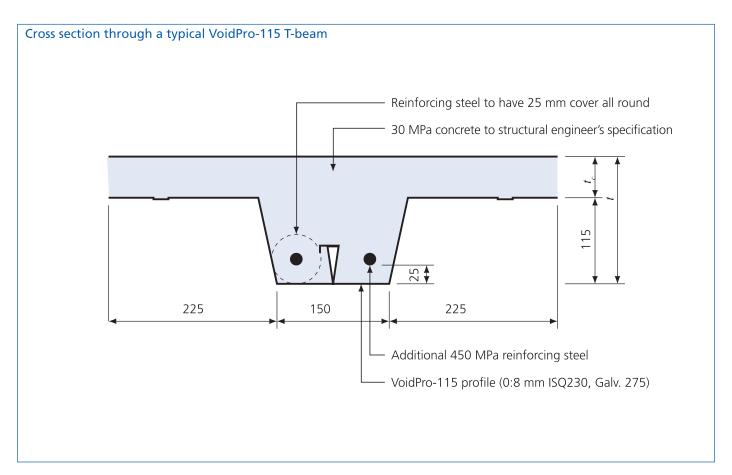
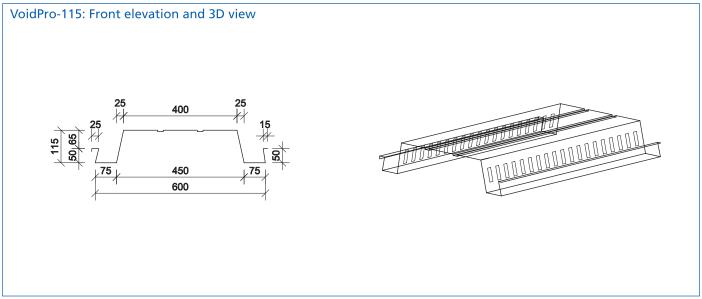


VP-115

The VoidPro-115 profile displaces 0:0815 m³ concrete per m² floor area. When calculating additional reinforcing requirements, it was assumed that the VoidPro-115 profile has an effective tension steel area of 320 mm².









VP-115

VOIDPRO-115 LOAD-SPAN TABLE

Additional reinforcing steel in [mm²] per beam at 600 mm spacing, for the VoidPro-115 system used in a single span simply supported configuration. Calculations are based on a characteristic concrete cube strength of 30 MPa and a characteristic deck steel yield strength of 230 MPa. Additional reinforcing should be high strength steel with a yield stress of 450 MPa. Additional reinforcing steel is limited to a maximum diameter of 20 mm. Cover of 25 mm above the deck soffit should be provided in all cases. Where values are listed as zero, no additional reinforcing is required as the VoidPro-115 profile provides sufficient tensile reinforcing. Where no value is listed, the span length is governed by either deflection considerations or the depth of the concrete compression block exceeds the limits imposed to prevent failure by concrete crushing. Underlined-values are for cases where serviceability considerations govern, but the allowable span can be increased by providing the indicated amount of reinforcing steel.

| 2.00 3.995 9.07 250 | Q_n a | G_n^{b} | TL_f^{c} | t^{d} | Floor span in [m] | | | | | | | | | | | | |
|--|---------|-----------|------------|---------|-------------------|------|---------|------------|------------|------------|-------------|------------|-------------|------------|-------------------|----------------|-------------|
| 1.50 2.150 6.06 170 0 20 40 60 270 20.20 20.2150 6.86 170 20 50 70 100 860 270 2.00 2.150 6.86 170 70 100 510 510 50 70 100 510 510 510 510 510 510 510 510 51 | kPa] | [kPa] | [kPa] | [mm] | 4.50 | 4.75 | 5.00 | 5.25 | 5.50 | 5.75 | 6.00 | 6.25 | 6.50 | 6.75 | 7.00 | 7.25 | 7.50 |
| 2.00 2.150 6.86 170 20 50 70 100 860 240 80 80 100 220 720 80 80 100 220 720 80 80 80 100 220 720 80 80 80 80 80 80 80 80 80 80 80 80 80 | | | | | | Д | ddition | nal reir | nforcin | g stee | el in [m | ım²] p | er bea | m 600 |) mm ^c | / _c | |
| 2.50 2.150 7.66 170 50 70 100 240 3.00 2.150 10.06 170 70 100 240 5.00 2.150 10.06 170 170 790 5.50 2.150 15.66 170 5.50 2.150 15.66 170 5.50 2.611 6.61 190 0 10 30 50 80 110 130 560 2.50 2.611 7.41 190 10 40 60 80 110 130 560 2.50 2.611 8.21 190 30 60 80 110 140 400 1090 3.00 2.611 9.01 190 50 80 110 140 230 750 3.00 2.611 10.61 190 100 130 160 250 7.50 2.611 16.21 190 240 470 1200 5.50 2.611 16.21 190 240 470 1200 5.50 2.842 6.89 200 0 10 30 50 80 100 130 150 380 3.00 2.842 7.69 200 10 30 50 80 100 130 160 250 3.00 2.842 10.89 200 90 120 150 180 270 700 5.50 2.842 10.89 200 90 120 150 180 270 700 5.50 2.842 16.49 200 220 270 500 1140 5.50 3.418 7.58 225 0 0 0 20 40 60 90 110 140 170 190 350 680 130 5.50 3.418 9.98 225 40 60 80 110 140 170 200 270 570 1070 5.50 3.418 13.18 225 100 130 170 200 240 280 470 890 920 5.50 3.418 13.18 225 100 130 170 200 240 280 470 890 920 5.50 3.418 13.18 225 100 130 170 200 240 280 470 890 920 5.50 3.418 13.18 225 100 130 170 200 240 280 470 890 920 5.50 3.418 13.18 225 100 130 170 200 240 280 470 890 920 5.50 3.418 13.18 225 100 130 170 200 240 280 470 890 920 5.50 