

# CIRCULAR HOLLOW SECTION

## Product Range

21.3mm to 355.6mm

## Thickness

1mm to 10mm

CIRCULAR HOLLOW SECTION FOR STRUCTURAL PURPOSES CONFORMING TO IS:1161 : 2014

| Outside Diameter | Thickness | Mass | Area of Cross Section | Internal Volume    | Moment of Inertia | Elastic Modulus | Plastic Modulus | Radius of Gyration | Square of Radius of Gyration | Torsional Constant |
|------------------|-----------|------|-----------------------|--------------------|-------------------|-----------------|-----------------|--------------------|------------------------------|--------------------|
| mm               | mm        | kg/m | cm <sup>2</sup>       | cm <sup>3</sup> /m | cm <sup>4</sup>   | cm <sup>3</sup> | cm <sup>3</sup> | cm                 | cm <sup>2</sup>              | cm <sup>3</sup>    |
| 21.30            | 1.60      | 0.78 | 0.99                  | 257                | 0.48              | 0.45            | 0.62            | 0.70               | 0.49                         | 0.91               |
| 21.30            | 1.80      | 0.87 | 1.10                  | 246                | 0.53              | 0.50            | 0.69            | 0.69               | 0.48                         | 0.99               |
| 21.30            | 2.00      | 0.95 | 1.21                  | 235                | 0.57              | 0.54            | 0.75            | 0.69               | 0.47                         | 1.07               |
| 21.30            | 2.30      | 1.08 | 1.37                  | 219                | 0.63              | 0.59            | 0.83            | 0.68               | 0.46                         | 1.18               |
| 21.30            | 2.60      | 1.20 | 1.53                  | 204                | 0.68              | 0.64            | 0.92            | 0.67               | 0.45                         | 1.28               |
| 21.30            | 2.90      | 1.32 | 1.68                  | 189                | 0.73              | 0.68            | 0.99            | 0.66               | 0.43                         | 1.37               |
| 26.90            | 1.60      | 1.00 | 1.27                  | 441                | 1.02              | 0.76            | 1.03            | 0.90               | 0.80                         | 1.52               |
| 26.90            | 1.80      | 1.11 | 1.42                  | 426                | 1.12              | 0.84            | 1.14            | 0.89               | 0.79                         | 1.67               |
| 26.90            | 2.00      | 1.23 | 1.56                  | 412                | 1.22              | 0.91            | 1.24            | 0.88               | 0.78                         | 1.81               |
| 26.90            | 2.30      | 1.40 | 1.78                  | 391                | 1.36              | 1.01            | 1.40            | 0.87               | 0.76                         | 2.02               |
| 26.90            | 2.60      | 1.56 | 1.98                  | 370                | 1.48              | 1.10            | 1.54            | 0.86               | 0.75                         | 2.20               |
| 26.90            | 2.90      | 1.72 | 2.19                  | 350                | 1.60              | 1.19            | 1.68            | 0.85               | 0.73                         | 2.38               |
| 33.70            | 1.60      | 1.27 | 1.61                  | 731                | 2.08              | 1.24            | 1.65            | 1.14               | 1.29                         | 2.47               |
| 33.70            | 1.80      | 1.42 | 1.80                  | 712                | 2.30              | 1.37            | 1.83            | 1.13               | 1.28                         | 2.73               |
| 33.70            | 2.00      | 1.56 | 1.99                  | 693                | 2.51              | 1.49            | 2.01            | 1.12               | 1.26                         | 2.98               |
| 33.70            | 2.30      | 1.78 | 2.27                  | 665                | 2.81              | 1.67            | 2.27            | 1.11               | 1.24                         | 3.34               |
| 33.70            | 2.60      | 1.99 | 2.54                  | 638                | 3.09              | 1.84            | 2.52            | 1.10               | 1.22                         | 3.67               |
| 33.70            | 2.90      | 2.20 | 2.81                  | 611                | 3.36              | 1.99            | 2.76            | 1.09               | 1.20                         | 3.98               |
| 33.70            | 3.20      | 2.41 | 3.07                  | 585                | 3.60              | 2.14            | 2.99            | 1.08               | 1.18                         | 4.28               |
| 33.70            | 3.60      | 2.67 | 3.40                  | 552                | 3.91              | 2.32            | 3.28            | 1.07               | 1.15                         | 4.64               |
| 38.10            | 3.00      | 2.60 | 3.31                  | 809                | 5.13              | 2.69            | 3.71            | 1.25               | 1.55                         | 5.39               |
| 38.10            | 4.00      | 3.36 | 4.29                  | 712                | 6.31              | 3.31            | 4.67            | 1.21               | 1.47                         | 6.63               |
