



WINDLOAD CALCULATION

UNI EN 1991-1-4/NA:2010

Created by: Ufficio tecnico Tecnaria - Tecnaria SPA

02 maggio 2024

CUSTOMER

CONTACT PERSON

PROJECT

Disclaimer

Questa comunicazione comporta assunzione di responsabilità della nostra società per quanto da noi calcolato con solo riferimento alle caratteristiche meccaniche dei fissaggi da noi forniti. Non si assume alcuna responsabilità con riferimento alle altre componenti costituenti la copertura e alla modalità di realizzazione della stessa, essendo al di fuori del nostro controllo. Il progettista strutturale (o il direttore dei lavori) in qualità di tecnico abilitato dovrà redigere la relazione di calcolo strutturale firmata.

Questa nostra valutazione non può sostituire le capacità del tecnico di effettuare una valutazione critica dei risultati ottenuti e di scegliere le soluzioni più idonee alle varie situazioni specifiche.
Il tecnico dovrà controllare la correttezza dei dati di calcolo della struttura.

Date: 02/05/2024

Customer:

Project:

Created by: Ufficio tecnico Tecnaria - Tecnaria SPA

, E-mail: tecnico@tecnaria.com

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Windload calculation

UNI EN 1991-1-4/NA:2010

| | | | | | |
|------------------------------------|--|---------------------------|----|---------------------|----|
| Date: | 02 mag 2024 | | | | |
| Customer: | | | | | |
| Project: | | | | | |
| Building height (m): | 10.5 | Building length (m): | 25 | Building width (m): | 40 |
| Type of roof: | Tetti piani $\leq 5^\circ$, Normale o parapetto, Parapet height (mm): 500 | | | | |
| Type of roof deck: | Cemento C25 | | | | |
| Pressure coefficient (Cpi): | Supporto a tenuta d'aria (Cpi=0,0) | | | | |
| Type of terrain: | Italy classe di rugosità D | | | | |
| Site location: | Scegli..., Italy (bologna,) | Wind speed at site (m/s): | 25 | | |
| Site related load factors: | Altitude: 60m Calt: 1,000 Co: 1,0 Cdir: 1,0 Cseason: 1,0 Cpe1 Cprob: 1 | | | | |
| Distance to sea (km): | > 30 km | | | | |
| Characteristic wind pressure (Qp): | 0,93 kN/m ² | | | | |
| Safety coefficient: | elemento costruttivo secondario (YQ=1,25) | | | | |

Insulation board fixing

| Insulation board type: | PIR | | | |
|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| Insulation board size (m): | 1,2x1,2 | | | |
| Insulation thickness (mm): | 120 | | | |
| Insulation old build up (mm): | 0 | | | |
| Fastener methodology: | Linee guida produttore | | | |
| | Corner | Perimeter | Field | Inner field |
| Total area (sqm) | 71 | 185 | 669 | 76 |
| Wtot (kN/sqm) | 2,35 | 1,88 | 1,40 | 0,23 |
| Plate/Tube | Guardian R 75 (450N, 100mm) | Guardian R 75 (450N, 100mm) | Guardian R 75 (450N, 100mm) | Guardian R 75 (450N, 100mm) |
| Fastener | Guardian CS 6,1 (2038N, 70mm) | Guardian CS 6,1 (2038N, 70mm) | Guardian CS 6,1 (2038N, 70mm) | Guardian CS 6,1 (2038N, 70mm) |
| Design load (N/pc): | 450N | 450N | 450N | 450N |
| Fasteners/sqm (pcs) | 2,08 | 2,08 | 2,08 | 2,08 |
| Fasteners/board (pcs) | 3 | 3 | 3 | 3 |
| Number of fixings (pcs) | 148 | 386 | 1394 | 159 |

