

**Table 3-4**  
**DEVELOPED LENGTH OF MATERIAL FOR 90° BENDS\***

| Material<br>Thickness<br>in. | Inside Radius of Bend (in.) |      |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |
|------------------------------|-----------------------------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
|                              | Sharp<br>Bend               | 1/64 | 1/32 | 3/64 | 1/16 | 5/64 | 3/32 | 7/64 | 1/8  | 5/32 | 3/16 | 7/32 | 1/4  | 5/16  | 3/8   | 7/16  | 1/2   | 5/8   |
| .016                         | .008                        | .033 | .061 | .086 | .111 | .135 | .160 | .184 | .209 | .258 | .307 | .356 | .406 | .503  | .602  | .700  | .798  | .994  |
| .020                         | .011                        | .035 | .063 | .089 | .114 | .138 | .163 | .187 | .212 | .261 | .310 | .359 | .408 | .507  | .605  | .703  | .801  | .998  |
| .025                         | .013                        | .038 | .064 | .092 | .118 | .142 | .167 | .191 | .216 | .265 | .314 | .363 | .412 | .511  | .609  | .707  | .805  | 1.001 |
| .032                         | .017                        | .041 | .066 | .094 | .123 | .148 | .173 | .197 | .222 | .271 | .320 | .369 | .418 | .516  | .614  | .712  | .811  | 1.007 |
| .040                         | .021                        | .045 | .070 | .097 | .126 | .153 | .179 | .203 | .228 | .277 | .326 | .375 | .424 | .522  | .621  | .719  | .817  | 1.013 |
| .051                         | .027                        | .051 | .076 | .100 | .129 | .155 | .184 | .212 | .236 | .285 | .334 | .383 | .433 | .531  | .629  | .727  | .825  | 1.022 |
| .057                         | .030                        | .054 | .079 | .103 | .130 | .156 | .185 | .214 | .241 | .290 | .339 | .388 | .438 | .536  | .634  | .732  | .830  | 1.027 |
| .063                         | .033                        | .057 | .082 | .106 | .131 | .158 | .186 | .216 | .245 | .294 | .344 | .393 | .442 | .540  | .638  | .736  | .834  | 1.031 |
| .072                         | .038                        | .062 | .087 | .111 | .135 | .161 | .189 | .220 | .248 | .302 | .351 | .400 | .449 | .547  | .646  | .744  | .842  | 1.038 |
| .081                         | .042                        | .067 | .091 | .116 | .140 | .165 | .191 | .224 | .250 | .307 | .358 | .407 | .456 | .554  | .653  | .751  | .849  | 1.045 |
| .091                         | .047                        | .072 | .096 | .121 | .146 | .170 | .194 | .227 | .252 | .312 | .366 | .415 | .464 | .562  | .660  | .758  | .857  | 1.053 |
| .102                         | .053                        | .078 | .102 | .127 | .151 | .176 | .200 | .230 | .258 | .316 | .370 | .424 | .473 | .571  | .669  | .767  | .865  | 1.062 |
| .109                         | .057                        | .082 | .106 | .131 | .155 | .180 | .204 | .232 | .261 | .319 | .371 | .429 | .478 | .577  | .675  | .773  | .871  | 1.067 |
| .125                         | .065                        | .090 | .114 | .139 | .164 | .188 | .213 | .237 | .267 | .324 | .373 | .434 | .491 | .589  | .687  | .785  | .884  | 1.080 |
| .156                         | .082                        | .106 | .131 | .155 | .180 | .204 | .229 | .253 | .278 | .332 | .384 | .444 | .500 | .614  | .712  | .810  | .908  | 1.104 |
| .188                         | .098                        | .123 | .147 | .172 | .196 | .221 | .245 | .270 | .295 | .344 | .394 | .454 | .510 | .624  | .736  | .834  | .933  | 1.129 |
| .250                         | .131                        | .155 | .180 | .204 | .229 | .254 | .278 | .303 | .327 | .376 | .425 | .474 | .529 | .643  | .756  | .869  | .982  | 1.178 |
| .313                         | .164                        | .188 | .213 | .237 | .262 | .286 | .311 | .335 | .360 | .409 | .458 | .507 | .556 | .662  | .776  | .889  | 1.002 | 1.227 |
| .375                         | .196                        | .221 | .245 | .270 | .295 | .319 | .344 | .386 | .393 | .442 | .491 | .540 | .589 | .687  | .797  | .909  | 1.022 | 1.247 |
| .500                         | .262                        | .286 | .311 | .335 | .360 | .384 | .409 | .433 | .458 | .507 | .556 | .605 | .654 | .753  | .851  | .949  | 1.061 | 1.285 |
| .625                         | .328                        | .352 | .377 | .401 | .426 | .450 | .475 | .499 | .524 | .573 | .622 | .671 | .720 | .818  | .916  | 1.014 | 1.113 | 1.323 |
| .750                         | .393                        | .417 | .442 | .466 | .491 | .513 | .540 | .564 | .589 | .638 | .687 | .736 | .785 | .884  | .982  | 1.080 | 1.178 | 1.374 |
| .875                         | .458                        | .483 | .507 | .532 | .556 | .581 | .605 | .630 | .654 | .703 | .753 | .802 | .851 | .949  | 1.047 | 1.145 | 1.243 | 1.440 |
| 1.000                        | .524                        | .548 | .573 | .597 | .622 | .646 | .671 | .695 | .720 | .769 | .818 | .867 | .916 | 1.014 | 1.113 | 1.211 | 1.309 | 1.505 |

\*Developed Length = (Length Before Bending) - (Sum of the Flat Lengths)

