UBAtc
Union belge pour l'Agrément technique de la Construction
Member of EOTA, UEAtc and WFTAO

European Technical Assessment

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UBAtc Assessment Operator

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**Technical Assessment Body issuing the European Technical Assessment: UBAtc.
UBAtc has been designated according to Article 29 of Regulation (EU) No 305/2011 and is member of EOTA (European Organisation for Technical Assessment)**

Trade name of the construction product:	Green Isologic EU, Green Isologic LE, Green Isologic PA & Green Isologic ZE
Product family to which the construction product belongs:	Non load-bearing permanent shuttering kits based on panels made of EPS
Manufacturer:	Green Isologic s.p.r.l. 49 Rue Slar 4801 Stembert Belgium
Manufacturing plants:	Seuropak bvba Nijverheidslaan, 10 8560 Gullegem Belgium
Website:	www.greenisologic.net
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of:	EAD 340309-00-0305: "Non load-bearing permanent shuttering kits/systems based on hollow-blocks or panels of insulating materials and sometimes concrete"
This version replaces:	ETA 13/0384 version 01, issued on 21/06/2018.
This European Technical Assessment contains:	24 pages, including 3 annexes, which form an integral part of this ETA.

European Organisation for Technical Assessment

Legal bases and general conditions

1 This European Technical Assessment is issued by UBAtc (Union belge pour l'Agrément technique de la construction, i.e. Belgian Union for technical Approval in construction), in accordance with:

- Regulation (EU) No 305/2011 [1] of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC
- Commission Implementing Regulation (EU) No 1062/2013 [2] of 30 October 2013 on the format of the European Technical Assessment for construction products
- European Assessment Document (EAD): EAD 340309-00-0305

2 Under the provisions of Regulation (EU) No 3205/2011, UBAtc is not authorized to check whether the provisions of this European Technical Assessment are met once the ETA has been issued.

3 The responsibility for the conformity of the performances of the products with this European Technical Assessment and the suitability of the products for the intended use remains with the holder of the European Technical Assessment.

4 Depending on the applicable Assessment and verification of constancy of performance (AVCP) system, (a) notified body(ies) may carry out third-party tasks in the process of assessment and verification of constancy of performance under this Regulation once the European Technical Assessment has been issued.

5 This European Technical Assessment allows the manufacturer of the construction product covered by this ETA to draw up a declaration of performance for the construction product.

6 CE marking should be affixed to all construction products for which the manufacturer has drawn up a declaration of performance.

7 This European Technical Assessment is not to be transferred to other manufacturers, agents of manufacturers, or manufacturing plants other than those indicated on page 1 of this European Technical Assessment.

8 The European Technical Assessment holder confirms to guarantee that the product(-s) to which this assessment relates, is/are produced and marketed in accordance with and comply with all applicable legal and regulatory provisions, including, without limitation, national and European legislation on the safety of products and services. The ETA-holder shall notify the UBAtc immediately in writing of any circumstance affecting the aforementioned guarantee. This assessment is issued under the condition that the aforementioned guarantee by the ETA-holder will be continuously observed.

9 According to Article 11(6) of Regulation (EU) No 305/2011, when making a construction product available on the market, the manufacturer shall ensure that the product is accompanied by instructions and safety information in a language determined by the Member State concerned which can be easily understood by users. These instructions and safety information should fully correspond with the technical information about the product and its intended use which the manufacturer has submitted to the responsible Technical Assessment Body for the issuing of the European Technical Assessment.

10 Pursuant to Article 11(3) of Regulation (EU) No 305/2011, manufacturers shall adequately take into account changes in the product-type and in the applicable harmonised technical specifications. Therefore, when the contents of the issued European Technical Assessment do not any longer correspond to the product-type, the manufacturer should refrain from using this European Technical Assessment as the basis for their declaration of performance.

11 All rights of exploitation in any form and by any means of this European Technical Assessment are reserved for UBAtc and the ETA-holder, subject to the provisions of the applicable UBAtc regulations.

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13 Subject to the application introduced, this European Technical Assessment is issued in English and may be issued by the UBAtc in its official languages. The translations correspond fully to the English reference version circulated in EOTA.

14 A European Technical Approval (ETA) was first issued by UBAtc on 30 June 2013 and was reissued as a European Technical Assessment on 21 June 2018 implementing a name change of the ETA-holder and the trade name of the products covered without technical changes. The current version, issued on 7 January 2026, comprises the conversion of the European Technical Assessment based on ETAG 009 to a European Technical Assessment based on EAD 340309-00-0305, without technical modifications.

[1]: OJEU, L 88 of 2011/04/04

[2]: OJEU, L 289 of 2013/10/31

Technical Provisions

1 Technical description of the system

1.1 Green Isologic system

Green Isologic is a non-loadbearing permanent shuttering system based on hollow blocks made of expanded polystyrene (EPS) leaves and polypropylene spacers applicable as formwork for plain and reinforced concrete walls cast in-situ.

The concrete infill structural pattern is of continuous type.

All details about shape and dimensions of the shuttering elements are given in this ETA, Annex II.

Special elements as lintel, corner and closing element are also part of this ETA.

Renderings, coatings and plasterboards are not part of this ETA.

Green Isologic has presented a Material Safety Data Sheet according to Regulation 1907/2006/EC and a declaration that the used EPS is in accordance with Regulation 1907/2006/EC concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

1.2 System components

1.2.1 Shuttering leaves

The shuttering leaves are made of expanded polystyrene (EPS). Nominal dimensions are given in Table 1.

Table 1 – Thicknesses of the shuttering leaves

	Inner shuttering leaf	Outer shuttering leaf
	(mm)	(mm)
Green Isologic EU	50	50
Green Isologic LE		100
Green Isologic PA		150
Green Isologic ZE		200

The upper and lower surfaces of the shuttering leaves are castellated and the vertical mating surfaces are tongue and mortise to form a tight fit when joined together.

The inner and outer surfaces have grooves running vertically. Those grooves on the outer side allow the application of hydraulic coatings. Because of the grooves on the inner side, the concrete combines with the shuttering leaves in a perfect fit. The grooves on the inner side also form locks for end stops.

Table 2 gives the most important characteristics of the EPS:

Table 2 – Characteristics of EPS

Characteristics	Unity	Value
nominal density	kg/m³	31
thermal conductivity $\lambda_{90/90}$	W/mK	0,031
water vapour diffusion resistance	-	60

1.2.2 Spacers

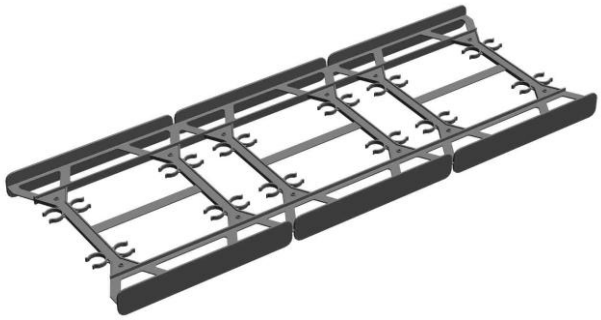
The spacers are made from polypropylene.

The horizontal distance between the spacers is 200 mm (see this ETA, Annex 2).

The shape of the spacers makes them suitable for precise location of the reinforcement bars for the concrete and secure a correct position of the reinforcement.

The two ends of the spacers are embedded in the EPS of the shuttering leaves.

The sum of the cross-sectional areas of the spacers is less than 2% of the area of the concrete core.



1.2.3 Shuttering elements

The length of the shuttering elements is 1200 mm and the height is 600 mm (see this ETA, Annex 2).

2 Specification of the intended use in accordance with the applicable EAD

2.1 Intended use

The kit is intended to be used for construction of load-bearing (structural) or non-load-bearing (non-structural) external (below or above ground) and internal walls for residential and non-residential buildings, including those, which are subject to fire regulations.

The walls are not intended to be adopted for buildings in seismic areas.

When using this type of construction below ground a waterproofing according to applicable national rules shall be provided on the external surface of the wall and should be protected against impact damage using an impact resistant layer or sand blinding.

The relevant and applicable use categories in accordance with EAD 340309 00-0305, clause 2.2.6 for the product are:

- Category IA3: product with no direct contact but possible impact on indoor air
- Category S/W3: product with no contact to and no impact on soil, ground or surface water.

2.2 Working life/Durability

The provisions made in this European Technical Assessment are based on an assumed intended working life of 50 years [3] (provided that the shuttering kit is subject to appropriate installation).

When assessing the product the intended use as foreseen by the manufacturer shall be taken into account. The real working life may be, in normal use conditions, considerably longer without major degradation affecting the basic characteristics for works

Indications given regarding the working life cannot be interpreted as a guarantee given by the producer or the UBAtc, but are to be regarded only as a means for choosing the appropriate product(s) in relation to the expected economically reasonable working life of the construction works.

2.3 Assumptions under which the product was assessed

The wall kit is applied on site according to the procedure laid down in the technical file deposited with the UBAtc.

2.3.1 Manufacturing directives

The shuttering elements are produced using an injection moulding technique in which the expanded polystyrene (EPS) is injected under controlled conditions. The shuttering elements incorporating the polypropylene spacers are produced in the production plant of Seuropak bvba, Nijverheidslaan 10, 8560 Gullegem, Belgium.

The products are produced according to agreed data/ information, deposited with the UBAtc, which identifies the system that has been assessed. Changes to the system/components/production process, which could result in the deposited data/information being incorrect, should be notified to the UBAtc before the changes are introduced. The UBAtc will decide whether or not such changes affect the ETA and consequently the validity of the ETA and if so whether further assessment/alterations to the ETA, shall be necessary.

2.3.2 Provisions related to the design and use of the product

The installation instructions, including special installation techniques and provisions for the qualification of the personnel are given in the manufacturer's technical documentation.

2.3.3 Packaging, transportation, storage, installation, maintenance, replacement and repair

Concerning product packaging, transport, storage, installation, maintenance, replacement and repair it is the responsibility of the manufacturer to undertake the appropriate measures and to advise his clients on the transport, storage, installation, maintenance, replacement and repair of the product, as he considers necessary.

It is assumed that the kit will be installed according to the manufacturer's instructions or (in absence of such instructions) according to the usual practice of the building professionals.

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

3.1 Mechanical resistance and stability (BWR 1)

3.1.1 Resulting structural pattern

The structural pattern is of continuous type according to EAD 340309-00-0305.

The dimensions and shape of the blocks are given in this ETA, Annex II.

3.1.2 Efficiency of filling

The efficiency of filling was verified in accordance with the provisions given in EAD 340309-00-0305 clause 2.2.2 by means of an in-situ erection of a trial structure.

The tightness, completeness of filling and correct setting and hardening of the concrete were assessed during the trial.

Considering the instructions of this ETA, clause 2.3, and the installation guide of the ETA-holder the efficient filling without bursting of the shuttering and without voids or any uncovered reinforcement in the concrete core is possible. See also clause 3.4.3 of this ETA.

3.1.3 Possibility of steel reinforcements

The instructions of the installation guide of the ETA-holder are appropriate to incorporate reinforcements in the walls, in accordance with EN 1992-1-1 or with equivalent national calculation rules.

Green Isologic recommends the use of steel fibre reinforced concrete (SFRC) using steel fibers.

3.2 Safety in case of fire (BWR 2)

3.2.1 Reaction to fire

No performance assessed.

