



## **Laboratory for Fire Safety**

*Classification of the fire resistance in accordance with  
EN\_13501-2:2023 of a monumental timber frame and fire  
resistant Fineo*

*Classification report*

**Reportnumber YA 2960-2E-RA-001 dated 28 October 2024**

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*Classification of the fire resistance in accordance with  
EN\_13501-2:2023 of a monumental timber frame and fire  
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Notified Body: NB 2264

**Product: Monumental timber frame and fire resistant Fineo**

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## 1 Introduction

This classification report defines the fire resistance classification which is assigned to a monumental timber frame with fire resistant Fineo, heated according to the standard fire curve, all this in accordance with the procedures described in EN 13501-2:2023, further referenced as EN 13501-2.



For performing measurements, the Laboratory for Fire Safety of Peutz bv is recognized by the Dutch Accreditation Body RvA..

The RvA is member of the **EA MLA** (European Accreditation Organisation MultiLateral Agreement). [www.european-accreditation.org](http://www.european-accreditation.org)

*EA: "Certificates and reports issued by bodies accreditatie by MLA and MRA members are considered to have the same degree of credibility, and are accepted in MLA and MRA countries".*

## 2 Details of the classified system

### 2.1 General

The system, a monumental timber frame with fire resistant Fineo, is defined as a glazed non-loadbearing external wall as meant in EN 13501-2 chapter 7.5.3.

The wall has an asymmetrical construction.

### 2.2 Product description

The system, a monumental timber frame with fire resistant Fineo, is fully described in the test report. See also the Appendix for drawings.

#### t 2.1 Construction materials

Material description	Dimensions / specifications
Glass	Structure oriented with the fire resistant segment to the fire side: Pyrobel 16 (3 mm float / 1.65 mm interlayer / 8 mm float / 1.65 mm interlayer / 3 mm float) / 0.8 mm EVA foil / Fineo toughened 6 mm / toughened 4 mm
Dimensions (w x h)	Frame 5: 2719 x 1576 mm Frame 6: 1276 x 2876 mm Window 1 – 4: 2736 x 1317 mm Window 5: 2579 x 1336 mm Window 6: 1036 x 2636 mm Glass 1 – 4: 1281 x 572 mm Glass 5: 2343 x 1200 mm Glass 6: 900 x 2500 mm
Frame timber	Mahogany 701 kg/m <sup>3</sup> MV
Window timber	Mahogany 575 kg/m <sup>3</sup> MV
Supporting construction	Areated concrete class G4/600, thickness 200 mm One free edge (left side seen from non fire side)

#### t 2.2 Fixing materials

Material description	Dimensions / specifications
Glazing sealant and putty	Bloem Sealants Renoseal
Cellular tape	PE tape white 10 x 3 mm Location: On both sides of the glass As elastic putty (unexposed side) and between glass and glazing bars (exposed side)
Screws window	Multifast fastscrew PK TX TORX T30 galvanized 6 x 120 mm, c.t.c. distance max. 600 mm Attached slanted from window to frame
Screws frame	Frame element upper corner left non-exposed side: Hilti HRD-C fixing anchor, frame plug HRD-C 10 x 160 mm, c.t.c. distance max. 550 mm Other frames: Hilti HDS-U, frame plug HRD-U8/90 8 x 140 mm, c.t.c. distance max. 550 mm
Screws frame interconnected	SPAX Wirox A9J 6 x 200 mm, c.t.c. distance max. 600 mm

## t 2.3 Other materials

<b>Material description</b>	<b>Dimensions / specifications</b>
Glass supporting blocks	Thickness: 2 mm
Isolation blanket	Promat Dalfratherm 1200 ULS Blanket Thickness: 13 mm Between supporting construction/ concrete frame and frames, not on free edge

## 3 Test data in support of the classification

The classification is based on the report mentioned in Table t 3.1.

This is the most recent version of the report, the report has not been withdrawn and may be used for this classification.

### t 3.1 Report used for the classification

Laboratory	Sponsor	Report reference and date of issue	Used Methods
Peutz bv, NB 2264	AGC Glass Europe nv	Y 2960-5E-RA-001 dated 28 August 2024	EN 1363-1:2020 EN 1363-2:1999 EN 1364-1:2015

### 3.1 Results

#### 3.1.1 Report Y 2960-5E-RA-001

The test specimen was heated using the standard heating curve as defined in EN 1363-1. The construction was constructed in such a way that it was oriented in both directions to the fire.

Table t 3.2 shows the time of failure ('fail') with respect to the relevant criteria or the finished test time ('pass') when the relevant criteria were not exceeded during the test. The elapsed time is the time in whole minutes that have elapsed since the commencement of the test.

After 46 minutes the test ended in consultation with the client.

