



**RIB-ROOF 465**

**zambelli**

SIMPLY COVERING FUNCTIONS

MADE IN GERMANY

# RIB-ROOF 465

## CONVINCING IN DESIGN AND FUNCTION

which satisfies both visually and functionally. The slim and round shaped pro RIB-ROOF metal roofing systems stand for high functionality and safety. Our products save time, costs and problems as we emphasize handling and use. RIB-ROOF 465 follows these basic ideas, gaining experience and developing further designs. By focusing on our principles, we have developed a design which satisfies both visually and functionally. The slim and round shaped profiled sheet seam makes RIB-ROOF 465 creative and interesting.

### Convincing design!

- ✓ Offering design options both in roof appearance and material choices
- ✓ Standard panel width: 465 mm

### Proven functionality!

- ✓ Suitable for all roof build-ups and substructures
- ✓ Installation possible for roof pitches up from 1,5°
- ✓ Diverse shapes of profiled sheets up to 33m, rollforming aside is also possible

Of course, RIB-ROOF 465 offers Zambelli's simple and time saving installation technique. A safe roof cover is guaranteed in the long term by an excellent sliding ability and stable profile sheet connection. RIB-ROOF 465 proves that a sophisticated technique does not have to be complicated but also can be good-looking.

### Clever technique!

- ✓ Stable profiled sheet connection without any zipping or crimping
- ✓ No time consuming traditional halter lay out required
- ✓ Excellent sliding ability by our innovative directional clip
- ✓ Simple and time-saving installation: positions of clips is determined by the profiled sheet, place clips, swivel profiled sheet and lock-into-place
- ✓ Unique male and female inter-locking seam
- ✓ Installation without transversal joint



### FILM OF MOBILE ROLLFORMING

Discover how smoothly the production of profiled sheets with lengths over 33 m works on site by means of our mobile rollforming machines. Direct link for smartphones, which are QR-capable, or on the Internet <http://mobile-rollforming.zambelli.de>

### RIB-ROOF 465

#### INSTALLATION WITH SLIDING CLIPS

##### STRAIGHT PROFILED SHEETS WITH STANDARD CLIPS



#### FILM OF INSTALLATION PRINCIPLE RIB-ROOF 465

Discover within two minutes how to install RIB-ROOF 465.  
Direct link for smartphones, which are QR-capable, or on the Internet  
<http://install-movies-465.zambelli.de>

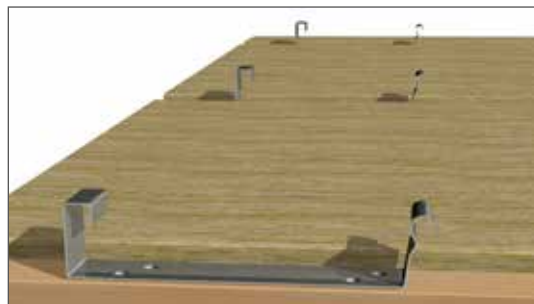


#### Film of installation principle RIB-ROOF 465 with standard clips on wooden counter-/transverse lathing

Discover within two minutes how to install RIB-ROOF 465 with straight profiled sheets and standard clips.  
<http://install-465.zambelli.de>

#### 1. Place the first row of clips

Align the clips (start or standard clips) along the verge and fasten them with rivets and screws approved by Construction Authorities (chapter 1.3.2). Further pre-assembling of sliding clips isn't necessary. The sliding clip distances depend on project specific data (span limits/ fixing element distances for enclosed halls, refer to chapter 2.8). Please generally pay attention to a higher wind load in edge and corner areas