**Table 3-4**  
**DEVELOPED LENGTH OF MATERIAL FOR 90° BENDS\* (Continued)**

| Material<br>Thickness<br>in. | Inside Radius of Bend (in.) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|------------------------------|-----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                              | 3/4                         | 7/8   | 1     | 1 1/4 | 1 1/2 | 1 3/4 | 2     | 2 1/4 | 2 1/2 | 2 3/4 | 3     | 3 1/4 | 3 1/2 | 3 3/4 | 4     | 4 1/2 | 5     | 5 1/2 |
| .016                         | 1.191                       | 1.387 | 1.583 | 1.976 | 2.368 | 2.761 | 3.154 | 3.547 | 3.940 | 4.332 | 4.725 | 5.118 | 5.510 | 5.903 | 6.298 | 7.081 | 7.867 | 8.652 |
| .020                         | 1.194                       | 1.390 | 1.587 | 1.979 | 2.372 | 2.765 | 3.157 | 3.550 | 3.943 | 4.335 | 4.728 | 5.121 | 5.514 | 5.905 | 6.299 | 7.084 | 7.870 | 8.655 |
| .025                         | 1.198                       | 1.394 | 1.590 | 1.983 | 2.376 | 2.769 | 3.161 | 3.554 | 3.947 | 4.339 | 4.732 | 5.125 | 5.517 | 5.910 | 6.303 | 7.088 | 7.874 | 8.659 |
| .032                         | 1.203                       | 1.400 | 1.596 | 1.989 | 2.381 | 2.774 | 3.167 | 3.559 | 3.952 | 4.345 | 4.738 | 5.130 | 5.523 | 5.916 | 6.308 | 7.094 | 7.879 | 8.665 |
| .040                         | 1.210                       | 1.406 | 1.602 | 1.995 | 2.388 | 2.780 | 3.173 | 3.566 | 3.958 | 4.351 | 4.744 | 5.137 | 5.529 | 5.922 | 6.315 | 7.100 | 7.885 | 8.671 |
| .051                         | 1.218                       | 1.414 | 1.611 | 2.003 | 2.396 | 2.789 | 3.181 | 3.574 | 3.967 | 4.360 | 4.752 | 5.145 | 5.538 | 5.930 | 6.323 | 7.109 | 7.894 | 8.679 |
| .057                         | 1.223                       | 1.419 | 1.616 | 2.008 | 2.401 | 2.794 | 3.186 | 3.579 | 3.972 | 4.365 | 4.757 | 5.150 | 5.543 | 5.935 | 6.328 | 7.113 | 7.899 | 8.684 |
| .063                         | 1.227                       | 1.423 | 1.620 | 2.013 | 2.405 | 2.798 | 3.191 | 3.583 | 3.977 | 4.369 | 4.761 | 5.154 | 5.547 | 5.940 | 6.332 | 7.118 | 7.903 | 8.688 |
| .072                         | 1.235                       | 1.431 | 1.627 | 2.020 | 2.413 | 2.805 | 3.198 | 3.591 | 3.984 | 4.376 | 4.769 | 5.162 | 5.554 | 5.947 | 6.340 | 7.125 | 7.911 | 8.696 |
| .081                         | 1.242                       | 1.438 | 1.634 | 2.027 | 2.420 | 2.812 | 3.205 | 3.598 | 3.990 | 4.383 | 4.776 | 5.169 | 5.561 | 5.954 | 6.347 | 7.132 | 7.917 | 8.703 |
| .091                         | 1.249                       | 1.446 | 1.642 | 2.035 | 2.427 | 2.820 | 3.213 | 3.605 | 3.998 | 4.391 | 4.784 | 5.176 | 5.569 | 5.962 | 6.354 | 7.140 | 7.925 | 8.711 |
| .102                         | 1.258                       | 1.454 | 1.651 | 2.043 | 2.436 | 2.829 | 3.222 | 3.614 | 4.007 | 4.400 | 4.792 | 5.185 | 5.578 | 5.971 | 6.363 | 7.149 | 7.934 | 8.719 |
| .109                         | 1.264                       | 1.461 | 1.656 | 2.049 | 2.442 | 2.835 | 3.227 | 3.620 | 4.013 | 4.405 | 4.798 | 5.191 | 5.583 | 5.976 | 6.369 | 7.154 | 7.940 | 8.725 |
| .125                         | 1.301                       | 1.473 | 1.669 | 2.062 | 2.454 | 2.847 | 3.240 | 3.632 | 4.025 | 4.418 | 4.811 | 5.203 | 5.596 | 5.989 | 6.381 | 7.167 | 7.952 | 8.738 |
| .156                         | 1.301                       | 1.497 | 1.693 | 2.086 | 2.479 | 2.872 | 3.264 | 3.657 | 4.050 | 4.442 | 4.835 | 5.228 | 5.620 | 6.013 | 6.406 | 7.191 | 7.977 | 8.762 |
| .188                         | 1.325                       | 1.522 | 1.718 | 2.111 | 2.503 | 2.896 | 3.289 | 3.681 | 4.074 | 4.467 | 4.860 | 5.252 | 5.645 | 6.038 | 6.430 | 7.216 | 8.001 | 8.787 |
| .250                         | 1.374                       | 1.571 | 1.767 | 2.160 | 2.553 | 2.945 | 3.338 | 3.731 | 4.123 | 4.516 | 4.909 | 5.301 | 5.694 | 6.087 | 6.480 | 7.265 | 8.050 | 8.836 |
| .313                         | 1.423                       | 1.620 | 1.816 | 2.209 | 2.602 | 2.994 | 3.387 | 3.780 | 4.172 | 4.565 | 4.958 | 5.350 | 5.743 | 6.136 | 6.529 | 7.314 | 8.099 | 8.885 |
| .375                         | 1.473                       | 1.669 | 1.865 | 2.258 | 2.651 | 3.043 | 3.436 | 3.829 | 4.222 | 4.614 | 5.007 | 5.400 | 5.792 | 6.185 | 6.578 | 7.363 | 8.149 | 8.934 |
| .500                         | 1.511                       | 1.737 | 1.964 | 2.356 | 2.749 | 3.142 | 3.584 | 3.027 | 4.320 | 4.712 | 5.105 | 5.498 | 5.891 | 6.283 | 6.676 | 7.461 | 8.247 | 9.032 |
| .625                         | 1.548                       | 1.774 | 2.001 | 2.454 | 2.847 | 3.240 | 3.632 | 4.025 | 4.418 | 4.811 | 5.203 | 5.596 | 5.989 | 6.381 | 6.774 | 7.560 | 8.345 | 9.130 |
| .750                         | 1.585                       | 1.812 | 2.038 | 2.491 | 2.915 | 3.338 | 3.731 | 4.123 | 4.516 | 4.909 | 5.301 | 5.694 | 6.087 | 6.480 | 6.872 | 7.658 | 8.443 | 9.228 |
| .875                         | 1.636                       | 1.850 | 2.075 | 2.529 | 2.983 | 3.436 | 3.829 | 4.222 | 4.614 | 5.007 | 5.400 | 5.792 | 6.185 | 6.578 | 6.970 | 7.756 | 8.541 | 9.327 |
| 1.000                        | 1.702                       | 1.898 | 2.112 | 2.566 | 3.021 | 3.474 | 3.927 | 4.320 | 4.712 | 5.105 | 5.498 | 5.891 | 6.283 | 6.676 | 7.069 | 7.854 | 8.639 | 9.426 |

\*Developed Length = (Length Before Bending) - (Sum of the Flat Lengths)