| 38.10            | 5.00      | 4.08 | 5.20                  | 620                | 7.28              | 3.82            | 5.52            | 1.18               | 1.40                         | 7.65               |
| 38.10            | 6.00      | 4.75 | 6.05                  | 535                | 8.07              | 4.23            | 6.25            | 1.15               | 1.33                         | 8.47               |
| 38.10            | 8.00      | 5.94 | 7.56                  | 384                | 9.17              | 4.82            | 7.42            | 1.10               | 1.21                         | 9.63               |
| 42.40            | 1.60      | 1.61 | 2.05                  | 1207               | 4.27              | 2.02            | 2.66            | 1.44               | 2.08                         | 4.03               |
| 42.40            | 1.80      | 1.80 | 2.30                  | 1182               | 4.74              | 2.24            | 2.97            | 1.44               | 2.06                         | 4.47               |
| 42.40            | 2.00      | 1.99 | 2.54                  | 1158               | 5.19              | 2.45            | 3.27            | 1.43               | 2.05                         | 4.90               |
| 42.40            | 2.30      | 2.27 | 2.90                  | 1122               | 5.84              | 2.76            | 3.70            | 1.42               | 2.02                         | 5.51               |
| 42.40            | 2.60      | 2.55 | 3.25                  | 1087               | 6.46              | 3.05            | 4.12            | 1.41               | 1.99                         | 6.10               |
| 42.40            | 2.90      | 2.83 | 3.60                  | 1052               | 7.06              | 3.33            | 4.53            | 1.40               | 1.96                         | 6.66               |
| 42.40            | 3.20      | 3.09 | 3.94                  | 1018               | 7.62              | 3.59            | 4.93            | 1.39               | 1.93                         | 7.19               |
| 42.40            | 3.60      | 3.45 | 4.39                  | 973                | 8.33              | 3.93            | 5.44            | 1.38               | 1.90                         | 7.86               |
| 48.30            | 1.60      | 1.84 | 2.35                  | 1598               | 6.41              | 2.65            | 3.49            | 1.65               | 2.73                         | 5.31               |
| 48.30            | 1.80      | 2.06 | 2.63                  | 1569               | 7.12              | 2.95            | 3.89            | 1.65               | 2.71                         | 5.89               |
| 48.30            | 2.00      | 2.28 | 2.91                  | 1541               | 7.81              | 3.23            | 4.29            | 1.64               | 2.68                         | 6.47               |
| 48.30            | 2.30      | 2.61 | 3.32                  | 1500               | 8.81              | 3.65            | 4.87            | 1.63               | 2.65                         | 7.30               |
| 48.30            | 2.60      | 2.93 | 3.73                  | 1459               | 9.78              | 4.05            | 5.44            | 1.62               | 2.62                         | 8.10               |
| 48.30            | 2.90      | 3.25 | 4.14                  | 1419               | 10.70             | 4.43            | 5.99            | 1.61               | 2.59                         | 8.86               |
| 48.30            | 3.00      | 3.35 | 4.27                  | 1405               | 11.00             | 4.55            | 6.17            | 1.61               | 2.58                         | 9.11               |
| 48.30            | 3.20      | 3.56 | 4.53                  | 1379               | 11.59             | 4.80            | 6.52            | 1.60               | 2.56                         | 9.59               |
| 48.30            | 3.60      | 3.97 | 5.06                  | 1327               | 12.71             | 5.26            | 7.21            | 1.59               | 2.51                         | 10.52              |
| 48.30            | 4.00      | 4.37 | 5.57                  | 1276               | 13.77             | 5.70            | 7.87            | 1.57               | 2.47                         | 11.40              |
| 48.30            | 4.50      | 4.86 | 6.19                  | 1213               | 15.01             | 6.21            | 8.66            | 1.56               | 2.42                         | 12.43              |
| 48.30            | 5.00      | 5.34 | 6.80                  | 1152               | 16.15             | 6.69            | 9.42            | 1.54               | 2.37                         | 13.38              |
| 48.30            | 6.00      | 6.26 | 7.97                  | 1035               | 18.19             | 7.53            | 10.81           | 1.51               | 2.28                         | 15.07              |
| 48.30            | 8.00      | 7.95 | 10.13                 | 819                | 21.37             | 8.85            | 13.16           | 1.45               | 2.11                         | 17.70              |