3.418 13.18 225 100 130 170 200 240 280 470 890 920 5.50 3.418 13.18 225 100 130 170 200 240 280 470 890 920 5.50 3.418 13.18 225 100 130 170 200 240 280 470 890 920 5.50 3.418 13.18 225 100 130 170 200 240 280 470 890 920 5.50 3.418 13.18 225 100 130 170 200 240 280 470 890 920 5.50 3.418 13.18 225 100 130 170 200 240 280 470 890 920 5.50 3.418 13.18 225 100 30 50 80 100 130 150 180 210 240 240 300 531 000 3.418 13.18 225 100 130 170 200 240 280 470 890 920 5.50 3.995 9.87 250 10 30 50 80 100 130 150 180 210 240 270 460 770 100 130 150 180 210 240 280 390 650 1080 100 3.995 10.67 250 30 50 70 100 120 150 180 210 240 280 390 650 1080 100 3.995 10.67 250 30 50 70 100 120 150 180 210 240 280 390 650 1080 100 3.995 10.67 250 30 50 70 100 120 150 180 210 240 280 390 650 1080 3.995 10.67 250 30 50 70 100 120 150 180 210 240 280 390 650 1080 3.995 10.67 250 30 50 70 100 120 150 180 210 240 280 390 650 1080 3.995 10.67 250 2 | 1.50 | 2.150 | 6.06 | 170 | 0 | 20 | 40 | 60 | 270 | | | | | | | | |
| 1.00 2.150 8.46 170 70 100 240 240 250 250 2.150 11.66 170 170 790 220 250 2.150 15.66 170 170 290 2.50 2.150 15.66 170 170 290 2.50 2.150 15.66 170 170 290 2.50 2.150 15.66 170 2.50 2.150 15.66 170 2.50 2.150 15.66 170 2.50 2.611 7.41 190 10 40 60 80 110 130 560 550 2.50 2.611 8.21 190 30 60 80 110 140 230 730 2.50 2.611 10.61 190 100 130 160 250 750 2.611 10.61 190 140 170 210 650 2.50 2.611 12.21 190 140 170 210 650 2.50 2.611 16.21 190 240 470 1200 2.50 2.842 6.89 200 0 10 30 50 80 100 130 150 520 1230 2.50 2.842 8.49 200 30 50 80 100 130 160 380 930 3.50 3.418 9.29 200 50 70 100 130 160 380 930 3.50 2.842 10.89 200 90 120 150 180 270 700 3.00 2.842 12.49 200 20 | | | 6.86 | 170 | | | | | 860 | | | | | | | | |
| 1.00 2.150 10.06 170 120 230 | | | | | | | | <u>510</u> | | | | | | | | | |
| 1.50 | | | | | | | 240 | | | | | | | | | | |
| 7.50 2.150 15.66 170 1.50 2.611 6.61 190 0 10 30 50 80 100 220 720 2.50 2.611 8.21 190 30 60 80 110 140 400 1090 2.601 8.21 190 100 130 160 250 750 2.611 10.61 190 100 130 160 250 750 2.50 2.611 10.61 190 140 170 210 650 2.50 2.611 16.21 190 240 470 1200 2.50 2.842 6.89 200 0 10 30 50 80 100 130 150 520 1230 2.50 2.842 7.69 200 10 30 50 80 100 130 160 380 930 2.50 2.842 7.69 200 10 30 50 80 100 130 160 380 930 2.50 2.842 10.89 200 90 120 150 180 270 700 2.50 2.842 10.89 200 90 120 150 180 270 700 2.50 2.842 10.89 200 90 120 150 180 270 700 2.50 2.842 16.49 200 220 270 500 1140 2.50 3.418 7.58 225 0 20 40 60 90 110 140 170 200 270 500 120 2.50 3.418 9.18 225 20 40 60 80 110 140 170 200 270 570 2.50 3.418 13.18 225 100 130 160 120 240 280 470 890 2.50 3.418 13.18 225 100 130 160 100 120 120 120 120 120 120 120 120 12 | | | | | | | | | | | | | | | | | |
| 1.50 2.611 6.61 190 0 10 30 50 80 100 220 720 720 720 720 720 720 720 720 7 | | | | | 170 | 790 | | | | | | | | | | | |
| 2.00 2.611 7.41 190 10 40 60 80 110 130 <u>560</u> 2.50 2.611 8.21 190 30 60 80 110 140 400 1090 3.00 2.611 10.61 190 100 130 160 250 750 3.00 2.611 12.21 190 140 170 210 650 3.00 2.611 12.21 190 240 470 1200 3.00 2.842 6.89 200 0 10 30 50 80 100 130 150 520 1230 3.00 2.842 7.69 200 10 30 50 80 100 130 160 250 250 250 250 2842 8.49 200 30 50 70 100 130 160 250 630 3.00 2.842 10.89 200 90 120 150 180 270 700 3.00 2.842 10.89 200 90 120 150 180 270 700 3.00 2.842 16.49 200 220 270 500 1140 3.00 3.418 8.38 225 0 20 40 60 90 110 