Table 4-1

**BEAM ALLOWABLE UNIFORM LOADS**  
**ALUMINUM ASSOCIATION STANDARD CHANNELS, ALLOY 6061-T6**

| Depth<br>in. | Wt<br>lb/ft | span (ft)              |                        |                        |                        |                        |                        |                          |                         |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |
|--------------|-------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|--------------------------|-------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|              |             | 1                      | 2                      | 3                      | 4                      | 5                      | 6                      | 7                        | 8                       | 9                      | 10                     | 11                     | 12                     | 13                     | 14                     | 15                     | 16                     | 17                     | 18                     | 19                     | 20                     | 21                     |
| 2            | 0.577       | 4.43<br>0.03<br>3.90   | 2.22<br>0.14<br>1.63   | 1.48<br>0.31<br>0.94   |                        |                        |                        |                          |                         |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| 2            | 1.07        | 8.56<br>0.03<br>7.97   | 4.28<br>0.14<br>3.59   | 2.85<br>0.31<br>2.21   |                        |                        |                        |                          |                         |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| 3            | 1.14        | 13.77<br>0.02<br>13.06 | 6.89<br>0.09<br>5.72   | 4.59<br>0.20<br>3.40   | 3.44<br>0.35<br>2.29   | 2.75<br>0.54<br>1.54   |                        |                          |                         |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| 3            | 1.60        | 19.59<br>0.02<br>18.93 | 9.80<br>0.09<br>8.51   | 6.53<br>0.20<br>5.19   | 4.90<br>0.35<br>3.60   | 3.92<br>0.55<br>2.68   |                        |                          |                         |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| 4            | 1.74        | 28.63<br>0.02<br>28.09 | 14.32<br>0.07<br>12.63 | 9.54<br>0.15<br>7.61   | 7.16<br>0.26<br>5.18   | 5.73<br>0.41<br>3.79   | 4.77<br>0.59<br>2.72   | 4.09<br>0.80<br>1.92     |                         |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| 4            | 2.33        | 38.66<br>0.02<br>38.34 | 19.33<br>0.07<br>17.50 | 12.89<br>0.15<br>10.72 | 9.67<br>0.26<br>7.45   | 7.73<br>0.41<br>5.56   | 6.44<br>0.60<br>4.34   | 5.52<br>0.81<br>3.49     |                         |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| 5            | 2.21        |                        | 22.90<br>0.05<br>20.68 | 15.27<br>0.12<br>12.54 | 11.45<br>0.21<br>8.58  | 9.16<br>0.32<br>6.27   | 7.63<br>0.47<br>4.69   | 6.54<br>0.63<br>3.26     | 5.73<br>0.83<br>2.39    |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| 5            | 3.09        |                        | 32.62<br>0.05<br>30.49 | 21.74<br>0.12<br>18.87 | 16.31<br>0.21<br>13.18 | 13.05<br>0.33<br>9.87  | 10.87<br>0.47<br>7.72  | 9.32<br>0.64<br>6.23     | 8.15<br>0.84<br>5.14    |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| 6            | 2.83        |                        | 23.33<br>0.10<br>19.64 | 17.50<br>0.17<br>13.50 | 14.00<br>0.27<br>9.91  | 11.67<br>0.39<br>7.59  | 10.00<br>0.53<br>5.49  | 8.75<br>0.69<br>3.99     | 7.78<br>0.88<br>3.03    | 7.00<br>1.08<br>2.39   |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| 6            | 4.03        |                        | 33.76<br>0.10<br>30.67 | 25.32<br>0.17<br>21.58 | 20.26<br>0.27<br>16.23 | 16.88<br>0.39<br>12.74 | 14.47<br>0.53<br>10.31 | 12.66<br>0.69<br>8.54    | 11.25<br>0.87<br>7.17   | 10.13<br>1.07<br>5.62  |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| 7            | 3.21        |                        | 29.95<br>0.08<br>26.45 | 22.46<br>0.14<br>18.25 | 17.97<br>0.23<br>13.42 | 14.98<br>0.33<br>10.28 | 12.84<br>0.44<br>7.69  | 11.23<br>0.58<br>5.50    | 9.98<br>0.73<br>4.12    | 8.99<br>0.91<br>3.20   | 8.17<br>1.10<br>2.56   | 7.49<br>1.30<br>2.09   |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| 7            | 4.72        |                        | 34.76<br>0.15<br>30.10 | 27.81<br>0.23<br>22.68 | 23.17<br>0.33<br>17.82 | 19.86<br>0.45<br>14.43 | 17.38<br>0.59<br>11.94 | 15.45<br>0.74<br>10.05   | 13.90<br>0.92<br>8.02   | 12.64<br>1.11<br>6.43  | 11.59<br>1.32<br>5.27  |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| 8            | 4.15        |                        | 34.30<br>0.13<br>27.91 | 27.44<br>0.20<br>20.69 | 22.86<br>0.29<br>15.98 | 19.60<br>0.40<br>12.69 | 17.15<br>0.52<br>9.51  | 15.24<br>0.66<br>7.11    | 13.72<br>0.82<br>5.51   | 12.47<br>0.99<br>4.39  | 11.43<br>1.18<br>3.59  | 10.55<br>1.38<br>2.99  | 9.80<br>1.60<br>2.53   |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| 8            | 5.79        |                        | 47.86<br>0.13<br>41.96 | 38.29<br>0.20<br>31.69 | 31.91<br>0.29<br>24.96 | 27.35<br>0.40<br>20.24 | 23.93<br>0.52<br>16.77 | 21.27<br>0.66<br>14.13   | 19.15<br>0.81<br>11.83  | 17.41<br>0.98<br>9.43  | 15.95<br>1.17<br>7.69  | 14.73<br>1.37<br>6.40  | 13.68<br>1.59<br>5.40  |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| 9            | 4.98        |                        | 35.17<br>0.18<br>27.65 | 29.31<br>0.26<br>21.40 | 25.12<br>0.35<br>17.02 | 21.98<br>0.46<br>13.53 | 19.54<br>0.58<br>10.01 | 17.58<br>0.72<br>7.69    | 15.99<br>0.87<br>6.09   | 14.65<br>1.04<br>4.94  | 13.53<br>1.22<br>4.09  | 12.56<br>1.41<br>3.44  | 11.72<br>1.62<br>2.93  |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| 9            | 6.97        |                        | 51.17<br>0.18<br>42.85 | 42.64<br>0.26<br>33.81 | 36.55<br>0.36<br>27.45 | 31.98<br>0.47<br>22.77 | 28.43<br>0.59<br>19.20 | 25.58<br>0.73<br>16.41   | 23.26<br>0.88<br>13.46  | 21.32<br>1.05<br>10.94 | 19.68<br>1.23<br>9.06  | 18.27<br>1.43<br>7.63  | 17.06<br>1.64<br>6.52  |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| 10           | 6.14        |                        |                        |                        |                        | 41.20<br>0.24<br>30.45 | 35.32<br>0.32<br>24.38 | 30.90<br>0.42<br>19.91   | 27.47<br>0.54<br>15.70  | 24.72<br>0.66<br>12.04 | 22.48<br>0.80<br>9.52  | 20.60<br>0.95<br>7.71  | 19.02<br>1.12<br>6.37  | 17.66<br>1.30<br>5.35  | 16.48<br>1.49<br>4.56  | 15.45<br>1.69<br>3.94  | 14.54<br>1.91<br>3.43  |                        |                        |                        |                        |                        |
| 10           | 8.36        |                        |                        |                        |                        | 57.31<br>0.24<br>45.98 | 49.13<br>0.32<br>37.46 | 42.99<br>0.42<br>31.17   | 38.21<br>0.53<br>26.37  | 34.39<br>0.66<br>22.60 | 31.26<br>0.80<br>19.57 | 28.66<br>0.95<br>15.97 | 26.45<br>1.12<br>13.20 | 24.56<br>1.29<br>11.10 | 22.93<br>1.49<br>9.47  | 21.49<br>1.69<br>8.17  | 20.23<br>1.91<br>7.13  |                        |                        |                        |                        |                        |
| 12           | 8.27        |                        |                        |                        |                        |                        | 56.70<br>0.27<br>41.38 | 49.61<br>0.35<br>34.05   | 44.10<br>0.45<br>28.45  | 39.69<br>0.55<br>23.21 | 36.08<br>0.67<br>18.19 | 33.07<br>0.80<br>14.61 | 30.53<br>0.93<br>11.99 | 28.35<br>1.08<br>10.01 | 26.46<br>1.24<br>8.48  | 24.81<br>1.41<br>7.28  | 23.35<br>1.60<br>6.32  | 22.05<br>1.79<br>5.53  | 20.89<br>1.99<br>4.89  | 19.84<br>2.21<br>4.35  | 18.90<br>2.44<br>3.90  |                        |
| 12           | 11.8        |                        |                        |                        |                        |                        | 84.28<br>0.27<br>67.86 | 73.74<br>0.35<br>56.89   | 65.55<br>0.44<br>48.47  | 58.99<br>0.55<br>41.84 | 53.63<br>0.66<br>36.50 | 49.16<br>0.79<br>32.12 | 45.38<br>0.93<br>28.48 | 42.14<br>1.07<br>23.97 | 39.33<br>1.23<br>20.35 | 36.87<br>1.40<br>17.50 | 34.70<br>1.58<br>15.21 | 32.77<br>1.77<br>13.35 | 31.05<br>1.98<br>11.81 | 29.50<br>2.19<br>10.53 | 28.09<br>2.41<br>9.44  |                        |
| 14           | 13.9        |                        |                        |                        |                        |                        |                        | 116.60<br>0.22<br>100.92 | 102.03<br>0.29<br>85.07 | 90.69<br>0.37<br>72.85 | 81.62<br>0.45<br>63.16 | 74.20<br>0.55<br>55.32 | 68.02<br>0.65<br>48.87 | 62.79<br>0.77<br>43.47 | 58.30<br>0.89<br>38.91 | 54.41<br>1.02<br>34.45 | 51.01<br>1.16<br>29.34 | 48.01<br>1.31<br>25.27 | 45.35<br>1.47<br>21.99 | 42.96<br>1.64<br>19.31 | 40.81<br>1.81<br>17.09 | 38.87<br>2.00<br>15.24 |

## Notes

1. Load is applied at beam's neutral axis on a simply supported single span braced against twisting at supports.
2. Building-type structure.
3. For each beam size, first line is total load (k) for laterally braced beam, second line is deflection (in.) for laterally braced beam, and third line is total load (k) for beam not laterally braced.

