

**Cross sectional data – calculated for safety class 1**

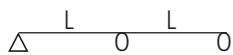
Table 1

|                                  |           |                     |       |       |       |       |       |
|----------------------------------|-----------|---------------------|-------|-------|-------|-------|-------|
| Sheet thickness, nominal         | $t_{nom}$ | mm                  | 0,7   | 0,8   | 0,90  | 1,00  | 1,20  |
| Sheet thickness in calculation   | $t_{ber}$ | mm                  | 0,655 | 0,750 | 0,855 | 0,940 | 1,13  |
| Tensile yield stress             | $f_y$     | Mpa                 | 350   | 350   | 350   | 350   | 350   |
| Mass                             | m         | kg/m                | 8,40  | 9,60  | 10,80 | 12,00 | 14,40 |
| Selfweight including overlap     | g         | kN/m <sup>2</sup>   | 0,09  | 0,10  | 0,12  | 0,13  | 0,15  |
| Bearing resistance $l_s=100$ mm  | $R_d$     | kN/m                | 21,99 | 28,59 | 36,68 | 43,86 | 61,78 |
| Bearing resistance $l_s=200$ mm  | $R_d$     | kN/m                | 29,07 | 37,66 | 48,11 | 57,36 | 80,37 |
| Moment narrow flange             | $M_d$     | kNm/m               | 11,88 | 14,26 | 16,66 | 18,46 | 22,19 |
| Moment of inertia in compression | $I_{efd}$ | mm <sup>4</sup> /mm | 2549  | 2919  | 3328  | 3659  | 4398  |
| Moment broad flange              | $M_d$     | kNm/m               | 9,19  | 11,46 | 14,03 | 16,20 | 21,30 |
| Moment of inertia in compression | $I_{efd}$ | mm <sup>4</sup> /mm | 2550  | 2920  | 3328  | 3659  | 4399  |

TP 128 web perforated has a 4% lower moment and moment of inertia value as well as a 12% lower bearing resistance value – multiply by 0.96 and 0.88 respectively.

**Rapid design – Two section sheeting of safety class 1 and 2**

Table 2



Rapid design has been done for snow load and selfweight 0.30 kN/m<sup>2</sup> +  $T_p$ . Roof pitch 0 degrees.

| Snow load<br>$S_o$<br>kN/m <sup>2</sup> | Load reduction factor<br>$\psi$ | Maximum span m (L) for different thicknesses and bearer width $l_s$ |                         |                         |                         |                         |
|---|---------------------------------|---|-------------------------|-------------------------|-------------------------|-------------------------|
|   |                                 | t = 0,70<br>$l_s = 150$   | t = 0,80<br>$l_s = 150$ | t = 0,90<br>$l_s = 150$ | t = 1,00<br>$l_s = 150$ | t = 1,20<br>$l_s = 150$ |
| 1,0                                     | 0,6                             | 7,58 m  | 8,47 m                  | 9,28 m                  | 9,86 m                  | 10,70 m                 |
| 1,5                                     | 0,7                             | 6,33 m  | 7,11 m                  | 7,83 m                  | 8,35 m                  | 9,34 m                  |
| 2,0                                     | 0,7                             | 5,51 m  | 6,21 m                  | 6,87 m                  | 7,34 m                  | 8,25 m                  |
| 2,5                                     | 0,7                             | 4,91 m  | 5,56 m                  | 6,16 m                  | 6,60 m                  | 7,45 m                  |
| 3,0                                     | 0,8                             | 4,45 m  | 5,06 m                  | 5,63 m                  | 6,04 m                  | 6,83 m                  |
| 4,0                                     | 0,8                             | 3,79 m  | 4,33 m                  | 4,84 m                  | 5,21 m                  | 5,92 m                  |

**Explanatory notes to calculations**

All data are based on Swedish Board of Housing, Building and Planning design regulations BKR 99 and StBK-N5.

The sheeting should be checked for the following load combinations.

**Loadbearing capacity** Snow + Selfweight: (1)  $Q_d = 1,3 \times \mu \times S_o + G$   
Wind suction + Selfweight: (2)  $Q_d = 1,3 \times \mu \times q_k - 0,85 \times G$

**Deflection** Ord. snow + Selfweight: (3)  $Q_o = 1,0 \times \mu \times \psi \times S_o + G$   
 $\mu$  = shape factor for snow load and wind load  
 $S_o$  = basic value of snow load  
 $G$  = selfweight  
 $q_k$  = characteristic value of wind load  
 $\psi$  = load reduction factor for ordinary load (See table 2)

At pitches greater than 20°, load combinations with wind pressure should also be considered. Accumulation of snow should be considered.

