



Laboratory for Fire Safety

Extended application according EN_15254-3:2019 of a wall with MAGOXX boards 12 mm

EXAP-report



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EXAP-report

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KvK: 12028033 orders according to DNR 2011, member NLIingenieurs, btw NL004933837B01, ISO-9001:2015

mook – zoetermeer – groningen – düsseldorf – dortmund – berlijn – nürnberg – leuven – parijs – lyon

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1 Introduction

On behalf of SINH Building Solutions an investigation has taken place to the expansion of the application for the fire resistance of a symmetric metal stud wall with MAGOXX boards, thickness 12 mm. The investigation is based on the test performed at the Peutz Laboratory for Fire Safety according the norm EN 1364-1:2015.

This report is drafted in accordance with EN 15725:2010 'Extended application reports on the fire performance of construction products and building elements' and EN 15254-3:2019 'Extended application of results from fire resistance tests – Non-loadbearing walls – Part 3: lightweight partitions'.

2 Description of the construction

The considered construction is symmetrical and consists of a metal stud frame covered on both sides with MAGOXX fire resistant boards.

The metal stud wall is composed of 2 horizontal UW-profiles size 75 × 40 × 0.6 mm and 8 vertical CW-75 profiles size 75 × 50 × 0,6 mm. The test specimen is completely fixed to the test frame by means of hammered plugs 6 × 55 (center-to-center 600 mm) with the exception of one vertical side. The free edge is fitted with rock wool, thickness 50 mm, to allow free movement. The distance between the studs is 600 mm (center-to-center) and in the cavity ROCKWOOL insulation material (70 mm Rocksono Base) is fitted tightly clamped between the studs.

At both sides, the metal stud frame is covered with a single layer of MAGOXX fire resistant board, thickness 12 mm. The boards are not mounted offset. The boards are fixed with fast fix screws 3.9 x 30 mm (center-to-center 200 mm). The screws are not finished. The joints that connect to the supporting construction (the joints at the circumference of the complete element) are finished with a joint filler, type Knauf Fix & Finish. The joints between the MAGOXX boards are mounted tightly (butt joint width ≤ 1 mm) and are finished with a joint filler, type Fix & Finish.

3 Test reports in support of this extended application report

The following report provided by the client was used for this assessment. The client has confirmed that this may be used for this assessment.

t3.1 Overview test reports

Name of Laboratory	Name of sponsor	Report reference number and date	Used methods
Peutz bv	SINH Building Solutions	Y 2159-2E-RA-001 dated 31 October 2019	EN 1363-1:2012 EN 1363-2:1999 EN 1364-1:2015

3.1 Test report Y 2159-2E-RA-001

Tested is a symmetrical metal stud wall with MAGOXX boards 12 mm. For a complete description of the construction, see the test report and the drawings in appendix 1.

Summary test results:

t3.2 Fire resistance test results

Assessment criterion	Elapsed time (minutes)
Integrity (E)	79 (120 without cotton pad)
Insulation (I)	53
Radiation (W)	120
Deflection of the wall of 100 mm	32

For some extended applications an overrun time is required. The required overrun time depends on the intended classification time as shown in the table below.

t3.3 Required overrun time

Classification time (min)	Required overrun time
≤ 30	≥ 3 min
> 30 en ≤ 60	≥ 6 min
> 60	≥ 10% of the classification time

4 Extended application

4.1 General

This chapter deals successively with the requested extended field of applications with an assessment based on the assessment aspects below, as indicated in standard EN 15254-3: 2019. In the indicated scope of application, a distinction is made for the different categories of the surplus value achieved with regard to the test results. The direct field of application from the tested wall in accordance with the test report Y 2159-2E-RA-001 is used as a starting point.

4.2 Lining

4.2.1 Exchange of lining

The exchange (replacement) of lining is not allowed.

4.2.2 Number of layers of boards

An increase of the number of layers of the tested boards is permitted on the condition that the length of the fixings are increased in function of the total thickness of the tested lining, for EI 45, EW 120 and E 120.

An increase of the number of layers of the tested boards combining a decrease of the thickness of the individual tested boards is permitted thanks to the achieved overrun time, see table below.

t4.1 Thickness boards with increase number of layers

Classification period [min]	Maximum decrease thickness per board [%]	Minimal allowable thickness per board [mm]	Minimal increase thickness total lining [%]	Minimal total thickness total lining [mm]
45 (EI)	25	9	10	15
90 (EW and E)				

This applies to the layers to be added:

- the density shall be at least the density of the tested board;
- the length of the fixings is increased in function of the total thickness of the lining.

4.2.3 Dimension of the boards

An increase of the dimensions of the tested boards is permitted thanks to the achieved overrun time, see table below.

t4.2 *Dimensions of the boards*

Classification period [min]	Maximum allowable length [%]	Maximum allowable length [mm]	Maximum allowable width [%]	Maximum allowable width [mm]
45 (EI)	25	3750	5	1260
90 (EW and E)				

A decrease of dimensions (length and width) of the tested boards is permitted, for EI 45, EW 120 and E 120.

ND: With changing the width of the boards the c.t.c. distance of the studs has to be adapted accordingly.

4.2.4 **Change in board orientation**

The lightweight partition may only be applied in a vertical board orientation("portrait"), for EI 45, EW 120 and E 120.