**Table 4-2**  
**BEAM ALLOWABLE UNIFORM LOADS**  
**ALUMINUM ASSOCIATION STANDARD W-SHAPES, ALLOY 6061-T6**

| Depth<br>in. | Wt<br>lb/ft | span (ft) |       |       |       |       |        |        |        |       |       |       |       |       |       |       |       |       |       |       |       |    |
|--------------|-------------|-----------|-------|-------|-------|-------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----|
|              |             | 1         | 2     | 3     | 4     | 5     | 6      | 7      | 8      | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21 |
| 3            | 1.64        | 21.05     | 10.52 | 7.02  | 5.26  | 4.21  |        |        |        |       |       |       |       |       |       |       |       |       |       |       |       |    |
|              |             | 0.02      | 0.08  | 0.19  | 0.33  | 0.52  |        |        |        |       |       |       |       |       |       |       |       |       |       |       |       |    |
|              |             | 20.74     | 9.42  | 5.75  | 3.99  | 2.97  |        |        |        |       |       |       |       |       |       |       |       |       |       |       |       |    |
| 3            | 2.03        | 26.11     | 13.06 | 8.70  | 6.53  | 5.22  |        |        |        |       |       |       |       |       |       |       |       |       |       |       |       |    |
|              |             | 0.02      | 0.09  | 0.19  | 0.34  | 0.54  |        |        |        |       |       |       |       |       |       |       |       |       |       |       |       |    |
|              |             | 25.75     | 11.76 | 7.25  | 5.09  | 3.83  |        |        |        |       |       |       |       |       |       |       |       |       |       |       |       |    |
| 4            | 2.31        | 39.88     | 19.94 | 13.29 | 9.97  | 7.98  | 6.65   | 5.70   |        |       |       |       |       |       |       |       |       |       |       |       |       |    |
|              |             | 0.02      | 0.06  | 0.14  | 0.25  | 0.40  | 0.57   | 0.77   |        |       |       |       |       |       |       |       |       |       |       |       |       |    |
|              |             | 39.88     | 18.31 | 11.23 | 7.78  | 5.77  | 4.48   | 3.37   |        |       |       |       |       |       |       |       |       |       |       |       |       |    |
| 4            | 2.79        | 48.46     | 24.23 | 16.15 | 12.11 | 9.69  | 8.08   | 6.92   |        |       |       |       |       |       |       |       |       |       |       |       |       |    |
|              |             | 0.02      | 0.06  | 0.14  | 0.26  | 0.40  | 0.58   | 0.79   |        |       |       |       |       |       |       |       |       |       |       |       |       |    |
|              |             | 48.46     | 22.30 | 13.76 | 9.61  | 7.21  | 5.65   | 4.57   |        |       |       |       |       |       |       |       |       |       |       |       |       |    |
| 5            | 3.70        | 39.95     | 26.63 | 19.97 | 15.98 | 13.32 | 11.41  | 9.99   |        |       |       |       |       |       |       |       |       |       |       |       |       |    |
|              |             | 0.05      | 0.12  | 0.20  | 0.32  | 0.46  | 0.63   | 0.82   |        |       |       |       |       |       |       |       |       |       |       |       |       |    |
|              |             | 37.57     | 23.32 | 16.35 | 12.27 | 9.63  | 7.79   | 6.45   |        |       |       |       |       |       |       |       |       |       |       |       |       |    |
| 6            | 4.03        |           | 34.73 | 26.05 | 20.84 | 17.37 | 14.88  | 13.02  | 11.58  | 10.42 |       |       |       |       |       |       |       |       |       |       |       |    |
|              |             |           | 0.09  | 0.17  | 0.26  | 0.38  | 0.52   | 0.68   | 0.85   | 1.06  |       |       |       |       |       |       |       |       |       |       |       |    |
|              |             |           | 31.01 | 21.74 | 16.27 | 12.70 | 10.21  | 8.23   | 6.19   | 4.83  |       |       |       |       |       |       |       |       |       |       |       |    |
| 6            | 4.69        |           | 40.66 | 30.50 | 24.40 | 20.33 | 17.43  | 15.25  | 13.55  | 12.20 |       |       |       |       |       |       |       |       |       |       |       |    |
|              |             |           | 0.10  | 0.17  | 0.27  | 0.38  | 0.52   | 0.68   | 0.86   | 1.07  |       |       |       |       |       |       |       |       |       |       |       |    |
|              |             |           | 36.41 | 25.62 | 19.27 | 15.13 | 12.25  | 10.14  | 8.20   | 6.44  |       |       |       |       |       |       |       |       |       |       |       |    |
| 7            | 5.80        |           |       | 44.04 | 35.23 | 29.36 | 25.17  | 22.02  | 19.57  | 17.62 | 16.01 | 14.68 |       |       |       |       |       |       |       |       |       |    |
|              |             |           |       | 0.15  | 0.23  | 0.33  | 0.45   | 0.59   | 0.74   | 0.91  | 1.11  | 1.32  |       |       |       |       |       |       |       |       |       |    |
|              |             |           |       | 37.93 | 28.63 | 22.55 | 18.29  | 15.16  | 12.78  | 10.17 | 8.14  | 6.66  |       |       |       |       |       |       |       |       |       |    |
| 8            | 6.18        |           |       | 53.43 | 42.74 | 35.62 | 30.53  | 26.71  | 23.75  | 21.37 | 19.43 | 17.81 | 16.44 | 15.26 |       |       |       |       |       |       |       |    |
|              |             |           |       | 0.13  | 0.20  | 0.29  | 0.39   | 0.51   | 0.65   | 0.80  | 0.96  | 1.15  | 1.35  | 1.56  |       |       |       |       |       |       |       |    |
|              |             |           |       | 46.78 | 35.35 | 27.82 | 22.52  | 18.62  | 15.63  | 12.48 | 9.85  | 7.96  | 6.57  | 5.52  |       |       |       |       |       |       |       |    |
| 8            | 7.02        |           |       | 60.99 | 48.80 | 40.66 | 34.85  | 30.50  | 27.11  | 24.40 | 22.18 | 20.33 | 18.77 | 17.43 |       |       |       |       |       |       |       |    |
|              |             |           |       | 0.13  | 0.20  | 0.29  | 0.39   | 0.51   | 0.65   | 0.80  | 0.97  | 1.15  | 1.35  | 1.57  |       |       |       |       |       |       |       |    |
|              |             |           |       | 53.56 | 40.57 | 32.03 | 26.03  | 21.62  | 18.25  | 15.59 | 12.38 | 10.07 | 8.35  | 7.04  |       |       |       |       |       |       |       |    |
| 9            | 8.36        |           |       |       | 65.40 | 54.50 | 46.71  | 40.87  | 36.33  | 32.70 | 29.73 | 27.25 | 25.15 | 23.36 | 21.80 |       |       |       |       |       |       |    |
|              |             |           |       |       | 0.18  | 0.26  | 0.35   | 0.46   | 0.58   | 0.71  | 0.86  | 1.03  | 1.21  | 1.40  | 1.61  |       |       |       |       |       |       |    |
|              |             |           |       |       | 55.64 | 44.09 | 35.94  | 29.93  | 25.33  | 21.71 | 18.32 | 14.81 | 12.22 | 10.25 | 8.73  |       |       |       |       |       |       |    |
| 10           | 8.65        |           |       |       |       | 62.49 | 53.56  | 46.87  | 41.66  | 37.49 | 34.08 | 31.24 | 28.84 | 26.78 | 25.00 | 23.43 | 22.05 |       |       |       |       |    |
|              |             |           |       |       |       | 0.23  | 0.31   | 0.40   | 0.51   | 0.63  | 0.77  | 0.91  | 1.07  | 1.24  | 1.42  | 1.62  | 1.83  |       |       |       |       |    |
|              |             |           |       |       |       | 51.77 | 42.30  | 35.27  | 29.87  | 25.61 | 22.16 | 17.73 | 14.48 | 12.05 | 10.17 | 8.70  | 7.53  |       |       |       |       |    |
| 10           | 10.3        |           |       |       |       | 74.42 | 63.79  | 55.81  | 49.61  | 44.65 | 40.59 | 37.21 | 34.35 | 31.89 | 29.77 | 27.91 | 26.27 |       |       |       |       |    |
|              |             |           |       |       |       | 0.23  | 0.31   | 0.41   | 0.52   | 0.64  | 0.77  | 0.92  | 1.08  | 1.25  | 1.43  | 1.63  | 1.84  |       |       |       |       |    |
|              |             |           |       |       |       | 61.98 | 50.79  | 42.50  | 36.15  | 31.15 | 27.12 | 23.43 | 19.28 | 16.14 | 13.71 | 11.80 | 10.26 |       |       |       |       |    |
| 12           | 11.7        |           |       |       |       |       | 86.86  | 76.00  | 67.56  | 60.80 | 55.27 | 50.67 | 46.77 | 43.43 | 40.53 | 38.00 | 35.76 | 33.78 | 32.00 | 30.40 | 28.95 |    |
|              |             |           |       |       |       |       | 0.26   | 0.34   | 0.43   | 0.53  | 0.64  | 0.76  | 0.89  | 1.04  | 1.19  | 1.35  | 1.53  | 1.71  | 1.91  | 2.12  | 2.33  |    |
|              |             |           |       |       |       |       | 71.63  | 60.08  | 51.17  | 44.12 | 38.41 | 33.71 | 28.84 | 23.80 | 19.96 | 16.96 | 14.58 | 12.67 | 11.10 | 9.81  | 8.73  |    |
| 12           | 14.3        |           |       |       |       |       | 108.31 | 94.77  | 84.24  | 75.82 | 68.93 | 63.18 | 58.32 | 54.16 | 50.55 | 47.39 | 44.60 | 42.12 | 39.90 | 37.91 | 36.10 |    |
|              |             |           |       |       |       |       | 0.26   | 0.34   | 0.43   | 0.53  | 0.64  | 0.77  | 0.90  | 1.04  | 1.20  | 1.36  | 1.54  | 1.73  | 1.92  | 2.13  | 2.35  |    |
|              |             |           |       |       |       |       | 90.43  | 76.15  | 65.16  | 56.48 | 49.47 | 43.70 | 38.89 | 34.62 | 29.25 | 25.04 | 21.67 | 18.95 | 16.71 | 14.84 | 13.28 |    |
| 14           | 16.0        |           |       |       |       |       | 142.18 | 124.41 | 110.59 | 99.53 | 90.48 | 82.94 | 76.56 | 71.09 | 66.35 | 62.20 | 58.55 | 55.29 | 52.38 | 49.76 | 47.39 |    |
|              |             |           |       |       |       |       | 0.22   | 0.29   | 0.37   | 0.45  | 0.55  | 0.65  | 0.77  | 0.89  | 1.02  | 1.16  | 1.31  | 1.47  | 1.64  | 1.81  | 2.00  |    |
|              |             |           |       |       |       |       | 122.35 | 103.32 | 88.62  | 76.95 | 67.48 | 59.66 | 53.12 | 47.57 | 42.29 | 35.82 | 30.70 | 26.60 | 23.26 | 20.50 | 18.21 |    |