Fixings summary (pcs): 2087

Roof membrane fixing

| | Corner | Perimeter | Field | Inner field |
|---------------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| Total area / Est. membrane area (sqm) | 71 / 75 | 185 / 196 | 669 / 707 | 76 / 80 |
| Cpe | 2,02 | 1,62 | 1,20 | 0,20 |
| Wtot (kN/m ²) | 2,35 | 1,88 | 1,40 | 0,23 |
| Membrane: | Flagon EP/PR 2,1m | Flagon EP/PR 2,1m | Flagon EP/PR 2,1m | Flagon EP/PR 2,1m |
| Plate/Tube: | Guardian R 48 (800N, 100mm) | Guardian R 48 (800N, 100mm) | Guardian R 48 (800N, 100mm) | Guardian R 48 (800N, 100mm) |
| Fastener: | Guardian CS 6,1 (2038N, 70mm) | Guardian CS 6,1 (2038N, 70mm) | Guardian CS 6,1 (2038N, 70mm) | Guardian CS 6,1 (2038N, 70mm) |
| Design load (N/pc): | 800N | 800N | 800N | 800N |
| Fasteners/sqm (pcs) | 2,94 | 2,35 | 1,74 | 1,03 |
| Distance between fastener rows (mm): | 1980 | 1980 | 1980 | 1980 |
| Fastener CC dist. (mm): | 172 | 215 | 289 | 490 |
| Number of fixings (pcs): | 209 | 436 | 1168 | 79 |

Fixings summary (pcs): 1892

Linear perimeter and upstand fixing

| | |
|--------------------------------|-----|
| Method: | - |
| Total perimeter length (m): | 130 |
| Total number of fixings (pcs): | 0 |

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Project:

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
, E-mail: tecnico@tecnaria.com

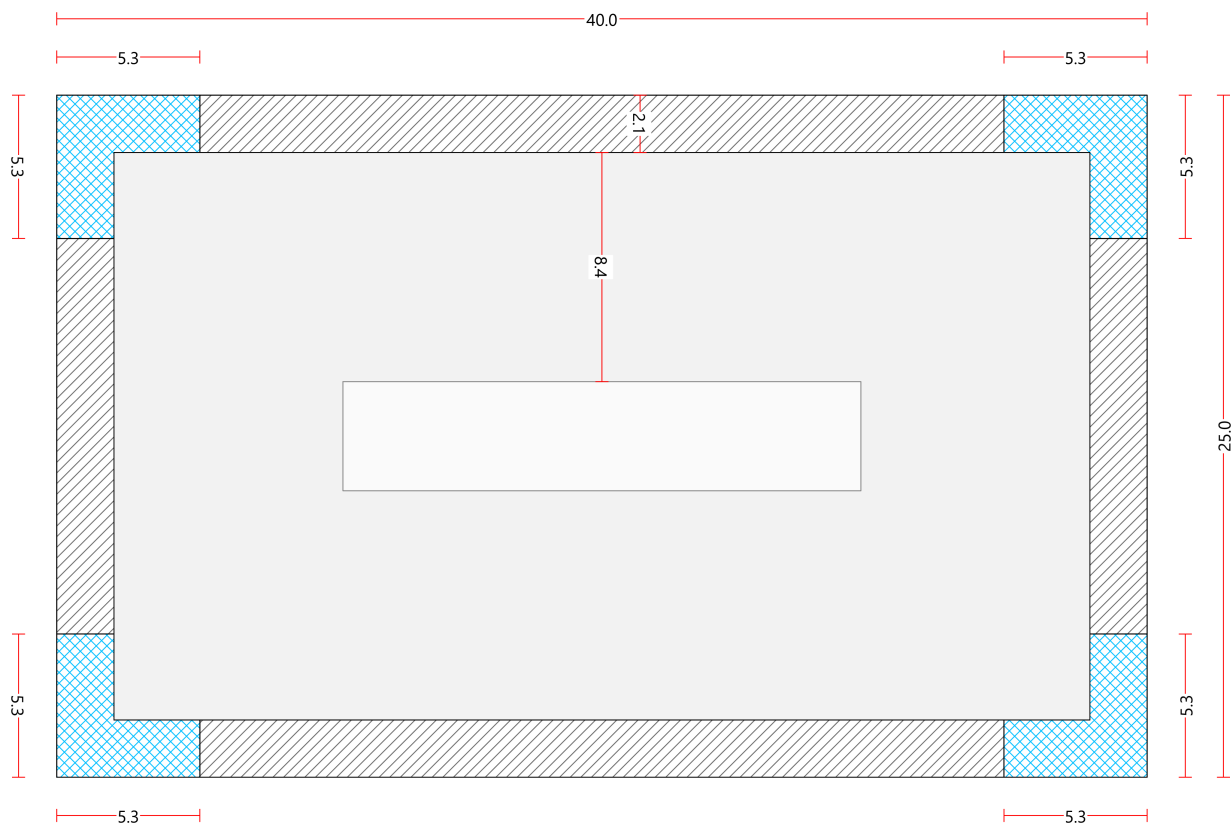
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Roof plan - Membrane fixing pattern