### t 3.2 Results fire resistance test

Performance criteria	Elapsed time [minutes]	Pass / Fail
Integrity (E)		
- No sustained flaming > 10 s.	46 minutes	fail
- Cotton pad doesn't glow nor ignites	46 minutes	-
- Gap gauge cannot enter the furnace	46 minutes	-
Insulation (I)		
- Average temperature rise less than 140 °C	46 minutes	fail (by reaching E)
- Maximal temperature rise less than 180 °C	37 minutes	fail
Radiation (W)		
- 15 kW/m <sup>2</sup> not reached	46 minutes	fail (by reaching E)

## 4 Classification

### 4.1 Reference of the classification

This classification is performed in accordance with paragraph 7.5.3 of EN 13501-2.

### 4.2 Classification

The system, a non-loadbearing glazed external wall, is classified according to the following combinations of assessment criteria and classes.

#### **Classification of the fire resistance**

**EI 30 (i→o)**

**EW 45 (i→o)**

**E 45 (i→o)**

(i→o): glass oriented with the fire resistant segment (Pyrobel) to the fire.

The classification is valid for the field of application as described in chapter 5.



## 5 Field of application

### 5.1 General

The classification is valid for structures that are identical in detail to the structure described in the test report. In addition, within the direct field of application as defined in the test standard, see Table t 3.1, one or more of the modifications of the tested structure indicated below are permitted, provided that at least the same stiffness and stability is achieved for the structure as for the tested structure.

The direct field of application is taken from Annex A, chapter A.4 of EN 1364-1. The field of application as defined in the present classification report comprises the direct field of application.

In the following, the terms 'non-heated side' (o) and 'heated side' (i) and denote the heating direction of the element.

### 5.2 Field of application and conditions

The field of application without overrun time is valid as described in section 5.3 up to and including the classifications: **EI 30 (i→o)**, **EW 45 (i→o)**, **E 45 (i→o)**.

The field of application is valid with overrun time, as described in section 5.4 up to and including the classifications: **EI 30 (i→o)**, **EW 30 (i→o)**, **E 30 (i→o)**.

The realized overrun time relative to the classification time is  $B \geq 6$  minutes.

In the sections below, the relevant section from the test standard (EN 1364-1) is cited.

### 5.3 Field of application without overrun time

#### 5.3.1 Glazed elements

*EN 1364-1, A.4.2.1.1 Installation angle*

Test results on vertical glazed elements cover glazed elements sloped to a maximum angle of  $\pm 10^\circ$  from the vertical plane, provided the height of the glazed element is not larger than the maximum height tested: 2876 mm.

*EN 1364-1, A.4.2.1.2 Height of the glazed element*

Test results cover rectangular glazed elements with a height increase of 10% subject to a maximum increase of 0.3 m, above the height tested, provided that:

- the maximum deflection of the tested specimen did not exceed 100 mm, and
- the allowances for thermal expansion of the construction are increased pro-rata.

In case of elements intended to be classified for EW, the following additional provisions apply:

- the average temperature of the unexposed face of the glazed element as well as the average temperature of the unexposed face of the non-glazed area of the test specimen (see figure 12 or 14 of EN 1364-1) remained below 300 °C, or,
- the heat radiation measured from the test specimen did not exceed 12.3 kW/m<sup>2</sup>.

*EN 1364-1, A.4.2.1.3 Width of the glazed element*

Test results cover rectangular glazed elements of greater width by replication of the tested glazed element or parts thereof, provided:

- the framing system is identical to the one tested, and
- the width of the specimen in the test was 2.8 m or greater with one vertical edge unrestrained, and
- the mullions within and/or connection joints between glazed elements have been tested.

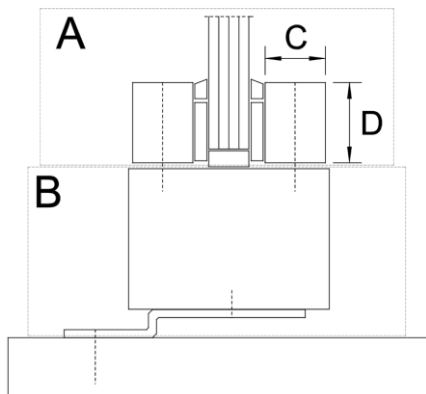
In case of elements intended to be classified for EW, the following additional provisions apply:

- the average temperature of the unexposed face of the glazed element as well as the average temperature of the unexposed face of the non-glazed area of the test specimen (see figure 12 or 14 of EN 1364-1) remained below 300 °C, or
- the heat radiation measured from the test complete and fully glazed test element with minimum size of 2.8 x 2.8 m<sup>2</sup> did not exceed 12.3 kW/m<sup>2</sup>.

*t 5.1 Allowed sizes of glazed elements, without overrun time*

<b>Dimensions</b>	<b>Tested element [mm]</b>	<b>Allowed sizes [mm]</b>
Width	2176	3164
Height	3995	Endless by replication

## 5.3.2 Glazing system (see figure 16 of EN 1364-1)



f 5.1 figure 16 from EN 1364-1, glazing system and framing system

A: glazing system

B: framing system

C: depth of the glazing bead

D: height of the glazing bead

### EN 1364-1, A.4.2.2.1 linear dimensions

The linear dimensions of panes may be increased from the dimensions tested. Height and width may be considered independently.