**Notes**

1. Load is applied at beam's neutral axis on a simply supported single span braced against twisting at supports.
2. Building-type structure.
3. For each beam size, first line is total load (k) for laterally braced beam, second line is deflection (in.) for laterally braced beam, and third line is total load (k) for beam not laterally braced.

**Table 4-3**  
**ALLOWABLE LOADS (LB/FT<sup>2</sup>) ON ASTM B632 6061-T6 ALUMINUM TREAD PLATE**

| Thickness<br>in. | Long span | Short span |       |       |       |       |       |       |
|------------------|-----------|------------|-------|-------|-------|-------|-------|-------|
|                  |           | 1'-0"      | 1'-6" | 2'-0" | 2'-6" | 3'-0" | 3'-6" | 4'-0" |
| 0.188            | 1'-0"     | 833        |       |       |       |       |       |       |
|                  | 1'-6"     | 440        | 247   |       |       |       |       |       |
|                  | 2'-0"     | 333        | 151   | 104   |       |       |       |       |
|                  | 2'-6"     | 300        | 117   | 70    | 53    |       |       |       |
|                  | 3'-0"     | 277        | 99    | 55    | 38    | 31    |       |       |
|                  | 3'-6"     | 270        | 92    | 47    | 31    | 23    | 19    |       |
|                  | 4'-0"     | 264        | 87    | 42    | 26    | 19    | 15    | 13    |
|                  | infinity  | 260        | 77    | 33    | 17    | 10    | 6     | 4     |
| 0.250            | 1'-0"     | 1975       |       |       |       |       |       |       |
|                  | 1'-6"     | 1043       | 585   |       |       |       |       |       |
|                  | 2'-0"     | 790        | 358   | 247   |       |       |       |       |
|                  | 2'-6"     | 711        | 276   | 166   | 126   |       |       |       |
|                  | 3'-0"     | 657        | 234   | 130   | 91    | 73    |       |       |
|                  | 3'-6"     | 641        | 217   | 111   | 73    | 55    | 46    |       |
|                  | 4'-0"     | 626        | 206   | 99    | 62    | 45    | 36    | 31    |
|                  | infinity  | 617        | 183   | 77    | 39    | 23    | 14    | 10    |
| 0.375            | 1'-0"     | 6664       |       |       |       |       |       |       |
|                  | 1'-6"     | 3519       | 1975  |       |       |       |       |       |
|                  | 2'-0"     | 2666       | 1208  | 833   |       |       |       |       |
|                  | 2'-6"     | 2401       | 933   | 560   | 427   |       |       |       |
|                  | 3'-0"     | 2216       | 790   | 440   | 307   | 247   |       |       |
|                  | 3'-6"     | 2164       | 733   | 376   | 246   | 185   | 155   |       |
|                  | 4'-0"     | 2114       | 696   | 333   | 209   | 151   | 121   | 104   |
|                  | infinity  | 2082       | 617   | 260   | 133   | 77    | 49    | 33    |
| 0.500            | 1'-0"     | 15797      |       |       |       |       |       |       |
|                  | 1'-6"     | 8341       | 4681  |       |       |       |       |       |
|                  | 2'-0"     | 6319       | 2865  | 1975  |       |       |       |       |
|                  | 2'-6"     | 5691       | 2212  | 1326  | 1011  |       |       |       |
|                  | 3'-0"     | 5254       | 1872  | 1043  | 729   | 585   |       |       |
|                  | 3'-6"     | 5129       | 1737  | 892   | 583   | 439   | 368   |       |
|                  | 4'-0"     | 5010       | 1650  | 790   | 495   | 358   | 286   | 247   |
|                  | infinity  | 4936       | 1462  | 617   | 316   | 183   | 115   | 77    |

Allowable loads in this table are calculated using Roark's Formulas for Stress and Strain, 6th edition, Table 26, Case 1a assuming that deflections are limited to the short span divided by 150, all plate edges are simply supported, the allowable flexural stress is 31.8 ksi, and the plate is uniformly loaded.

