

Classification of fire resistance according to EN 13501-2: 2007 +A1:2009 of a METACON RGS EW 360 ECO Twindoor rolling shutter

Classification no.	2015-Efectis-R000681
Sponsor	Metacon Branddeuren James Wattstraat 14 2809 PA GOUDA THE NETHERLANDS
Product name	METACON RGS EW360 ECO Twindoor
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TABLE OF CONTENTS

1. INTRODUCTION	3
2. DETAILS OF CLASSIFIED PRODUCT	3
2.1 General.....	3
2.2 Test specimen.....	3
2.3 Side guides.....	5
2.4 Electronic rolling system.....	5
2.5 Fixings.....	5
2.6 Gap with.....	5
2.7 Method of assembly.....	6
3. SAMPLING AND MANUFACTURING OF THE CONSTRUCTION	6
4. TEST REPORT & TEST RESULTS IN SUPPORT OF CLASSIFICATION	6
4.1 Test report.....	6
4.2 Test results.....	6
5. CLASSIFICATION	7
5.1 Reference of classification.....	7
5.2 Classification.....	7
6. FIELD OF APPLICATION	7
6.1 Specific Restrictions on Materials and Constructions.....	7
6.2 Fixings.....	8
6.3 Permissible Size Variations.....	8
6.4 Supporting construction.....	8
7. LIMITATIONS	9
8. FIGURES	10

1. INTRODUCTION

This classification report defines the resistance to fire classification assigned to a METACON RGS EW 360 ECO Twindoor single steel skin cassette vertical rolling shutter assembly in accordance with the procedures given in EN 13501-2:2007+A1:2009.

2. DETAILS OF CLASSIFIED PRODUCT

2.1 GENERAL

For the dimensions and specifications of the materials and components of the examined construction, also see the figures in chapter 8. Details of the installation of the construction are given in the paragraphs below.

2.2 TEST SPECIMEN

2.2.1 General

The test specimen was a steel single skin cassette vertical rolling shutter door-set from METACON, type METACON RGS EW 360 ECO.

2.2.2 TEST FRAME

The test frame was constructed of steel beams with a fire resistant concrete lining.

Dimensions	
Aperture	4000 x 3500 mm (w x h)
Width of frame and concrete lining	250 mm

2.2.3 SUPPORTING CONSTRUCTION

The door set was built in a, according to EN 1363-1:1999, standard low density rigid supporting construction, being two aerated concrete piers with a lintel on top. A calcium silicate board panel was placed under the door set to simulate a non-combustible floor facing 200 mm from the edges of the door surface, thickness 20 mm.

Specifications	
Overall dimensions	4000 x 3500 mm (w x h)
Aperture	3340 x 2810 mm (w x h)
Material	Aerated concrete
Density	650 kg/m ³ ± 200 kg/m ³
Thickness	200 mm

2.2.4 SHUTTER

The rolling shutter was built of steel skin insulated cassettes hooking at the top and bottom part of each cassette. At the top an interlock was mounted on the shutter and on the door. The bottom cassette comprised an armour limit cover as comprised the sides an armour end cap. The shutter was hung with increasing space between the hooks of the cassettes from bottom to top to prevent failure of the top flame barrier. The cassette at the level of the flame barrier of the guiding system comprised a tube in the top of the cassette. The upper part of the shutter

comprised single skin laths. (See figures 1, 2 and 3 for details)

Dimensions door-set	
Overall	3800 x 3300 mm (w x h)
Specifications cassettes	
Material	Electroplated steel
Thickness	0.8 mm
Dimensions	3600 x 117.5 x 21.6 mm (w x h x t)
Insulation	White blanket
Manufacturer	Insulcon
Type	Insulfrax, 128 kg / m ³
Bottom cassette	L-shaped armour limit cover
Material	Electroplated steel
Thickness	2 mm
Sides cassette	Armour end cap
Material	Electroplated steel
Thickness	0.8 mm
Fixing end cap	Blind rivets
Type	ST / ST
Dimensions	Ø 4.8 x 8 mm
Cassette flame barrier guiding system	
In top cavity of cassette	Steel tube
Dimensions	20 x 20 x 2 mm (w x h x t)
Specifications top flame barrier	
Dimensions flame barrier on test frame	3320 x 80 x 2 mm (w x h x t)
Dimensions flame barrier on the shutter	3320 x 65 x 2 mm (w x h x t)
Specifications top laths	
Material	Electroplated steel
Dimensions	3320 x 110 x 1 mm (w x h x t)
Diameter hook	Ø 20 mm
Number laths	4