4.3 **Metal framework**

4.3.1 **General**

Assumption is that the metal framing components are as specified in EN 14195 (galvanized steel).

4.3.2 **Shape of the steel profiles**

A change of shape of the steel profiles is not permitted.

4.3.3 **Nominal thickness of the steel profiles**

The nominal wall thickness for the steel profiles can be increased without limitations, for EI 45, EW 120 and E 120. A decrease is not permitted.

4.3.4 **Nominal steel profiles depth (web)**

The nominal depth of the steel profiles can be decreased thanks to the achieved overrun time, see table below, on the condition that the shape of the steel profile has not changed. The thickness of the insulation material may also be decreased pro rata.

t4.3 *Decrease depth of the steel profiles*

Classification period [min]	maximum decrease of depth [%]	minimal allowable depth [mm]
45 (EI)	10	67.5
90 (EW and E)		

The nominal depth of the steel profiles can be increased without limitations, on the condition that the shape of the steel profile has not changed, for EI 45, EW 120 and E 120. The thickness of the insulation material must be increased pro rata.

4.3.5 Nominal steel profiles width (flange)

The nominal width of the steel profiles, onto which the lining is fixed, can be increased without limitations, on the condition that the shape of the steel profile has not changed, for EI 45, EW 120 and E 120. A decrease is not permitted.

4.3.6 Stud spacing

An increase of the stud spacing is permitted thanks to the achieved overrun time, see table below, on the condition that the vertical joints of the boards are located at the studs.

t4.4 Increase of stud spacing

Classification period [min]	maximum allowable increase c.t.c. [%]	maximum allowable c.t.c. distance [mm]
45 (EI)	5	630
90 (EW and E)		

A decrease of the stud spacing is always permitted, for EI 45, EW 120 and E 120, on the condition that the vertical joints of the boards are located at the studs.

4.4 Mineral wool insulation

4.4.1 General

The below mentioned EXAP-rules are only valid for mineral wool, composed as defined in EN 13162. The insulation parameters to be considered are density and thickness.

4.4.2 Removal of mineral wool

The removal of the mineral wool is not permitted.

4.4.3 Exchange of mineral wool

It is not permitted to exchange the rock wool by glass wool.

4.4.4 Tested density within the tolerances declared by the manufacturer

An increase of the density of the rock wool is permitted, for EI 45, EW 120 and E 120. A decrease of the density of the rock wool is permitted thanks to the achieved overrun time, see table below.

t4.5 decrease density mineral wool

Classification period [min]	maximum allowable decrease [%]	minimal allowable density [kg/m ³]
45 (EI)	10	25
90 (EW and E)		

4.4.5 Thickness

An increase of the thickness of the rock wool is permitted, for EI 45, EW 120 and E 120. A decrease of the thickness of the rock wool is permitted thanks to the achieved overrun time, see table below.

t4.6 Decrease thickness mineral wool

Classification period [min]	maximum allowable decrease [%]	minimal allowable thickness [mm]
45 (EI)	10	63
90 (EW and E)		

4.5 Lightweight partition (system)

4.5.1 Increase of height

The height of the lightweight partition can be increased thanks to the achieved overrun time, see table below.

t4.7 Increase of height of the lightweight partition

Classification period [min]	Increase of height of tested wall ≤ 1 m	Increase of height of tested wall ≤ 2 m	Increase of height of tested wall ≤ 3 m
30 (EI, EW and E)	Expansion allowances are increased pro rata	Not possible	Not possible
20 (EI, EW and E)	Expansion allowances are increased pro rata	Expansion allowances are increased pro rata	Increase the thickness of the lining at each side with minimal 6 mm by adding an extra layer or by increasing the thickness of the board (18 mm) AND expansion allowances are increased pro rata

The extended application rules are applicable to the tested lining, the insulation and the metal framework of the lightweight partition.

In any way the maximum extended height shall be lower than or equal to the maximum allowed height in ambient conditions declared by the manufacturer.



4.5.2 Increase of width

Increase of width is permitted, for EI 45, EW 120 and E 120.

5 Limitations

This document does not represent type approval or certification of this product.