## CIRCULAR HOLLOW SECTION FOR STRUCTURAL PURPOSES CONFORMING TO IS:1161 : 2014

| Outside Diameter | Thickness | Mass  | Area of Cross Section | Internal Volume    | Moment of Inertia | Elastic Modulus | Plastic Modulus | Radius of Gyration | Square of Radius of Gyration | Torsional Constant |
|------------------|-----------|-------|-----------------------|--------------------|-------------------|-----------------|-----------------|--------------------|------------------------------|--------------------|
| mm               | mm        | kg/m  | cm <sup>2</sup>       | cm <sup>3</sup> /m | cm <sup>4</sup>   | cm <sup>3</sup> | cm <sup>3</sup> | cm                 | cm <sup>2</sup>              | cm <sup>4</sup>    |
| 60.30            | 1.60      | 2.32  | 2.95                  | 2561               | 12.72             | 4.22            | 5.51            | 2.08               | 4.31                         | 8.44               |
| 60.30            | 2.00      | 2.88  | 3.66                  | 2489               | 15.58             | 5.17            | 6.80            | 2.06               | 4.25                         | 10.34              |
| 60.30            | 2.30      | 3.29  | 4.19                  | 2437               | 17.65             | 5.85            | 7.74            | 2.05               | 4.21                         | 11.71              |
| 60.30            | 2.60      | 3.70  | 4.71                  | 2384               | 19.65             | 6.52            | 8.66            | 2.04               | 4.17                         | 13.04              |
| 60.30            | 2.90      | 4.11  | 5.23                  | 2333               | 21.59             | 7.16            | 9.56            | 2.03               | 4.13                         | 14.32              |
| 60.30            | 3.00      | 4.24  | 5.40                  | 2316               | 22.22             | 7.37            | 9.86            | 2.03               | 4.12                         | 14.74              |
| 60.30            | 3.20      | 4.51  | 5.74                  | 2282               | 23.47             | 7.78            | 10.44           | 2.02               | 4.09                         | 15.57              |
| 60.30            | 3.60      | 5.03  | 6.41                  | 2215               | 25.87             | 8.58            | 11.59           | 2.01               | 4.03                         | 17.16              |
| 60.30            | 4.00      | 5.55  | 7.07                  | 2148               | 28.17             | 9.34            | 12.70           | 2.00               | 3.98                         | 18.69              |
| 60.30            | 4.50      | 6.19  | 7.89                  | 2067               | 30.90             | 10.25           | 14.04           | 1.98               | 3.92                         | 20.50              |
| 60.30            | 5.00      | 6.82  | 8.69                  | 1987               | 33.48             | 11.10           | 15.33           | 1.96               | 3.85                         | 22.21              |
| 60.30            | 6.00      | 8.04  | 10.24                 | 1832               | 38.18             | 12.66           | 17.76           | 1.93               | 3.73                         | 25.33              |
| 60.30            | 8.00      | 10.32 | 13.14                 | 1541               | 45.99             | 15.25           | 22.05           | 1.87               | 3.50                         | 30.51              |
| 76.10            | 2.00      | 3.66  | 4.66                  | 4083               | 31.98             | 8.40            | 10.98           | 2.62               | 6.87                         | 16.81              |
| 76.10            | 2.30      | 4.19  | 5.33                  | 4015               | 36.34             | 9.55            | 12.53           | 2.61               | 6.81                         | 19.10              |
| 76.10            | 2.60      | 4.71  | 6.00                  | 3948               | 40.59             | 10.67           | 14.05           | 2.60               | 6.76                         | 21.34              |
| 76.10            | 2.90      | 5.24  | 6.67                  | 3882               | 44.74             | 11.76           | 15.55           | 2.59               | 6.71                         | 23.52              |
| 76.10            | 3.20      | 5.75  | 7.33                  | 3816               | 48.78             | 12.82           | 17.02           | 2.58               | 6.66                         | 25.64              |
| 76.10            | 3.60      | 6.44  | 8.20                  | 3728               | 54.01             | 14.19           | 18.94           | 2.57               | 6.59                         | 28.39              |
| 76.10            | 4.00      | 7.11  | 9.06                  | 3642               | 59.06             | 15.52           | 20.81           | 2.55               | 6.52                         | 31.04              |
| 76.10            | 4.50      | 7.95  | 10.12                 | 3536               | 65.12             | 17.11           | 23.10           | 2.54               | 6.43                         | 34.23              |
| 76.10            | 5.00      | 8.77  | 11.17                 | 3432               | 70.92             | 18.64           | 25.32           | 2.52               | 6.35                         | 37.28              |