2.3 SIDE GUIDES

The side guides were made of a steel flame barrier and a steel tube welded together.
 (See figure 3 for details)

Specifications	
Material guide flame barrier	Electroplated steel
Dimensions	80 x 54 x 3 mm (w x h x t)
Tube	50 x 50 x 2 mm (w x h x t)
Overall width	130 mm
Tightness door and guide flame barrier	58 mm (see picture 7.1 in § 7)

2.4 ELECTRONIC ROLLING SYSTEM

In opened position the shutter is rolled upon a barrel. The power drive of the barrel was an electrical motor. On both sides axles were welded on the closed sides of the barrel. On the supporting construction left and right a console was mounted. The ball bearings are fixed with two bolts on the consoles.

The shutter was mounted to the barrel with steel plate hooks fixed with bolts.

Specifications	
Material consoles and barrel	Steel
Dimensions barrel	Ø 133 x 3600 x 3mm (w x t)
Thickness consoles	2 mm
Power drive	Electric motor on one side of barrel
Mounting axles barrel	Ball bearings
Mounting motor	Motor bracket
Mounting shutter top lath	Steel plates with hooks
Diameter hook	Ø 20 mm
Number steel mounting plates	7
Bolts	1 per plate
Dimensions	Ø 8 x 20 mm

2.5 FIXINGS

The side guides were fixed with M6 bolts at 500 mm c.t.c. distance through the wall.

2.6 GAP WITH

The calculated gap width (secondary gap with) of the guiding system and the cassettes:

Nominal width guiding system minus thickness steel: $54 - 2 \times 2 = 50$ mm.

50 mm minus nominal width cassette: $50 - 21.6 = 28.4$ mm / 2 sides = 14.2 mm on both sides of cassettes.

2.7 METHOD OF ASSEMBLY

The shutter was built in the following order:

- Assembly of the aerated concrete supporting construction
- Mounting of the side guides
- Mounting of the sections
- Connecting the sections.

3. SAMPLING AND MANUFACTURING OF THE CONSTRUCTION

Efectis Nederland BV Centre for Fire Safety	Test frame Support construction
Metacon BV	Producing the door-set Installation of the construction

4. TEST REPORT & TEST RESULTS IN SUPPORT OF CLASSIFICATION

4.1 TEST REPORT

Name of laboratory	Name of sponsor	Test report no.	Test method
Efectis Nederland BV Centre for Fire Safety	METACON Branddeuren	2015-Efectis-R000525	EN 1634-1:2014

4.2 TEST RESULTS

Criterion	Time (min.)	Result
Integrity, (E) - Cotton pad - Gap Gauge Ø 6 mm - Gap Gauge Ø 25 mm - Sustained flaming > 10 sec.:		Not determined Not determined Not determined No Failure
Thermal insulation, (I) - Mean temperature rise - Maximum temperature rise I ₁ - Maximum temperature rise I ₂	33 32 30	Failure Failure Failure
Heat radiation (W)		No failure**, max. 11.5 kW/m ² at 400 min.
* The heating was terminated after 400 minutes in concurrence with the client.		
** Highest classifications according to EN 13501-2 are E240, EI ₁ 30 and EI ₂ 30 and EW60		

5. CLASSIFICATION

5.1 REFERENCE OF CLASSIFICATION

This classification has been prepared in accordance with clause 7 of EN13501-2:2007+A1:2009.

5.2 CLASSIFICATION

The tested METACON door set has been classified according to the criteria and classes, whereby the highest classifications according to EN 13501-2 are E240, and EW60:

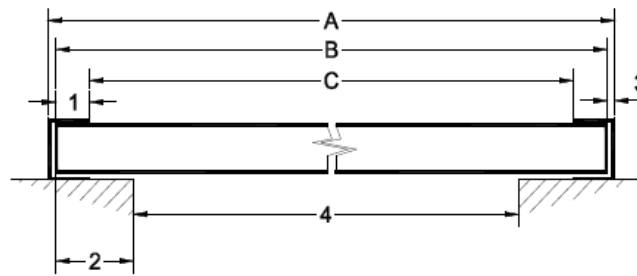
E240
EI₁30
EI₂30
EW60

6. FIELD OF APPLICATION

The conclusions in this chapter apply exclusively to all door set types mounted on an aerated concrete wall which are equivalent in detail, including fittings/furniture and materials used, to the structure described in this report and that also comply with the following conditions:

6.1 SPECIFIC RESTRICTIONS ON MATERIALS AND CONSTRUCTIONS

- The type of metal shall not be changed from that tested.
- The material thickness may be increased up to 50% but it shall not be reduced beyond acceptable metal industry tolerances
- The material thickness of side guides and barrel carrying end plates may be increased up to 50% but it shall not be reduced beyond acceptable metal industry tolerances
- The tightness between the shutter curtain and the vertical guides shall not be reduced for size decrease. See figure below.



b)

Key

- a) sliding door
- b) rolling shutter doorset
- A clearance distance between inside of guides
- B width of rolling shutter curtain
- C distance between vertical guides
- 1 tightness
- 2 overlap
- 3 clearance gap
- 4 clear opening

 Tightness of the interlock $B-C/2$

Figure 6.1 Source: EN1634-1:2014

6.2 FIXINGS

The number of fixings to attach the frame to the support structure may be increased but not decreased. The centre to centre distance between the fastenings may be reduced but not increased.

6.3 PERMISSIBLE SIZE VARIATIONS

- For insulated metal doors size decrease is permitted with a limit of 50% reduction in width and 75% reduction in height
- Size increase is permitted for EI₁ and EI₂ 30 minutes, maximum 30% in height and 10% in width.

6.4 SUPPORTING CONSTRUCTION

The door set built on to a standard low density rigid support construction as specified in EN 1363-1 can be applied to a door set mounted in the same manner on a wall provided it has a density of at least $650 \pm 200 \text{ kg/m}^3$ and a minimum wall thickness of 200 mm, with the same or higher fire resistance.

7. LIMITATIONS

This classification report does not represent any type approval or certification of the product.