3.2.2 Resistance to fire

With a minimum thickness of the continuous concrete core of 150 mm and the use of normal weight concrete with a minimum strength C16/20 according to EAD 340309-00-0305, Annex A, the resistance to fire of wall is as follows:

- Load-bearing wall: REI120
- Non load-bearing wall: EI120

3 The real working life of a product incorporated in a specific works depends on the environmental conditions to which that works is subject, as well as on the particular conditions of the design, execution, use and maintenance of that works. Therefore, it cannot be excluded that in certain cases the real working life of the product may also be shorter than referred to above.

3.3 Hygiene, health and the environment (BWR 3)

3.3.1 Release of dangerous substances

No performance assessed.

3.3.2 Water vapour permeability

The tabulated design value of water vapour diffusion resistance coefficient (μ) of expanded polystyrene, in accordance with EN ISO 10456 is 60.

The values for the water vapour diffusion resistance of concrete in dependence of density and type are tabulated in EN ISO 10456.

Based on calculations according to EN ISO 13788 using normal climatic boundary conditions, the kit's external envelope has been assessed to provide adequate moisture control for the intended use, provided that the building is heated during wintertime.

3.3.3 Water absorption

No performance assessed.

3.3.4 Water tightness

Wall finishes (internal and external) are not part of the kit.

According to the installation guide of the ETA-holder, when this type of construction is used below ground an adequate waterproofing shall be provided.

For internal protection (in rooms with splashing water and/or high humidity), the recommendations of the ETA-holder shall be followed.

3.4 Safety in use (BWR 4)

3.4.1 Bond strength

3.4.1.1 Bond strength between layers of a shuttering leaf

The shuttering leaves are always produced in one piece including the polypropylene spacers. The latter assuring the constant distance between the inner and outer leaves. The inner and outer surfaces of the shuttering leaves have grooves running vertically. Because of the grooves on the inner side, the concrete combines with the shuttering leaves in a perfect fit. The grooves on the inner side also form locks for end stops.

3.4.1.2 Bond strength between shuttering leaf and concrete

This performance was not determined since the expanded polystyrene inner and outer shuttering leaves are connected with polypropylene spacers. This is sufficient to hold in place the shuttering leaves once the concrete is installed.

3.4.2 Resistance to impact load

The wall finishes are not part of the kit. No impact resistance based on impact tests has been assessed.

3.4.3 Resistance to filling pressure

The resistance to filling pressure has been assessed by testing the tensile strength of the spacers and the pull-out strength between spacers and shuttering leaves.

The minimal tensile strength of the spacer is 4140 N. The minimal pull-out strength between spacers and shuttering leaves is 2631 N.

Resistance to filling pressure is satisfactory for filling to 1 m high at once (at an average vertical concreting rate of 1,6 m/h) without bracing supports and to 2,40 m (storey's height) with bracing supports.

The maximum aggregate size shall be 16 mm and the slump class of the concrete shall be S4 according to EN 206:2013+A2:2021, Table 3. The concrete shall have rapid or middle strength development according to EN 206:2013+A2:2021, Table 12.

Table 3 - Resistance to filling pressure

Characteristics	Unity	Value
Minimal tensile strength of the spacers	kN	4,14
Minimal strength to pull out of the spacers	kN	2,63
maximum pouring height without bracing supports	m	1

In addition, the resistance to filling pressure was verified by erection of a trial structure in-situ. The resistance to filling pressure has been controlled during filling and on completion of the filling. The requirements of EAD 340309-00-0305, clause 2.2.12.1, in respect to cracking and failure of the system elements and horizontal bowing of shuttering are satisfactorily met.

3.4.4 Safety against personal injuries

The shuttering elements do not have sharp or cutting edges, even if they were cut out for the realization of the particular points of construction. The surface of the shuttering leaves is soft. There is no risk of abrasion or of cutting injuries.

3.5 Protection against noise (BWR 5)

3.5.1 Airborne sound insulation

Airborne sound insulation has been assessed according to EN ISO 10140-2. The measured airborne sound insulation, expressed as a single number, Rw, according to EN ISO 717-1 are given in table 4.

Table 4 – Sound reduction index - laboratory results

	$R_W(C;C_{Tr})$
	(dB)
Green Isologic EU	53(-4;-3)
Green Isologic PA + gypsum board (12.5mm)	50(-1;-4)
Green Isologic ZE	49(-1;-4)
Green Isologic ZE + gypsum board (12.5mm)	46(0;-3)
Green Isologic ZE + external render	50(-2;-5)

3.5.2 Sound absorption

No performance assessed.

3.6 Energy economy and heat retention (BWR 6)

3.6.1 Thermal resistance

The values of thermal resistance R_T and the corresponding thermal transmittance coefficient U of the shuttering elements in end use conditions (with concrete filling but without inner and outer finishes) are given in this ETA, Table 5. The calculation is carried out in accordance with EN ISO 6946 taking into account a thermal conductivity of 0.031 W/mK for the EPS and of 2 W/mK for concrete.

Table 5 – Thermal resistance

Product	Thickness			R_T	U
	Internal shuttering leaf	Concrete core	External shuttering leaf		
	[mm]	[mm]	[mm]	[m²K/W]	[W/m²K]
Green Isologic EU	50	150	50	3,47	0,29
Green Isologic LE			100	5,08	0,20
Green Isologic PA			150	6,69	0,15
Green Isologic ZE			200	8,31	0,12
NOTE: The values R_{si} and R_{se} used to determined R_T are respectively 0,125 m²K/W and 0,043 m²K/W					

3.6.1.1 Thermal inertia

The values of the heat capacity of concrete and expanded polystyrene are tabulated in EN ISO 10456.

3.7 Aspects of durability, serviceability and identification

3.7.1 Resistance to deterioration

3.7.1.1 Physical agents

The dimensional variations of the expanded polystyrene under the effect of one exposure to the temperature of 70°C during 48 hours are lower than 3%.

3.7.1.2 Chemical agents

No performance assessed.

Green Isologic shuttering elements do not contain any steel components and no corrosion can occur. Expanded polystyrene is chemically inert and would only be at risk from petrol, diesel or similar solvents. Wall finishes (internal and external) are not part of the kit.

3.7.1.3 Biological agents

No performance assessed.

The application of EPS as thermal insulating material for decades has shown that it sufficiently protects against fungi, bacteria, algae and insects.

EPS does not provide a food value and in general it does not contain voids suitable for habitation by vermin.

The product does not contain any biocide.

3.7.1.4 Resistance to normal use damage

The product will be protected in use by internal finishing and external applications against normal use impacts.

The instructions given in the installation guide of the ETA-holder are suitable for the realization of perforations through the walls to make pass ducts.

The installation guide of the ETA-holder regarding fixings (hanging objects) shall be followed.

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

According to the European Commission Decision 98/279/EC, as amended by 2001/596/EC, AVCP system 2+ applies.

5 Technical details necessary for the implementation of the AVCP system

5.1 Tasks for the ETA-holder

5.1.1 Factory production control (FPC)

The factory production control shall be in accordance with the "Control Plan" relating to the ETA which is part of the technical documentation of this ETA. The "Control Plan" is laid down in the context of the factory production control system operated by the manufacturer and deposited at the UBAtc and shall be in agreement with the provisions given in Table 3.2.1of EAD 340309-00-0305.

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 ensure that the product is in conformity with this ETA.

The manufacturer may only use constituent materials stated in the technical documentation of this ETA.

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

5.2 Tasks for the Technical Assessment Body

The notified body (bodies) shall perform the tasks specified in Regulation (EU) N° 305/2011, Annex V, clause 1.2 (b).

The notified 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 (reports).

In cases where the provisions of the ETA and its "Control Plan" are no longer fulfilled the notified body shall inform the UBAtc without delay.

UBAtc asbl is a non-profit organization according to Belgian law. It is a Technical Assessment Body notified by the Belgian notifying authority, the Federal Public Services Economy, SMEs, Self-Employed and Energy, on 17 July 2013 in the framework of Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC and is member of the European Organisation for Technical Assessment, EOTA (www.eota.eu).

This European Technical Assessment has been issued by UBAtc asbl, in Sint-Stevens-Woluwe, on the basis of the technical work carried out by the Assessment Operators, Buildwise and SECO Belgium.

On behalf of UBAtc asbl,

Bart De Pauw,
General manager

On behalf of the Assessment Operator,
Buildwise and SECO Belgium, responsible for the technical content of the ETA,

Olivier Vandooren,
CEO Buildwise

Bernard Heiderscheidt,
CEO SECO Belgium

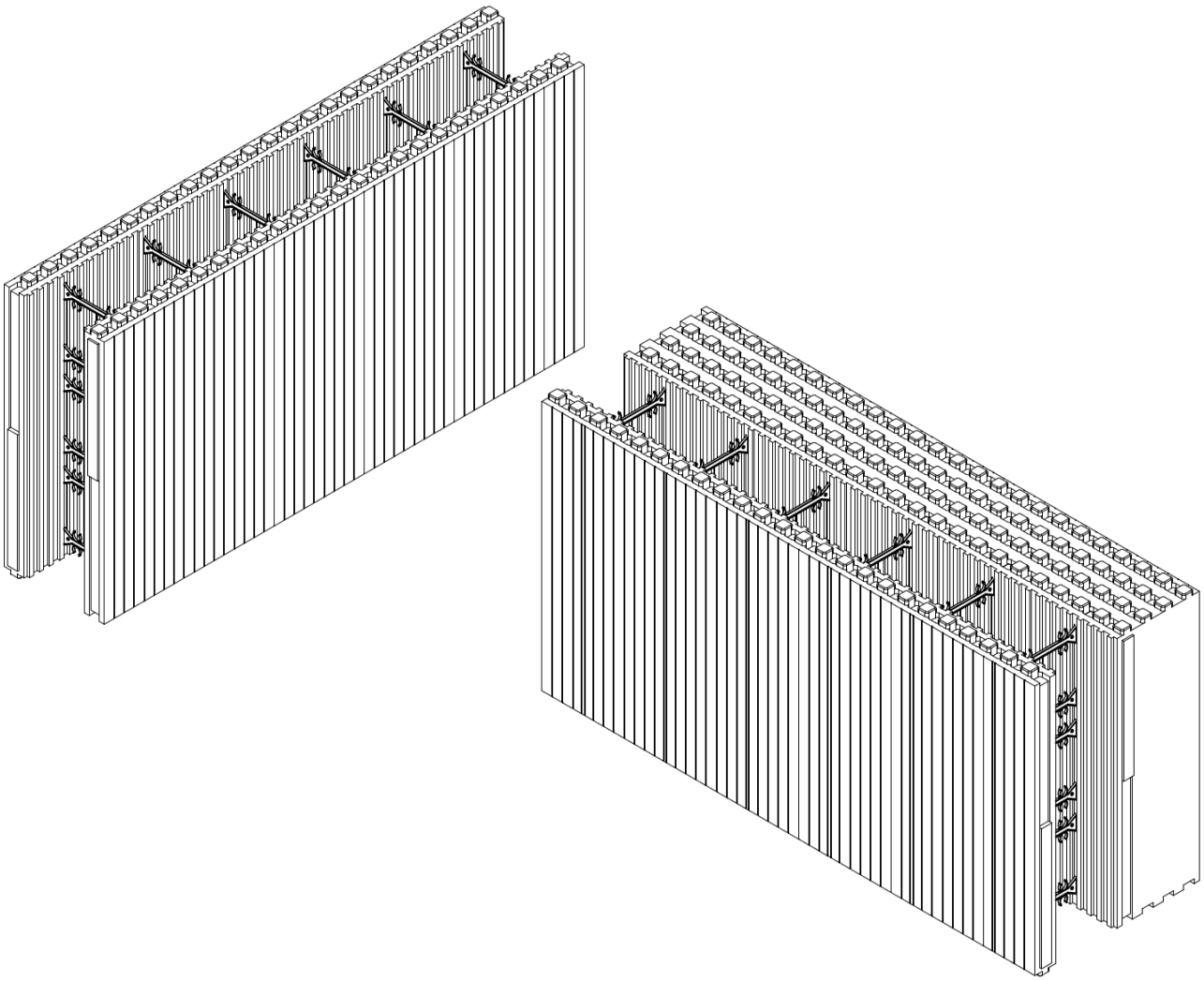
The most recent version of this European Technical Assessment may be consulted on the UBAtc website (www.butgb-ubatc.be).