Minimum fastening:

End bearer 2 screw in bottom of each profile  
Intermediate, end overlap 1 screw in bottom of each profile  
Side overlap Maximum c/c 500 mm

Where the span tables are insufficient, the sheeting should be designed in accordance with the conditions set out below, whereby the dimensioning values for  $M_d$  and  $R_d$  as per table 1 are divided by partial coefficients  $\gamma_v$  specified below for the respective security classes.

|                     |  | $\gamma_v$ |     |      |
|---------------------|--|------------|-----|------|
|                     | Security class   | 1          | 2   | 3    |
| Field               | $M_d \leq M_d$   | 1,0        | 1,1 | 1,2  |
| Intermediate bearer | $M_d - R_d \times l_s/8 \leq M_d$                                | 1,0        | 1,0 | 1,09 |
|                     | $(M_d - R_d \times l_s/4) / M_d + 0,64 \times R_d/R_d \leq 1,16$ | 1,0        | 1,0 | 1,09 |
|                     | $R_d \leq R_d$   | 1,0        | 1,0 | 1,09 |
| End bearer          | $R_d \leq R_d$ eller $R_d^2/2$                                   | 1,0        | 1,1 | 1,2  |

For end bearers, the design value  $R_d$  is the same as for intermediate bearers if the distance from the end of the sheeting to the nearest purlin is greater than 65 mm; otherwise  $R_d/2$  applies. For bearer widths of between 100 and 200 mm,  $R_d$  is interpolated rectilinearly.

For web perforated sheeting,  $M_d$  and  $I_{efd}$  are multiplied by 0.96 and  $R_d$  by 0.88. For sheeting with an extra wave of overlap,  $M_d$ ,  $R_d$  and  $I_{efd}$  are multiplied by 1.46. The deflection is checked for L/150. Pay attention to the connecting sections, etc. For other deflection requirements, the specified maximum loads can be adjusted proportionately.