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8. FIGURES

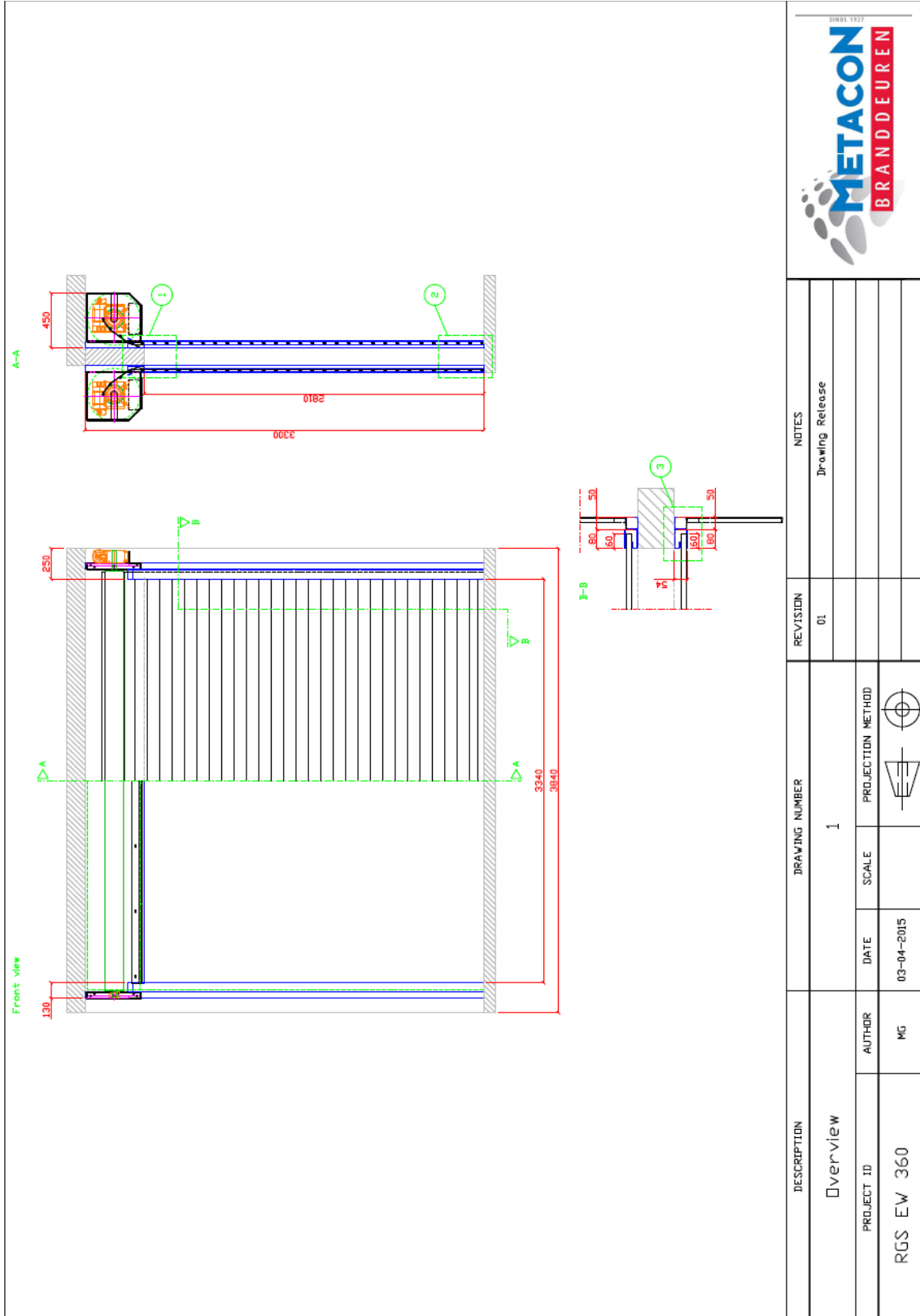


Figure 1 Overview