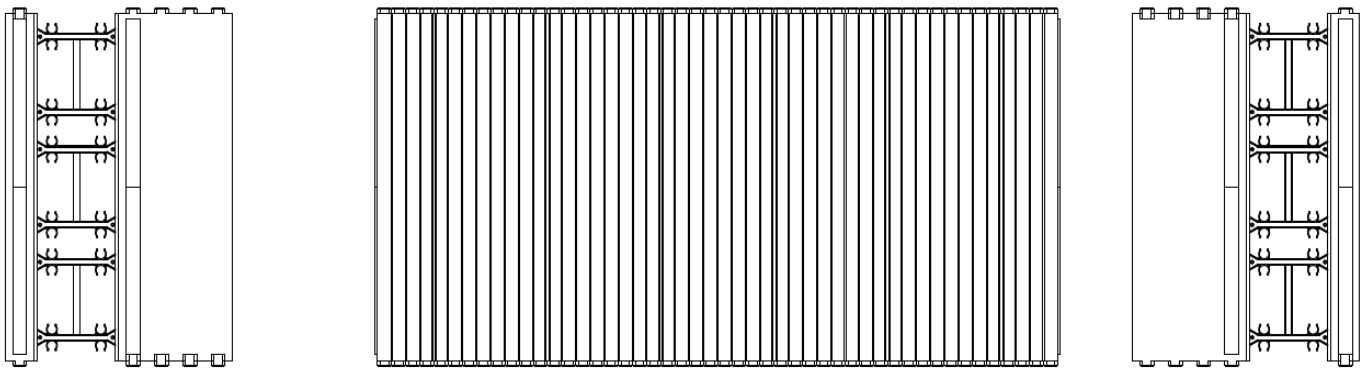
Annex I: Reference documents

EAD 340309-00-0305:2019	Non Load-bearing permanent shuttering kits/systems based on hollow blocks or panels of insulated materials and sometimes concrete
EN 206:2013+A2:2021	Concrete - Specification, performance, production and conformity
EN 1992-1-1:2023	Eurocode 2 - Design of concrete structures - Part 1-1: General rules and rules for buildings, bridges and civil engineering structures
EN ISO 717-1:2020	Acoustics - Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation
EN ISO 6946:2017	Building components and building elements - Thermal resistance and thermal transmittance - Calculation methods
EN ISO 10140-2:2021	Acoustics - Laboratory measurement of sound insulation of building elements - Part 2: Measurement of airborne sound insulation
EN ISO 10456:2007/AC:2009	Building materials and products - Hygrothermal properties - Tabulated design values and procedures for determining declared and design thermal values
EN ISO 13788:2012	Hygrothermal performance of building components and building elements - Internal surface temperature to avoid critical surface humidity and interstitial condensation - Calculation methods
EN ISO 16535:2019	Thermal insulating products for building applications - Determination of long-term water absorption by immersion

Annex II: Drawings

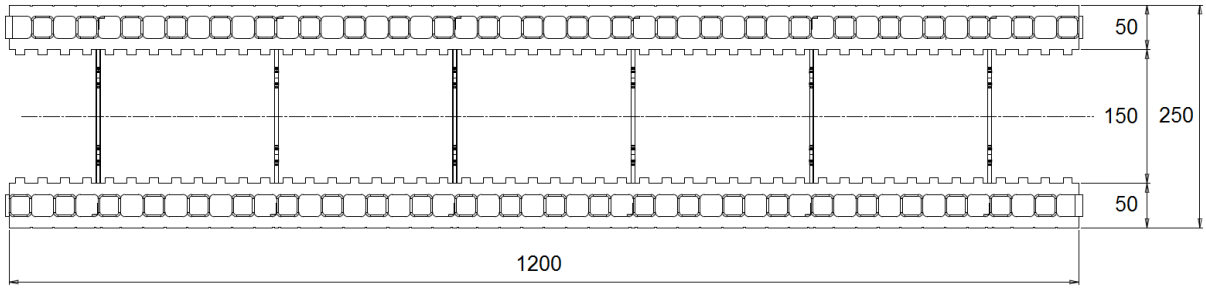
II.1 Standard shuttering elements



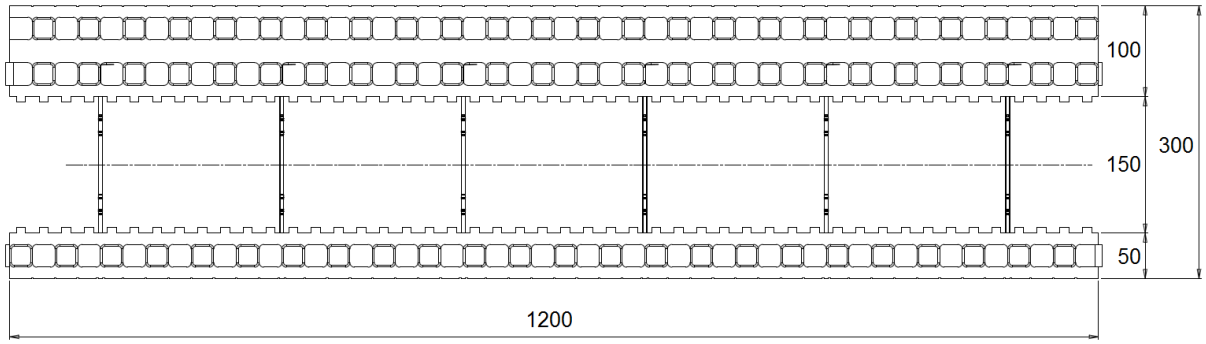


Green Isologic proposes four different blocks (Green Isologic EU, LE, PA or ZE) depending on the thickness of the external leaf.

Green Isologic EU



Green Isologic LE



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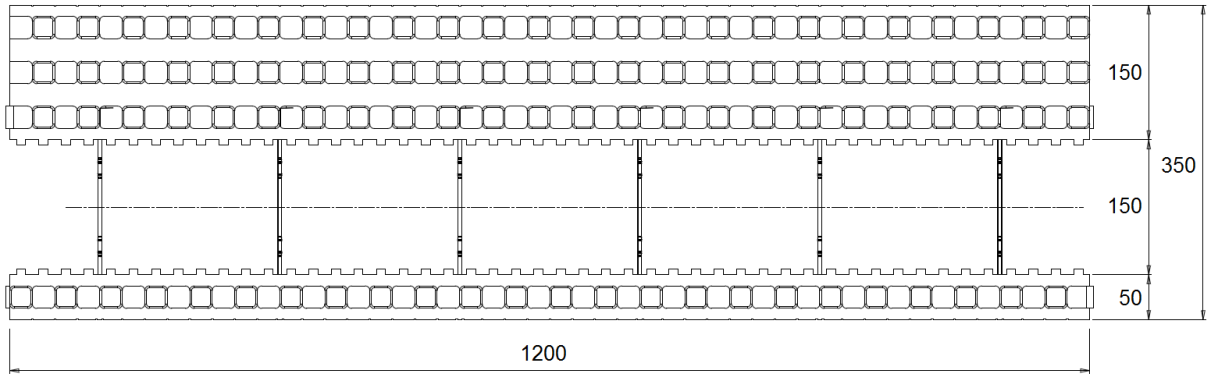

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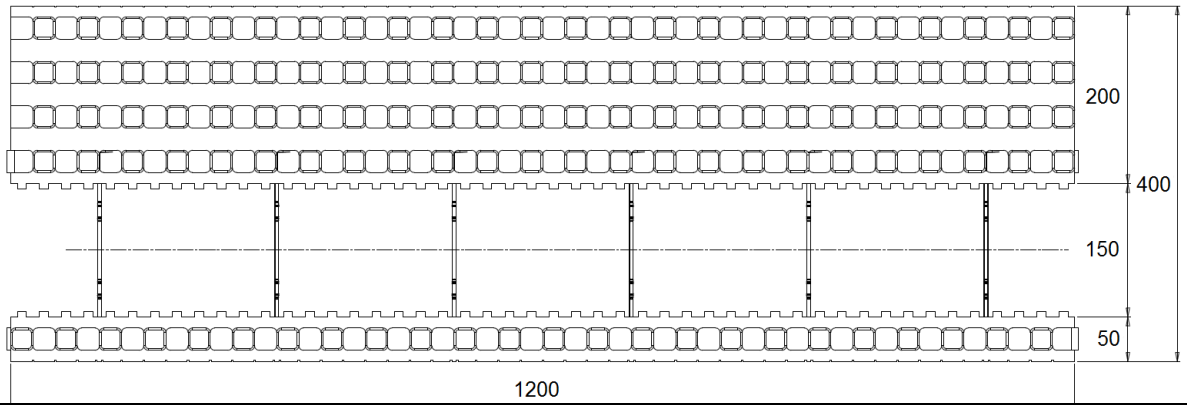