140 170 190 350 680 130 60 200 240 630 60 3.418 8.38 225 70 100 130 160 200 240 8.00 3.418 9.98 225 40 60 80 110 140 170 200 270 570 1070 130 160 200 3.418 11.58 225 70 100 130 160 90 220 260 490 60 80 110 140 170 200 270 570 1070 130 160 200 240 840 13.81 8.38 225 100 130 170 200 240 880 470 890 750 3.418 17.18 225 190 230 270 320 430 810 1550 150 180 270 750 3.418 17.18 225 190 230 270 320 430 810 1550 150 180 210 240 300 53 650 100 3.995 9.87 250 10 30 50 80 100 130 150 150 180 210 240 280 390 550 100 30 995 12.27 250 60 80 110 140 170 200 230 450 850 100 3.995 9.87 250 10 30 50 80 100 130 150 180 210 240 280 390 53 100 3.995 12.27 250 60 80 110 140 170 200 230 430 710 1170 1170 1170 1170 1170 1170 117 | 7.50 | 2.150 | 15.66 | 170 | | | | | | | | | | | | | |
| $\begin{array}{cccccccccccccccccccccccccccccccccccc$ | | | | | | | | | | | | <u>720</u> | | | | | |
| 3.00 2.611 9.01 190 50 80 110 140 230 730 | | | | | | | | | | | | | | | | | |
| 4.00 2.611 10.61 190 100 130 160 250 750 5.00 2.611 12.21 190 140 170 210 650 7.50 2.611 16.21 190 240 470 1200 1.50 2.842 6.89 200 0 10 30 50 80 100 130 150 520 1230 2.00 2.842 7.69 200 10 30 50 80 100 130 150 520 1230 2.00 2.842 8.49 200 30 50 80 100 130 160 380 930 3.00 2.842 9.29 200 50 70 100 130 160 250 670 4.00 2.842 10.89 200 90 120 150 180 270 700 5.00 2.842 16.49 200 220 270 500 1140 10 130 160 180 400 | | | | | | | | | | | <u>1090</u> | | | | | | |
| 5.000 2.6111 12.21 190 140 170 210 650 7.50 2.611 16.21 190 240 470 1200 1.50 2.842 6.89 200 0 10 30 50 80 100 130 150 520 1230 2.00 2.842 7.69 200 10 30 50 80 100 130 150 520 1230 2.50 2.842 8.49 200 30 50 80 100 130 160 380 930 3.00 2.842 10.89 200 90 120 150 180 270 700 700 4.00 2.842 10.89 200 90 120 150 180 270 700 700 5.00 2.842 16.49 200 130 160 200 240 630 700 110 140 170 190 350 680 1310 1.50 3.418 7.58 225 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td><u>730</u></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> | | | | | | | | | | <u>730</u> | | | | | | | |
| 7.50 2.611 16.21 190 240 470 1200 1.50 2.842 6.89 200 0 10 30 50 80 100 130 150 520 1230 2.50 2.842 8.49 200 30 50 80 100 130 160 380 930 2.50 2.842 10.89 200 90 120 150 180 270 700 2.50 2.842 12.49 200 130 160 200 240 630 2.50 2.842 16.49 200 220 270 500 1140 1.50 3.418 7.58 225 0 0 20 40 60 90 110 140 170 190 350 680 1310 2.50 3.418 9.98 225 40 60 80 110 140 170 200 230 450 850 3.00 3.418 13.18 225 100 130 170 200 240 280 470 890 3.00 3.418 13.18 225 100 130 170 200 240 280 470 890 3.00 3.418 17.18 225 100 20 20 240 60 80 100 130 150 180 210 240 300 53 3.00 3.995 9.07 250 0 20 40 60 80 100 130 150 180 210 240 300 53 3.00 3.995 10.67 250 30 50 70 100 120 150 180 210 240 280 390 650 100 3.00 3.995 10.67 250 30 50 70 100 120 150 180 210 240 280 390 650 100 3.00 3.995 13.87 250 90 110 140 170 200 230 270 310 430 710 1170 1170 1170 1170 1170 1170 117 | | | | | | | | | <u>/50</u> | | | | | | | | |