| Bearing combination | Thick-ness mm | Limitations  | Span L (m) |      |      |      |      |      |      |      |      |      |      |      |                        |      |
|---------------------|---------------|--------------|------------|------|------|------|------|------|------|------|------|------|------|------|------------------------|------|
|                     |               |              | Bearer 100 | 4,20 | 4,50 | 4,80 | 5,10 | 5,40 | 5,70 | 6,0  | 6,30 | 6,60 | 6,90 |      | 7,20                   | 7,50 |
|                     | 0,70          | Moment       | 4,17       | 3,63 | 3,19 | 2,83 | 2,52 | 2,26 | 2,04 | 1,85 | 1,69 | 1,54 | 1,42 | 1,31 | Security class 1       |      |
|                     |               | Deflection   | 3,84       | 3,11 | 2,56 | 2,13 | 1,79 | 1,52 | 1,30 | 1,12 | 0,98 | 0,85 | 0,75 | 0,66 |                        |      |
|                     |               | Wind suction | 5,39       | 4,69 | 4,13 | 3,65 | 3,26 | 2,93 | 2,64 | 2,39 | 2,18 | 2,00 | 1,83 | 1,69 |                        |      |
|                     | 0,80          | Moment       | 5,20       | 4,53 | 3,98 | 3,52 | 3,14 | 2,82 | 2,55 | 2,31 | 2,10 | 1,93 | 1,77 | 1,63 |                        |      |
|                     |               | Deflection   | 4,39       | 3,56 | 2,93 | 2,44 | 2,05 | 1,74 | 1,49 | 1,29 | 1,12 | 0,98 | 0,86 | 0,76 |                        |      |
| 0,90                | Moment        | 6,36         | 5,54       | 4,87 | 4,32 | 3,85 | 3,45 | 3,12 | 2,83 | 2,58 | 2,36 | 2,17 | 2,00 |      |                        |      |
|                     | Deflection    | 5,01         | 4,06       | 3,34 | 2,78 | 2,34 | 1,98 | 1,70 | 1,47 | 1,27 | 1,11 | 0,98 | 0,87 |      |                        |      |
| 1,00                | Moment        | 7,35         | 6,40       | 5,63 | 4,98 | 4,44 | 3,99 | 3,60 | 3,27 | 2,98 | 2,72 | 2,50 | 2,30 |      |                        |      |
|                     | Deflection    | 5,50         | 4,46       | 3,67 | 3,05 | 2,57 | 2,18 | 1,87 | 1,61 | 1,40 | 1,22 | 1,08 | 0,95 |      |                        |      |
| 1,20                | Moment        | 9,66         | 8,41       | 7,40 | 6,55 | 5,84 | 5,24 | 4,73 | 4,29 | 3,91 | 3,58 | 3,29 | 3,03 |      |                        |      |
|                     | Deflection    | 6,62         | 5,37       | 4,41 | 3,67 | 3,09 | 2,62 | 2,25 | 1,94 | 1,68 | 1,47 | 1,29 | 1,14 |      |                        |      |
| 1,20                | Wind suction  | 10,06        | 8,77       | 7,70 | 6,83 | 6,09 | 5,46 | 4,93 | 4,47 | 4,08 | 3,73 | 3,42 | 3,16 |      |                        |      |
|                     |               | 0,70         | Bearer 100 | 3,54 | 3,18 | 2,87 | 2,60 | 2,37 | 2,17 | 2,00 | 1,84 | 1,70 | 1,58 | 1,47 |                        | 1,37 |
| Bearer 200          |               |              | 4,16       | 3,70 | 3,32 | 3,00 | 2,72 | 2,48 | 2,26 | 2,08 | 1,92 | 1,77 | 1,64 | 1,53 |                        |      |
| Deflection          |               |              | 4,17       | 3,63 | 3,19 | 2,83 | 2,52 | 2,26 | 2,04 | 1,85 | 1,69 | 1,54 | 1,42 | 1,31 |                        |      |
| 0,80                |               | Bearer 100   | 4,41       | 3,95 | 3,56 | 3,23 | 2,94 | 2,69 | 2,47 | 2,27 | 2,10 | 1,95 | 1,81 | 1,69 |                        |      |
|                     |               | Bearer 200   | 5,15       | 4,58 | 4,10 | 3,69 | 3,35 | 3,05 | 2,78 | 2,55 | 2,35 | 2,17 | 2,01 | 1,87 |                        |      |
| 0,90                | Bearer 100    | 5,37         | 4,80       | 4,32 | 3,91 | 3,55 | 3,25 | 2,98 | 2,74 | 2,53 | 2,35 | 2,18 | 2,03 |      |                        |      |
|                     | Bearer 200    | 6,22         | 5,53       | 4,94 | 4,45 | 4,02 | 3,66 | 3,34 | 3,06 | 2,82 | 2,60 | 2,41 | 2,24 |      |                        |      |
| 1,00                | Bearer 100    | 6,14         | 5,48       | 4,93 | 4,45 | 4,05 | 3,69 | 3,38 | 3,11 | 2,87 | 2,66 | 2,47 | 2,30 |      |                        |      |
|                     | Bearer 200    | 7,08         | 6,28       | 5,61 | 5,04 | 4,56 | 4,14 | 3,78 | 3,46 | 3,18 | 2,94 | 2,72 | 2,52 |      |                        |      |