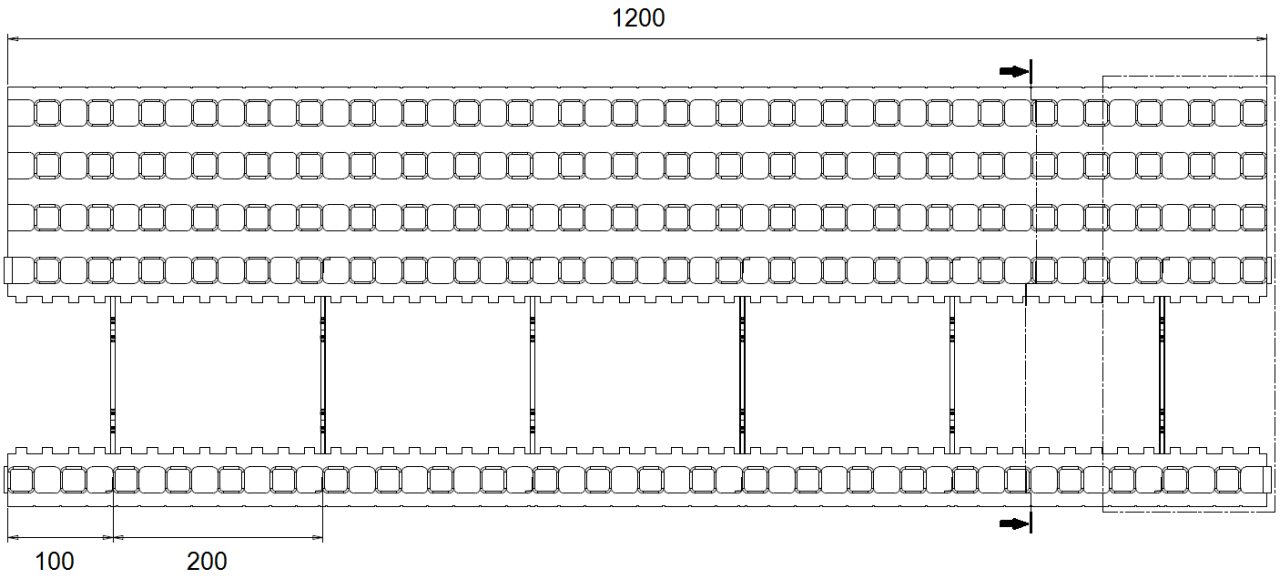
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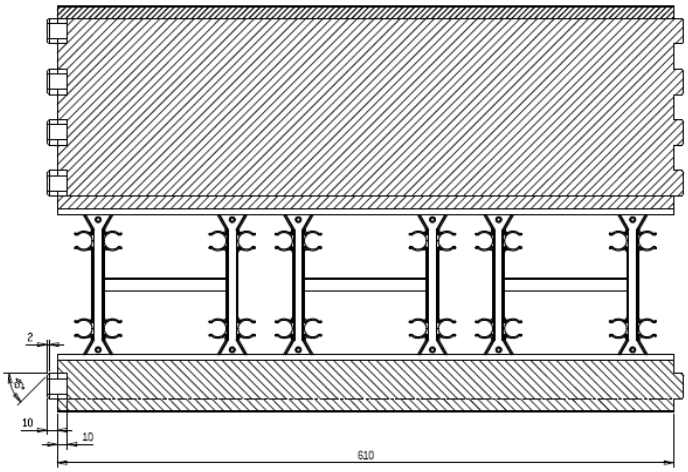
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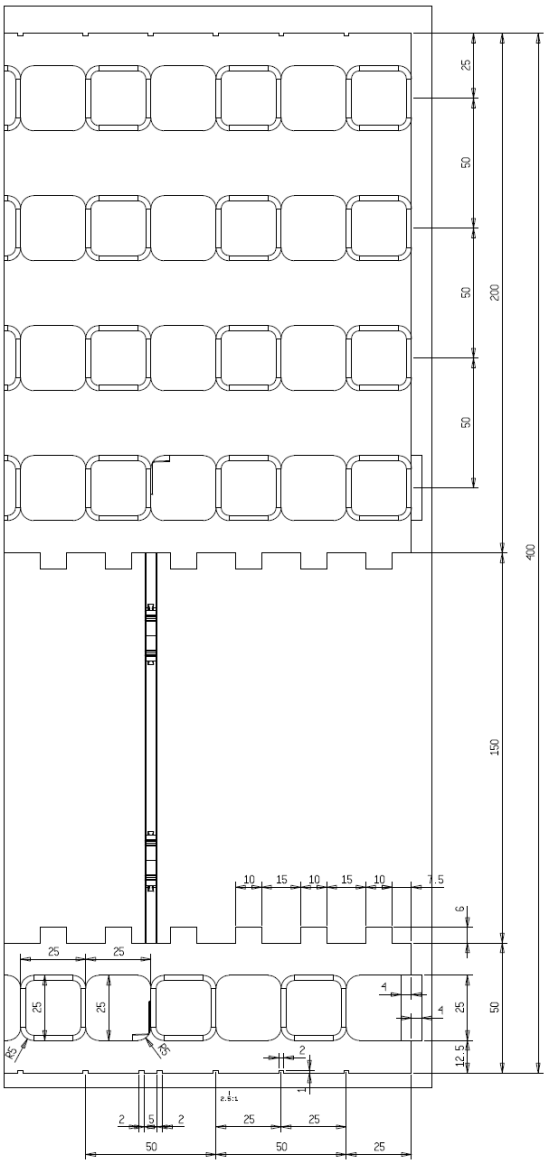
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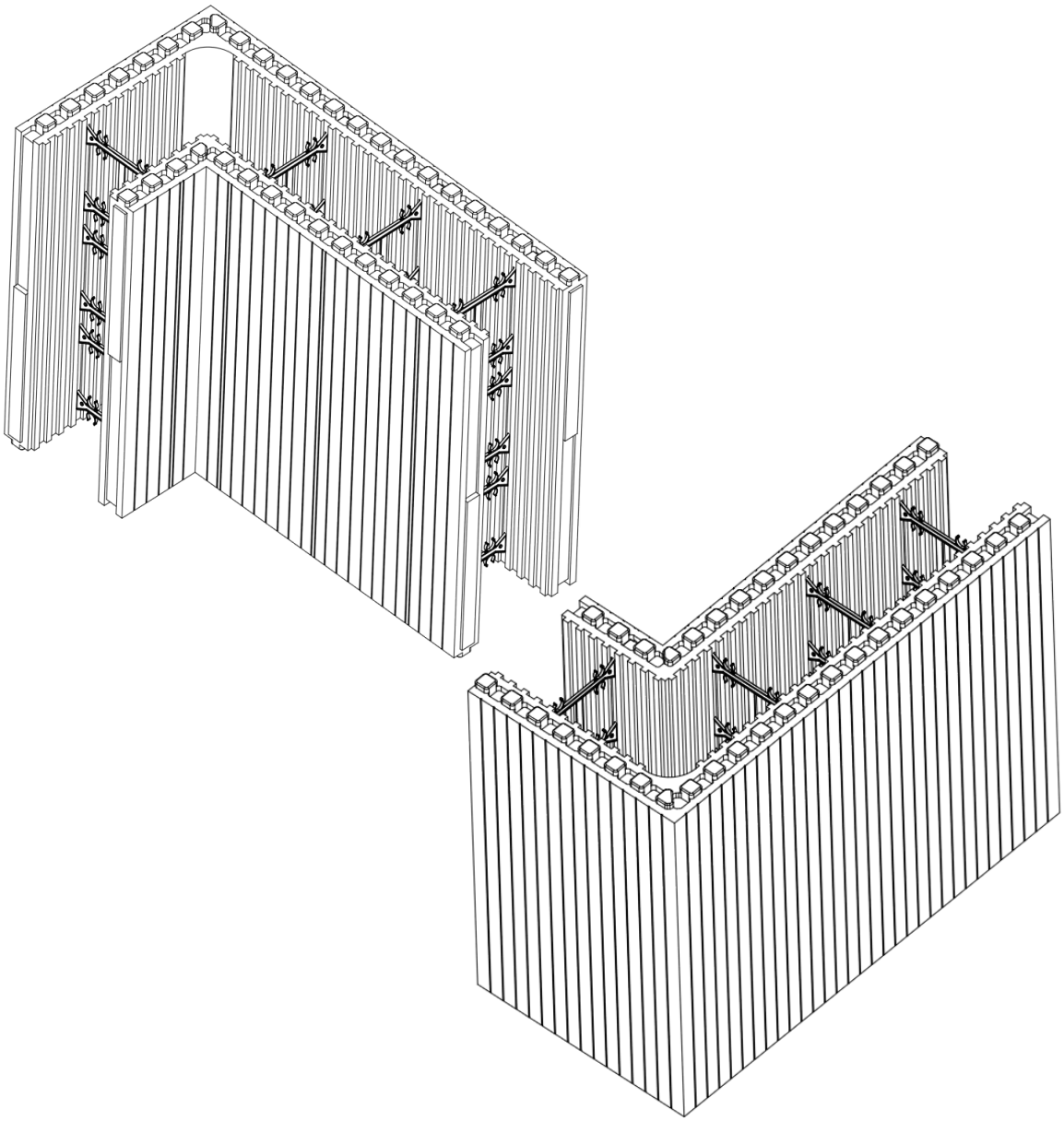
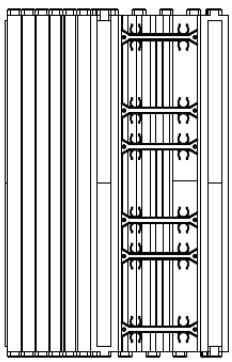
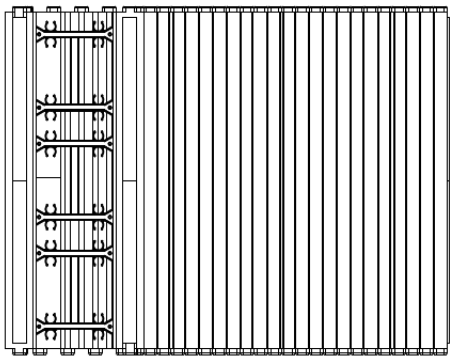
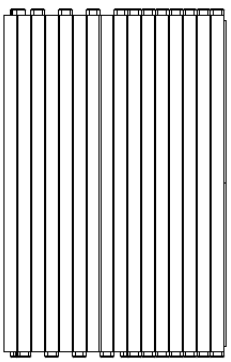
II.2 Corner elements