| 1.50 2.842 6.89 200 0 10 30 50 80 100 130 150 <u>520 1230</u> 2.00 2.842 7.69 200 30 50 80 100 130 160 <u>380 930</u> 3.00 2.842 9.29 200 50 70 100 130 160 <u>250 670</u> 4.00 2.842 10.89 200 90 120 150 180 <u>270 700</u> 5.00 2.842 12.49 200 130 160 200 240 630 7.50 2.842 16.49 200 220 270 <u>500 1140</u> 1.50 3.418 7.58 225 0 0 20 40 60 90 110 130 160 180 400 770 150 150 2.50 3.418 9.18 225 20 40 60 90 110 140 170 190 350 680 1310 2.50 3.418 13.18 225 100 130 160 80 110 140 170 200 230 450 850 100 3.418 13.18 225 100 130 170 200 240 280 470 890 7.50 3.418 17.18 225 190 230 270 320 430 810 1550 1.50 3.995 8.27 250 0 0 20 40 60 80 100 130 150 180 210 240 330 530 2.50 3.995 9.87 250 10 30 50 80 100 130 150 180 210 240 270 460 770 2.50 3.995 9.87 250 10 30 50 80 100 130 150 180 210 240 300 530 108 1.50 3.995 12.27 250 60 80 110 140 170 200 230 270 310 430 710 1170 200 3.995 12.27 250 60 80 110 140 170 200 230 270 310 430 710 1170 200 3.995 12.27 250 60 80 110 140 170 200 230 270 310 430 710 1170 200 3.995 12.27 250 60 80 110 140 170 200 230 270 310 430 710 1170 200 3.995 12.27 250 60 80 110 140 170 200 230 270 310 430 710 1170 200 3.995 12.27 250 60 80 110 140 170 200 230 270 310 430 710 1170 200 3.995 12.27 250 60 80 110 140 170 200 230 270 310 430 710 1170 200 3.995 12.27 250 60 80 110 140 170 200 230 270 310 430 710 1170 200 3.995 13.87 250 90 110 150 180 210 240 280 390 650 108 100 3.995 13.87 250 90 110 150 180 210 240 280 390 650 108 100 3.995 13.87 250 90 110 150 180 210 240 280 390 650 108 100 3.995 13.87 250 90 110 150 180 210 240 280 390 650 108 100 3.995 13.87 250 90 110 150 180 210 250 290 330 430 710 1170 | | | | | | | | 650 | | | | | | | | | |
| 2.00 2.842 7.69 200 10 30 50 80 100 130 150 <u>520</u> 1 <u>230</u> 2.50 2.842 8.49 200 30 50 70 100 130 160 <u>380</u> <u>930</u> 3.00 2.842 10.89 200 90 120 150 180 <u>270</u> 700 5.00 2.842 12.49 200 130 160 200 240 <u>630</u> 6.50 2.842 16.49 200 220 270 <u>500</u> 1140 1.50 3.418 7.58 225 0 0 0 20 40 60 90 110 130 160 180 <u>400</u> 770 152 150 180 130 160 140 170 190 <u>350</u> 680 1310 2.50 3.418 9.18 225 20 40 60 90 110 140 170 200 270 <u>570</u> 1070 3.418 11.58 225 70 100 130 160 190 220 260 490 920 5.00 3.418 13.18 225 100 130 170 200 240 280 470 890 7.50 3.418 17.18 225 190 230 270 320 430 810 1550 1.50 3.995 8.27 250 0 0 20 40 60 80 100 120 150 180 210 240 300 <u>530</u> 220 250 3.995 9.87 250 10 30 50 80 100 130 150 180 210 240 300 <u>530</u> 1070 3.00 3.995 12.27 250 60 80 110 140 170 200 230 270 310 430 710 170 170 180 3.995 12.27 250 60 80 110 140 170 200 230 270 310 430 710 170 170 180 3.995 12.27 250 60 80 110 140 170 200 230 270 310 430 710 170 170 180 3.995 12.27 250 60 80 110 140 170 200 230 270 310 430 710 170 170 170 170 170 170 170 170 17 | | | 16.21 | 190 | 240 | 4/0 | 1200 | | | | | | | | | | |
| 2.50 | | | | | | | | | | | | | | | | | |
| 3.00 2.842 9.29 200 50 70 100 130 160 <u>250</u> 670 4.00 2.842 10.89 200 90 120 150 180 <u>270</u> 700 5.00 2.842 12.49 200 130 160 200 240 630 7.50 2.842 16.49 200 220 270 <u>500</u> 1140 1.50 3.418 7.58 225 0 0 20 40 60 90 110 130 160 180 400 <u>770</u> 1520 2.00 3.418 8.38 225 0 20 40 60 90 110 140 170 190 <u>350</u> 680 1310 2.50 3.418 9.18 225 20 40 60 90 110 140 170 200 <u>270</u> <u>570</u> 1070 3.00 3.418 9.98 225 40 60 80 110 140 170 200 230 450 4.00 3.418 11.58 225 70 100 130 160 190 220 260 490 7.50 3.418 17.18 225 190 230 270 320 430 810 1550 1.50 3.995 8.27 250 0 0 0 20 40 60 80 100 120 150 170 200 230 <u>344</u> 2.00 3.995 9.07 250 0 20 40 60 80 100 130 150 180 210 240 300 <u>53</u> 3.00 3.995 9.87 250 10 30 50 80 100 130 150 180 210 240 280 <u>390</u> 3.00 3.995 10.67 250 30 50 70 100 120 150 180 210 240 280 <u>390</u> 4.00 3.995 12.27 250 60 80 110 140 170 200 230 270 310 430 <u>710</u> 1170 | | | | | | | | | | | | | <u>1230</u> | | | | |