| 76.10            | 6.00      | 10.37 | 13.21                 | 3227               | 81.76             | 21.49           | 29.56           | 2.49               | 6.19                         | 42.97              |
| 76.10            | 8.00      | 13.44 | 17.12                 | 2837               | 100.59            | 26.44           | 37.27           | 2.42               | 5.88                         | 52.87              |
| 76.10            | 9.00      | 14.90 | 18.97                 | 2651               | 108.70            | 28.57           | 40.76           | 2.39               | 5.73                         | 57.13              |
| 88.90            | 2.00      | 4.29  | 5.46                  | 5661               | 51.57             | 11.60           | 15.11           | 3.07               | 9.44                         | 23.20              |
| 88.90            | 2.30      | 4.91  | 6.26                  | 5581               | 58.70             | 13.21           | 17.25           | 3.06               | 9.38                         | 26.41              |
| 88.90            | 2.60      | 5.53  | 7.05                  | 5502               | 65.68             | 14.78           | 19.37           | 3.05               | 9.32                         | 29.55              |
| 88.90            | 2.90      | 6.15  | 7.84                  | 5424               | 72.52             | 16.31           | 21.46           | 3.04               | 9.26                         | 32.63              |
| 88.90            | 3.20      | 6.76  | 8.62                  | 5346               | 79.21             | 17.82           | 23.51           | 3.03               | 9.19                         | 35.64              |
| 88.90            | 3.60      | 7.57  | 9.65                  | 5242               | 87.90             | 19.77           | 26.21           | 3.02               | 9.11                         | 39.55              |
| 88.90            | 4.00      | 8.38  | 10.67                 | 5140               | 96.34             | 21.67           | 28.85           | 3.00               | 9.03                         | 43.35              |
| 88.90            | 4.50      | 9.37  | 11.93                 | 5014               | 106.54            | 23.97           | 32.09           | 2.99               | 8.93                         | 47.94              |
| 88.90            | 5.00      | 10.35 | 13.18                 | 4889               | 116.37            | 26.18           | 35.24           | 2.97               | 8.83                         | 52.36              |
| 88.90            | 6.00      | 12.27 | 15.63                 | 4645               | 134.94            | 30.36           | 41.31           | 2.94               | 8.64                         | 60.72              |
| 88.90            | 8.00      | 15.96 | 20.33                 | 4174               | 167.97            | 37.79           | 52.53           | 2.87               | 8.26                         | 75.58              |
| 88.90            | 9.00      | 17.74 | 22.59                 | 3948               | 182.57            | 41.07           | 57.70           | 2.84               | 8.08                         | 82.14              |
| 88.90            | 10.00     | 19.46 | 24.79                 | 3728               | 195.98            | 44.09           | 62.59           | 2.81               | 7.91                         | 88.18              |
| 101.60           | 2.00      | 4.91  | 6.26                  | 7482               | 77.63             | 15.28           | 19.84           | 3.52               | 12.41                        | 30.56              |
| 101.60           | 2.30      | 5.63  | 7.18                  | 7390               | 88.48             | 17.42           | 22.68           | 3.51               | 12.33                        | 34.84              |
| 101.60           | 2.60      | 6.35  | 8.09                  | 7299               | 99.14             | 19.52           | 25.49           | 3.50               | 12.26                        | 39.03              |
| 101.60           | 2.90      | 7.06  | 8.99                  | 7208               | 109.59            | 21.57           | 28.26           | 3.49               | 12.19                        | 43.15              |
| 101.60           | 3.20      | 7.77  | 9.89                  | 7118               | 119.85            | 23.59           | 31.00           | 3.48               | 12.12                        | 47.19              |
| 101.60           | 3.60      | 8.70  | 11.08                 | 6999               | 133.24            | 26.23           | 34.59           | 3.47               | 12.02                        | 52.46              |
| 101.60           | 4.00      | 9.63  | 12.26                 | 6881               | 146.28            | 28.80           | 38.12           | 3.45               | 11.93                        | 57.59              |
| 101.60           | 4.50      | 10.78 | 13.73                 | 6735               | 162.13            | 31.92           | 42.46           | 3.44               | 11.81                        | 63.83              |
| 101.60           | 5.00      | 11.91 | 15.17                 | 6590               | 177.47            | 34.93           | 46.70           | 3.42               | 11.70                        | 69.87              |