| | |
|-----------|-------------|
| Date: | 02 mag 2024 |
| Customer: | |
| Project: | |

| | Corner | Perimeter | Field | Inner field |
|---------------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| Total area / Est. membrane area (sqm) | 71 / 75 | 185 / 196 | 669 / 707 | 76 / 80 |
| Cpe | 2,02 | 1,62 | 1,20 | 0,20 |
| Wtot (kN/m²) | 2,35 | 1,88 | 1,40 | 0,23 |
| Membrane: | Flagon EP/PR 2,1m | Flagon EP/PR 2,1m | Flagon EP/PR 2,1m | Flagon EP/PR 2,1m |
| Plate/Tube: | Guardian R 48 (800N, 100mm) | Guardian R 48 (800N, 100mm) | Guardian R 48 (800N, 100mm) | Guardian R 48 (800N, 100mm) |
| Fastener: | Guardian CS 6,1 (2038N, 70mm) | Guardian CS 6,1 (2038N, 70mm) | Guardian CS 6,1 (2038N, 70mm) | Guardian CS 6,1 (2038N, 70mm) |
| Design load (N/pc): | 800N | 800N | 800N | 800N |
| Fasteners/sqm (pcs): | 2,94 | 2,35 | 1,74 | 1,03 |
| Distance between fastener rows (mm): | 1980 | 1980 | 1980 | 1980 |
| Fastener CC dist. (mm): | 172 | 215 | 289 | 490 |
| Number of fixings (pcs): | 209 | 436 | 1168 | 79 |

-  Zona d'angolo
 -  Zona di perimetro
 -  Zona di campo
 -  Zona di campo interno
- Unità: Metro (m)
Building height: 10,5



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
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Windload calculation

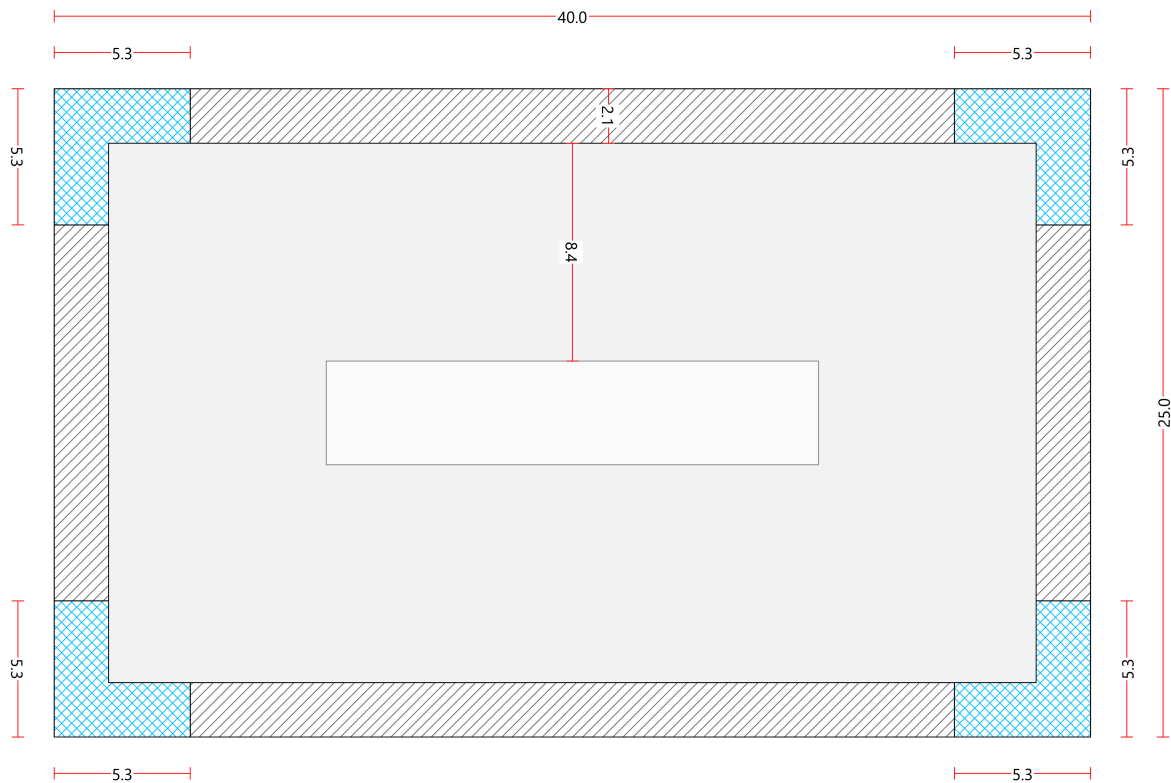
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Roof plan - Separate fixing of insulation