| 4.00 2.842 10.89 200 90 120 150 180 <u>270 700 </u> | | | | | | | | | | | | <u>930</u> | | | | | |
| 5.00 2.842 12.49 200 130 160 200 240 630 7.50 2.842 16.49 200 220 270 500 1140 1140 170 180 180 400 770 1520 1520 150 170 180 180 180 180 180 180 180 180 180 18 | | | | | | | | | | | <u>670</u> | | | | | | |
| 7.50 2.842 16.49 200 220 270 500 1140 1.50 3.418 7.58 225 0 0 20 40 60 90 110 130 160 180 400 770 1520 2.00 3.418 8.38 225 0 20 40 60 90 110 140 170 190 350 680 1310 2.50 3.418 9.18 225 20 40 60 90 110 140 170 200 270 570 1070 3.00 3.418 9.98 225 40 60 80 110 140 170 200 230 450 850 4.00 3.418 11.58 225 70 100 130 160 190 220 260 490 920 5.00 3.418 13.18 225 100 130 170 200 240 280 470 890 7.50 3.418 17.18 225 190 230 270 320 430 810 1550 1.50 3.995 8.27 250 0 0 20 40 60 80 100 120 150 170 200 230 344 2.00 3.995 9.87 250 10 30 50 80 100 130 150 180 210 240 300 530 2.50 3.995 10.67 250 30 50 70 100 120 150 180 210 240 270 460 770 3.00 3.995 12.27 250 60 80 110 140 170 200 230 270 310 430 710 1170 5.00 3.995 13.87 250 90 110 150 180 210 240 280 390 650 1080 4.00 3.995 13.87 250 90 110 150 180 210 250 290 330 430 710 1170 | | | | | | | | | | <u>700</u> | | | | | | | |
| $\begin{array}{cccccccccccccccccccccccccccccccccccc$ | | | | | | | | | <u>630</u> | | | | | | | | |
| 2.00 3.418 8.38 225 0 20 40 70 90 110 140 170 190 <u>350 680</u> 1310 2.50 3.418 9.18 225 20 40 60 90 110 140 170 200 <u>270 570 1070</u> 1070 3.418 9.98 225 40 60 80 110 140 170 200 230 450 850 4.00 3.418 11.58 225 70 100 130 160 190 220 260 490 920 5.00 3.418 13.18 225 100 130 170 200 240 280 470 890 7.50 3.418 17.18 225 190 230 270 320 430 810 1550 5.00 3.995 8.27 250 0 0 20 40 60 80 100 120 150 170 200 230 340 2.00 3.995 9.07 250 0 20 40 60 80 100 130 150 180 210 240 300 530 2.50 3.995 9.87 250 10 30 50 80 100 130 150 180 210 240 270 460 770 3.00 3.995 10.67 250 30 50 70 100 120 150 180 210 240 280 390 650 1084 100 3.995 12.27 250 60 80 110 140 170 200 230 270 310 430 710 170 5.00 3.995 13.87 250 90 110 150 180 210 240 280 390 650 1086 5.00 3.995 13.87 250 90 110 150 180 210 250 290 330 430 710 170 | 7.50 | 2.842 | 16.49 | 200 | 220 | 270 | 500 | 1140 | | | | | | | | | |
| 2.50 3.418 9.18 225 20 40 60 90 110 140 170 200 270 570 1070 3.00 3.418 9.98 225 40 60 80 110 140 170 200 230 450 850 4.00 3.418 11.58 225 70 100 130 160 190 220 260 490 920 5.00 3.418 13.18 225 100 130 170 200 240 280 470 890 7.50 3.418 17.18 225 190 230 270 320 430 810 1550 1.50 3.995 8.27 250 0 0 0 20 40 60 80 100 120 150 170 200 230 340 200 3.995 9.07 250 0 20 40 60 80 100 130 150 180 210 240 300 530 250 3.995 9.87 250 10 30 50 80 100 130 150 180 210 240 300 530 250 3.995 9.87 250 10 30 50 80 100 130 150 180 210 240 270 460 770 3.00 3.995 10.67 250 30 50 70 100 120 150 180 210 240 280 390 650 1080 3.995 12.27 250 60 80 110 140 170 200 230 270 310 430 710 1170 5.00 3.995 13.87 250 90 110 150 180 210 240 280 390 650 1080 3.995 13.87 250 90 110 150 180 210 250 290 330 430 710 1170 | | | | | | | | 40 | | | | | | | | | <u>1520</u> |