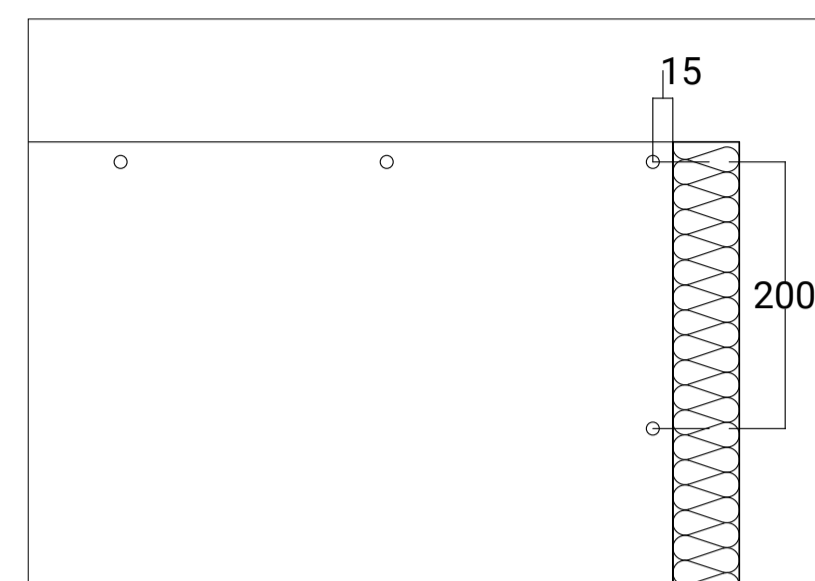
Mook,

Ir. J.J. Mertens

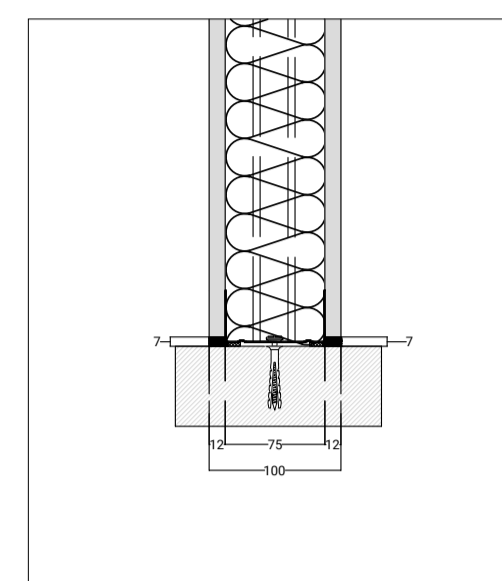


Head Laboratory for Fire Safety

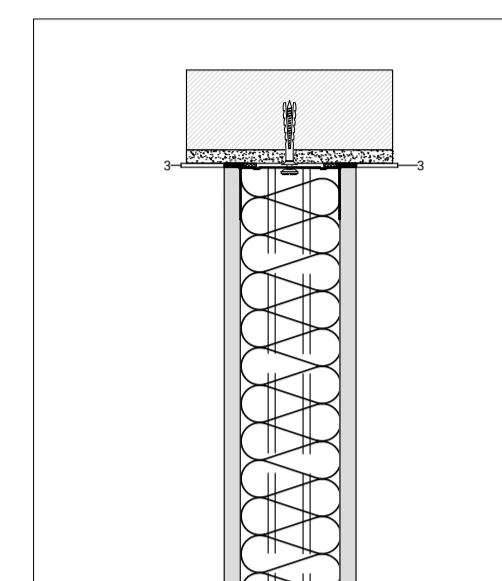
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12 pages and 1 appendix of 6 pages