| | | | | |
|-------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
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| Insulation board type: | PIR | | | |
| Insulation board size (m): | 1,2x1,2 | | | |
| Insulation thickness (mm): | 120 | | | |
| Insulation old build up (mm): | 0 | | | |
| Fastener methodology: | Linee guida produttore | | | |
| | Corner | Perimeter | Field | Inner field |
| Total area (sqm) | 71 | 185 | 669 | 76 |
| Wtot (kN/sqm) | 2,35 | 1,88 | 1,40 | 0,23 |
| Plate/Tube | Guardian R 75 (450N, 100mm) | Guardian R 75 (450N, 100mm) | Guardian R 75 (450N, 100mm) | Guardian R 75 (450N, 100mm) |
| Fastener | Guardian CS 6,1 (2038N, 70mm) | Guardian CS 6,1 (2038N, 70mm) | Guardian CS 6,1 (2038N, 70mm) | Guardian CS 6,1 (2038N, 70mm) |
| Design load (N/pc): | 450N | 450N | 450N | 450N |
| Fasteners/sqm (pcs) | 2,08 | 2,08 | 2,08 | 2,08 |
| Fasteners/board (pcs) | 3 | 3 | 3 | 3 |
| Number of fixings (pcs) | 148 | 386 | 1394 | 159 |

-  Zona d'angolo
 -  Zona di perimetro
 -  Zona di campo
 -  Zona di campo interno
- Building height: 10,5

Unità: Metro (m)



Date: 02/05/2024

Customer:

Project:

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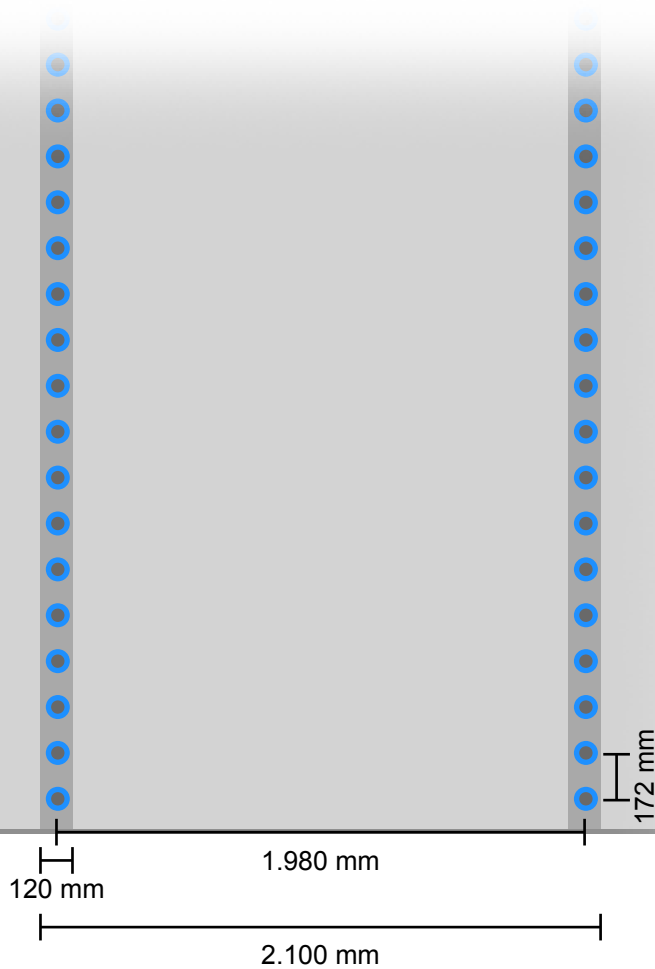
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| | |
|-----------|-------------|
| Date: | 02 mag 2024 |
| Customer: | |
| Project: | |