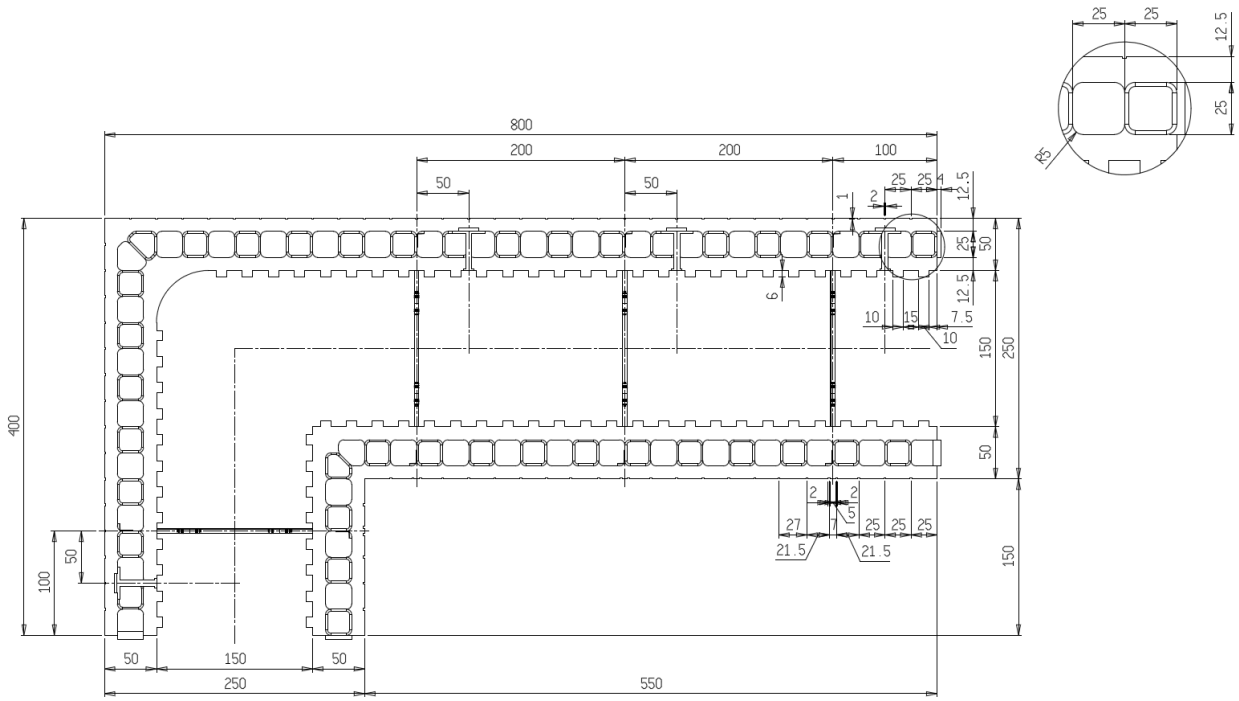




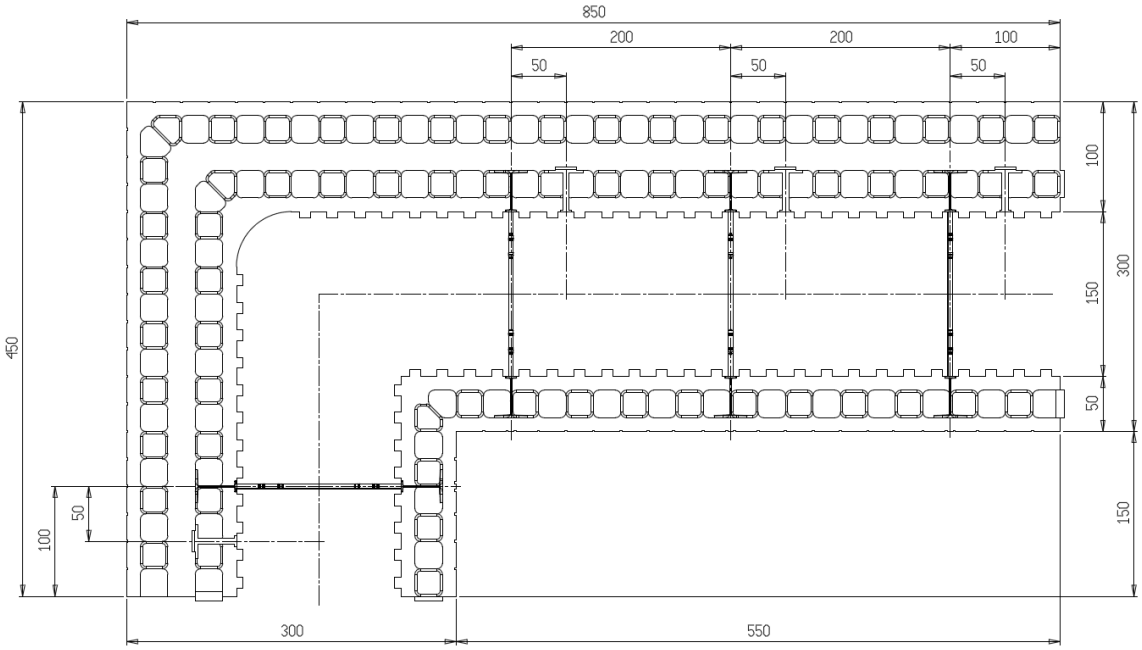




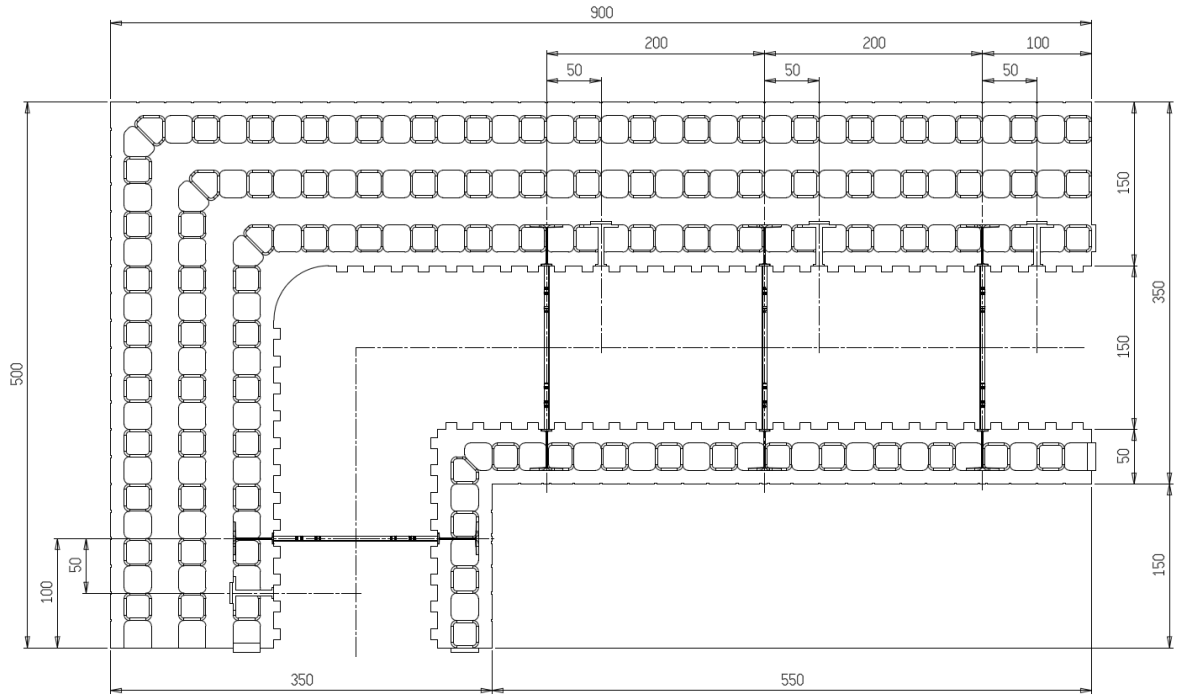
Green Isologic EU



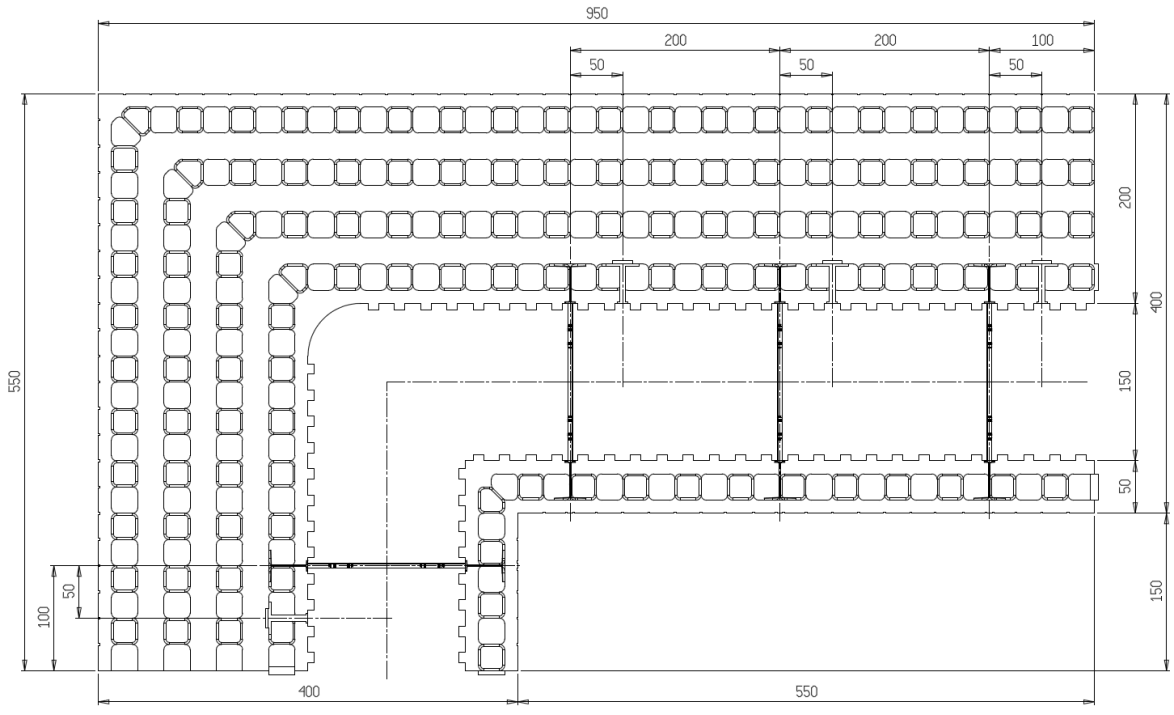
Green Isologic LE



Green Isologic PA

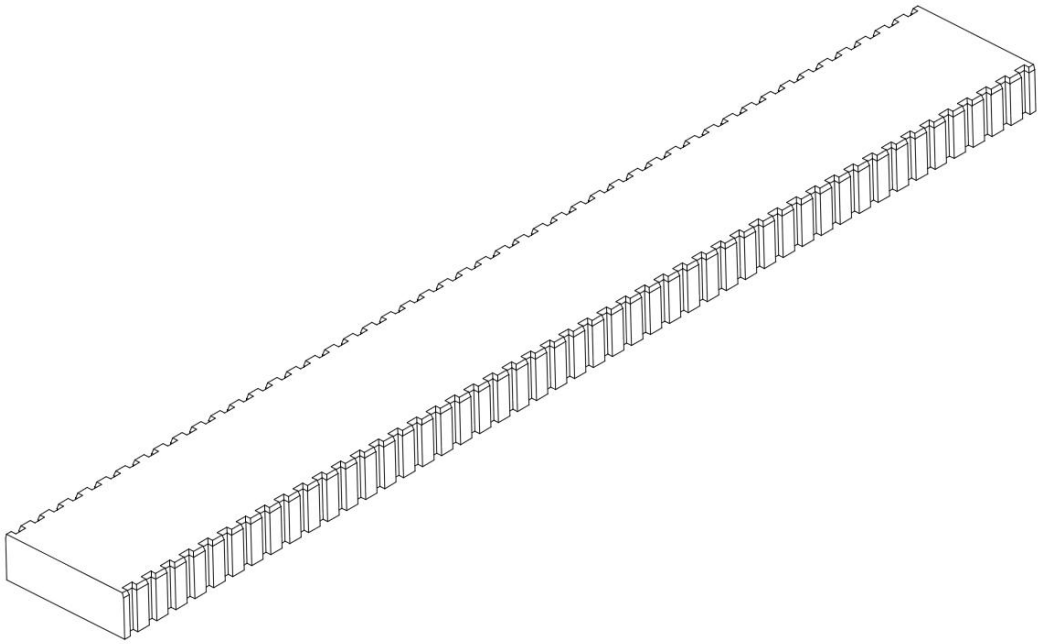


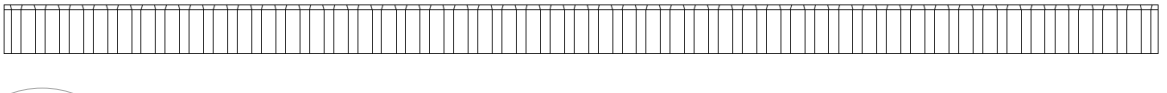
Green Isologic ZE

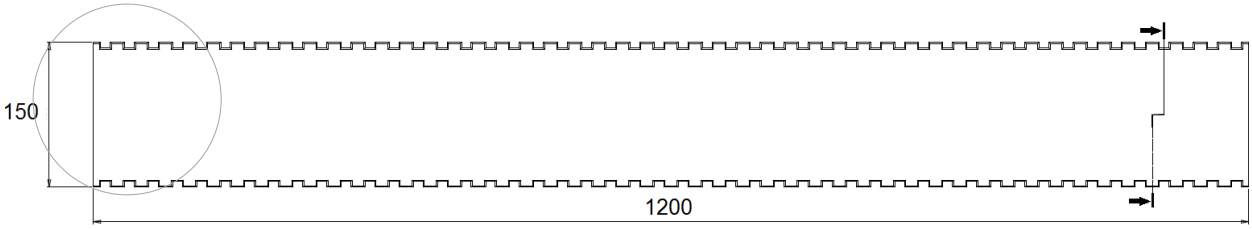