### EN 1364-1, A.4.2.2.2 aspect ratio

If both portrait and landscape aspect ratio rectangular panes have been tested, then the height of the landscape pane may be increased and/or the width of the portrait pane may be increased, subject to:

- the area of the pane after increasing the linear dimensions shall be less or equal to the average area of the largest tested landscape and portrait panes:
 
$$A \leq \frac{1}{2} * (A_{\text{portrait, max}} + A_{\text{landscape, max}})$$
, in which
  - A area of the assessed glass pane;
  - $A_{\text{portrait, max}}$  maximum area of tested glass pane oriented in "portrait" format;
  - $A_{\text{landscape, max}}$  maximum area of tested glass pane oriented in "landscape" format.
- all panes were tested in an identical framing and glazing system;
- the largest tested width as well as the largest tested height is not exceeded.

### t 5.2 Allowed sizes and aspect ratio of individual panes, without overrun time

Pane dimension	Largest tested pane		Allowed aspect ratio <sup>(1)</sup>
	portrait	landscape	
Width [mm]	900	2343	2343
Height [mm]	2500	1200	2500
Area [m <sup>2</sup> ]	2.3	2.8	2.5

<sup>(1)</sup> When applying the maximum tested width and height, the allowed maximum area shall not be exceeded.

### *EN 1364-1, A.4.2.2.3 Glazing beads*

The test specimen is glazed with Renoseal glazing putty and on pane 5 decorative beads are glued. For both situations no direct field of application is described, the panes need to be glazed as tested.

### 5.3.3 Framing system (see figure 16 of EN 1364-1)

#### *EN 1364-1, A.4.2.3*

The distance between mullions and/or transoms may be decreased from that tested, and the maximal allowed pane size must be respected.

Maximal allowed distance between mullions (clear opening): 2319 mm.

Maximal allowed distance between transoms (clear opening): 2476 mm.

Maximal allowed centre to centre distance between fixing centres of the frame to the supporting construction is 550 mm.

Maximal allowed centre to centre distance between fixing centres of the windowframes to the frame is 600 mm.

The cross-sectional dimensions of the frame profiles may be increased from the tested dimensions: d x h: 137 x 214 mm and the cross-sectional dimensions of the windowframe profiles may be increased from the tested dimensions: d x h: 65 x 85 mm under the following restrictions:

- Taking into account the rebate-profiling of the profiles;
- for combustible framing intended to be used for E and/or EW classification, the depth of the frame profiles on the unexposed side is as tested: 15 mm.

### 5.3.4 Supporting constructions

#### *EN 1364-1, A.2.4.1*

The test specimen is tested in the test frame without any supporting construction, the result is applicable to high density rigid supporting constructions with at least the same fire resistance as the tested specimen.

#### *EN 1364-1, A.2.4.2 Standard supporting constructions*

The test specimen as a whole is tested in a low-density rigid standard supporting construction and may be applied to low and high density rigid supporting constructions (in accordance with EN 1363-1) with at least the same fire resistance classification and an overall thickness equal or greater than that of the element used in the tests.

The permitted rigid supporting constructions can be interfaced with all edge-types of the glazed element.

## *EN 1364-1, A.2.4.3 non-standard supporting constructions*

The glass is mounted in window frames. These window frames d x h: 65 x 85 mm are partly fixed to the concrete test frame and partly to the frame work d x h: 137 x 214 mm. Therefore these test samples are partly fixed to a non-standard supporting construction.

The result of a test of fire resistant glazing tested in non-standard supporting constructions is only applicable to that construction. The window frames can only be mounted in the frames as tested, or in low or high rigid supporting constructions.

## **5.4 Field of application requiring overrun time**

### **5.4.1 Dimensions of the glazed element**

#### *EN 1364-1, A.4.3.2.1 Height*

An overrun time B is achieved. The test result of the glazed element covers the height up to a maximum of the tested height multiplied by a factor of 1.2. This is irrespective of the measured deflections.

In case of the element intended to be classified for EW, the following additional provisions apply:

- the average temperature of the unexposed face of the glazed element as well as the average temperature of the unexposed face of the non-glazed area of the test specimen (see figure 12 or 14 of EN 1364-1) remained below 300 °C, or
- the heat radiation measured from the complete and fully glazed element did not exceed 12.3 kW/m<sup>2</sup>.

#### *EN 1364-1, A.4.3.2.2 Width*

Test results cover rectangular glazed elements of greater width by replication of the tested glazed element or parts thereof, provided:

- the framing system is identical to the one tested, and
- the width of the specimen in the test was 2.8 m or greater with one vertical edge unrestrained, and
- the mullions within and/or connection joints between glazed elements have been tested.

In case of the element intended to be classified for EW, the following additional provisions apply:

- the average temperature of the unexposed face of the glazed element as well as the average temperature of the unexposed face of the non-glazed area of the test specimen (see figure 12 or 14 of EN 1364-1) remained below 300 °C, or
- the heat radiation measured from the complete and fully glazed element did not exceed 12.3 kW/m<sup>2</sup>.