Fixing pattern - Corner

- Overlap
- Fastener

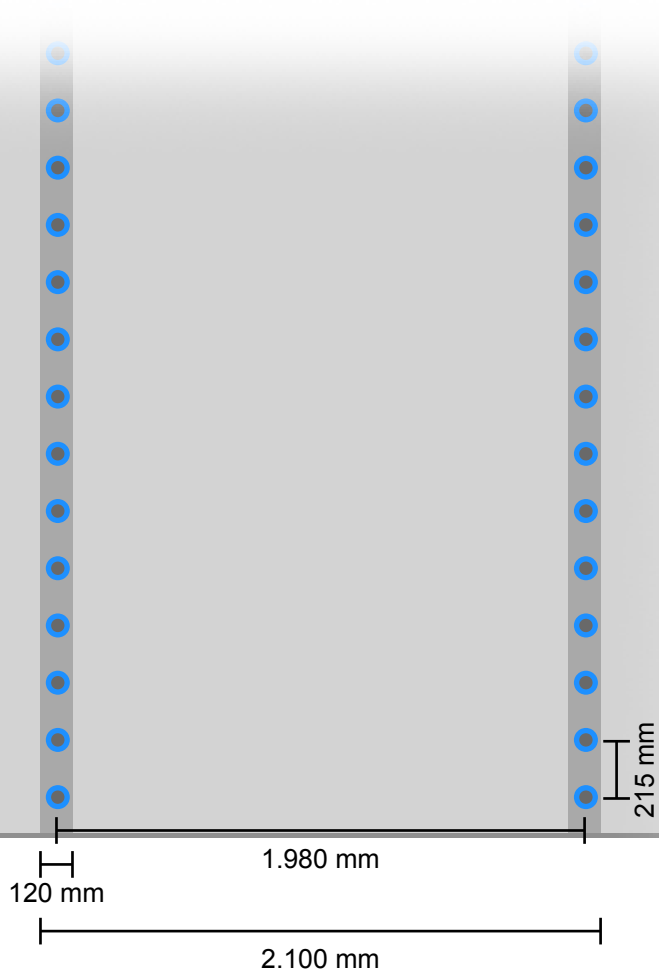


Please note that this is only a visual representation and not set to scale.

| | |
|-----------|-------------|
| Date: | 02 mag 2024 |
| Customer: | |
| Project: | |