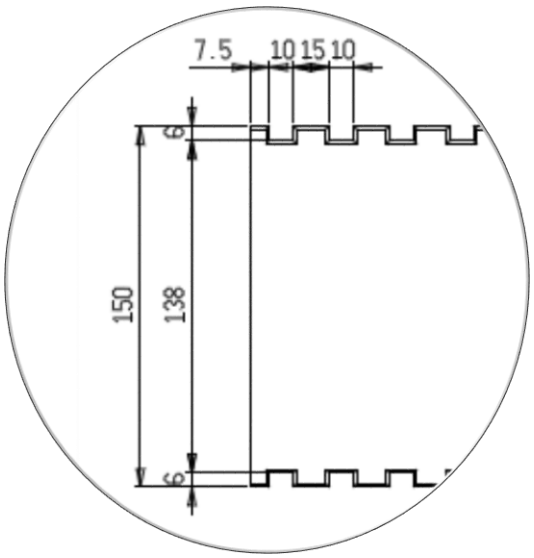
II.3 Accessory parts

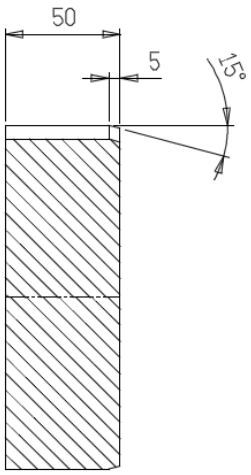
Lintel bottom leaf



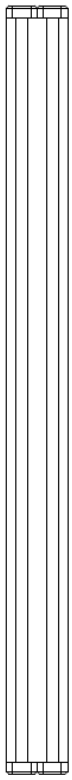


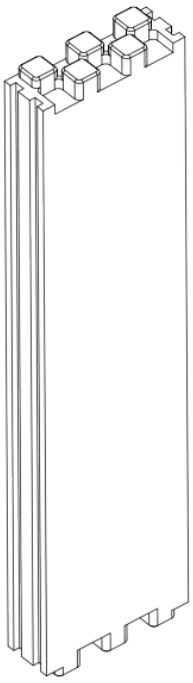


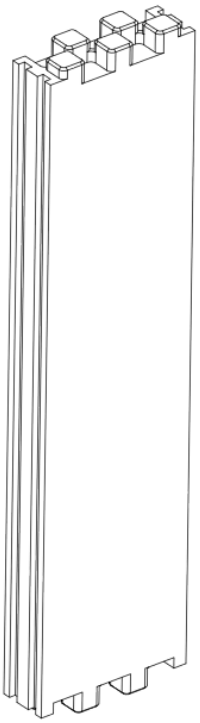


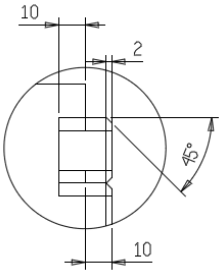


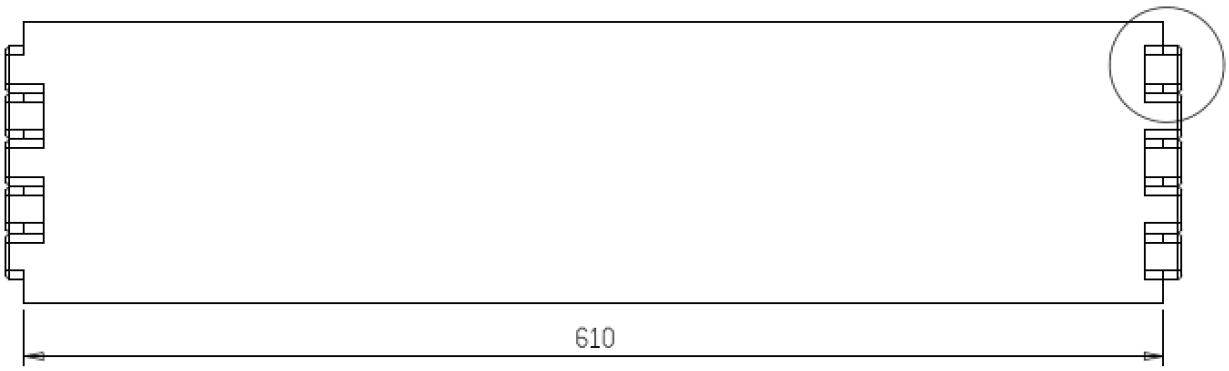
End leaf

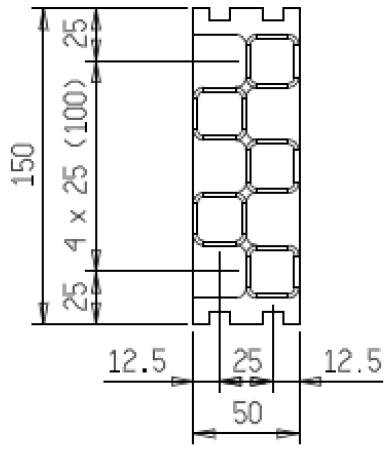