## 5.4.2 Dimensions and area of individual rectangular glass panes

EN 1364-1, A.4.3.3 maximal width and height

Overrun time B is achieved. The test result of a pane covers dimensions up to a maximum of the tested dimensions multiplied by a factor 1.2 in width and/or height, provided the maximum tested area multiplied by a factor 1.21 is not exceeded.

In case of the element intended to be classified for EW, the following additional provisions apply:

- the average temperature of the unexposed face of the glazed element as well as the average temperature of the unexposed face of the non-glazed area of the test specimen (see figure 12 or 14 of EN 1364-1) remained below 300 °C, or
- the heat radiation measured from the complete and fully glazed element did not exceed 12.3 kW/m<sup>2</sup>.

In order to accommodate the increase in glass dimensions, it is permitted to increase the distance between mullions and/or transoms.

EN 1364-1, A.4.3.4 aspect ratio

If both portrait and landscape aspect ratio rectangular panes have been tested, then the height of the landscape pane may be increased and/or the width of the portrait pane may be increased, subject to:

- the area of the pane after increasing the linear dimensions shall be less or equal to the average area of the largest tested landscape and portrait panes:  
 $A \leq \frac{1}{2} * (A_{\text{portrait, max}} + A_{\text{landscape, max}})$ , in which
  - A area of the assessed glass pane;
  - $A_{\text{portrait, max}}$  maximum area of tested glass pane oriented in "portrait" format;
  - $A_{\text{landscape, max}}$  maximum area of tested glass pane oriented in "landscape" format.
- all panes were tested in an identical framing and glazing system;
- the largest tested width as well as the largest tested height is not exceeded.

### t 5.3 Allowed sizes and aspect ratio of individual panes, with overrun time

Pane dimension	Largest tested pane	Largest tested pane	Allowed aspect ratio <sup>(1)</sup>
	portrait	landscape	
Width <sup>(2)</sup> [mm]	1080	2812	2812
Height <sup>(2)</sup> [mm]	3000	1440	3000
Area [m <sup>2</sup> ]	2.7	3.4	3.1

<sup>(1)</sup> When applying the maximum tested width and height, the allowed maximum area shall not be exceeded.


<sup>(2)</sup> The allowed dimensions might exceed production limits.

## 6 Additional Statement

The extended application results relate to the behaviour of a product/product family or building element under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product/product family or building element in use

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

In the event of conflicting provisions in the harmonised standards and technical specifications, the provisions of Regulation (EU) 305/2011, better known as the Construction Products Regulation (CPR), prevail.