Fixing pattern - Perimeter

- Overlap
- Fastener

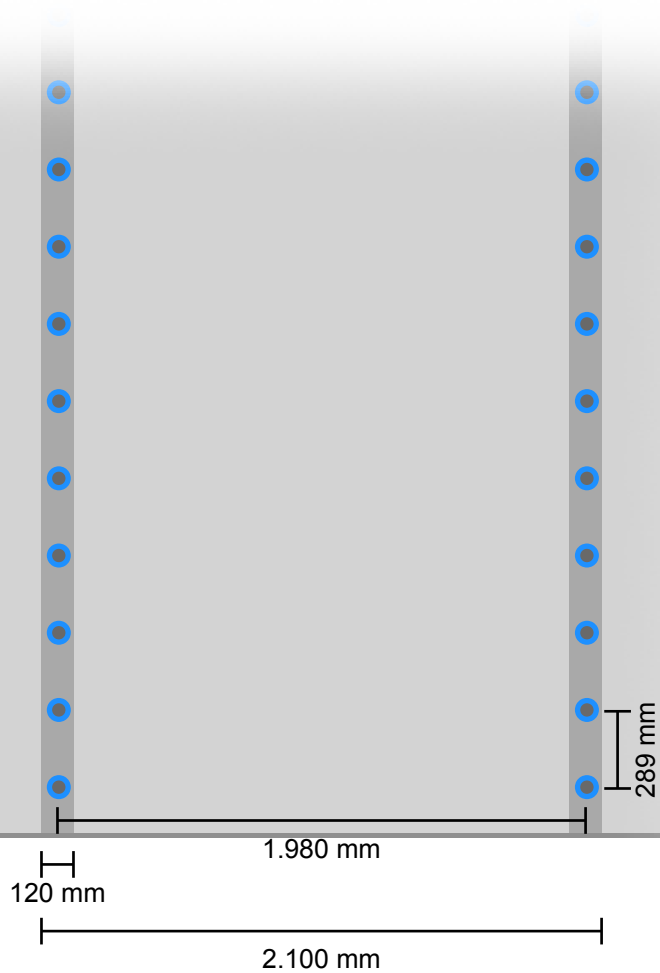


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| | |
|-----------|-------------|
| Date: | 02 mag 2024 |
| Customer: | |
| Project: | |

Fixing pattern - Field

- Overlap
- Fastener

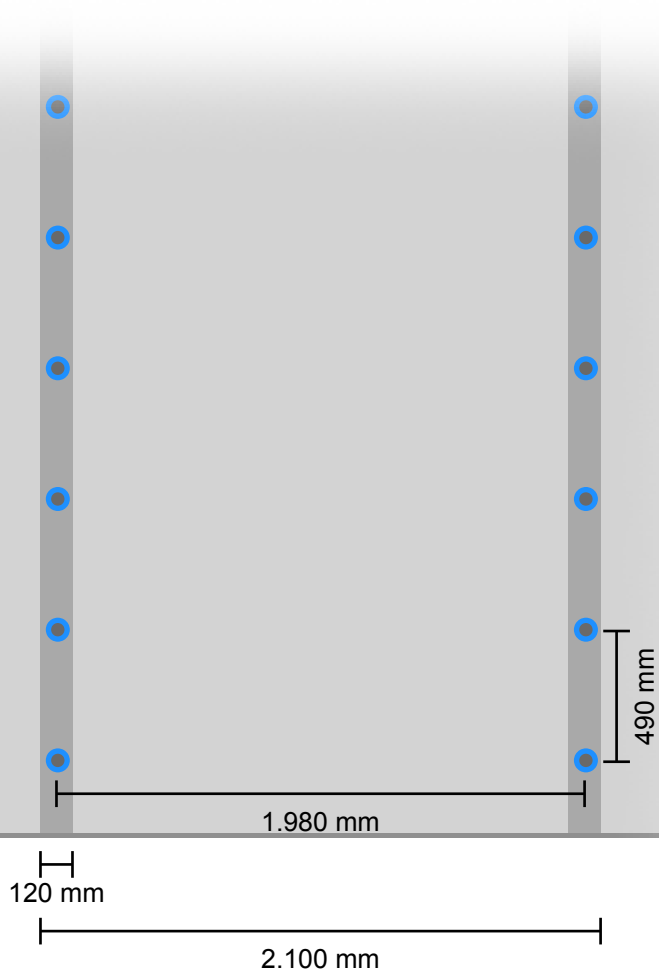


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| | |
|-----------|-------------|
| Date: | 02 mag 2024 |
| Customer: | |
| Project: | |

Fixing pattern - Inner field

- Overlap
- Fastener



| | |
|-----------|-------------|
| Date: | 02 mag 2024 |
| Customer: | |
| Project: | |

Materials - Insulation board & fixing

| <i>Insulation</i> | | Insulation (pcs) | |
|-------------------|--|------------------|--|
| PIR | | n/a | |
| <i>Plate/Tube</i> | | Plate/Tube (pcs) | |
| Guardian R 75 | | 2.086 | |
| <i>Fasteners</i> | | Fasteners (pcs) | |
| Guardian CS 6,1 | | 2.086 | |

Materials - Roof membrane & fixing

| <i>Membranes</i> | | Total area (sqm) | |
|-------------------|--|------------------|--|
| Flagon EP/PR 2,1m | | 1.059 | |
| <i>Plate/Tube</i> | | Plate/Tube (pcs) | |
| Guardian R 48 | | 1.892 | |
| <i>Fasteners</i> | | Fasteners (pcs) | |
| Guardian CS 6,1 | | 1.892 | |