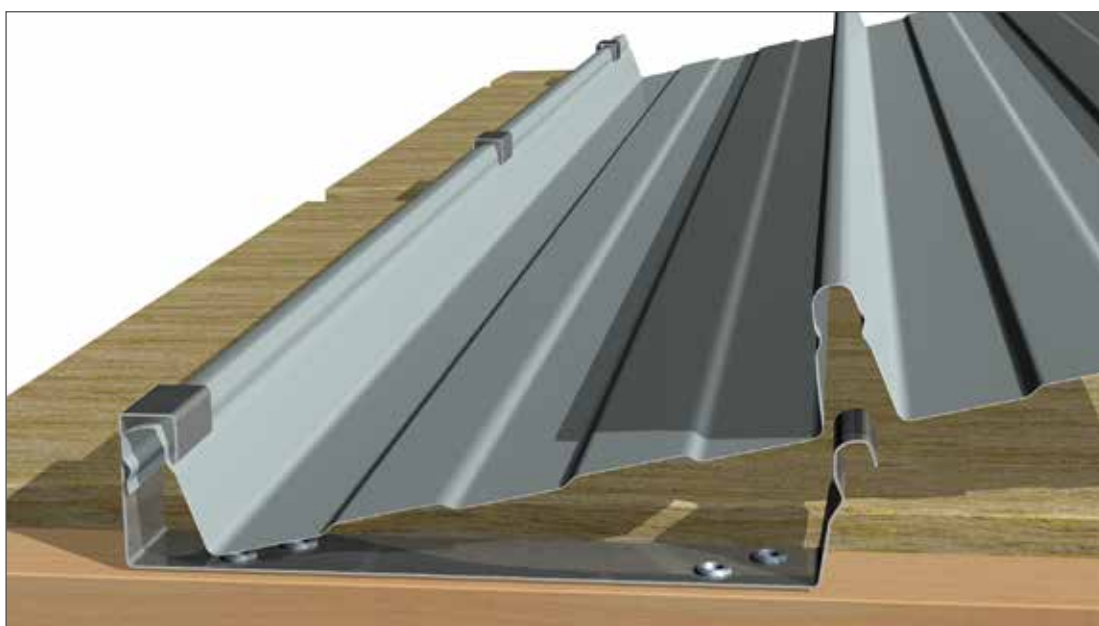


The first row of sliding clips with start clips is aligned along the verge side.

#### 2. Insert the first profiled sheet

The first profiled sheet is swivelled with the large rib into the overlapping start clip and clicked onto the clip in the middle rib. Alternatively with standard clip, it is possible to press the large rib in the overlapping area together and click the profiled sheet with large

and middle rib onto the clip (click-into-place is hearable). Fasten the profiled sheet with brackets which spread to the outer rib on the substructure (this isn't necessary when using the start clip).



# RIB-ROOF 465

## INSTALLATION TECHNIQUE

### 3. Place the next row of clips

The position of the next row depends on the construction width of the elements. We recommend to use a plumb line on the eaves as well as to regularly check the construction width in order to ensure a parallel and aligned installation of the profiled sheets.

Now fasten the next row of clips at an angle of  $> 90^\circ$  to the fastening structure to the rear edging of the bare small rib of the profiled sheet and swivel the profiled sheet onto the substructure. Click the clips into place in the longitudinal trough of the rib and fasten them onto the substructure.



The construction widths should be checked when installing profiled sheets. The standard clip is used up from the second row of clips.

Please fasten every profiled sheet with a fixed-point clip or fixed-point profile in order to avoid a slide-off. Profiled sheets up to approx. 20 m, roof pitches  $< 15^\circ$  and normal snow loads, each profiled sheet's small rib is fastened at its retaining bracket shoulder at ridge by means of a cup blind rivet at side (4.8 mm x length 12.5 mm, flat round head 9.5 mm). The rivet head is covered with the large rib of next profiled sheet.

Set the fixed point with sufficient distance to the ridge when installing longer profiled sheets in order to ensure a greater material expansion. Please also take into consideration the length expansion of the profiled sheet from fixed-point to ridge, also when using ridge caps, e.g. with enlarged closures.



Fixed-point clip

With roof pitches  $> 15^\circ$ , high snow loads and sheet lengths of more than approx. 20 m and height of thermal insulation  $\geq 160$  mm, please contact us in advance so that we can plan the necessary amount of fixed-points with special constructions, e.g. fixed-point clip/fixed-point profile or standard clips on hat profile.

### 4. Insert the next profiled sheet

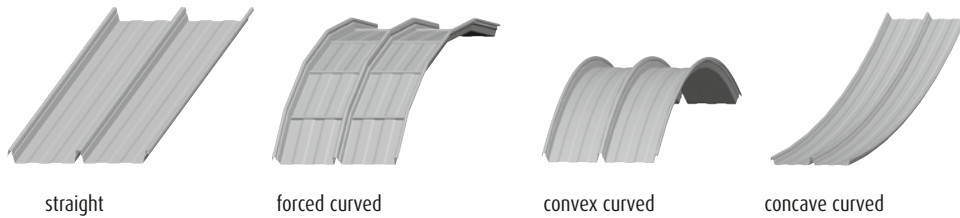
Click the large and middle rib of the second profiled sheet onto the first one and onto the exposed part of the clip. Use the alternate merging principle and proceed from eaves point to ridge point. The clicking normally occurs by well-aimed walking (utilities: wooden

batten with drilled grooves). Thanks to moulded longitudinal troughs, the longitudinal pushes are rainproof after having been clicked into place. Zipping by machine or working concerning craftsmanship isn't necessary.

# RIB-ROOF 465

## DELIVERY PROGRAM

Standard construction width = 465 mm



| Profiled sheet |            |          |                  |                              |
|----------------|------------|----------|------------------|------------------------------|
|                |            |          |                  |                              |
| Standard clip  | Start clip | End clip | Directional clip | Directional profile          |
|                |            |          | 200 mm           | 750 mm<br>1500 mm<br>2600 mm |

### Ridge

| Ridge cap | Closure | Profile filler, top side | Ventilation ridge cap | Ventilation closure |
|-----------|---------|--------------------------|-----------------------|---------------------|
|           |         |                          |                       |                     |

### Verge

| Cover sheet for verge | Suspended profile | Stopping plate | Variable cover sheet for verge |
|-----------------------|-------------------|----------------|--------------------------------|
|                       |                   |                |                                |