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|------------------|-----------|-------|-----------------------|--------------------|-------------------|-----------------|-----------------|--------------------|------------------------------|--------------------|
| mm               | mm        | kg/m  | cm <sup>2</sup>       | cm <sup>3</sup> /m | cm <sup>4</sup>   | cm <sup>3</sup> | cm <sup>3</sup> | cm                 | cm <sup>2</sup>              | cm <sup>4</sup>    |
| 114.30           | 2.00      | 5.54  | 7.06                  | 9555               | 111.27            | 19.47           | 25.23           | 3.97               | 15.77                        | 38.94              |
| 114.30           | 2.30      | 6.35  | 8.09                  | 9452               | 126.95            | 22.21           | 28.86           | 3.96               | 15.69                        | 44.43              |
| 114.30           | 2.60      | 7.16  | 9.12                  | 9348               | 142.37            | 24.91           | 32.45           | 3.95               | 15.60                        | 49.82              |
| 114.30           | 2.90      | 7.97  | 10.15                 | 9246               | 157.55            | 27.57           | 36.00           | 3.94               | 15.52                        | 55.13              |
| 114.30           | 3.00      | 8.24  | 10.49                 | 9212               | 162.55            | 28.44           | 37.17           | 3.94               | 15.50                        | 56.88              |
| 114.30           | 3.20      | 8.77  | 11.17                 | 9144               | 172.47            | 30.18           | 39.51           | 3.93               | 15.44                        | 60.36              |
| 114.30           | 3.60      | 9.83  | 12.52                 | 9009               | 191.98            | 33.59           | 44.13           | 3.92               | 15.33                        | 67.19              |
| 114.30           | 4.00      | 10.88 | 13.86                 | 8875               | 211.07            | 36.93           | 48.69           | 3.90               | 15.23                        | 73.86              |
| 114.30           | 4.50      | 12.19 | 15.52                 | 8709               | 234.32            | 41.00           | 54.28           | 3.89               | 15.10                        | 82.00              |
| 114.30           | 5.00      | 13.48 | 17.17                 | 8544               | 256.92            | 44.96           | 59.77           | 3.87               | 14.96                        | 89.91              |
| 114.30           | 6.00      | 16.03 | 20.41                 | 8219               | 300.21            | 52.53           | 70.45           | 3.83               | 14.71                        | 105.06             |
| 127.00           | 2.00      | 6.17  | 7.85                  | 11882              | 153.44            | 24.16           | 31.25           | 4.42               | 19.54                        | 48.33              |
| 127.00           | 2.60      | 7.98  | 10.16                 | 11652              | 196.65            | 30.97           | 40.24           | 4.40               | 19.35                        | 61.94              |
| 127.00           | 2.90      | 8.88  | 11.31                 | 11537              | 217.78            | 34.30           | 44.67           | 4.39               | 19.26                        | 68.59              |
| 127.00           | 3.00      | 9.18  | 11.69                 | 11499              | 224.75            | 35.39           | 46.14           | 4.39               | 19.23                        | 70.79              |
| 127.00           | 3.20      | 9.77  | 12.45                 | 11423              | 238.60            | 37.57           | 49.06           | 4.38               | 19.17                        | 75.15              |
| 127.00           | 3.60      | 10.96 | 13.96                 | 11272              | 265.87            | 41.87           | 54.83           | 4.36               | 19.05                        | 83.74              |
| 127.00           | 4.00      | 12.14 | 15.46                 | 11122              | 292.61            | 46.08           | 60.54           | 4.35               | 18.93                        | 92.16              |
| 127.00           | 4.50      | 13.60 | 17.32                 | 10936              | 325.29            | 51.23           | 67.56           | 4.33               | 18.78                        | 102.45             |
| 127.00           | 5.00      | 15.05 | 19.16                 | 10751              | 357.14            | 56.24           | 74.46           | 4.32               | 18.64                        | 112.48             |
| 127.00           | 6.00      | 17.91 | 22.81                 | 10387              | 418.44            | 65.90           | 87.92           | 4.28               | 18.35                        | 131.79             |
| 139.70           | 2.60      | 8.79  | 11.20                 | 14208              | 263.21            | 37.68           | 48.88           | 4.85               | 23.50                        | 75.36              |