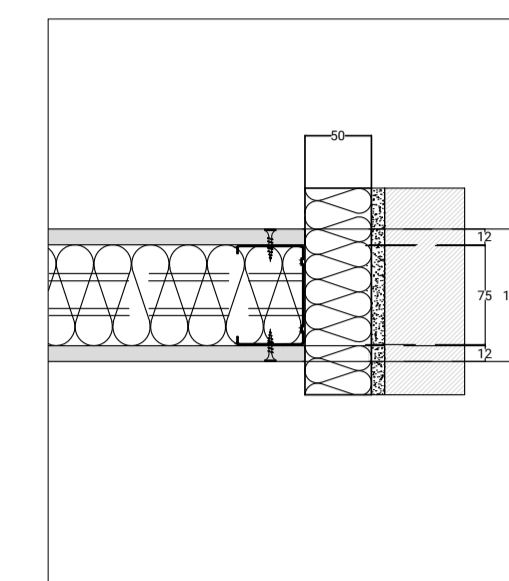
Schroef afstand, 1:5



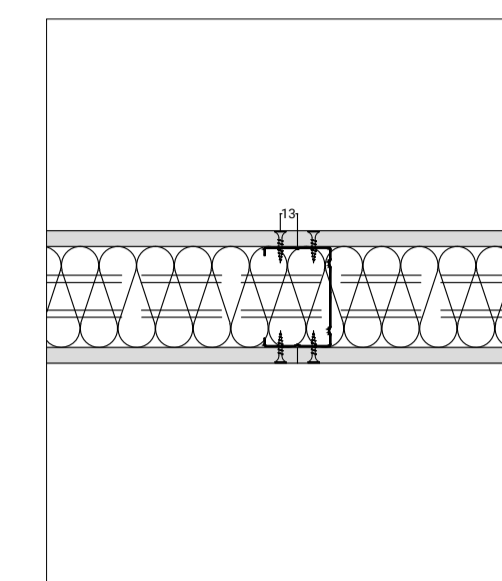
Bevestiging vloer, 1:5



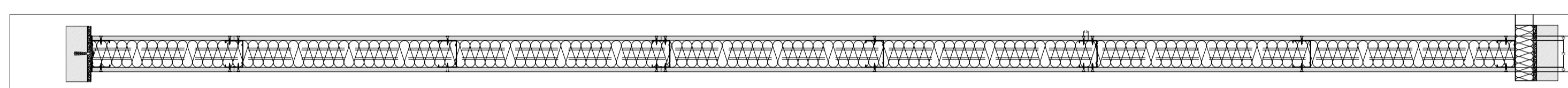
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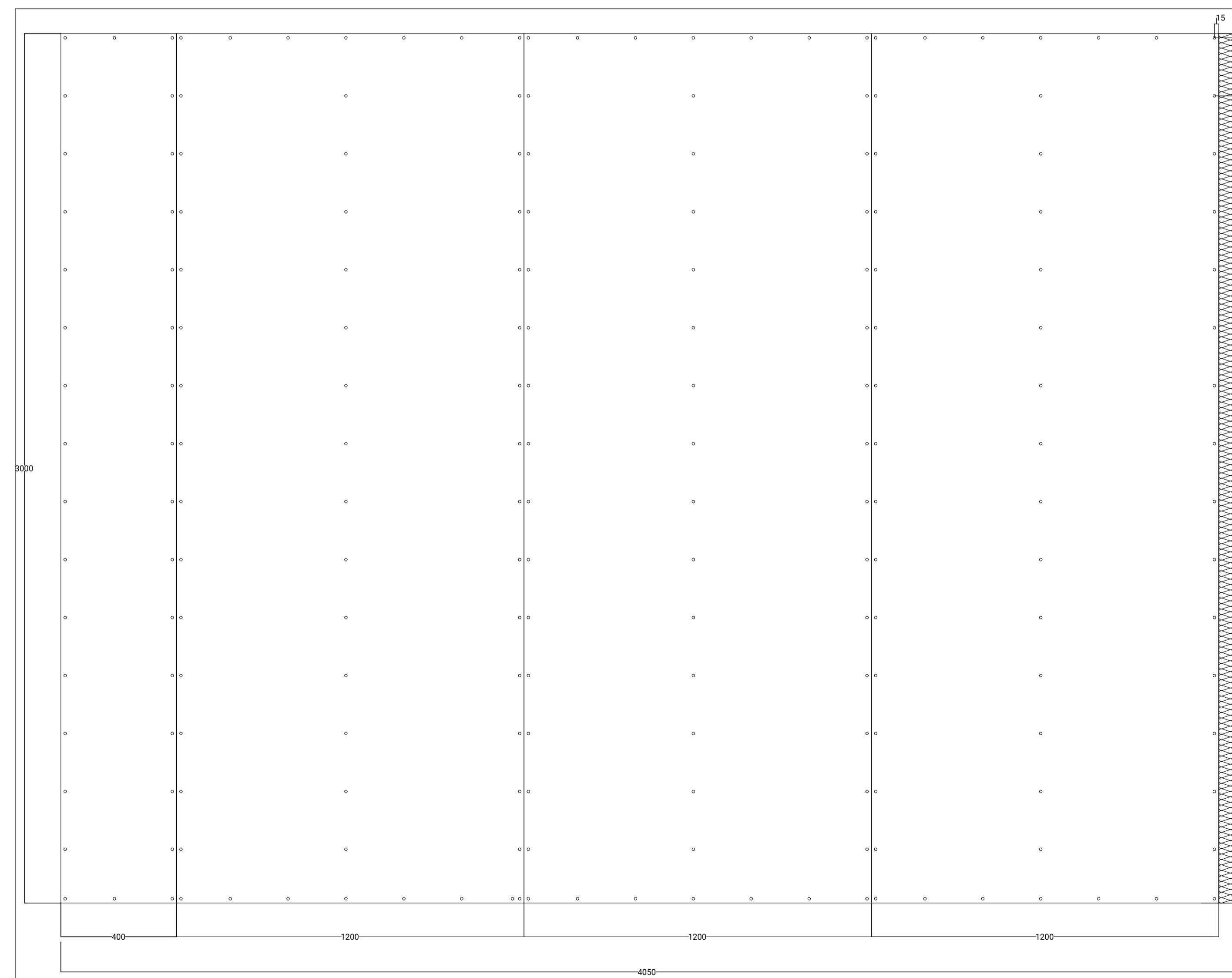
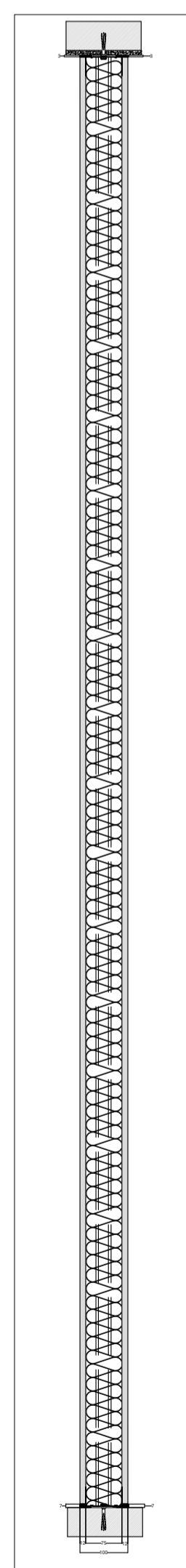
Bevestiging wand, 1:5