### Eaves

| Gutter inlet sheet | Eaves panel | Profile filler, rear side | Eaves angle |
|--------------------|-------------|---------------------------|-------------|
|                    |             |                           |             |

### Accessories

| Snow guard bracket | Snow guard pipe with groove      | Solar pipe with groove | Pipe connector | Ice stopper | Snow guard raising element |
|--------------------|----------------------------------|------------------------|----------------|-------------|----------------------------|
|                    |                                  |                        |                |             |                            |
| Solar bracket      | Bracket for lightning protection | Tread support          | Coil material  | Flashings   | Tools for profiled sheets  |
|                    |                                  |                        |                |             |                            |
| Fall arrest system | screws                           | Walkway                | Soaker         | Bezel       | Sanitarian vent conical    |
|                    |                                  |                        |                |             |                            |

# DELIVERY PROGRAM

## TAPERED, CURVED, TAPERED CURVED PROFILED SHEETS

### TAPERED PROFILED SHEETS

RIB-ROOF profiled sheets are also available tapered, curved or tapered curved. Tapered profiled sheets with a minimum construction width 230mm and a maximum of 500 mm are executable. Apart from the standard width 500 mm, we are prepared to manufacture other construction widths e.g. 333mm, 400 mm or up to 600 mm as a maximum, upon request.

### CURVED PROFILED SHEETS

The requirement of a minimum roof pitch for curved roofs is dropped (locally limited) if the roof elements in areas of roof pitches  $\leq 2.9^\circ$  (5 %) are arranged in such a way that they go continuously through or are welded at the ridge side.

In general: As the profiled sheets have to be pressed onto the requested radius when carrying out force-curving, waves are possible. Therefore, curving with machines is the optically better solution.

Depending on the material and material thickness (t in mm) when curving with machines, the following minimum bending radii have to be observed:

#### Minimum bending radii with RIB-ROOF 465

| Material      | Material thickness t | convex  | concave  |
|---------------|----------------------|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
|               | [mm]                 | Radius [m]                                                                                | Radius [m]                                                                                 |
| Steel         | 0.63                 | 6.00                                                                                      | 20.00                                                                                      |
| Aluminium     | 1.00                 | 6.00                                                                                      | 20.00                                                                                      |
| Aluminium     | 0.90                 | 10.00                                                                                     | 20.00                                                                                      |
| Aluminium     | 0.80                 | 15.00                                                                                     | -                                                                                          |
| Titanium zinc | 1.00                 | on request                                                                                | on request                                                                                 |
| Copper        | 0.60                 | on request                                                                                | on request                                                                                 |

Table of minimum bending radii

Please contact us in advance if you intend to order curved profiled sheets with low bending radii. **RIB-ROOF 465** profiled sheets can alternatively be forced-curved so that low bending radii are possible. RIB-ROOF 465 profiled sheets can also be curved without any machines with a **radius over 60 m** but forced-curved.

# MATERIAL AND SURFACE SELECTION

## TAKE ADVANTAGE OF DIVERSITY

The materials and colours shown below are on stock.

### MATERIALS

|                                                                                    |                                                                                               |
|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
|   | <b>Aluminium</b><br>mill finish / stucco-embossed 0.7 / 1.0 mm                                |
|   | <b>Aluminium</b><br>mill finish / stucco-embossed,<br>protective plating on both sides 1.0 mm |
|   | <b>Alu-zinc</b><br>steel sheet with alu-zinc alloy<br>corrosion protection class III 0.63 mm  |
|   | <b>Titanium zinc VMZINC</b><br>mill finish / pre-weathered 0.7 / 0.8 / 1.0 mm                 |
|  | <b>Copper KME</b><br>TECU® 0.6 mm                                                             |

### SPECIAL SURFACES

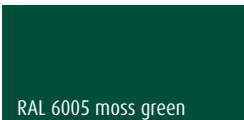
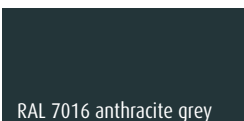
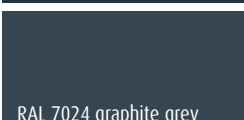
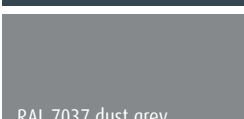
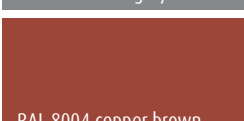
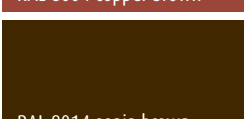
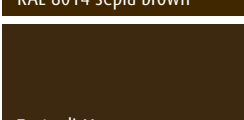
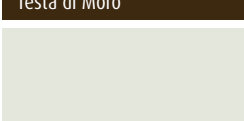
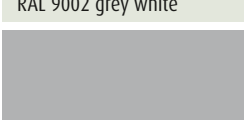
Special colours and surfaces are on request available, e.g. in aluminium:

|                                                                                     |                                                                |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------|
|  | <b>Patina Look</b>                                             |
|  | <b>Zinc Look</b><br>Delivery is effected with protective foil. |
|  | <b>Stucco-embossed Patina Matt</b>                             |
|  | <b>AluNatur</b><br>Available in many colour variations.        |

We are also prepared to deliver other colour-coatings, materials, thicknesses, and lacquer qualities subject to certain amounts and adequate delivery times. Price on request.