**Table 4-4**  
**MAXIMUM SPANS (IN.)**  
**Corrugated And V-Beam Roofing And Siding**

| Design Load (psf)                                             | Number of Equal Spans |            |          |            |          |            |
|---------------------------------------------------------------|-----------------------|------------|----------|------------|----------|------------|
|                                                               | One                   |            | Two      |            | Three    |            |
|                                                               | Strength              | Deflection | Strength | Deflection | Strength | Deflection |
| <b>Corrugated Roofing and Siding – 0.024" thick</b>           |                       |            |          |            |          |            |
| 20                                                            | 79                    | 61         | 79       | –          | 88       | 76         |
| 25                                                            | 70                    | 57         | 70       | –          | 79       | 70         |
| 30                                                            | 64                    | 54         | 64       | –          | 72       | 66         |
| 35                                                            | 60                    | 51         | 60       | –          | 67       | 63         |
| 40                                                            | 56                    | 49         | 56       | –          | 63       | 60         |
| 45                                                            | 53                    | 47         | 53       | –          | 59       | 58         |
| 50                                                            | 50                    | 45         | 50       | –          | 56       | 56         |
| <b>Corrugated Roofing and Siding – 0.032" thick</b>           |                       |            |          |            |          |            |
| 20                                                            | 92                    | 67         | 92       | 90         | 102      | 83         |
| 25                                                            | 82                    | 63         | 82       | –          | 92       | 77         |
| 30                                                            | 75                    | 59         | 75       | –          | 84       | 73         |
| 35                                                            | 70                    | 56         | 70       | –          | 78       | 69         |
| 40                                                            | 65                    | 54         | 65       | –          | 73       | 66         |
| 45                                                            | 62                    | 52         | 62       | –          | 69       | 64         |
| 50                                                            | 58                    | 50         | 58       | –          | 65       | 62         |
| <b>V-Beam Roofing and Siding – 0.032" thick, 4 7/8" Pitch</b> |                       |            |          |            |          |            |
| 20                                                            | 128                   | 110        | 128      | –          | 144      | 136        |
| 25                                                            | 115                   | 102        | 115      | –          | 129      | 127        |
| 30                                                            | 105                   | 97         | 105      | –          | 118      | –          |
| 35                                                            | 98                    | 92         | 98       | –          | 109      | –          |
| 40                                                            | 92                    | 88         | 92       | –          | 102      | –          |
| 45                                                            | 86                    | 85         | 86       | –          | 97       | –          |
| 50                                                            | 82                    | 82         | 82       | –          | 92       | –          |
| 55                                                            | 78                    | –          | 78       | –          | 87       | –          |
| 60                                                            | 75                    | –          | 75       | –          | 84       | –          |
| <b>V-Beam Roofing and Siding – 0.040" thick, 4 7/8" Pitch</b> |                       |            |          |            |          |            |
| 20                                                            | 150                   | 118        | 150      | –          | 167      | 146        |
| 25                                                            | 134                   | 110        | 134      | –          | 150      | 136        |
| 30                                                            | 123                   | 104        | 123      | –          | 137      | 128        |
| 35                                                            | 114                   | 99         | 114      | –          | 127      | 122        |
| 40                                                            | 107                   | 94         | 107      | –          | 119      | 117        |
| 45                                                            | 101                   | 91         | 101      | –          | 113      | 112        |
| 50                                                            | 96                    | 88         | 96       | –          | 107      | –          |
| 55                                                            | 91                    | 85         | 91       | –          | 102      | –          |
| 60                                                            | 87                    | 83         | 87       | –          | 98       | –          |

**Notes**

1. Maximum spans are calculated in accordance with the *Specification for Aluminum Structures* for allowable strength design of building-type structures.
2. Material is Alclad 3004-H151, -H261, or -H361 (which are stucco embossed tempers) or Alclad 3004-H16. Dimensions are given in Part V Table 25 and section properties are given in Part V Table 26.
3. The deflection limit is 1/60 of the span.

**Table 4-4**  
**MAXIMUM SPANS (IN.) (Continued)**  
**Corrugated And V-Beam Roofing And Siding**

| Design Load (psf)                                             | Number of Equal Spans |            |          |            |          |            |
|---------------------------------------------------------------|-----------------------|------------|----------|------------|----------|------------|
|                                                               | One                   |            | Two      |            | Three    |            |
|                                                               | Strength              | Deflection | Strength | Deflection | Strength | Deflection |
| <b>V-Beam Roofing and Siding – 0.050" thick, 4 7/8" Pitch</b> |                       |            |          |            |          |            |
| 20                                                            | 171                   | 127        | 171      | 170        | 191      | 157        |
| 25                                                            | 154                   | 118        | 154      | –          | 172      | 146        |
| 30                                                            | 141                   | 111        | 141      | –          | 158      | 138        |
| 35                                                            | 131                   | 106        | 131      | –          | 146      | 131        |
| 40                                                            | 122                   | 102        | 122      | –          | 137      | 125        |
| 45                                                            | 116                   | 98         | 116      | –          | 129      | 121        |
| 50                                                            | 110                   | 94         | 110      | –          | 123      | 117        |
| 55                                                            | 105                   | 92         | 105      | –          | 117      | 113        |
| 60                                                            | 100                   | 89         | 100      | –          | 112      | 110        |
| <b>V-Beam Roofing and Siding – 0.032" thick, 5 1/3" Pitch</b> |                       |            |          |            |          |            |
| 20                                                            | 128                   | 114        | 128      | –          | 143      | 141        |
| 25                                                            | 115                   | 106        | 115      | –          | 129      | –          |
| 30                                                            | 105                   | 100        | 105      | –          | 118      | –          |
| 35                                                            | 98                    | 95         | 98       | –          | 109      | –          |
| 40                                                            | 91                    | 91         | 91       | –          | 102      | –          |
| 45                                                            | 86                    | –          | 86       | –          | 96       | –          |
| 50                                                            | 82                    | –          | 82       | –          | 91       | –          |
| 55                                                            | 78                    | –          | 78       | –          | 87       | –          |
| 60                                                            | 75                    | –          | 75       | –          | 84       | –          |
| <b>V-Beam Roofing and Siding – 0.040" thick, 5 1/3" Pitch</b> |                       |            |          |            |          |            |
| 20                                                            | 153                   | 123        | 153      | –          | 171      | 151        |
| 25                                                            | 137                   | 114        | 137      | –          | 154      | 141        |
| 30                                                            | 126                   | 108        | 126      | –          | 141      | 133        |
| 35                                                            | 117                   | 102        | 117      | –          | 130      | 126        |
| 40                                                            | 109                   | 98         | 109      | –          | 122      | 121        |
| 45                                                            | 103                   | 94         | 103      | –          | 115      | –          |
| 50                                                            | 98                    | 91         | 98       | –          | 110      | –          |
| 55                                                            | 93                    | 88         | 93       | –          | 104      | –          |
| 60                                                            | 90                    | 86         | 90       | –          | 100      | –          |
| <b>V-Beam Roofing and Siding – 0.050" thick, 5 1/3" Pitch</b> |                       |            |          |            |          |            |
| 20                                                            | 176                   | 132        | 176      | 176        | 197      | 163        |
| 25                                                            | 158                   | 123        | 158      | –          | 177      | 151        |
| 30                                                            | 145                   | 116        | 145      | –          | 162      | 143        |
| 35                                                            | 134                   | 110        | 134      | –          | 150      | 136        |
| 40                                                            | 126                   | 105        | 126      | –          | 141      | 130        |
| 45                                                            | 119                   | 101        | 119      | –          | 133      | 125        |
| 50                                                            | 113                   | 98         | 113      | –          | 126      | 121        |
| 55                                                            | 108                   | 95         | 108      | –          | 120      | 117        |
| 60                                                            | 103                   | 92         | 103      | –          | 115      | 114        |

**Notes**

1. Maximum spans are calculated in accordance with the *Specification for Aluminum Structures* for allowable strength design of building-type structures.
2. Material is Alclad 3004-H151, -H261, or -H361 (which are stucco embossed tempers) or Alclad 3004-H16. Dimensions are given in Part V Table 25 and section properties are given in Part V Table 26.
3. The deflection limit is 1/60 of the span.