| 3.00 3.418 9.98 225 40 60 80 110 140 170 200 230 450 850 4.00 3.418 11.58 225 70 100 130 160 190 220 260 490 920 5.00 3.418 13.18 225 100 130 170 200 240 280 470 890 7.50 3.418 17.18 225 190 230 270 320 430 810 1550 7.50 3.995 8.27 250 0 0 20 40 60 80 100 120 150 170 200 230 340 2.00 3.995 9.07 250 0 20 40 60 80 100 130 150 180 210 240 300 530 2.50 3.995 9.87 250 10 30 50 80 100 130 150 180 210 240 270 460 77 3.00 3.995 10.67 250 30 50 70 100 120 150 180 210 240 280 390 650 1080 3.995 12.27 250 60 80 110 140 170 200 230 270 310 430 710 1170 5.00 3.995 13.87 250 90 110 150 180 210 250 290 330 430 710 1170 | | | | | | | | | | | | | | | | <u>1310</u> | |
| 4.00 3.418 11.58 225 70 100 130 160 190 220 260 490 920 5.00 3.418 13.18 225 100 130 170 200 240 280 470 890 7.50 3.418 17.18 225 190 230 270 320 430 810 1550 1.50 3.995 8.27 250 0 0 20 40 60 80 100 120 150 170 200 230 340 2.00 3.995 9.07 250 0 20 40 60 80 100 130 150 180 210 240 300 530 2.50 3.995 9.87 250 10 30 50 80 100 130 150 180 210 240 270 460 770 3.00 3.995 10.67 250 30 50 70 100 120 150 180 210 240 280 390 650 1080 3.995 12.27 250 60 80 110 140 170 200 230 230 270 310 430 710 1170 5.00 3.995 13.87 250 90 110 150 180 210 250 290 330 430 710 1170 | | | | | | | | | | | | | | | <u>1070</u> | | |
| 5.00 3.418 13.18 225 100 130 170 200 240 280 470 890 7.50 3.418 17.18 225 190 230 270 320 430 810 1550 890 810 1550 890 810 1550 890 810 1550 890 810 1550 890 810 1550 890 810 1550 890 890 890 890 890 890 890 890 890 89 | | | | | | | | | | | | | | <u>850</u> | | | |
| $\begin{array}{cccccccccccccccccccccccccccccccccccc$ | | | | | | | | | | | | | 920 | | | | |
| 1.50 3.995 8.27 250 0 0 20 40 60 80 100 120 150 170 200 230 <u>340 200 3.995 9.07 250 0 20 40 60 80 100 130 150 180 210 240 300 530 200 3.995 9.87 250 10 30 50 80 100 130 150 180 210 240 270 460 <u>770 3.00 3.995 10.67 250 30 50 70 100 120 150 180 210 240 280 390 650 1080 4.00 3.995 12.27 250 60 80 110 140 170 200 230 270 310 430 710 1170 1170 1170 1170 1170 1170 117</u></u> | | | | | | | | | | | | <u>890</u> | | | | | |
| $\begin{array}{cccccccccccccccccccccccccccccccccccc$ | 7.50 | 3.418 | 17.18 | 225 | 190 | 230 | 270 | 320 | <u>430</u> | 810 | <u>1550</u> | | | | | | |
| 2.50 3.995 9.87 250 10 30 50 80 100 130 150 180 210 240 270 460 770 100 3.995 10.67 250 30 50 70 100 120 150 180 210 240 280 390 650 1080 100 3.995 12.27 250 60 80 110 140 170 200 230 270 310 430 710 1170 5.00 3.995 13.87 250 90 110 150 180 210 250 290 330 430 710 1170 | | | | | | | | | | | | | | | | 230 | 340 |
| 3.00 3.995 10.67 250 30 50 70 100 120 150 180 210 240 280 <u>390 650 1080 100 100 100 100 100 100 100 100 1</u> | | | | | | | | | | | | | | | | | <u>530</u> |
| 4.00 3.995 12.27 250 60 80 110 140 170 200 230 270 310 <u>430</u> <u>710</u> <u>1170</u> 5.00 3.995 13.87 250 90 110 150 180 210 250 290 330 <u>430</u> <u>710</u> <u>1170</u> | | | | | | | | | | | | | | | | | <u>770</u> |
| 5.00 3.995 13.87 250 90 110 150 180 210 250 290 330 430 710 1170 | | | | | | | | | | | | | | | | | 1080 |
| | | | | | | | | | | | | | | | | <u>1170</u> | |
| | | | | | | | | | | | | | | <u>710</u> | <u>1170</u> | | |

Unfactored imposed (live) load. Unfactored own-weight of the slab and the VoidPro-50 profile. Unfactored own-weight of the slab and the VoidPro-50 profile. Total factored load using the SANS10160-1 STR load combination of 1:2Gn + 1:6Qn where Gn is the total nominal permanent (dead) load and Qn is the total imposed (live) load. Note that in calculating the total factored load, an allowance was made for the additional permanent load of 0:9 kPa accounting for services and finishes. Concrete own weight was calculated based on a mass of 2350 kg/m^3 .