### COLOUR-COATINGS

|                                                                                      |                                                                                                              |
|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
|    | <b>Steel</b><br>sheet galvanised, polyester coated 0.63 mm<br><b>Aluminium</b> polyester coated 0.7 mm       |
|    | <b>Steel</b><br>sheet galvanised, polyester coated 0.63 mm                                                   |
|    | <b>Steel</b><br>sheet galvanised, polyester coated 0.63 mm<br><b>Aluminium</b> polyester coated 0.7 mm       |
|    | <b>Steel</b><br>sheet galvanised, polyester coated 0.63 mm<br><b>Aluminium</b> polyester coated 0.7 mm       |
|   | <b>Steel</b><br>sheet galvanised, polyester coated 0.63 mm                                                   |
|  | <b>Steel</b><br>sheet galvanised, polyester coated 0.63 mm<br><b>Aluminium</b> polyester coated 0.7 mm       |
|  | <b>Aluminium</b> polyester coated 0.7 mm                                                                     |
|  | <b>Steel</b><br>sheet galvanised, polyester coated 0.63 mm                                                   |
|  | <b>Steel</b><br>sheet galvanised, polyester coated 0.63 mm                                                   |
|  | <b>Steel</b><br>sheet galvanised, polyester coated 0.63 mm<br><b>Aluminium</b> polyester coated 0.7 / 1.0 mm |
|  | <b>Steel</b><br>sheet galvanised, polyester coated 0.63 mm<br><b>Aluminium</b> polyester coated 0.7 / 1.0 mm |

Images are similar to RAL colours

Aluminium mill finish, coated on both sides,  
Steel sheet, galvanised coated on both sides

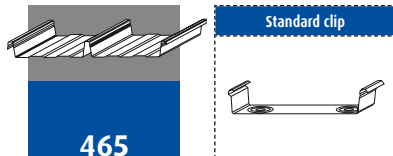
Colour coating on both sides:  
Front side 25 µm in RAL colours, rear side protective coating (light coloured)

# RIB-ROOF METAL ROOFING SYSTEMS

## SPANS / CLIP DISTANCES RIB-ROOF 465

### 2.10 SPANS/CLIP DISTANCES RIB-ROOF 465

2.10.1



| Wind loads according to DIN EN 1991-1-4/NA |                 | Wind zone 1 inland     |                   |                   | Wind zone 2 inland     |                   |                   | Wind zone 3 inland     |                   |                   | Wind zone 4 inland     |                   |                   |                                     |
|--------------------------------------------|-----------------|------------------------|-------------------|-------------------|------------------------|-------------------|-------------------|------------------------|-------------------|-------------------|------------------------|-------------------|-------------------|-------------------------------------|
| Material                                   | Thick-ness (mm) | Clip distance (m) with |                   |                   | Clip distance (m) with |                   |                   | Clip distance (m) with |                   |                   | Clip distance (m) with |                   |                   | max. span limit for acces-sibility* |
|                                            |                 | H                      | G                 | F                 | H                      | G                 | F                 | H                      | G                 | F                 | H                      | G                 | F                 |                                     |
|                                            |                 | (standard area)        | (edge area)       | (corner area)     | (standard area)        | (edge area)       | (corner area)     | (standard area)        | (edge area)       | (corner area)     | (standard area)        | (edge area)       | (corner area)     |                                     |
|                                            |                 | $c_{pe,1} = -1.2$      | $c_{pe,1} = -2.0$ | $c_{pe,1} = -2.5$ | $c_{pe,1} = -1.2$      | $c_{pe,1} = -2.0$ | $c_{pe,1} = -2.5$ | $c_{pe,1} = -1.2$      | $c_{pe,1} = -2.0$ | $c_{pe,1} = -2.5$ | $c_{pe,1} = -1.2$      | $c_{pe,1} = -2.0$ | $c_{pe,1} = -2.5$ |                                     |