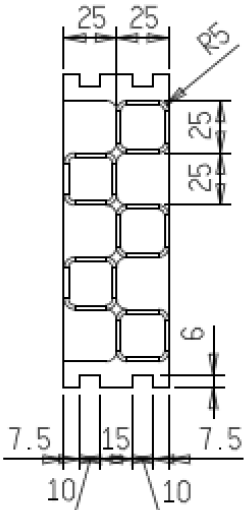





10
2
45°
10


610

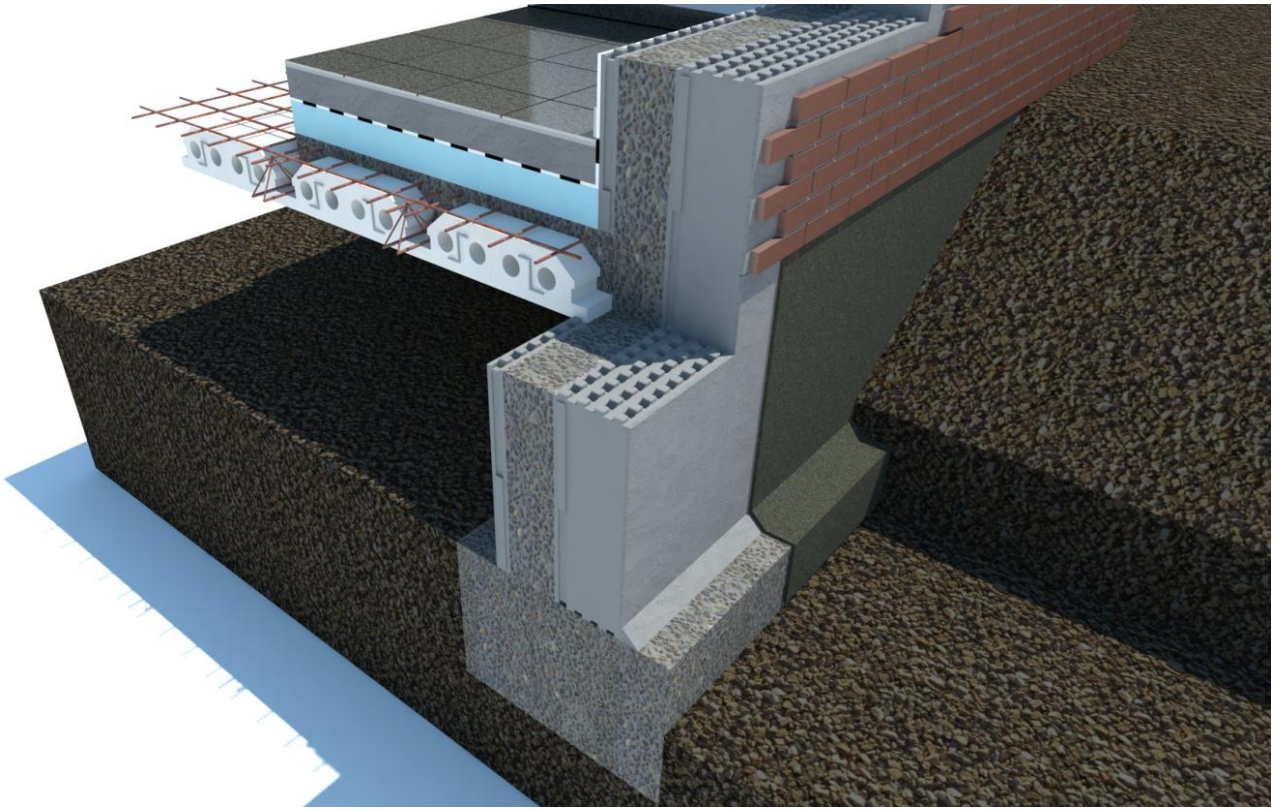

150
25
4 x 25 (100)
25
12.5
25
12.5
50

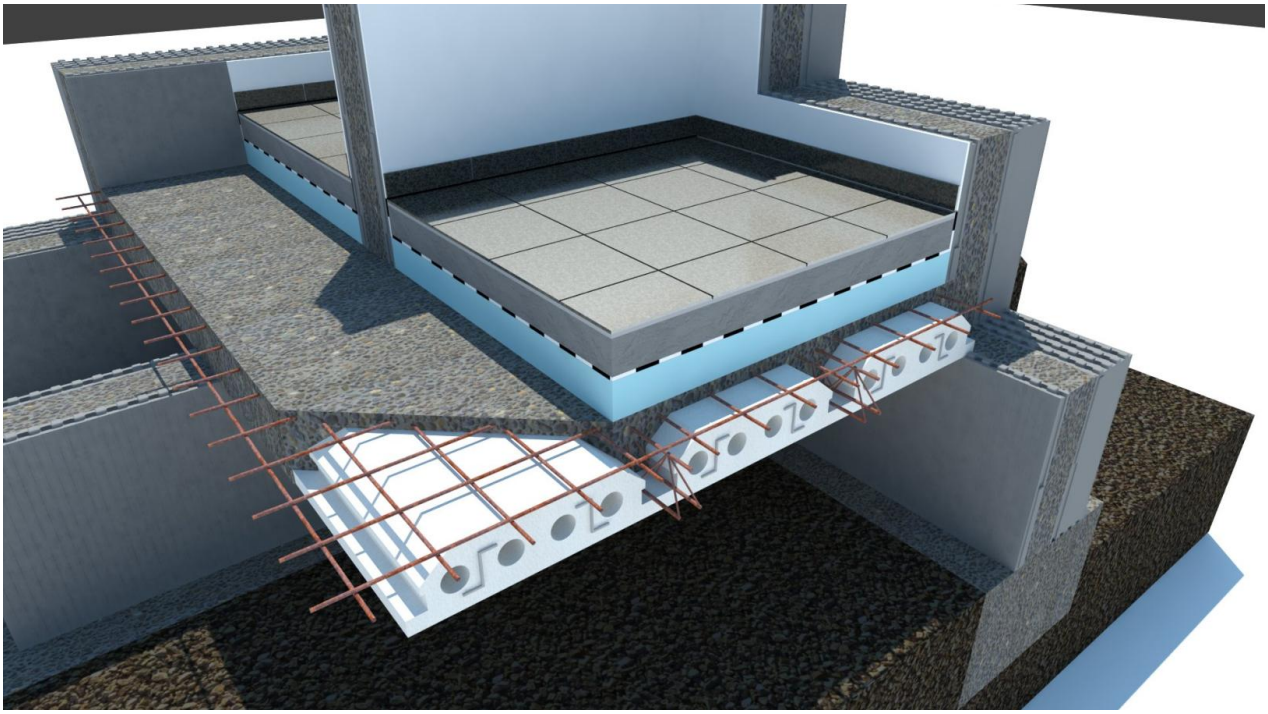

25
25
R5
25
25
6
7.5
15
7.5
10
10

Annex III Assembly details

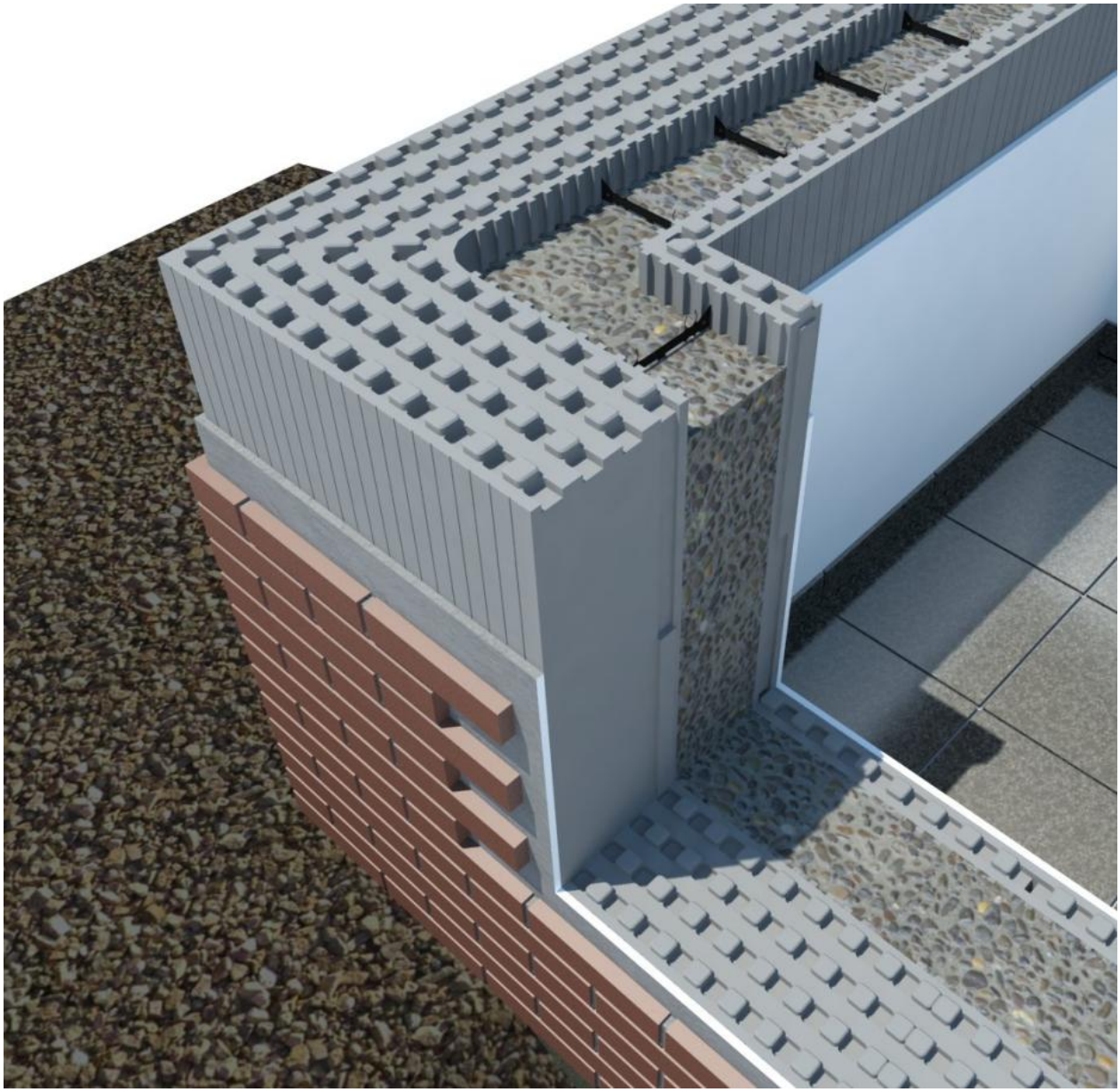
This annex provides details about the assembly of the different building components with the shuttering elements.