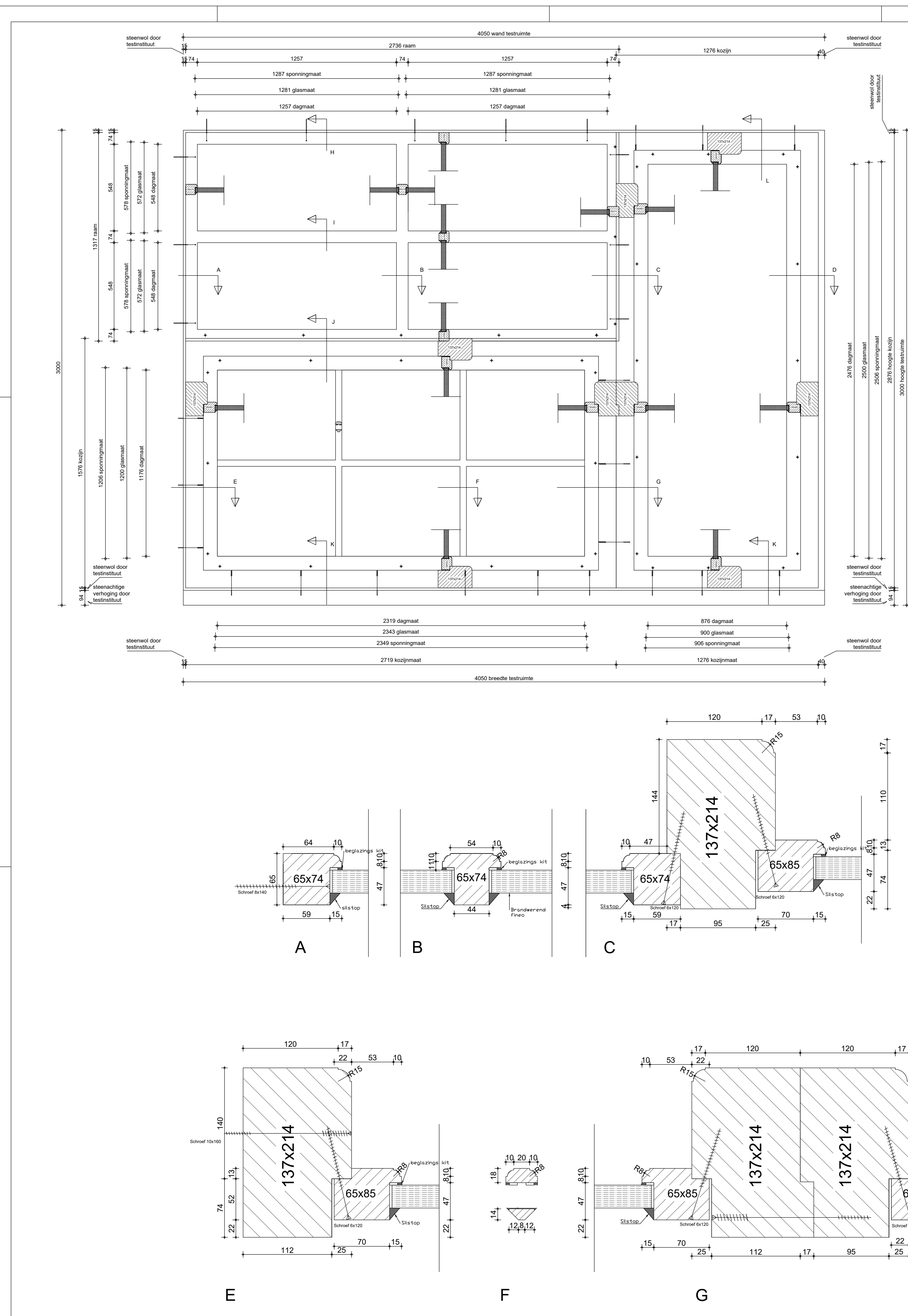


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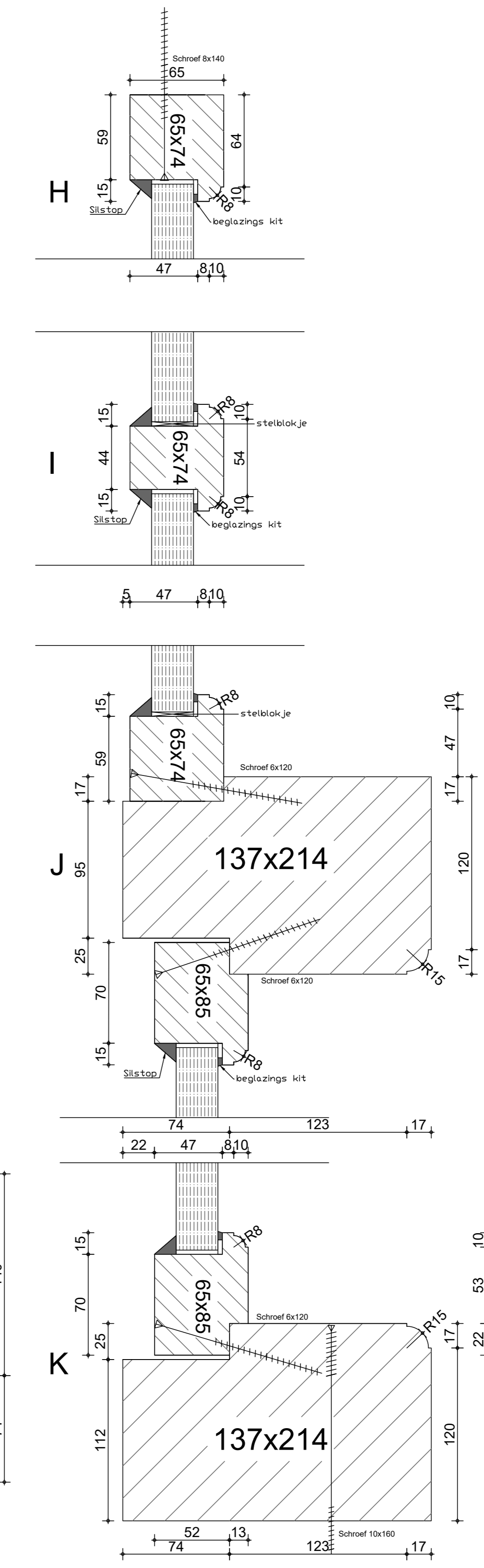
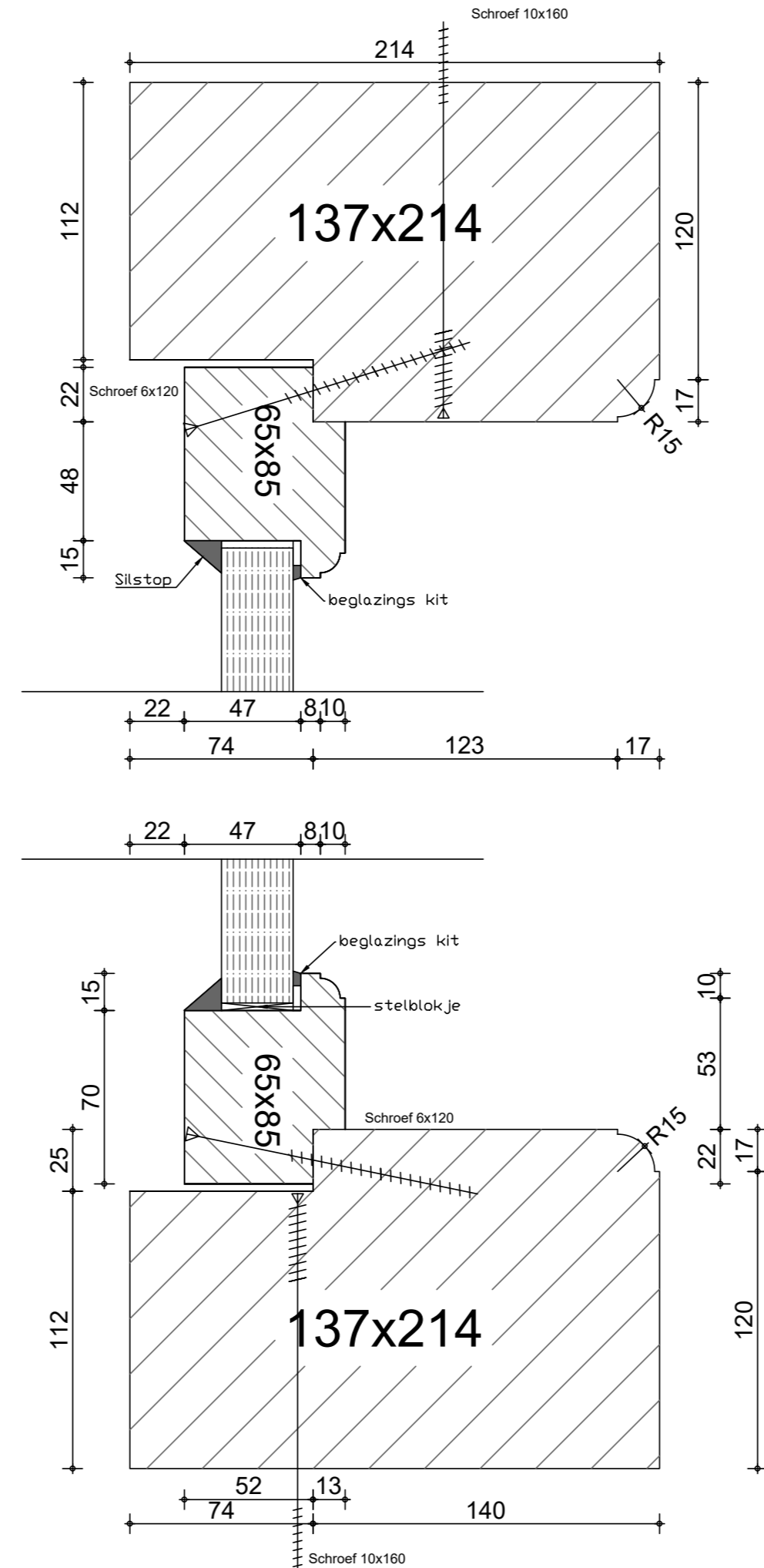
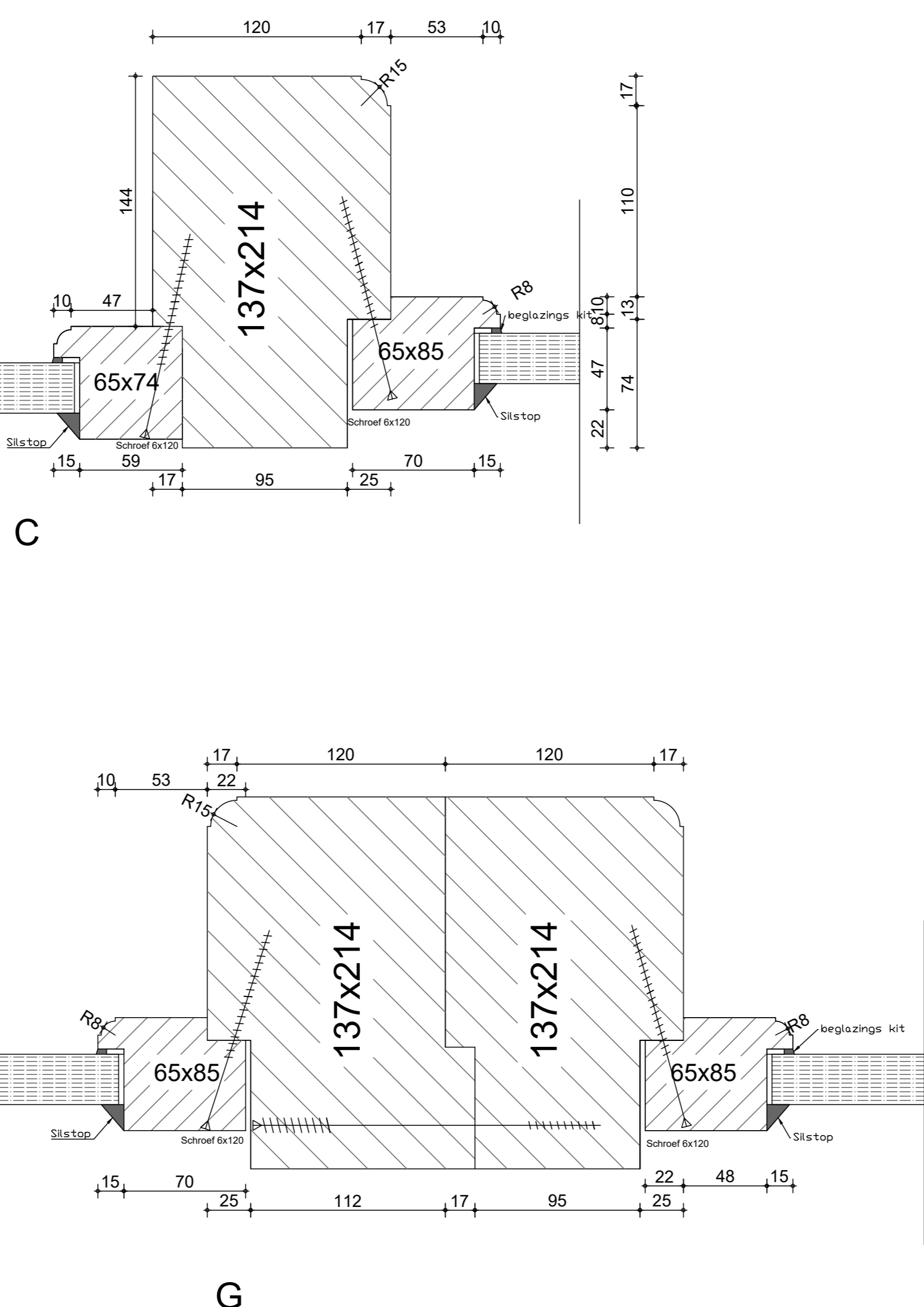