| Height of building $h \leq 10.00$ m |      |                                |                              |                              |                                |                              |                              |                                |                              |                              |                                |                              |                              |        |
|-------------------------------------|------|--------------------------------|------------------------------|------------------------------|--------------------------------|------------------------------|------------------------------|--------------------------------|------------------------------|------------------------------|--------------------------------|------------------------------|------------------------------|--------|
|                                     |      | $q_p = 0.50$ kN/m <sup>2</sup> |                              |                              | $q_p = 0.65$ kN/m <sup>2</sup> |                              |                              | $q_p = 0.80$ kN/m <sup>2</sup> |                              |                              | $q_p = 0.95$ kN/m <sup>2</sup> |                              |                              |        |
|                                     |      | w=-0.60<br>kN/m <sup>2</sup>   | w=-1.00<br>kN/m <sup>2</sup> | w=-1.25<br>kN/m <sup>2</sup> | w=-0.78<br>kN/m <sup>2</sup>   | w=-1.30<br>kN/m <sup>2</sup> | w=-1.63<br>kN/m <sup>2</sup> | w=-0.96<br>kN/m <sup>2</sup>   | w=-1.60<br>kN/m <sup>2</sup> | w=-2.00<br>kN/m <sup>2</sup> | w=-1.14<br>kN/m <sup>2</sup>   | w=-1.90<br>kN/m <sup>2</sup> | w=-2.38<br>kN/m <sup>2</sup> |        |
| Steel                               | 0.63 | 3.71 m                         | 2.23 m                       | 1.78 m                       | 2.85 m                         | 1.71 m                       | 1.37 m                       | 2.32 m                         | 1.39 m                       | 1.11 m                       | 1.95 m                         | 1.17 m                       | 0.94 m                       | 1.60 m |
|                                     | 0.75 | 4.21 m                         | 2.53 m                       | 2.02 m                       | 3.24 m                         | 1.94 m                       | 1.55 m                       | 2.63 m                         | 1.58 m                       | 1.26 m                       | 2.21 m                         | 1.33 m                       | 1.06 m                       | 2.40 m |
| Aluminium                           | 0.70 | 1.51 m                         | 0.91 m                       | 0.72 m                       | 1.16 m                         | 0.70 m                       | 0.56 m                       | 0.94 m                         | 0.57 m                       | 0.45 m                       | 0.79 m                         | 0.48 m                       | 0.38 m                       | 1.20 m |
|                                     | 0.80 | 1.97 m                         | 1.18 m                       | 0.94 m                       | 1.51 m                         | 0.91 m                       | 0.73 m                       | 1.23 m                         | 0.74 m                       | 0.59 m                       | 1.04 m                         | 0.62 m                       | 0.50 m                       | 1.50 m |
|                                     | 0.90 | 2.21 m                         | 1.33 m                       | 1.06 m                       | 1.70 m                         | 1.02 m                       | 0.82 m                       | 1.38 m                         | 0.83 m                       | 0.66 m                       | 1.16 m                         | 0.70 m                       | 0.56 m                       | 1.70 m |
|                                     | 1.00 | 2.46 m                         | 1.48 m                       | 1.18 m                       | 1.89 m                         | 1.13 m                       | 0.91 m                       | 1.54 m                         | 0.92 m                       | 0.74 m                       | 1.29 m                         | 0.78 m                       | 0.62 m                       | 1.90 m |

| Height of building $h > 10.00$ m $\leq 18.00$ m |      |                                |                              |                              |                                |                              |                              |                                |                              |                              |                                |                              |                              |        |
|-------------------------------------------------|------|--------------------------------|------------------------------|------------------------------|--------------------------------|------------------------------|------------------------------|--------------------------------|------------------------------|------------------------------|--------------------------------|------------------------------|------------------------------|--------|
|                                                 |      | $q_p = 0.65$ kN/m <sup>2</sup> |                              |                              | $q_p = 0.80$ kN/m <sup>2</sup> |                              |                              | $q_p = 0.95$ kN/m <sup>2</sup> |                              |                              | $q_p = 1.15$ kN/m <sup>2</sup> |                              |                              |        |
|                                                 |      | w=-0.78<br>kN/m <sup>2</sup>   | w=-1.30<br>kN/m <sup>2</sup> | w=-1.63<br>kN/m <sup>2</sup> | w=-0.96<br>kN/m <sup>2</sup>   | w=-1.60<br>kN/m <sup>2</sup> | w=-2.00<br>kN/m <sup>2</sup> | w=-1.14<br>kN/m <sup>2</sup>   | w=-1.90<br>kN/m <sup>2</sup> | w=-2.38<br>kN/m <sup>2</sup> | w=-1.38<br>kN/m <sup>2</sup>   | w=-2.30<br>kN/m <sup>2</sup> | w=-2.88<br>kN/m <sup>2</sup> |        |
| Steel                                           | 0.63 | 2.85 m                         | 1.71 m                       | 1.37 m                       | 2.32 m                         | 1.39 m                       | 1.11 m                       | 1.95 m                         | 1.17 m                       | 0.94 m                       | 1.61 m                         | 0.97 m                       | 0.77 m                       | 1.60 m |
|                                                 | 0.75 | 3.24 m                         | 1.94 m                       | 1.55 m                       | 2.63 m                         | 1.58 m                       | 1.26 m                       | 2.21 m                         | 1.33 m                       | 1.06 m                       | 1.83 m                         | 1.10 m                       | 0.88 m                       | 2.40 m |
| Aluminium                                       | 0.70 | 1.16 m                         | 0.70 m                       | 0.56 m                       | 0.94 m                         | 0.57 m                       | 0.45 m                       | 0.79 m                         | 0.48 m                       | 0.38 m                       | 0.66 m                         | 0.39 m                       | 0.31 m                       | 1.20 m |
|                                                 | 0.80 | 1.51 m                         | 0.91 m                       | 0.73 m                       | 1.23 m                         | 0.74 m                       | 0.59 m                       | 1.04 m                         | 0.62 m                       | 0.50 m                       | 0.86 m                         | 0.51 m                       | 0.41 m                       | 1.50 m |
|                                                 | 0.90 | 1.70 m                         | 1.02 m                       | 0.82 m                       | 1.38 m                         | 0.83 m                       | 0.66 m                       | 1.16 m                         | 0.70 m                       | 0.56 m                       | 0.96 m                         | 0.58 m                       | 0.46 m                       | 1.70 m |
|                                                 | 1.00 | 1.89 m                         | 1.13 m                       | 0.91 m                       | 1.54 m                         | 0.92 m                       | 0.74 m                       | 1.29 m                         | 0.78 m                       | 0.62 m                       | 1.07 m                         | 0.64 m                       | 0.51 m                       | 1.90 m |