| 139.70           | 2.90      | 9.79  | 12.46                 | 14082              | 291.68            | 41.76           | 54.28           | 4.84               | 23.40                        | 83.52              |
| 139.70           | 3.20      | 10.77 | 13.72                 | 13956              | 319.78            | 45.78           | 59.63           | 4.83               | 23.30                        | 91.56              |
| 139.70           | 3.60      | 12.09 | 15.39                 | 13789              | 356.65            | 51.06           | 66.70           | 4.81               | 23.17                        | 102.12             |
| 139.70           | 4.00      | 13.39 | 17.05                 | 13623              | 392.86            | 56.24           | 73.68           | 4.80               | 23.04                        | 112.49             |
| 139.70           | 4.50      | 15.01 | 19.11                 | 13417              | 437.20            | 62.59           | 82.29           | 4.78               | 22.87                        | 125.18             |
| 139.70           | 5.00      | 16.61 | 21.16                 | 13212              | 480.54            | 68.80           | 90.76           | 4.77               | 22.71                        | 137.59             |
| 139.70           | 6.00      | 19.79 | 25.20                 | 12808              | 564.26            | 80.78           | 107.33          | 4.73               | 22.39                        | 161.56             |
| 139.70           | 8.00      | 25.99 | 33.10                 | 12018              | 720.29            | 103.12          | 138.93          | 4.66               | 21.76                        | 206.24             |
| 165.10           | 2.60      | 10.42 | 13.27                 | 20081              | 438.23            | 53.09           | 68.66           | 5.75               | 33.02                        | 106.17             |
| 165.10           | 2.90      | 11.60 | 14.78                 | 19931              | 486.13            | 58.89           | 76.30           | 5.74               | 32.90                        | 117.78             |
| 165.10           | 3.20      | 12.78 | 16.28                 | 19781              | 533.48            | 64.63           | 83.89           | 5.73               | 32.78                        | 129.25             |
| 165.10           | 3.60      | 14.34 | 18.27                 | 19582              | 595.79            | 72.17           | 93.91           | 5.71               | 32.62                        | 144.35             |
| 165.10           | 4.00      | 15.89 | 20.24                 | 19384              | 657.16            | 79.61           | 103.83          | 5.70               | 32.46                        | 159.22             |
| 165.10           | 4.50      | 17.83 | 22.70                 | 19138              | 732.57            | 88.74           | 116.10          | 5.68               | 32.27                        | 177.49             |
| 165.10           | 5.00      | 19.75 | 25.15                 | 18894              | 806.54            | 97.70           | 128.20          | 5.66               | 32.07                        | 195.41             |
| 165.10           | 6.00      | 23.55 | 29.99                 | 18409              | 950.25            | 115.11          | 151.95          | 5.63               | 31.69                        | 230.22             |
| 165.10           | 8.00      | 31.00 | 39.48                 | 17460              | 1221.25           | 147.94          | 197.61          | 5.56               | 30.93                        | 295.88             |
| 168.30           | 2.60      | 10.63 | 13.53                 | 20893              | 464.63            | 55.21           | 71.39           | 5.86               | 34.33                        | 110.43             |
| 168.30           | 2.90      | 11.83 | 15.07                 | 20739              | 515.46            | 61.26           | 79.34           | 5.85               | 34.21                        | 122.51             |
| 168.30           | 3.20      | 13.03 | 16.60                 | 20587              | 565.74            | 67.23           | 87.24           | 5.84               | 34.09                        | 134.46             |
| 168.30           | 3.60      | 14.63 | 18.63                 | 20384              | 631.90            | 75.09           | 97.67           | 5.82               | 33.92                        | 150.18             |
| 168.30           | 4.00      | 16.21 | 20.65                 | 20182              | 697.09            | 82.84           | 108.00          | 5.81               | 33.76                        | 165.68             |
| 168.30           | 4.50      | 18.18 | 23.16                 | 19931              | 777.22            | 92.36           | 120.77          | 5.79               | 33.56                        | 184.72             |
| 168.30           | 5.00      | 20.14 | 25.65                 | 19681              | 855.85            | 101.70          | 133.38          | 5.78               | 33.36                        | 203.41             |
| 168.30           | 6.00      | 24.02 | 30.59                 | 19187              | 1008.69           | 119.87          | 158.12          | 5.74               | 32.97                        | 239.74             |