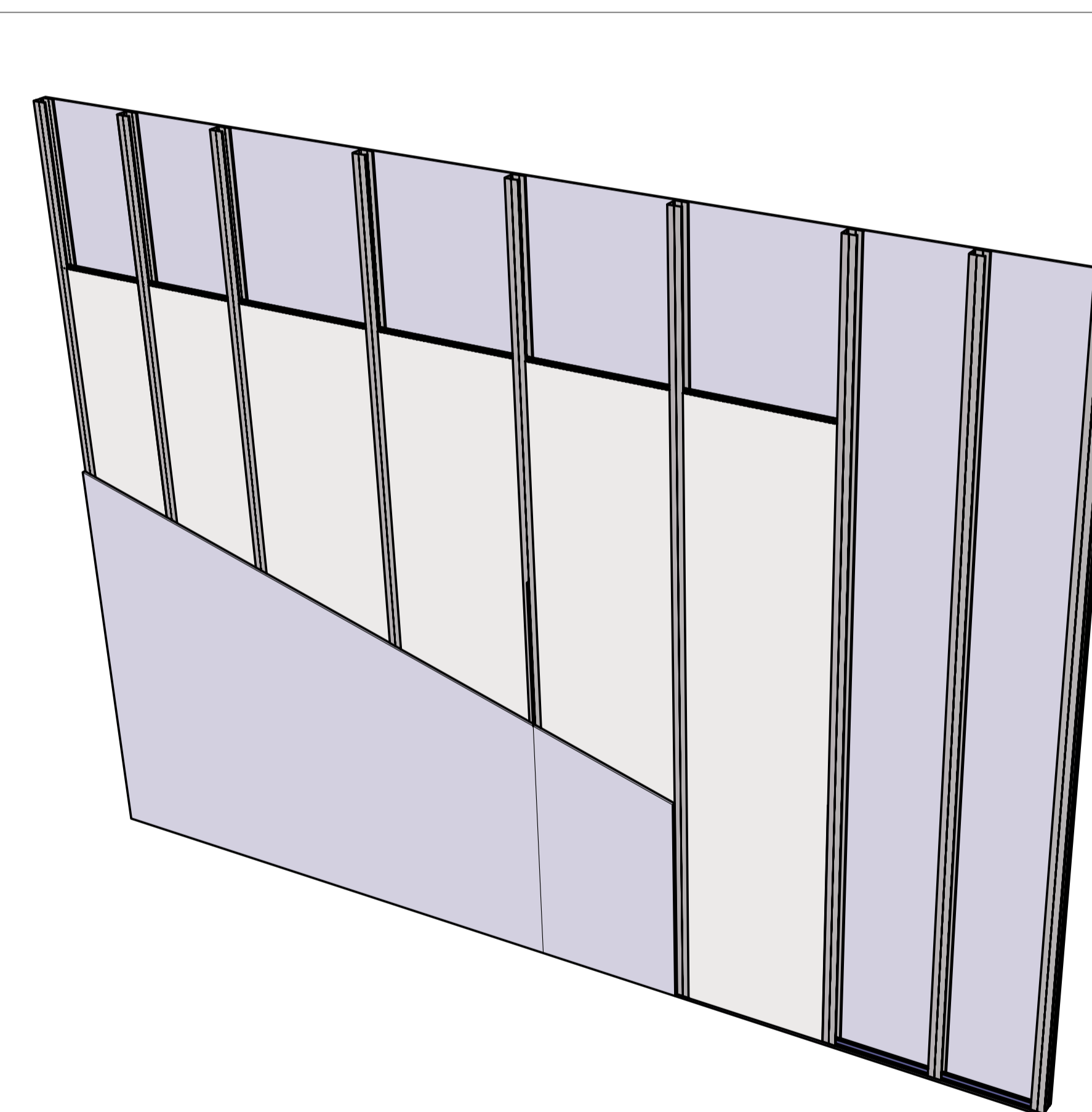
Platenlas, 1:5



Langsdoorsnede, 1:10



Dwarsdoorsnede, 1:10 Vooranzicht, 1:10



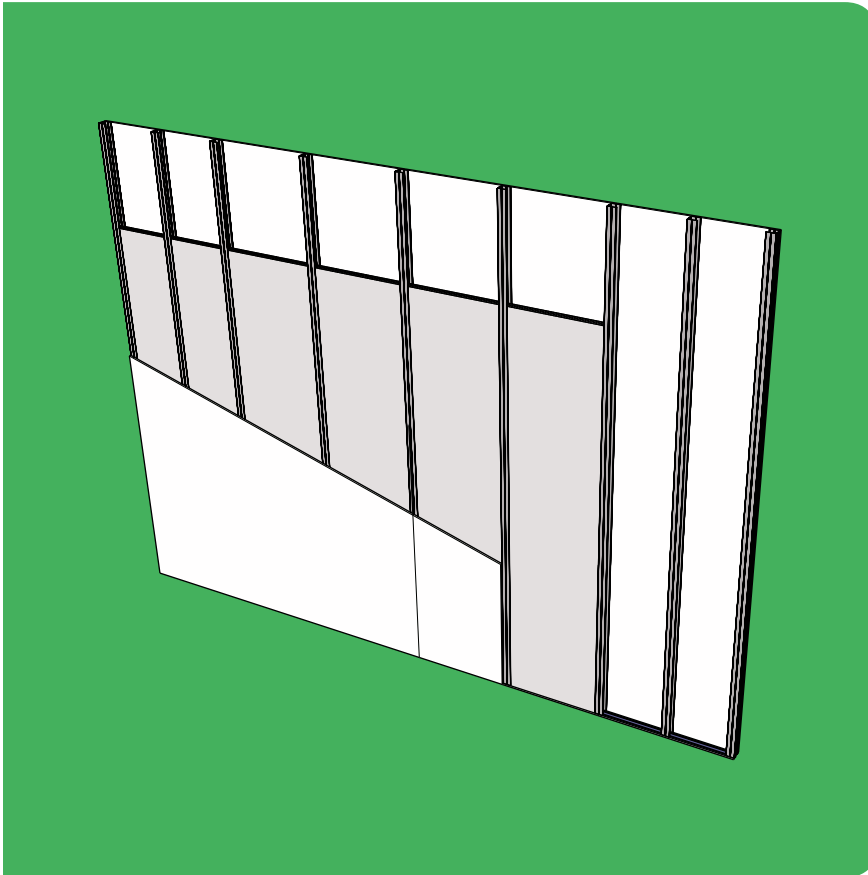
3D Model

Project: Brandproof Staanderwanden MAGOXX				
Overzicht plaatconstructie				
gemaakt:	Naam	Datum	Paraaf	schaal: 1:10, 1:5
projectleider:	Angella Korfeven	02-09-19		projectnummer: 100076
opdrachtgever:	Frank Immerzeel	10-09-19		formaat: A1