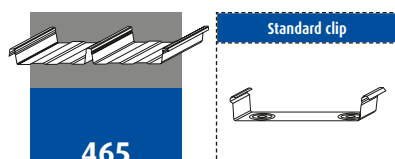
| Height of building $h > 18.00$ m $\leq 25.00$ m |      |                                |                              |                              |                                |                              |                              |                                |                              |                              |                                |                              |                              |        |
|-------------------------------------------------|------|--------------------------------|------------------------------|------------------------------|--------------------------------|------------------------------|------------------------------|--------------------------------|------------------------------|------------------------------|--------------------------------|------------------------------|------------------------------|--------|
|                                                 |      | $q_p = 0.75$ kN/m <sup>2</sup> |                              |                              | $q_p = 0.90$ kN/m <sup>2</sup> |                              |                              | $q_p = 1.10$ kN/m <sup>2</sup> |                              |                              | $q_p = 1.30$ kN/m <sup>2</sup> |                              |                              |        |
|                                                 |      | w=-0.90<br>kN/m <sup>2</sup>   | w=-1.50<br>kN/m <sup>2</sup> | w=-1.88<br>kN/m <sup>2</sup> | w=-1.08<br>kN/m <sup>2</sup>   | w=-1.80<br>kN/m <sup>2</sup> | w=-2.25<br>kN/m <sup>2</sup> | w=-1.32<br>kN/m <sup>2</sup>   | w=-2.20<br>kN/m <sup>2</sup> | w=-2.75<br>kN/m <sup>2</sup> | w=-1.56<br>kN/m <sup>2</sup>   | w=-2.60<br>kN/m <sup>2</sup> | w=-3.25<br>kN/m <sup>2</sup> |        |
| Steel                                           | 0.63 | 2.47 m                         | 1.48 m                       | 1.19 m                       | 2.06 m                         | 1.24 m                       | 0.99 m                       | 1.69 m                         | 1.01 m                       | 0.81 m                       | 1.43 m                         | 0.86 m                       | 0.68 m                       | 1.60 m |
|                                                 | 0.75 | 2.81 m                         | 1.68 m                       | 1.35 m                       | 2.34 m                         | 1.40 m                       | 1.12 m                       | 1.91 m                         | 1.15 m                       | 0.92 m                       | 1.62 m                         | 0.97 m                       | 0.78 m                       | 2.40 m |
| Aluminium                                       | 0.70 | 1.01 m                         | 0.60 m                       | 0.48 m                       | 0.84 m                         | 0.50 m                       | 0.40 m                       | 0.69 m                         | 0.41 m                       | 0.33 m                       | 0.58 m                         | 0.35 m                       | 0.28 m                       | 1.20 m |
|                                                 | 0.80 | 1.31 m                         | 0.79 m                       | 0.63 m                       | 1.09 m                         | 0.66 m                       | 0.52 m                       | 0.89 m                         | 0.54 m                       | 0.43 m                       | 0.76 m                         | 0.45 m                       | 0.36 m                       | 1.50 m |
|                                                 | 0.90 | 1.47 m                         | 0.88 m                       | 0.71 m                       | 1.23 m                         | 0.74 m                       | 0.59 m                       | 1.00 m                         | 0.60 m                       | 0.48 m                       | 0.85 m                         | 0.51 m                       | 0.41 m                       | 1.70 m |
|                                                 | 1.00 | 1.64 m                         | 0.98 m                       | 0.79 m                       | 1.37 m                         | 0.82 m                       | 0.66 m                       | 1.12 m                         | 0.67 m                       | 0.54 m                       | 0.95 m                         | 0.57 m                       | 0.45 m                       | 1.90 m |

Table with max. spans and clip distances (central axis) for enclosed halls, e.g. double pitch roof up to 5° roof pitch.