VP-115

REINFORCING REQUIREMENTS FOR A 60 MINUTE FIRE RATING

Additional reinforcing steel in [mm²] per beam at 600 mm spacing, for the VoidPro-115 system used in a single span simply supported configuration. The minimum slab thickness required to attain a 60 minute fire rating is 190 mm. Those values with * next to them are governed by fire requirements, whilst the remainder are governed by serviceability or ultimate limit state requirements. The steel decking has been assumed to lose all its strength in fire. Additional reinforcing steel is limited to a maximum diameter of 20 mm. Cover of 25 mm above the deck soffit should be provided in all cases. Refer to Table 2.1 for additional design assumptions. The reinforcement is suitable for the following occupancies according to SANS 10160-1: (A) Domestic and residential areas, (B) Public areas not susceptible to crowding, (C) Public areas where people may congregate, (D) Shopping areas, and (J/K) Accessible flat roofs. For other occupancy categories (industrial usage, storage etc.) refer to the Voidcon fire design guideline document.

| .50 .00 .50 .00 .00 .50 .50 .50 .50 | 2.611 2.611 2.611 2.611 2.611 2.611 2.611 2.842 2.842 2.842 | 12.21 16.21 6.89 7.69 8.49 | 190 190 190 190 190 190 190 200 | *110 *114 *119 *123 *131 140 240 *110 *114 | *123 *128 *132 *137 *147 170 470 *122 *127 | *136 *142 *147 *152 *163 210 1200 | *151 *156 *162 *168 250 650 | *165 *172 *178 230 750 | *181 *188 400 730 | 220 560 1090 *196 | m ²] pe | 6.50 er bean | | | | 7.50 |
|---|--|---|--|--|--|---|--|------------------------------------|----------------------------|----------------------------|---------------------|-----------------|---------|--------------------------------|------|------|
| .00 : .50 : .00 : .50 : .50 : .50 : .50 : .00 : | 2.611 2.611 2.611 2.611 2.611 2.611 2.842 2.842 2.842 | 7.41 8.21 9.01 10.61 12.21 16.21 6.89 7.69 8.49 | 190 190 190 190 190 190 200 200 | *114 *119 *123 *131 140 240 *110 *114 | *123 *128 *132 *137 *147 170 470 *122 *127 | *136 *142 *147 *152 *163 210 1200 | *151 *156 *162 *168 250 650 | *165 *172 *178 230 750 | *181 *188 400 730 | 220 560 1090 *196 | 720 | 630 | n 600 r | mm ^c / _c | , | |
| .00 : .50 : .00 : .50 : .50 : .50 : .50 : .00 : | 2.611 2.611 2.611 2.611 2.611 2.611 2.842 2.842 2.842 | 7.41 8.21 9.01 10.61 12.21 16.21 6.89 7.69 8.49 | 190 190 190 190 190 190 200 200 | *114 *119 *123 *131 140 240 *110 *114 | *128 *132 *137 *147 170 470 *122 *127 | *142 *147 *152 *163 210 1200 *136 | *156 *162 *168 250 650 *150 | *172 *178 230 750 | *188 400 730 *180 | 560 1090 *196 | 220 | | | | | |
| .50 .00 .00 .50 .50 .50 .50 | 2.611 2.611 2.611 2.611 2.611 2.842 2.842 2.842 | 8.21 9.01 10.61 12.21 16.21 6.89 7.69 8.49 | 190 190 190 190 190 200 | *119 *123 *131 140 240 *110 *114 | *132 *137 *147 170 470 *122 *127 | *147 *152 *163 210 1200 *136 | *162 *168 250 650 | *178 230 750 *164 | 400 730 *180 | *196 | | | | | | |
| .00 : .00 : .50 : .50 : .50 : .00 : .00 : .00 : .00 : .00 : .00 : .00 : .00 | 2.611 2.611 2.611 2.611 2.842 2.842 2.842 | 9.01 10.61 12.21 16.21 6.89 7.69 8.49 | 190 190 190 190 200 200 | *123 *131 140 240 *110 *114 | *137 *147 170 470 *122 *127 | *152 *163 210 1200 *136 | *168 250 650 *150 | 230 750 *164 | *180 | *196 | | | | | | |