| 1,20                | Bearer 100    | 7,85         | 6,99       | 6,27 | 5,65 | 5,12 | 4,66 | 4,27 | 3,92 | 3,61 | 3,34 | 3,09 | 2,88 |      |                        |      |
|                     | Bearer 200    | 8,97         | 7,93       | 7,07 | 6,34 | 5,72 | 5,19 | 4,72 | 4,32 | 3,97 | 3,65 | 3,38 | 3,13 |      |                        |      |
| 1,20                | Deflection    | 9,66         | 8,41       | 7,40 | 6,55 | 5,84 | 5,24 | 4,73 | 4,29 | 3,91 | 3,58 | 3,29 | 3,03 |      |                        |      |
|                     | Wind suction  | 9,66         | 8,41       | 7,40 | 6,55 | 5,84 | 5,24 | 4,73 | 4,29 | 3,91 | 3,58 | 3,29 | 3,03 |      |                        |      |
|                     | 0,70          | Bearer 100   | 4,25       | 3,81 | 3,44 | 3,13 | 2,86 | 2,62 | 2,41 | 2,23 | 2,06 | 1,92 | 1,78 | 1,67 | Security class 1 and 2 |      |
|                     |               | Bearer 200   | 5,03       | 4,49 | 4,03 | 3,64 | 3,30 | 3,01 | 2,76 | 2,54 | 2,34 | 2,16 | 2,01 | 1,87 |                        |      |
|                     |               | Deflection   | 5,21       | 4,54 | 3,99 | 3,53 | 3,15 | 2,83 | 2,55 | 2,32 | 2,11 | 1,93 | 1,77 | 1,63 |                        |      |
|                     | 0,80          | Bearer 100   | 5,30       | 4,75 | 4,29 | 3,89 | 3,55 | 3,25 | 2,98 | 2,75 | 2,55 | 2,37 | 2,20 | 2,05 |                        |      |
|                     |               | Bearer 200   | 6,24       | 5,56 | 4,98 | 4,50 | 4,08 | 3,71 | 3,40 | 3,12 | 2,88 | 2,66 | 2,47 | 2,29 |                        |      |
| 0,90                | Bearer 100    | 6,49         | 5,79       | 5,21 | 4,72 | 4,30 | 3,93 | 3,61 | 3,33 | 3,07 | 2,85 | 2,65 | 2,47 |      |                        |      |
|                     | Bearer 200    | 7,56         | 6,72       | 6,02 | 5,42 | 4,91 | 4,47 | 4,08 | 3,75 | 3,45 | 3,19 | 2,95 | 2,75 |      |                        |      |
| 1,00                | Deflection    | 7,95         | 6,93       | 6,09 | 5,39 | 4,81 | 4,32 | 3,90 | 3,53 | 3,22 | 2,95 | 2,71 | 2,49 |      |                        |      |
|                     | Wind suction  | 7,95         | 6,93       | 6,09 | 5,39 | 4,81 | 4,32 | 3,90 | 3,53 | 3,22 | 2,95 | 2,71 | 2,49 |      |                        |      |
| 1,20                | Bearer 100    | 7,41         | 6,62       | 5,96 | 5,39 | 4,90 | 4,48 | 4,11 | 3,78 | 3,49 | 3,24 | 3,01 | 2,80 |      |                        |      |
|                     | Bearer 200    | 8,62         | 7,66       | 6,85 | 6,16 | 5,57 | 5,07 | 4,63 | 4,24 | 3,90 | 3,60 | 3,34 | 3,10 |      |                        |      |
| 1,20                | Deflection    | 9,18         | 8,00       | 7,03 | 6,23 | 5,56 | 4,99 | 4,50 | 4,08 | 3,72 | 3,40 | 3,13 | 2,88 |      |                        |      |
|                     | Wind suction  | 9,18         | 8,00       | 7,03 | 6,23 | 5,56 | 4,99 | 4,50 | 4,08 | 3,72 | 3,40 | 3,13 | 2,88 |      |                        |      |
| 1,20                | Bearer 100    | 9,50         | 8,47       | 7,60 | 6,86 | 6,23 | 5,68 | 5,20 | 4,78 | 4,41 | 4,08 | 3,78 | 3,52 |      |                        |      |
|                     | Bearer 200    | 10,96        | 9,71       | 8,66 | 7,77 | 7,02 | 6,37 | 5,80 | 5,31 | 4,88 | 4,50 | 4,16 | 3,86 |      |                        |      |
| 1,20                | Deflection    | 12,07        | 10,52      | 9,24 | 8,19 | 7,30 | 6,56 | 5,92 | 5,37 | 4,89 | 4,47 | 4,11 | 3,79 |      |                        |      |
|                     | Wind suction  | 12,07        | 10,52      | 9,24 | 8,19 | 7,30 | 6,56 | 5,92 | 5,37 | 4,89 | 4,47 | 4,11 | 3,79 |      |                        |      |

### Explanations

|              |  |
|--------------|--|
| Moment       | Loadbearing capacity in field. Dimensioning load case 1.                                   |
| Bearer 100   | Loadbearing capacity at intermediate bearer with $l_s = 100$ mm. Dimensioning load case 1. |
| Bearer 200   | Loadbearing capacity at intermediate bearer with $l_s = 200$ mm. Dimensioning load case 1. |
| Deflection   | Deflection L/150. Dimensioning load case 3.  |
| Wind suction | Loadbearing capacity for vertical wind load. Dimensioning load case 2.                     |

\*\*\* Subject to alteration without notice \*\*\*