\* installation-related, e.g. with lathing or Z-profile

# RIB-ROOF METAL ROOFING SYSTEMS

## SPANS / CLIP DISTANCES RIB-ROOF 465



| Wind loads according to DIN EN 1991-1-4/NA |                        | Wind zone 2<br>coasts and islands of Baltic Sea |                                     |                                       | Wind zone 3<br>coasts and islands of Baltic Sea |                                     |                                       | Wind zone 4<br>coasts of North and Baltic Sea as well as islands of Baltic Sea |                                     |                                       | Wind zone 4<br>islands of North Sea     |                                     |                                       |                                                  |
|--------------------------------------------|------------------------|-------------------------------------------------|-------------------------------------|---------------------------------------|-------------------------------------------------|-------------------------------------|---------------------------------------|--------------------------------------------------------------------------------|-------------------------------------|---------------------------------------|-----------------------------------------|-------------------------------------|---------------------------------------|--------------------------------------------------|
| Material                                   | Thick-<br>ness<br>(mm) | Clip distance (m) with                          |                                     |                                       | Clip distance (m) with                          |                                     |                                       | Clip distance (m) with                                                         |                                     |                                       | Clip distance (m) with                  |                                     |                                       | max.<br>span<br>limit<br>for acces-<br>sibility* |
|                                            |                        | H                                               | G                                   | F                                     | H                                               | G                                   | F                                     | H                                                                              | G                                   | F                                     | H                                       | G                                   | F                                     |                                                  |
|                                            |                        | (standard<br>area)<br>$c_{pe,1} = -1.2$         | (edge<br>area)<br>$c_{pe,1} = -2.0$ | (corner<br>area)<br>$c_{pe,1} = -2.5$ | (standard<br>area)<br>$c_{pe,1} = -1.2$         | (edge<br>area)<br>$c_{pe,1} = -2.0$ | (corner<br>area)<br>$c_{pe,1} = -2.5$ | (standard<br>area)<br>$c_{pe,1} = -1.2$                                        | (edge<br>area)<br>$c_{pe,1} = -2.0$ | (corner<br>area)<br>$c_{pe,1} = -2.5$ | (standard<br>area)<br>$c_{pe,1} = -1.2$ | (edge<br>area)<br>$c_{pe,1} = -2.0$ | (corner<br>area)<br>$c_{pe,1} = -2.5$ |                                                  |

| Height of building $h \leq 10.00$ m |                              |                              |                              |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |
|-------------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|--------|
| $q_p = 0.85 \text{ kN/m}^2$         |                              |                              |                              | $q_p = 1.05 \text{ kN/m}^2$  |                              |                              | $q_p = 1.25 \text{ kN/m}^2$  |                              |                              | $q_p = 1.40 \text{ kN/m}^2$  |                              |                              |        |
|                                     | w=-1.02<br>kN/m <sup>2</sup> | w=-1.70<br>kN/m <sup>2</sup> | w=-2.13<br>kN/m <sup>2</sup> | w=-1.26<br>kN/m <sup>2</sup> | w=-2.10<br>kN/m <sup>2</sup> | w=-2.63<br>kN/m <sup>2</sup> | w=-1.50<br>kN/m <sup>2</sup> | w=-2.50<br>kN/m <sup>2</sup> | w=-3.13<br>kN/m <sup>2</sup> | w=-1.68<br>kN/m <sup>2</sup> | w=-2.80<br>kN/m <sup>2</sup> | w=-3.50<br>kN/m <sup>2</sup> |        |
| Steel                               | 0.63                         | 2.18 m                       | 1.31 m                       | 1.05 m                       | 1.77 m                       | 1.06 m                       | 0.85 m                       | 1.48 m                       | 0.89 m                       | 0.71 m                       | 1.32 m                       | 0.79 m                       | 0.64 m |
|                                     | 0.75                         | 2.48 m                       | 1.49 m                       | 1.19 m                       | 2.00 m                       | 1.20 m                       | 0.96 m                       | 1.68 m                       | 1.01 m                       | 0.81 m                       | 1.50 m                       | 0.90 m                       | 0.72 m |
| Aluminium                           | 0.70                         | 0.89 m                       | 0.53 m                       | 0.43 m                       | 0.72 m                       | 0.43 m                       | 0.34 m                       | 0.60 m                       | 0.36 m                       | 0.29 m                       | 0.54 m                       | 0.32 m                       | 0.26 m |
|                                     | 0.80                         | 1.16 m                       | 0.69 m                       | 0.56 m                       | 0.94 m                       | 0.56 m                       | 0.45 m                       | 0.79 m                       | 0.47 m                       | 0.38 m                       | 0.70 m                       | 0.42 m                       | 0.34 m |
|                                     | 0.90                         | 1.30 m                       | 0.78 m                       | 0.62 m                       | 1.05 m                       | 0.63 m                       | 0.50 m                       | 0.88 m                       | 0.53 m                       | 0.42 m                       | 0.79 m                       | 0.47 m                       | 0.38 m |
|                                     | 1.00                         | 1.45 m                       | 0.87 m                       | 0.69 m                       | 1.17 m                       | 0.70 m                       | 0.56 m                       | 0.98 m                       | 0.59 m                       | 0.47 m                       | 0.88 m                       | 0.53 m                       | 0.42 m |