	Wibinda			bladnummer: 1 van 1
Status:	Final			xxxx-xxx-VO-CI-01

Bestandsnaam: Overzichtstekening_sloanderwanden.dwg

MAGOXX[®] Board

safe, smart and sustainable



MAGOXX Staanderwanden

MAGOXX

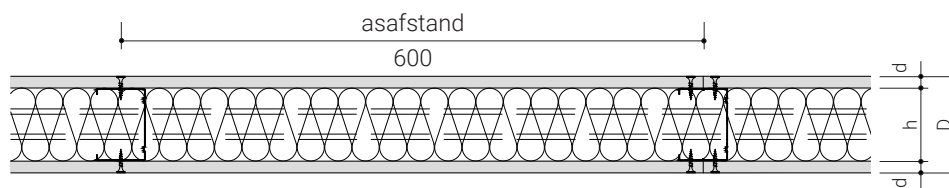
Staanderwanden

Eigenschappen

Standerwanden

Technische eigenschappen

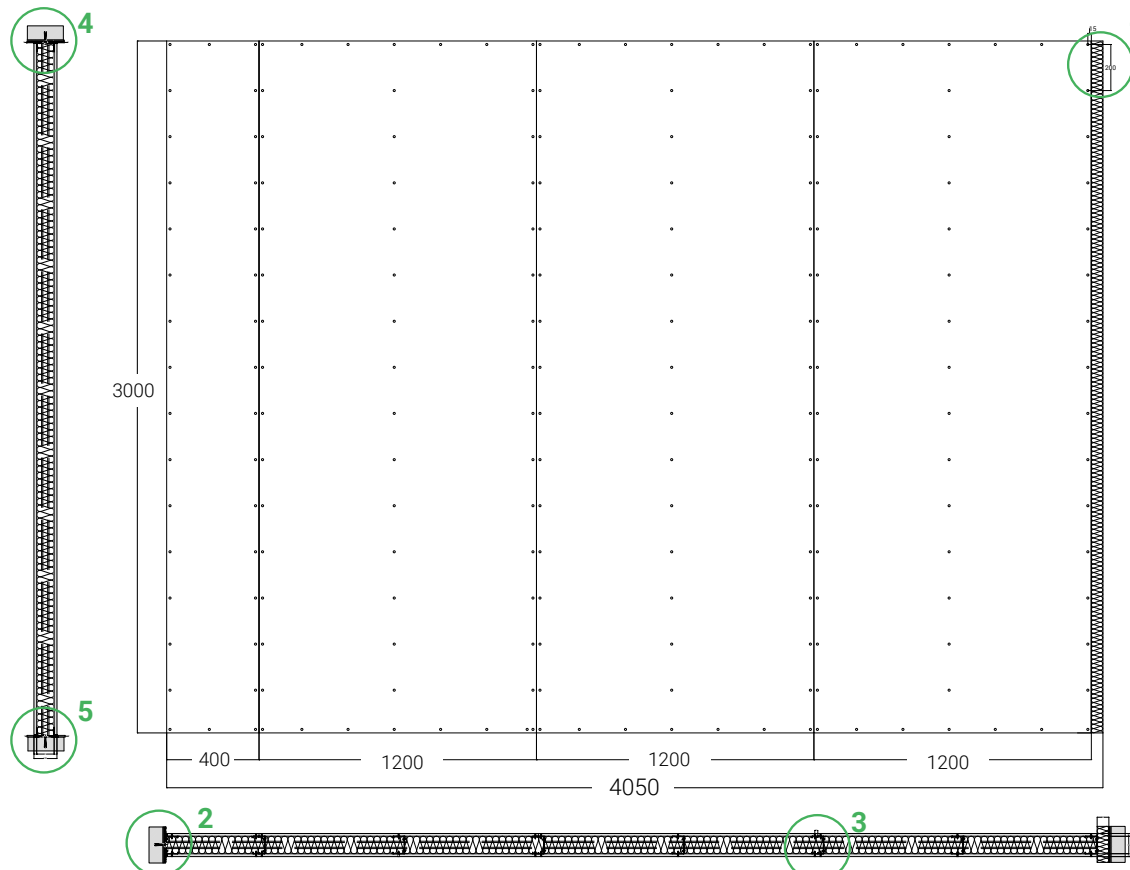
Enkele draagstructuur - éénlagige beplating