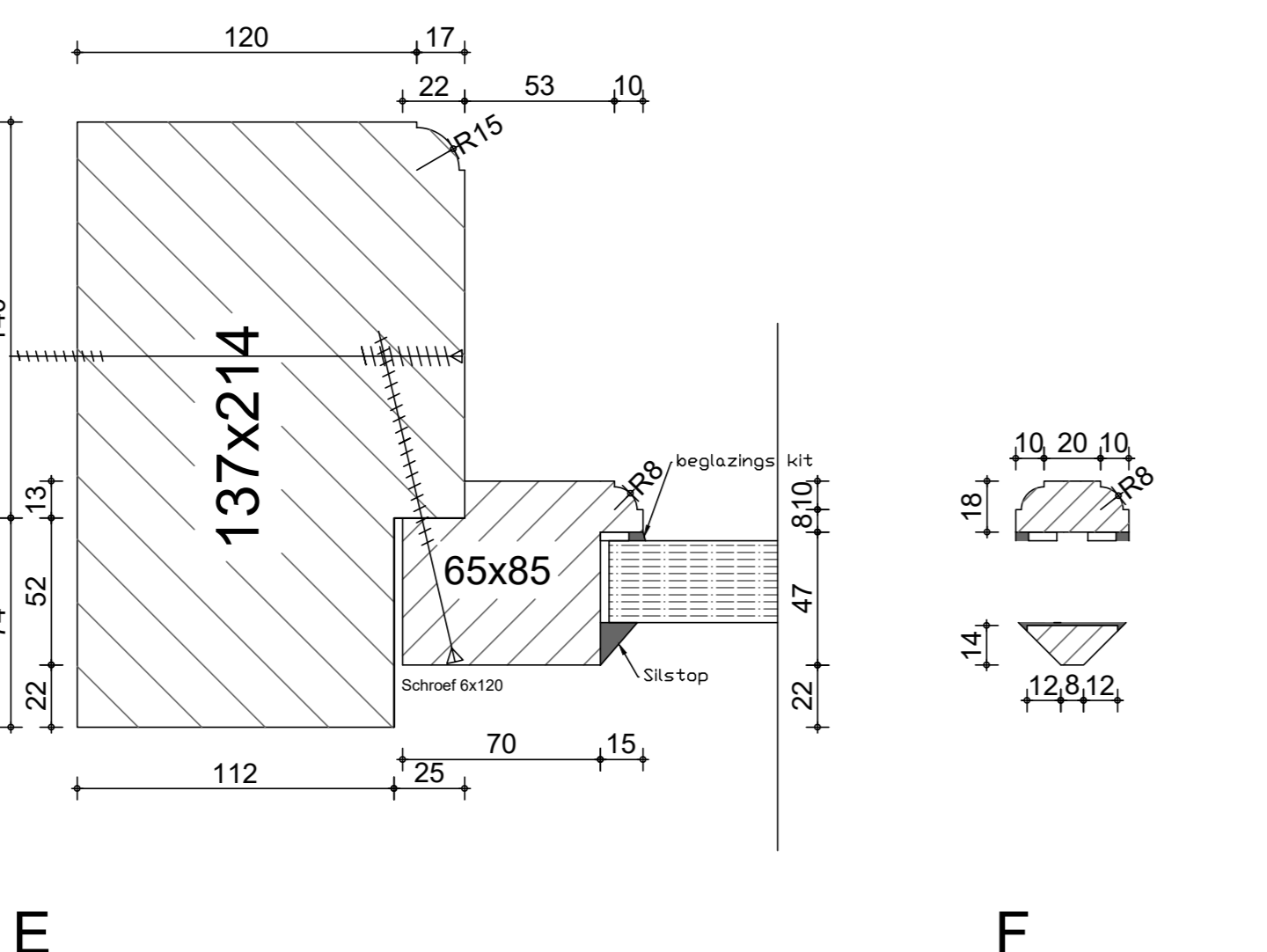
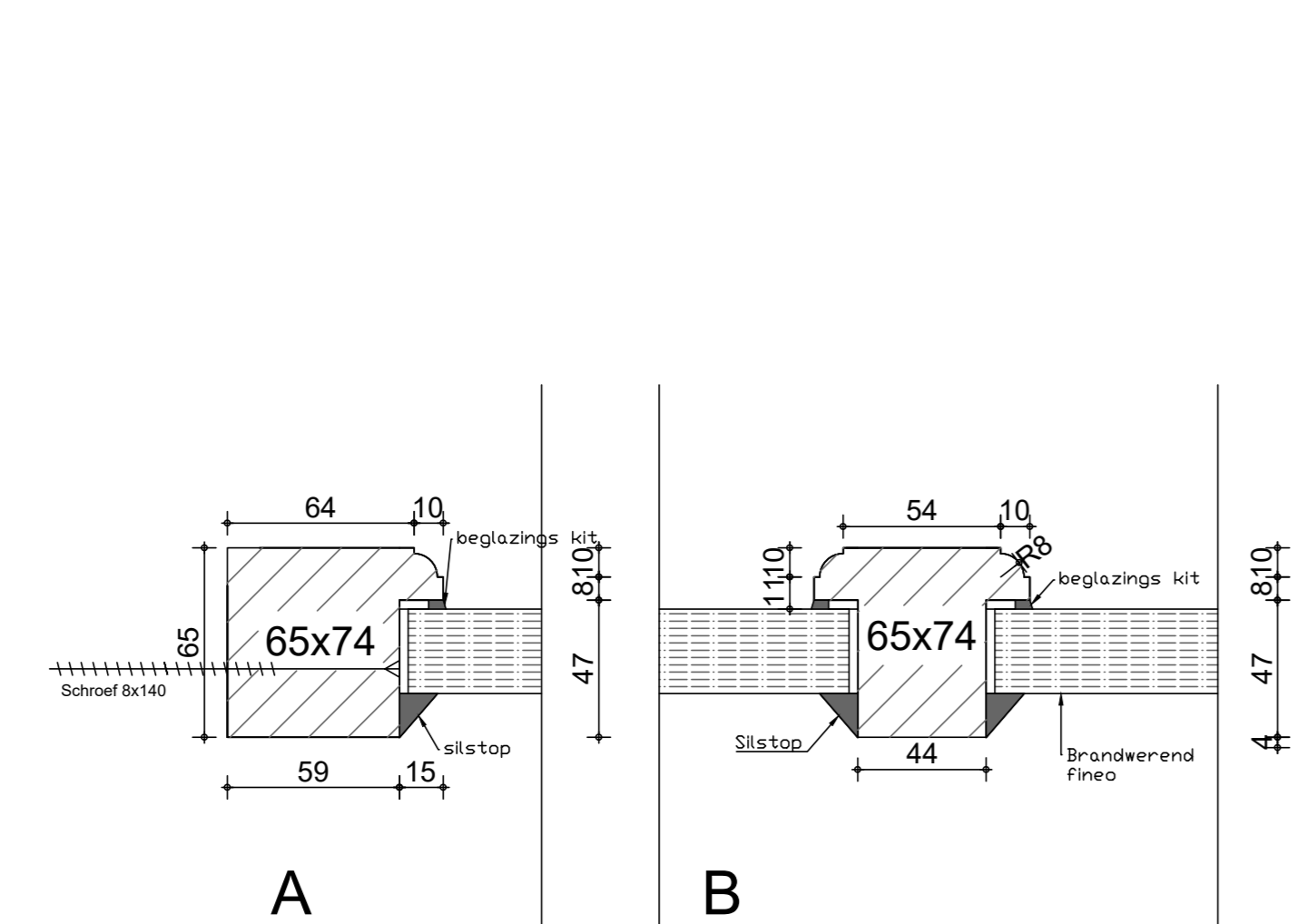


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Management

This report contains 15 pages and 1 Appendix of 2 page(s)



- Diverse specificaties
- Schroeven ramen 8x140, schroeven tbv ramen < 600 mm hoh
  - schroeven kozijnen afstands Schroeven 10x160, schroeven kozijnen <550mm hoh
  - kozijnhout mahonie 640-700 kg/m<sup>3</sup>
  - raamhout mahonie 640-700 kg/m<sup>3</sup>
  - beglazing brandwerend finco
  - beglazing monteren middels Renoseal van Bloem



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