**Table 4-5**  
**MAXIMUM SPANS (IN.) COMMERCIAL RIBBED SIDING**

| Design Load (psf)                             | Number of Equal Spans |                  |                   |                   |                  |                  |                   |                   |                  |                  |                   |                   |
|-----------------------------------------------|-----------------------|------------------|-------------------|-------------------|------------------|------------------|-------------------|-------------------|------------------|------------------|-------------------|-------------------|
|                                               | One                   |                  |                   |                   | Two              |                  |                   |                   | Three            |                  |                   |                   |
|                                               | Str <sup>1</sup>      | Str <sup>2</sup> | Defl <sup>1</sup> | Defl <sup>2</sup> | Str <sup>1</sup> | Str <sup>2</sup> | Defl <sup>1</sup> | Defl <sup>2</sup> | Str <sup>1</sup> | Str <sup>2</sup> | Defl <sup>1</sup> | Defl <sup>2</sup> |
| <b>Ribbed Siding – 0.032" thick, 4" Pitch</b> |                       |                  |                   |                   |                  |                  |                   |                   |                  |                  |                   |                   |
| 20                                            | 98                    | 101              |                   | 85                | 101              | 98               | –                 |                   | 113              | 110              | 106               |                   |
| 25                                            | 88                    | 91               |                   | 79                | 91               | 88               | –                 |                   | 101              | 98               | 98                |                   |
| 30                                            | 80                    | 83               |                   | 75                | 83               | 80               | –                 |                   | 93               | 90               | 93                |                   |
| 35                                            | 75                    | 77               |                   | 71                | 77               | 75               | –                 |                   | 86               | 83               | –                 |                   |
| 40                                            | 70                    | 72               |                   | 68                | 72               | 70               | –                 |                   | 80               | 78               | –                 |                   |
| 45                                            | 66                    | 68               |                   | 66                | 68               | 66               | –                 |                   | 76               | 74               | –                 |                   |
| 50                                            | 63                    | 64               |                   | 63                | 64               | 63               | –                 |                   | 72               | 70               | –                 |                   |
| <b>Ribbed Siding – 0.040" thick, 4" Pitch</b> |                       |                  |                   |                   |                  |                  |                   |                   |                  |                  |                   |                   |
| 20                                            | 118                   | 120              |                   | 92                | 120              | 118              | –                 |                   | 134              | 132              | 113               |                   |
| 25                                            | 106                   | 107              |                   | 85                | 107              | 106              | –                 |                   | 120              | 118              | 105               |                   |
| 30                                            | 97                    | 98               |                   | 80                | 98               | 97               | –                 |                   | 110              | 108              | 99                |                   |
| 35                                            | 90                    | 91               |                   | 76                | 91               | 90               | –                 |                   | 102              | 100              | 94                |                   |
| 40                                            | 84                    | 85               |                   | 73                | 85               | 84               | –                 |                   | 95               | 94               | 90                |                   |
| 45                                            | 79                    | 80               |                   | 70                | 80               | 79               | –                 |                   | 90               | 89               | 87                |                   |
| 50                                            | 75                    | 76               |                   | 68                | 76               | 75               | –                 |                   | 85               | 84               | 84                |                   |
| <b>Ribbed Siding – 0.032" thick, 8" Pitch</b> |                       |                  |                   |                   |                  |                  |                   |                   |                  |                  |                   |                   |
| 20                                            | 62                    | 77               | 74                | –                 | 77               | 62               | –                 | –                 | 78               | 69               | –                 | –                 |
| 25                                            | 56                    | 69               | –                 | –                 | 69               | 56               | –                 | –                 | 70               | 62               | –                 | –                 |
| 30                                            | 51                    | 63               | –                 | –                 | 63               | 51               | –                 | –                 | 64               | 57               | –                 | –                 |
| 35                                            | 47                    | 59               | –                 | –                 | 59               | 47               | –                 | –                 | 59               | 53               | –                 | –                 |
| 40                                            | 44                    | 55               | –                 | –                 | 55               | 44               | –                 | –                 | 55               | 49               | –                 | –                 |
| 45                                            | 42                    | 52               | –                 | –                 | 52               | 42               | –                 | –                 | 52               | 47               | –                 | –                 |
| 50                                            | 40                    | 49               | –                 | –                 | 49               | 40               | –                 | –                 | 49               | 44               | –                 | –                 |
| <b>Ribbed Siding – 0.040" thick, 8" Pitch</b> |                       |                  |                   |                   |                  |                  |                   |                   |                  |                  |                   |                   |
| 20                                            | 75                    | 91               | 80                | 84                | 91               | 75               | –                 | –                 | 94               | 84               | –                 | –                 |
| 25                                            | 67                    | 82               | 74                | 79                | 82               | 67               | –                 | –                 | 84               | 75               | –                 | –                 |
| 30                                            | 62                    | 75               | 70                | 74                | 75               | 62               | –                 | –                 | 77               | 69               | –                 | –                 |
| 35                                            | 57                    | 69               | 67                | –                 | 69               | 57               | –                 | –                 | 71               | 64               | –                 | –                 |
| 40                                            | 54                    | 65               | 64                | –                 | 65               | 54               | –                 | –                 | 67               | 60               | –                 | –                 |
| 45                                            | 51                    | 61               | –                 | –                 | 61               | 51               | –                 | –                 | 63               | 56               | –                 | –                 |
| 50                                            | 48                    | 58               | –                 | –                 | 58               | 48               | –                 | –                 | 60               | 54               | –                 | –                 |

**Notes**

1. Wide flat is on loaded side; load is toward neutral axis.
2. Narrow flat is on loaded side; load is toward neutral axis.
3. Maximum spans are calculated in accordance with the *Specification for Aluminum Structures* for allowable strength design of building-type structures.
4. Material is Alclad 3004-H151, -H261, or -H361 (which are stucco embossed tempers) or Alclad 3004-H16. Dimensions are given in Part V Table 25 and section properties are given in Part V Table 26.
5. The deflection limit is 1/60 of the span