Foundation + Floor/External wall

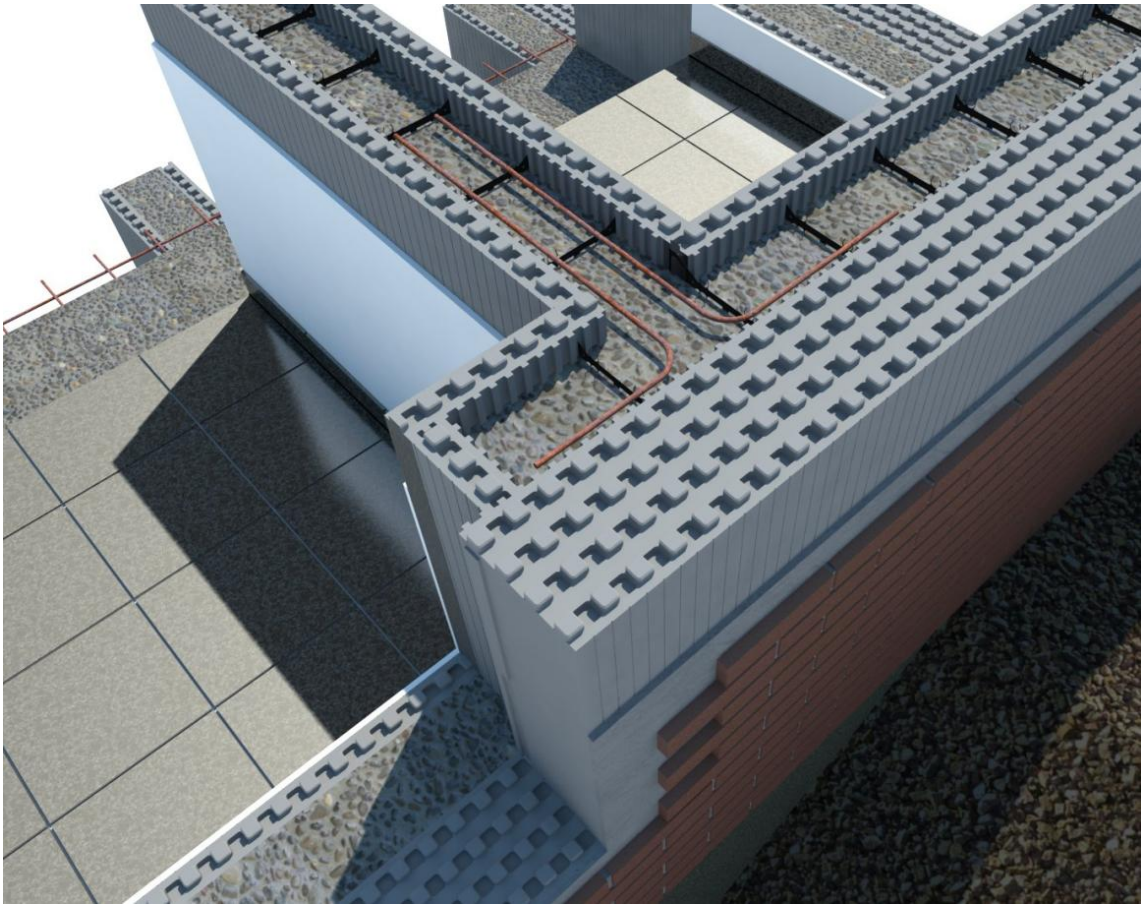




External wall/External wall

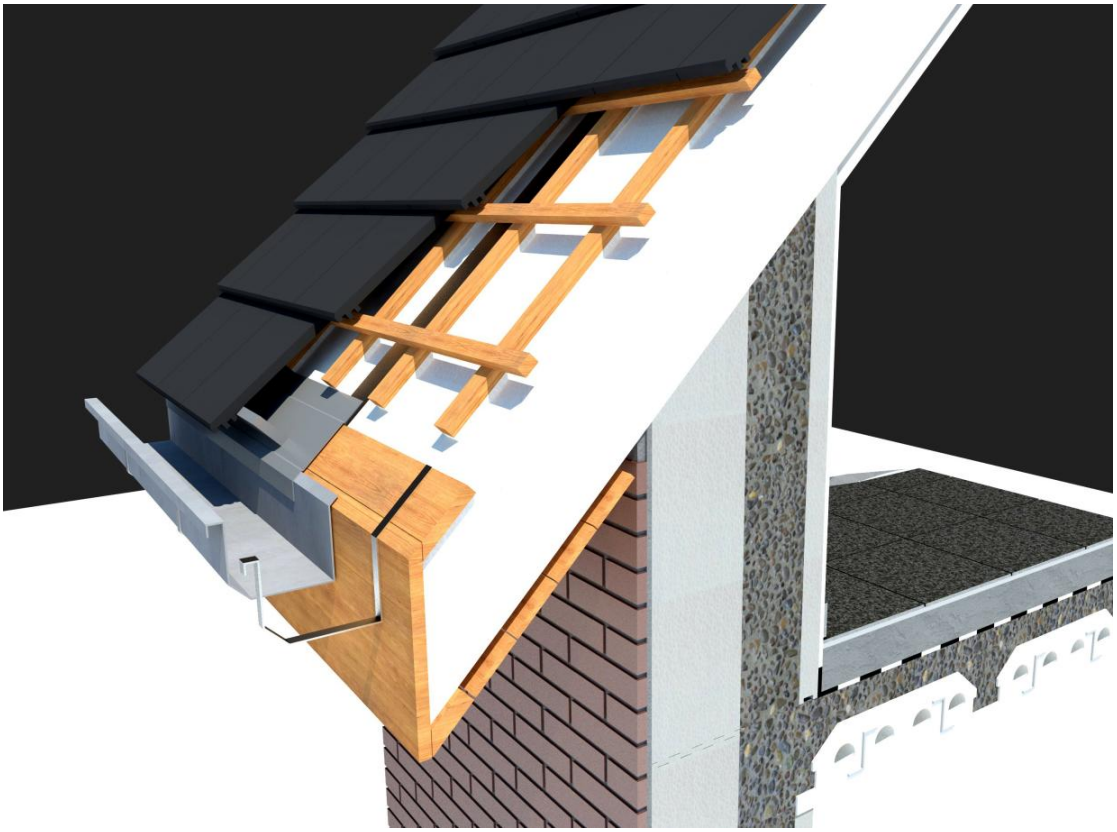


Internal wall/External wall

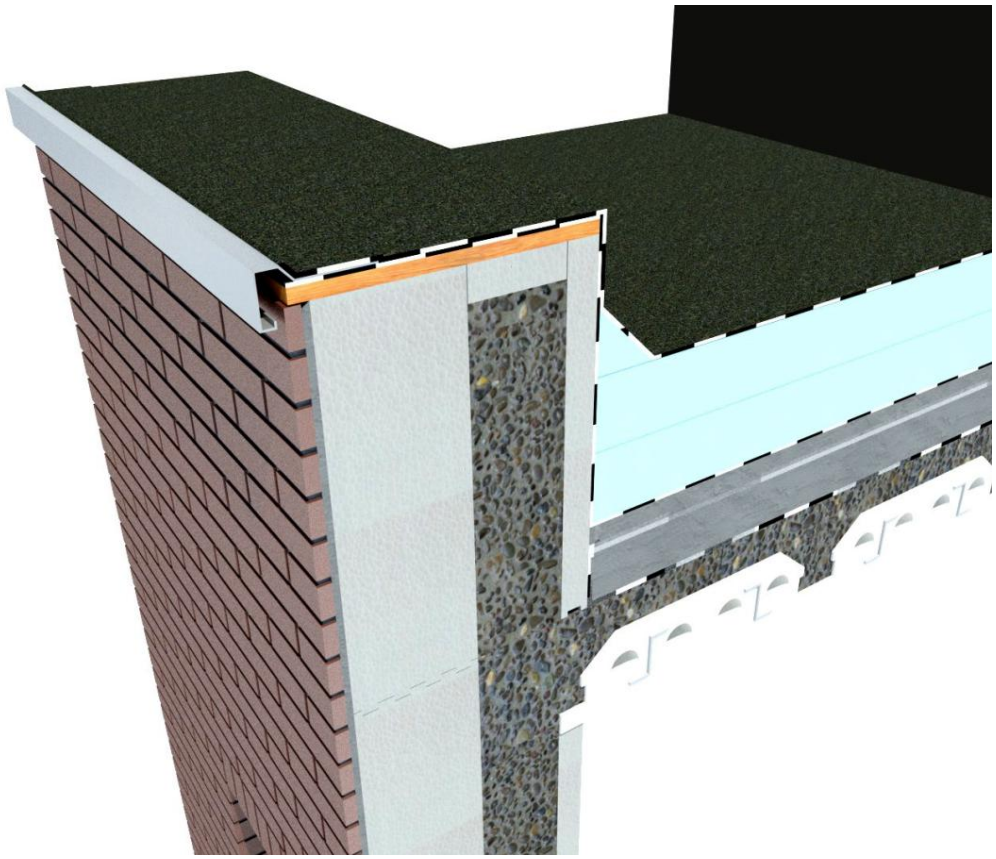


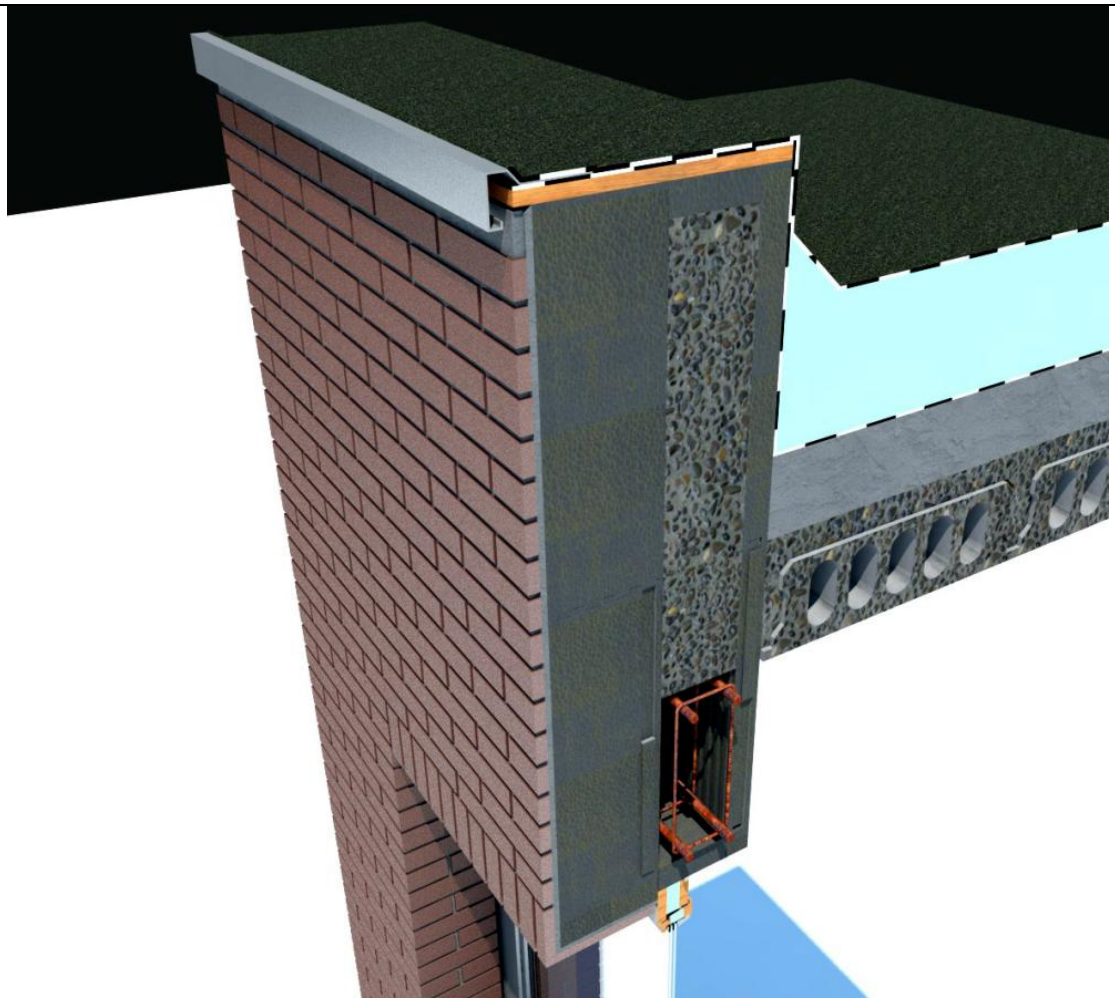
For the connection between an inner wall and an outer wall, it is necessary to cut and remove a portion of the block (inner leaf of the outer wall) to obtain a monolithic wall. Steel reinforcement can be expected to strengthen the connection.

External wall/Inclined roof

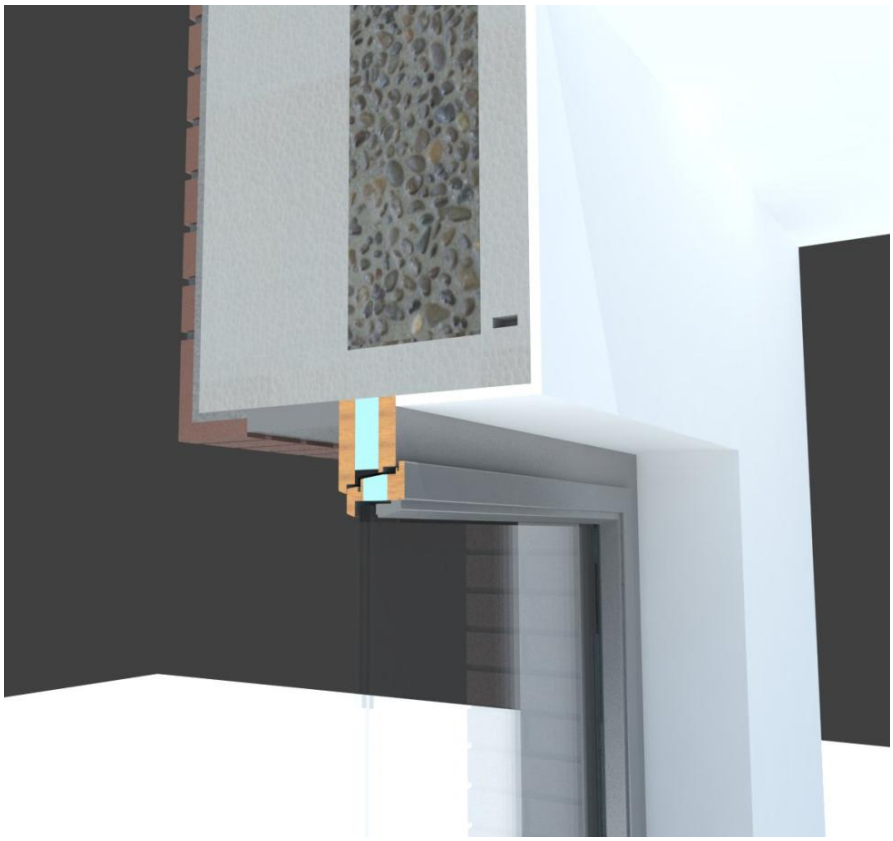


External wall/Flat roof



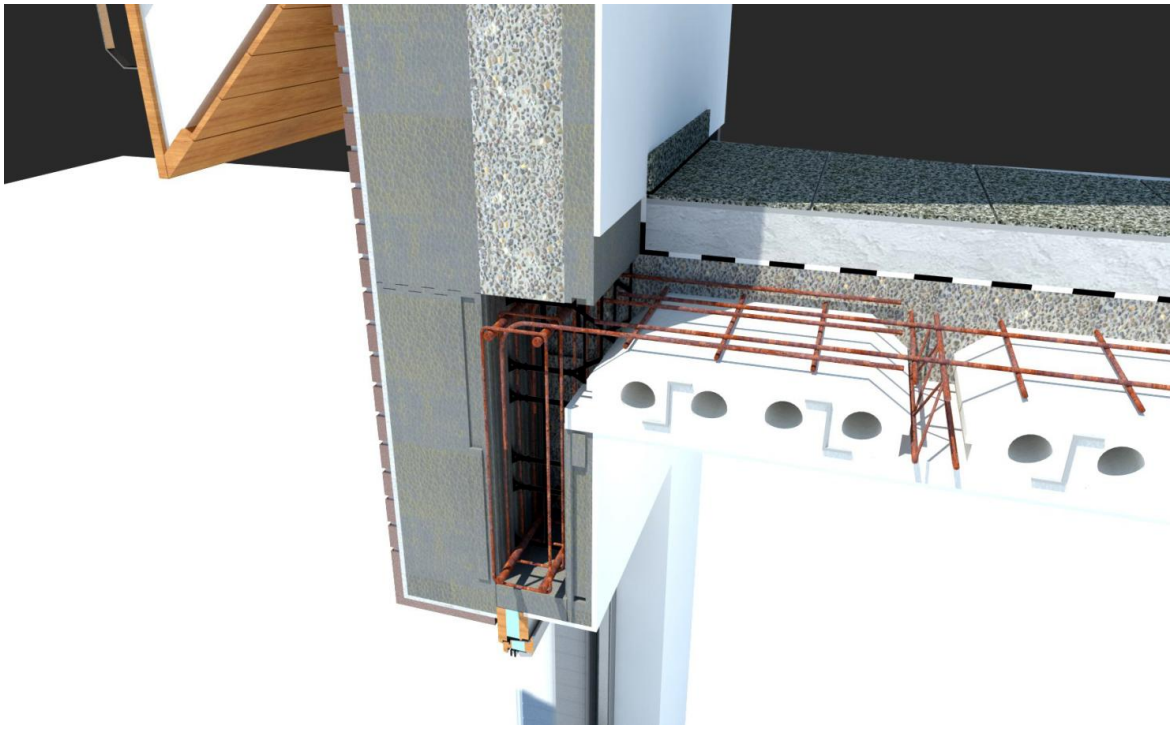


External wall/windows-doors



Lintel

In case of EPS selfsupporting panels



In case of precast concrete hollow core slabs