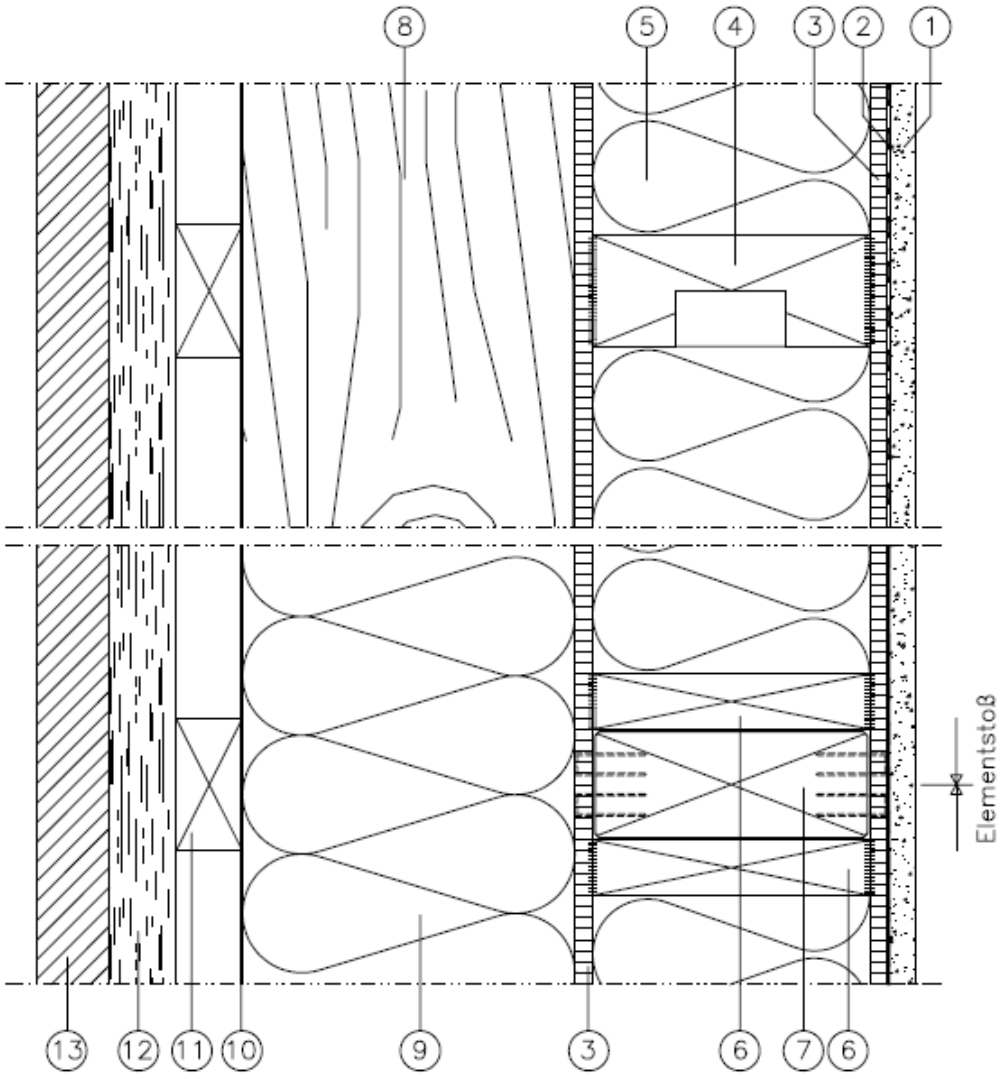
Vertikaler Schnitt - Deckenelementstoß
Vertical section – ceiling element joint



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.

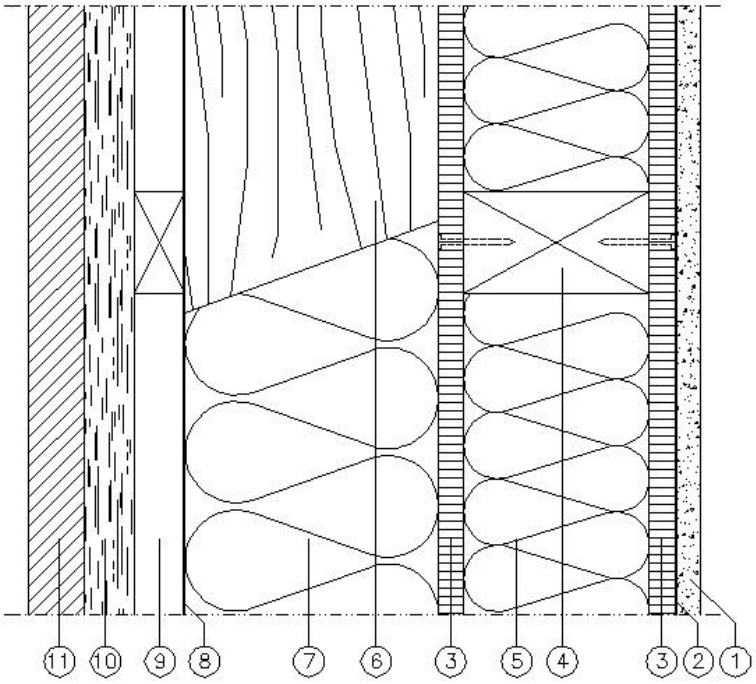
Alternativ: Vertikalschnitt - Außenwand mit Holzverschalung
Alternatively: Vertical section - external wall with timber cladding



1 = Gipskartonplatte	Gypsum board
2 = Dampfsperre	Vapour barrier
3 = OSB	OSB
4 = Rahmenhölzer mit Kabelkanal	Framing timber with cable duct
5 = Mineralfaserdämmung	Thermal insulation
6 = Rahmenholz	Framing timber
7 = senkrechtes Konstruktionsholz	Verticall 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 geklebt.
The timber frame construction will be glued to the OSB.

Alternativ: Vertikalschnitt - Giebelwand
Alternatively: Vertical section - gable wall



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

1 = Gipskartonplatte	Gypsum board
2 = Dampfsperre	Vapour barrier
3 = OSB	OSB
4 = Konstruktionsholz	Timber frame
5 = Mineralfaserdämmung	Thermal insulation
6 = Grundkonstruktionsholz	Constructional timber
7 = Wärmedämmung	Thermal insulation
8 = Dampfdiffusionsoffene Bahn	Open vapour diffusion sealing foil
9 = Grundlattung	Basic lathing
10 = Traglattung	Load bearing lathing
11 = Holzbekleidung	Timber cladding

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