| .00 .50 .50 .50 .50 .00 .00 .00 .00 .00 | 2.611 2.611 2.611 2.842 2.842 2.842 | 10.61 12.21 16.21 6.89 7.69 8.49 | 190 190 190 200 200 | *131 140 240 *110 *114 | *147 170 470 *122 *127 | *163 210 1200 *136 | 250 650 *150 | 750 *164 | *180 | | | | | | | |
| .00 .50 .50 .00 .50 .00 | 2.611 2.611 2.842 2.842 2.842 | 12.21 16.21 6.89 7.69 8.49 | 190 190 200 200 | 140 240 *110 *114 | 170 470 *122 *127 | 210 1200 *136 | 650 *150 | *164 | | | | | | | | |
| .50 .50 .50 .50 .50 .00 .00 . | 2.611 2.842 2.842 2.842 | 6.89 7.69 8.49 | 190 200 200 | 240 *110 *114 | 470 *122 *127 | 1200 *136 | *150 | | | | | | | | | |
| .50 .00 .50 .00 | 2.842 2.842 2.842 | 6.89 7.69 8.49 | 200 200 | *110 *114 | *122 *127 | *136 | | | | | | | | | | |
| .00 . .50 . .00 . | 2.842 2.842 | 7.69 8.49 | 200 | *114 | *127 | | | | | | | | | | | |
| .50 i | 2.842 | 8.49 | | | | *141 | *155 | *170 | ¥107 | | = | | | | | |
| .00 | | | 200 | *118 | | T 1 T | . 132 | 170 | ^18 <i>/</i> | *203 | 520 | 1230 | | | | |
| .00 | 2 842 | 0 00 | | | *131 | *145 | *161 | *176 | *193 | 380 | 930 | | | | | |
| | 2.042 | 9.29 | 200 | *121 | *136 | *150 | *166 | *182 | 250 | 670 | | | | | | |
| 00 ' | 2.842 | | | | *144 | | 180 | 270 | 700 | | | | | | | |
| | 2.842 | | | *137 | 160 | 200 | 240 | 630 | | | | | | | | |
| .50 | 2.842 | 16.49 | 200 | 220 | 270 | 500 | 1140 | | | | | | | | | |
| .50 | 3.418 | 7.58 | 225 | *108 | *121 | *134 | *148 | *162 | *178 | *194 | *210 | *228 | *246 | 400 | 770 | 152 |
| .00 | 3.418 | 8.38 | 225 | *112 | *125 | *138 | *153 | *168 | *183 | *200 | *217 | *235 | 350 | 680 | 1310 | |
| .50 | 3.418 | 9.18 | 225 | *115 | *128 | *142 | *157 | *173 | *189 | *206 | *224 | 270 | 570 | 1070 | | |
| | 3.418 | 9.98 | | | *132 | | | | | | *231 | 450 | 850 | | | |
| | 3.418 | | | | *140 | | | 190 | 220 | 260 | 490 | 920 | | | | |
| | 3.418 | | | *132 | | 170 | 200 | 240 | 280 | 470 | 890 | | | | | |
| .50 | 3.418 | 17.18 | 225 | 190 | 230 | 270 | 320 | 430 | 810 | 1550 | | | | | | |
| .50 | 4.00 | 8.27 | 250 | *107 | *120 | *133 | *146 | *161 | *176 | *192 | *208 | *226 | *244 | *262 | *282 | 34 |
| .00 | 4.00 | 9.07 | 250 | *110 | *123 | *136 | *151 | *165 | *181 | *197 | *214 | *232 | *251 | *270 | 300 | 53 |
| .50 | 4.00 | 9.87 | | | | | | | | | | *238 | | | 460 | 77 |
| .00 | | 10.67 | | | *130 | | | | | | | | 280 | 390 | 650 | 108 |
| .00 | | 12.27 | | | *137 | | | | | 230 | 270 | 310 | 430 | | 1170 | |
| .00 | | 13.87 17.87 | 250 250 | *129 160 | *143 200 | *159 240 | 180 280 | 210 330 | 250 380 | 290 430 | 330 | 430 1160 | 710 | 1170 | | |

Unfactored imposed (live) load. Unfactored own-weight of the slab and the VoidPro-115 profile. Total factored load using the SANS10160-1 ACC load combination of 1:0Gn + 0:3Qn where Gn is the total nominal permanent (dead) load and Qn is the total imposed (live) load. Note that in calculating the total factored load, an allowance was made for the additional permanent load of 0:9 kPa accounting for services and finishes. Total thickness of the slab.