# CIRCULAR HOLLOW SECTION

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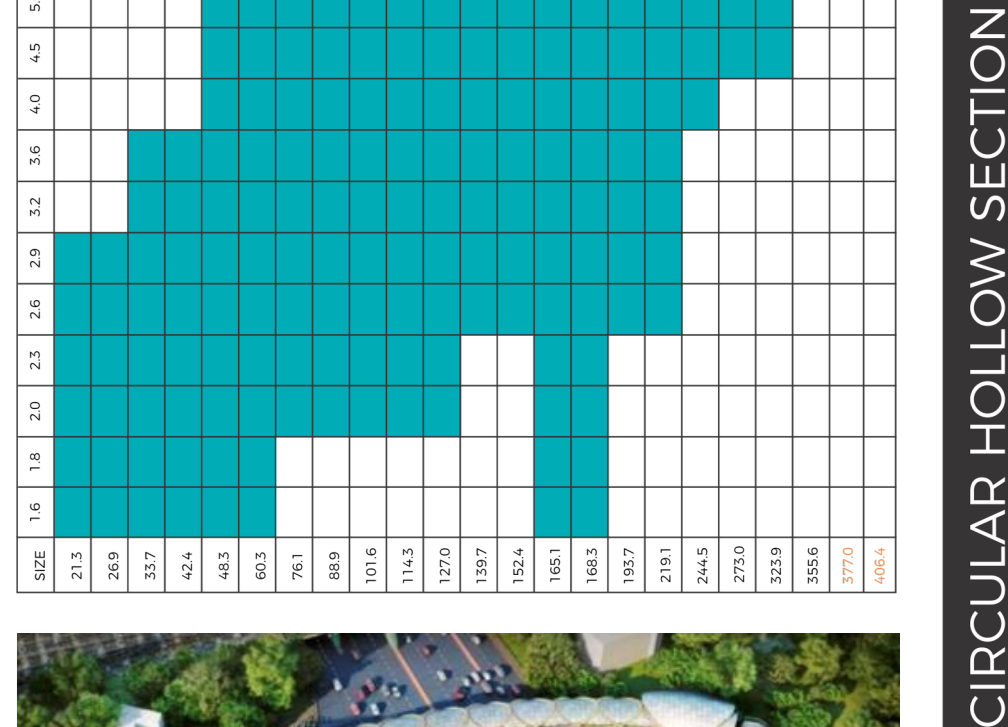
| SIZE  | 1.6 | 1.8 | 2.0 | 2.3 | 2.6 | 2.9 | 3.2 | 3.6 | 4.0 | 4.5 | 5 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| 21.3  |     |     |     |     |     |     |     |     |     |     |   |
| 26.9  |     |     |     |     |     |     |     |     |     |     |   |
| 33.7  |     |     |     |     |     |     |     |     |     |     |   |
| 42.4  |     |     |     |     |     |     |     |     |     |     |   |
| 48.3  |     |     |     |     |     |     |     |     |     |     |   |
| 60.3  |     |     |     |     |     |     |     |     |     |     |   |
| 76.1  |     |     |     |     |     |     |     |     |     |     |   |
| 88.9  |     |     |     |     |     |     |     |     |     |     |   |
| 101.6 |     |     |     |     |     |     |     |     |     |     |   |
| 114.3 |     |     |     |     |     |     |     |     |     |     |   |
| 127.0 |     |     |     |     |     |     |     |     |     |     |   |
| 139.7 |     |     |     |     |     |     |     |     |     |     |   |
| 152.4 |     |     |     |     |     |     |     |     |     |     |   |
| 165.1 |     |     |     |     |     |     |     |     |     |     |   |
| 168.3 |     |     |     |     |     |     |     |     |     |     |   |
| 193.7 |     |     |     |     |     |     |     |     |     |     |   |
| 219.1 |     |     |     |     |     |     |     |     |     |     |   |
| 244.5 |     |     |     |     |     |     |     |     |     |     |   |
| 273.0 |     |     |     |     |     |     |     |     |     |     |   |
| 323.9 |     |     |     |     |     |     |     |     |     |     |   |
| 355.6 |     |     |     |     |     |     |     |     |     |     |   |
| 377.0 |     |     |     |     |     |     |     |     |     |     |   |
| 406.4 |     |     |     |     |     |     |     |     |     |     |   |