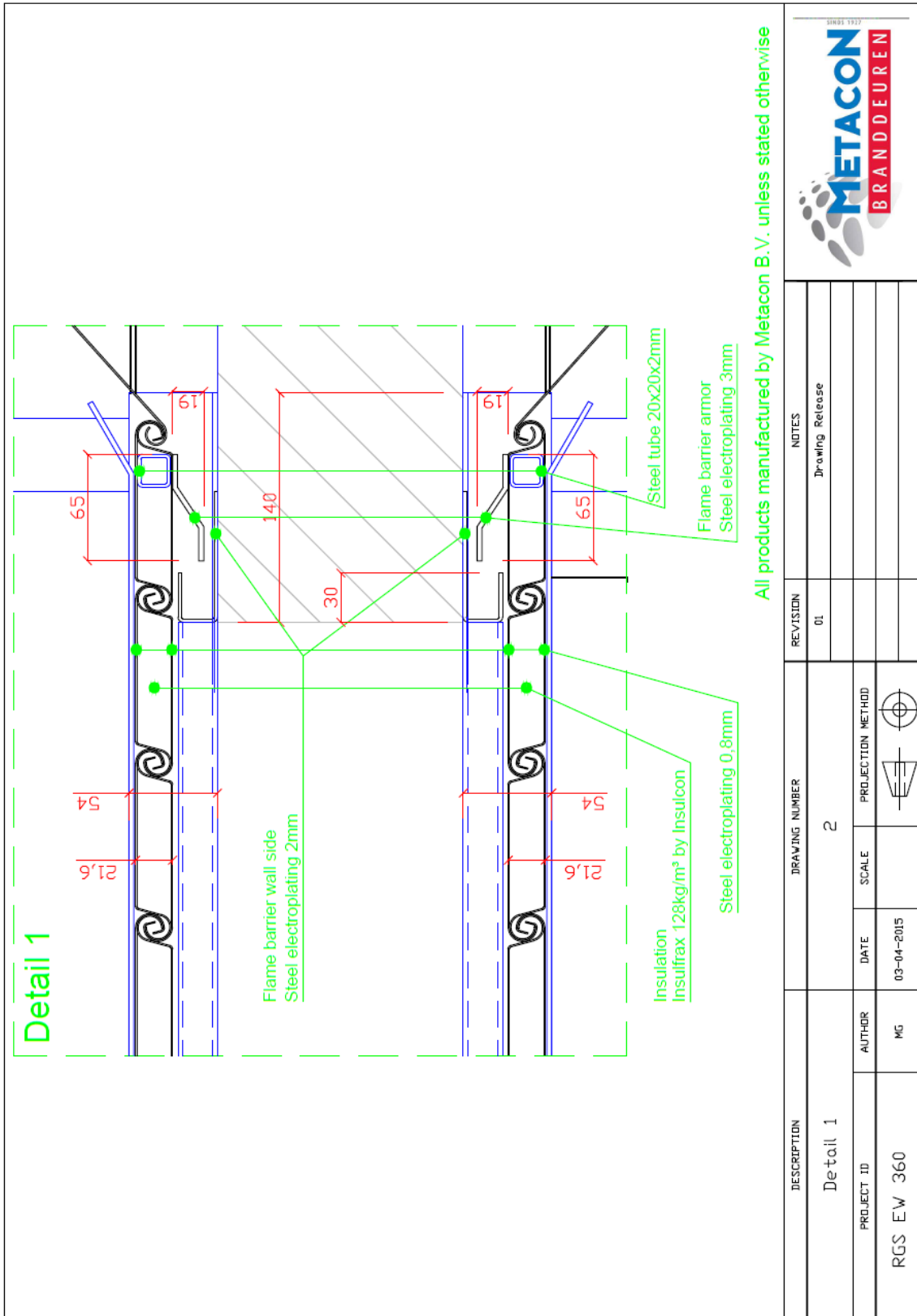


Figure 2 Detail 1

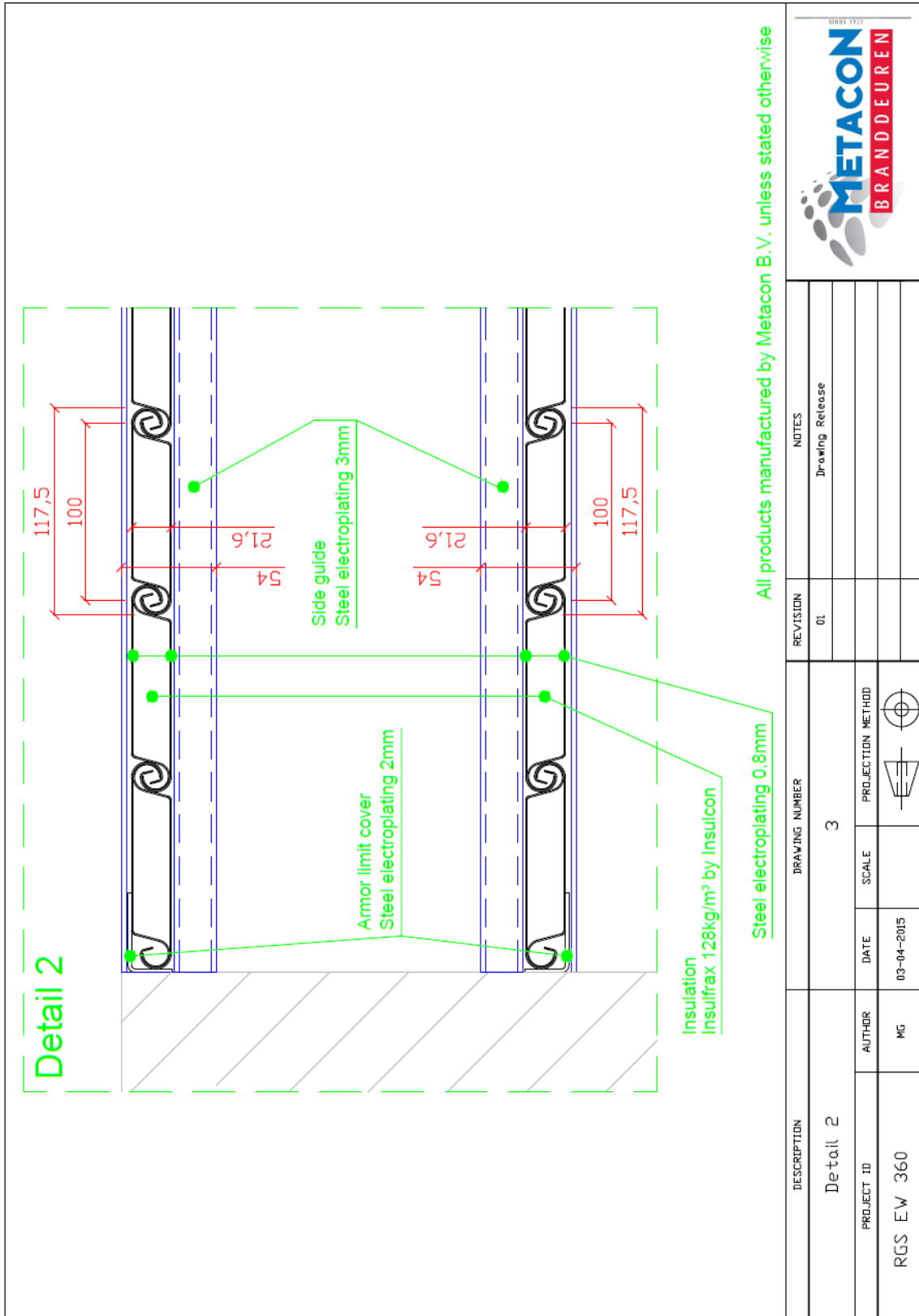


Figure 3 Detail 2