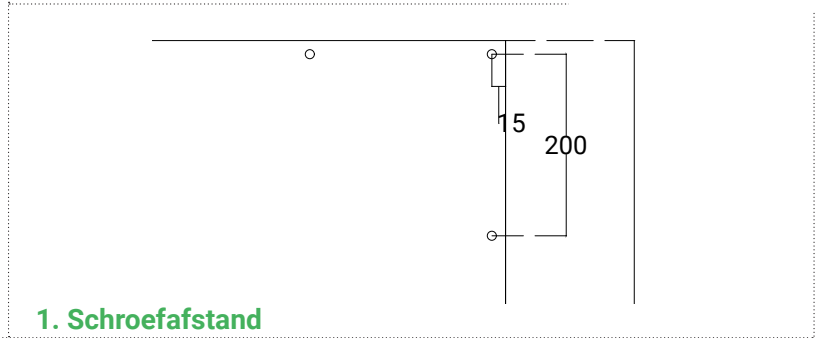
Afmetingen

Wanddikte D	Profiel (spouw) h	Beplating d	Gewicht ca. kg/m ²
100	75	12	28

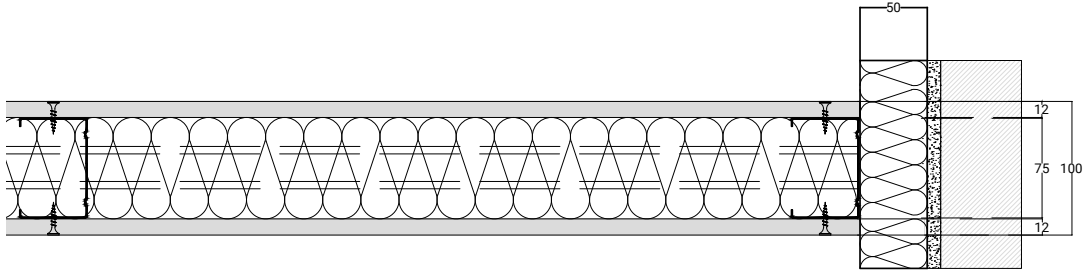
Vooraanzicht & doorsnedes



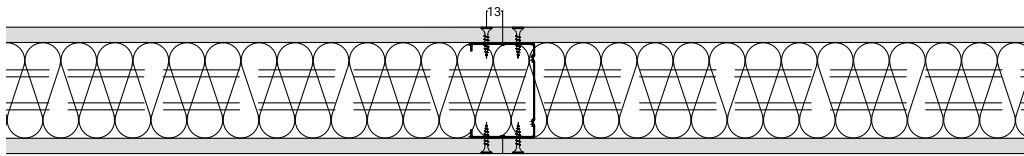
Details



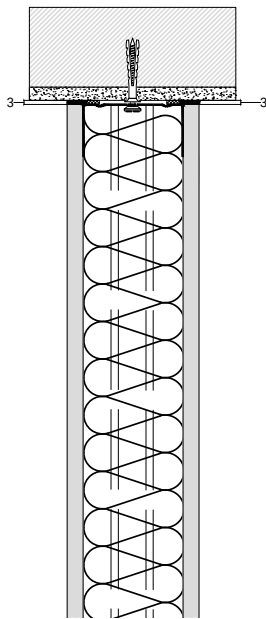
1. Schroefafstand



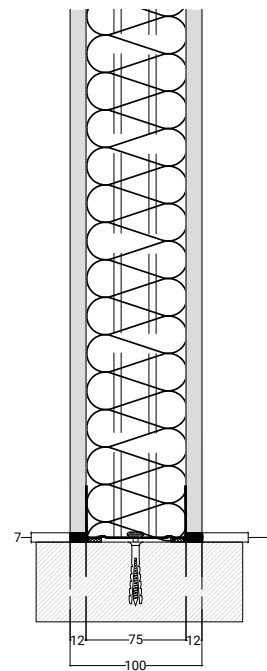
2. Aansluiting aan een massieve wand schaal 1:5