| Height of building $h > 10.00 \text{ m} \leq 18.00 \text{ m}$ |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |  |  |  |
|---------------------------------------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|--------|--|--|--|
| $q_p = 1.00 \text{ kN/m}^2$                                   |                              |                              |                              | $q_p = 1.20 \text{ kN/m}^2$  |                              |                              | $q_p = 1.40 \text{ kN/m}^2$  |                              |                              |        |  |  |  |
|                                                               | w=-1.20<br>kN/m <sup>2</sup> | w=-2.00<br>kN/m <sup>2</sup> | w=-2.50<br>kN/m <sup>2</sup> | w=-1.44<br>kN/m <sup>2</sup> | w=-2.40<br>kN/m <sup>2</sup> | w=-3.00<br>kN/m <sup>2</sup> | w=-1.68<br>kN/m <sup>2</sup> | w=-2.80<br>kN/m <sup>2</sup> | w=-3.50<br>kN/m <sup>2</sup> |        |  |  |  |
| Steel                                                         | 0.63                         | 1.85 m                       | 1.11 m                       | 0.89 m                       | 1.55 m                       | 0.93 m                       | 0.74 m                       | 1.32 m                       | 0.79 m                       | 0.64 m |  |  |  |
|                                                               | 0.75                         | 2.10 m                       | 1.26 m                       | 1.01 m                       | 1.75 m                       | 1.05 m                       | 0.84 m                       | 1.50 m                       | 0.90 m                       | 0.72 m |  |  |  |
| Aluminium                                                     | 0.70                         | 0.75 m                       | 0.45 m                       | 0.36 m                       | 0.63 m                       | 0.38 m                       | 0.30 m                       | 0.54 m                       | 0.32 m                       | 0.26 m |  |  |  |
|                                                               | 0.80                         | 0.98 m                       | 0.59 m                       | 0.47 m                       | 0.82 m                       | 0.49 m                       | 0.39 m                       | 0.70 m                       | 0.42 m                       | 0.34 m |  |  |  |
|                                                               | 0.90                         | 1.10 m                       | 0.66 m                       | 0.53 m                       | 0.92 m                       | 0.55 m                       | 0.44 m                       | 0.79 m                       | 0.47 m                       | 0.38 m |  |  |  |
|                                                               | 1.00                         | 1.23 m                       | 0.74 m                       | 0.59 m                       | 1.02 m                       | 0.61 m                       | 0.49 m                       | 0.88 m                       | 0.53 m                       | 0.42 m |  |  |  |

| Height of building $h > 18.00 \text{ m} \leq 25.00 \text{ m}$ |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |  |  |  |
|---------------------------------------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|--------|--|--|--|
| $q_p = 1.10 \text{ kN/m}^2$                                   |                              |                              |                              | $q_p = 1.30 \text{ kN/m}^2$  |                              |                              | $q_p = 1.55 \text{ kN/m}^2$  |                              |                              |        |  |  |  |
|                                                               | w=-1.32<br>kN/m <sup>2</sup> | w=-2.20<br>kN/m <sup>2</sup> | w=-2.75<br>kN/m <sup>2</sup> | w=-1.56<br>kN/m <sup>2</sup> | w=-2.60<br>kN/m <sup>2</sup> | w=-3.25<br>kN/m <sup>2</sup> | w=-1.86<br>kN/m <sup>2</sup> | w=-3.10<br>kN/m <sup>2</sup> | w=-3.88<br>kN/m <sup>2</sup> |        |  |  |  |
| Steel                                                         | 0.63                         | 1.69 m                       | 1.01 m                       | 0.81 m                       | 1.43 m                       | 0.86 m                       | 0.68 m                       | 1.20 m                       | 0.72 m                       | 0.57 m |  |  |  |
|                                                               | 0.75                         | 1.91 m                       | 1.15 m                       | 0.92 m                       | 1.62 m                       | 0.97 m                       | 0.78 m                       | 1.36 m                       | 0.81 m                       | 0.65 m |  |  |  |
| Aluminium                                                     | 0.70                         | 0.69 m                       | 0.41 m                       | 0.33 m                       | 0.58 m                       | 0.35 m                       | 0.28 m                       | 0.49 m                       | 0.29 m                       | 0.23 m |  |  |  |
|                                                               | 0.80                         | 0.89 m                       | 0.54 m                       | 0.43 m                       | 0.76 m                       | 0.45 m                       | 0.36 m                       | 0.63 m                       | 0.38 m                       | 0.30 m |  |  |  |
|                                                               | 0.90                         | 1.00 m                       | 0.60 m                       | 0.48 m                       | 0.85 m                       | 0.51 m                       | 0.41 m                       | 0.71 m                       | 0.43 m                       | 0.34 m |  |  |  |
|                                                               | 1.00                         | 1.12 m                       | 0.67 m                       | 0.54 m                       | 0.95 m                       | 0.57 m                       | 0.45 m                       | 0.79 m                       | 0.48 m                       | 0.38 m |  |  |  |

Table with max. spans and clip distances (central axis) for enclosed halls, e.g. double pitch roof up to 5° roof pitch.

\* installation-related, e.g. with lathing or Z-profile



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