CIRCULAR HOLLOW SECTION



| SIZE  | 1.6 | 1.8 | 2.0 | 2.3 | 2.6 | 2.9 | 3.2 | 3.6 | 4.0 | 4.5 | 5 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| 21.3  |     |     |     |     |     |     |     |     |     |     |   |
| 26.9  |     |     |     |     |     |     |     |     |     |     |   |
| 33.7  |     |     |     |     |     |     |     |     |     |     |   |
| 42.4  |     |     |     |     |     |     |     |     |     |     |   |
| 48.3  |     |     |     |     |     |     |     |     |     |     |   |
| 60.3  |     |     |     |     |     |     |     |     |     |     |   |
| 76.1  |     |     |     |     |     |     |     |     |     |     |   |
| 88.9  |     |     |     |     |     |     |     |     |     |     |   |
| 101.6 |     |     |     |     |     |     |     |     |     |     |   |
| 114.3 |     |     |     |     |     |     |     |     |     |     |   |
| 127.0 |     |     |     |     |     |     |     |     |     |     |   |
| 139.7 |     |     |     |     |     |     |     |     |     |     |   |
| 152.4 |     |     |     |     |     |     |     |     |     |     |   |
| 165.1 |     |     |     |     |     |     |     |     |     |     |   |
| 168.3 |     |     |     |     |     |     |     |     |     |     |   |
| 193.7 |     |     |     |     |     |     |     |     |     |     |   |
| 219.1 |     |     |     |     |     |     |     |     |     |     |   |
| 244.5 |     |     |     |     |     |     |     |     |     |     |   |
| 273.0 |     |     |     |     |     |     |     |     |     |     |   |
| 323.9 |     |     |     |     |     |     |     |     |     |     |   |
| 355.6 |     |     |     |     |     |     |     |     |     |     |   |
| 377.0 |     |     |     |     |     |     |     |     |     |     |   |
| 406.4 |     |     |     |     |     |     |     |     |     |     |   |

CIRCULAR HOLLOW SECTION



| SIZE  | 1.6 | 1.8 | 2.0 | 2.3 | 2.6 | 2.9 | 3.2 | 3.6 | 4.0 | 4.5 | 5 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| 21.3  |     |     |     |     |     |     |     |     |     |     |   |
| 26.9  |     |     |     |     |     |     |     |     |     |     |   |
| 33.7  |     |     |     |     |     |     |     |     |     |     |   |
| 42.4  |     |     |     |     |     |     |     |     |     |     |   |
| 48.3  |     |     |     |     |     |     |     |     |     |     |   |
| 60.3  |     |     |     |     |     |     |     |     |     |     |   |
| 76.1  |     |     |     |     |     |     |     |     |     |     |   |
| 88.9  |     |     |     |     |     |     |     |     |     |     |   |
| 101.6 |     |     |     |     |     |     |     |     |     |     |   |
| 114.3 |     |     |     |     |     |     |     |     |     |     |   |
| 127.0 |     |     |     |     |     |     |     |     |     |     |   |
| 139.7 |     |     |     |     |     |     |     |     |     |     |   |
| 152.4 |     |     |     |     |     |     |     |     |     |     |   |
| 165.1 |     |     |     |     |     |     |     |     |     |     |   |
| 168.3 |     |     |     |     |     |     |     |     |     |     |   |
| 193.7 |     |     |     |     |     |     |     |     |     |     |   |
| 219.1 |     |     |     |     |     |     |     |     |     |     |   |
| 244.5 |     |     |     |     |     |     |     |     |     |     |   |
| 273.0 |     |     |     |     |     |     |     |     |     |     |   |
| 323.9 |     |     |     |     |     |     |     |     |     |     |   |
| 355.6 |     |     |     |     |     |     |     |     |     |     |   |
| 377.0 |     |     |     |     |     |     |     |     |     |     |   |
| 406.4 |     |     |     |     |     |     |     |     |     |     |   |

CIRCULAR HOLLOW SECTION

# CIRCULAR HOLLOW SECTION