3. Platenlas schaal 1:5



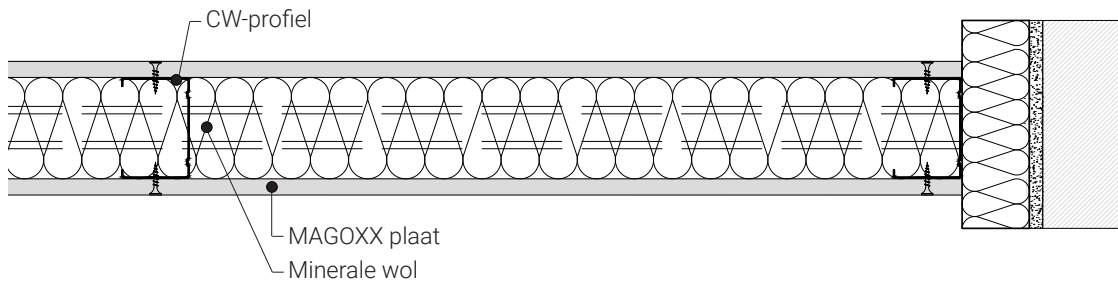
4. Plafondaansluiting schaal 1:5



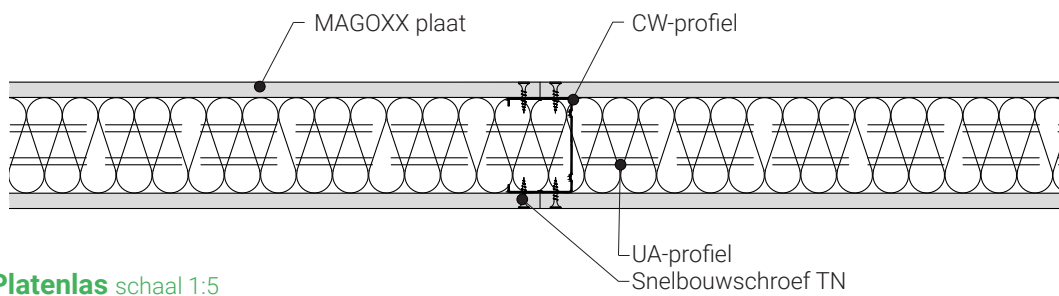
5. Vloeraansluiting schaal 1:5

Materiaalbenodigheden

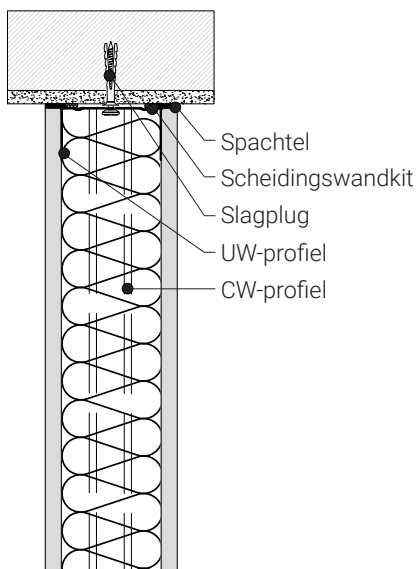
Standerwanden



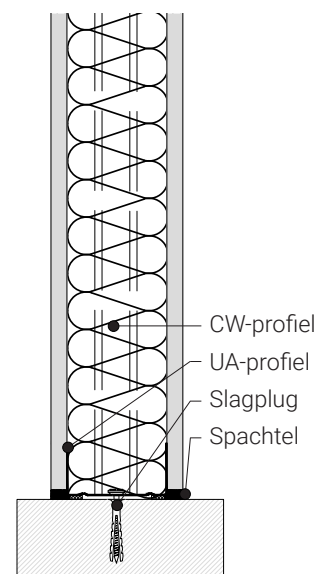
2. Aansluiting aan een massieve wand schaal 1:5



3. Platenlas schaal 1:5



4. Plafondaansluiting schaal 1:5



5. Vloeraansluiting schaal 1:5

Constructie + Montage

Staanderwanden

Specificatie materiaalbenodigdheden

Materiaalbenodigdheden per m² wand zonder verlies en afval.

Onderconstructie

- UW-profiel 75x40x0,6
- CW-profiel 75x50x0,6
- Popnagels $\geq 3 \times 8$ mm, verbinding CW- met UW-profiel (niet toepassen bij brandproof)
- Slagplug 6/55
- Isolatie minerale wol 70mm
- Minerale wol tussen muur en wand vrije zijde 50mm

Beplating

- MAGOXX brandwerende plaat 3000x1200x12 mm
- Snelbouwschroeven 3,9x30

Naadafwerking

- Spachtel

Constructie + montage

Constructie

De staanderwand bestaat uit een enkele metalen structuur (W111) met aan beide zijden een beplating van MAGOXX brandwerende platen.

Het metalen staanderwerk wordt rondom met de aangrenzende bouwdelen verbonden. De beplating wordt enkel laags aangebracht. In de spouw wordt isolatiemateriaal opgenomen.

Montage

Onderconstructie

De profielen die worden bevestigd aan aangrenzende bouwdelen, dienen te worden voorzien van dichtingsband.

Randprofielen tegen aangrenzende bouwdelen met hiervoor geschikte bevestigingsmiddelen aan de omringende bouwdelen bevestigen. Asafstand voor de bevestigingspunten maximaal 1 m.

Aan wanden minimaal 3 bevestigingspunten. Geschikte bevestigingsmiddelen voor massieve bouwdelen: slagpluggen.

Voor bevestiging aan niet massieve bouwdelen dienen voor het bouw materiaal geschikte bevestigingsmiddelen toegepast te worden. Bij metalen staanderwanden met een enkelvoudige beplating, welke voorzien worden van tegelwerk, dient de asafstand van de staanders te worden teruggebracht naar 400 mm.

Beplating

Beplating uitvoeren met MAGOXX platen van de benodigde lengte.

Bij brandwerende eisen dienen de aansluitingsvoegen tussen de metalen staanderwand en de massieve bouwdelen met spachtelmateriaal te worden gevuld. Schroefafstand 200 mm.