**Table 4-6**  
**DEFLECTIONS AND ALLOWABLE LOADS FOR 6061-T6 ALUMINUM BAR GRATING**

| Type P-19<br>bearing bar spacing |           | 1 3/16in. cross bar spacing 4in. |       |           |       |       |       |       |       |       |       |       |       |       |       |       |       |
|----------------------------------|-----------|----------------------------------|-------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Bearing Bar                      |           | Span (in.)                       |       |           |       |       |       |       |       |       |       |       |       |       |       |       |       |
| depth                            | thickness | $L_{max}$                        | 24    | 30        | 36    | 42    | 48    | 54    | 60    | 66    | 72    | 78    | 84    | 90    | 96    | 102   | 108   |
| 1                                | 0.125     | 39                               | $U$   | $lb/ft^2$ | 676   | 433   | 300   | 221   | 169   | 134   |       |       |       |       |       |       |       |
| I/bar                            | 0.0104    |                                  | $D_u$ | in.       | 0.234 | 0.365 | 0.526 | 0.715 | 0.934 | 1.183 |       |       |       |       |       |       |       |
| I/ft                             | 0.1042    |                                  | $C$   | $lb/ft$   | 676   | 541   | 451   | 386   | 338   | 300   |       |       |       |       |       |       |       |
| $\lambda$                        | 36.8      |                                  | $D_c$ | in.       | 0.187 | 0.292 | 0.420 | 0.572 | 0.748 | 0.946 |       |       |       |       |       |       |       |
| 1                                | 0.1875    | 44                               | $U$   | $lb/ft^2$ | 1014  | 649   | 451   | 331   | 253   | 200   |       |       |       |       |       |       |       |
| I/bar                            | 0.0156    |                                  | $D_u$ | in.       | 0.234 | 0.365 | 0.526 | 0.715 | 0.934 | 1.183 |       |       |       |       |       |       |       |
| I/ft                             | 0.1563    |                                  | $C$   | $lb/ft$   | 1014  | 811   | 676   | 579   | 507   | 451   |       |       |       |       |       |       |       |
| $\lambda$                        | 24.5      |                                  | $D_c$ | in.       | 0.187 | 0.292 | 0.420 | 0.572 | 0.748 | 0.946 |       |       |       |       |       |       |       |
| 1                                | 0.25      | 47                               | $U$   | $lb/ft^2$ | 1352  | 865   | 601   | 441   | 338   | 267   | 216   | 179   | 150   |       |       |       |       |
| I/bar                            | 0.0208    |                                  | $D_u$ | in.       | 0.234 | 0.365 | 0.526 | 0.715 | 0.934 | 1.183 | 1.460 | 1.767 | 2.102 |       |       |       |       |
| I/ft                             | 0.2083    |                                  | $C$   | $lb/ft$   | 1352  | 1082  | 901   | 773   | 676   | 601   | 541   | 492   | 451   |       |       |       |       |
| $\lambda$                        | 18.4      |                                  | $D_c$ | in.       | 0.187 | 0.292 | 0.420 | 0.572 | 0.748 | 0.946 | 1.168 | 1.413 | 1.682 |       |       |       |       |
| 1.25                             | 0.125     | 47                               | $U$   | $lb/ft^2$ | 1056  | 676   | 469   | 345   | 264   | 209   | 169   | 140   | 117   |       |       |       |       |
| I/bar                            | 0.0203    |                                  | $D_u$ | in.       | 0.187 | 0.292 | 0.420 | 0.572 | 0.748 | 0.946 | 1.168 | 1.413 | 1.682 |       |       |       |       |
| I/ft                             | 0.2035    |                                  | $C$   | $lb/ft$   | 1056  | 845   | 704   | 604   | 528   | 469   | 422   | 384   | 352   |       |       |       |       |
| $\lambda$                        | 41.1      |                                  | $D_c$ | in.       | 0.150 | 0.234 | 0.336 | 0.458 | 0.598 | 0.757 | 0.934 | 1.131 | 1.346 |       |       |       |       |
| 1.25                             | 0.1875    | 51                               | $U$   | $lb/ft^2$ | 1584  | 1014  | 704   | 517   | 396   | 313   | 253   | 209   | 176   | 150   | 129   |       |       |
| I/bar                            | 0.0305    |                                  | $D_u$ | in.       | 0.187 | 0.292 | 0.420 | 0.572 | 0.748 | 0.946 | 1.168 | 1.413 | 1.682 | 1.974 | 2.289 |       |       |
| I/ft                             | 0.3052    |                                  | $C$   | $lb/ft$   | 1584  | 1267  | 1056  | 905   | 792   | 704   | 634   | 576   | 528   | 487   | 453   |       |       |
| $\lambda$                        | 27.4      |                                  | $D_c$ | in.       | 0.150 | 0.234 | 0.336 | 0.458 | 0.598 | 0.757 | 0.934 | 1.131 | 1.346 | 1.579 | 1.831 |       |       |
| 1.25                             | 0.25      | 55                               | $U$   | $lb/ft^2$ | 2112  | 1352  | 939   | 690   | 528   | 417   | 338   | 279   | 235   | 200   | 172   |       |       |
| I/bar                            | 0.0407    |                                  | $D_u$ | in.       | 0.187 | 0.292 | 0.420 | 0.572 | 0.748 | 0.946 | 1.168 | 1.413 | 1.682 | 1.974 | 2.289 |       |       |
| I/ft                             | 0.4069    |                                  | $C$   | $lb/ft$   | 2112  | 1690  | 1408  | 1207  | 1056  | 939   | 845   | 768   | 704   | 650   | 604   |       |       |
| $\lambda$                        | 20.6      |                                  | $D_c$ | in.       | 0.150 | 0.234 | 0.336 | 0.458 | 0.598 | 0.757 | 0.934 | 1.131 | 1.346 | 1.579 | 1.831 |       |       |
| 1.5                              | 0.125     | 53                               | $U$   | $lb/ft^2$ | 1521  | 973   | 676   | 497   | 380   | 300   | 243   | 201   | 169   | 144   | 124   | 108   | 95    |
| I/bar                            | 0.0352    |                                  | $D_u$ | in.       | 0.156 | 0.243 | 0.350 | 0.477 | 0.623 | 0.788 | 0.973 | 1.178 | 1.402 | 1.645 | 1.908 | 2.190 | 2.492 |
| I/ft                             | 0.3516    |                                  | $C$   | $lb/ft$   | 1521  | 1217  | 1014  | 869   | 760   | 676   | 608   | 553   | 507   | 468   | 435   | 406   | 380   |
|                                  |           |                                  |       |           |       |       |       |       |       |       |       |       |       |       |       | 358   | 338   |

**Table 4-6**  
**DEFLECTIONS AND ALLOWABLE LOADS FOR 6061-T6 ALUMINUM BAR GRATING**

| Type P-19<br>bearing bar spacing |           | 1 3/16in. cross bar spacing 4in. |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|----------------------------------|-----------|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                                  |           | Span (in.)                       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Bearing Bar                      |           |                                  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| depth                            | thickness | $L_{max}$                        | 24    | 30    | 36    | 42    | 48    | 54    | 60    | 66    | 72    | 78    | 84    | 90    | 96    | 102   | 108   |
| $\lambda$                        | 45.1      | $D_c$ in.                        | 0.125 | 0.195 | 0.280 | 0.382 | 0.498 | 0.631 | 0.779 | 0.942 | 1.121 | 1.316 | 1.526 | 1.752 | 1.993 | 2.250 | 2.523 |
| 1.5                              | 0.1875    | 59 $U$ lb/ft <sup>2</sup>        | 2281  | 1460  | 1014  | 745   | 570   | 451   | 365   | 302   | 253   | 216   | 186   | 162   | 143   | 126   | 113   |
| 1/bar                            | 0.0527    | $D_u$ in.                        | 0.156 | 0.243 | 0.350 | 0.477 | 0.623 | 0.788 | 0.973 | 1.178 | 1.402 | 1.645 | 1.908 | 2.190 | 2.492 | 2.813 | 3.154 |
| 1/ft                             | 0.5273    | $C$ lb/ft                        | 2281  | 1825  | 1521  | 1304  | 1141  | 1014  | 913   | 830   | 760   | 702   | 652   | 608   | 570   | 537   | 507   |
| $\lambda$                        | 30.0      | $D_c$ in.                        | 0.125 | 0.195 | 0.280 | 0.382 | 0.498 | 0.631 | 0.779 | 0.942 | 1.121 | 1.316 | 1.526 | 1.752 | 1.993 | 2.250 | 2.523 |
| 1.5                              | 0.25      | 63 $U$ lb/ft <sup>2</sup>        | 3042  | 1947  | 1352  | 993   | 760   | 601   | 487   | 402   | 338   | 288   | 248   | 216   | 190   | 168   | 150   |
| 1/bar                            | 0.0703    | $D_u$ in.                        | 0.156 | 0.243 | 0.350 | 0.477 | 0.623 | 0.788 | 0.973 | 1.178 | 1.402 | 1.645 | 1.908 | 2.190 | 2.492 | 2.813 | 3.154 |
| 1/ft                             | 0.7031    | $C$ lb/ft                        | 3042  | 2433  | 2028  | 1738  | 1521  | 1352  | 1217  | 1106  | 1014  | 936   | 869   | 811   | 760   | 716   | 676   |
| $\lambda$                        | 22.5      | $D_c$ in.                        | 0.125 | 0.195 | 0.280 | 0.382 | 0.498 | 0.631 | 0.779 | 0.942 | 1.121 | 1.316 | 1.526 | 1.752 | 1.993 | 2.250 | 2.523 |
| 1.75                             | 0.1875    | 66 $U$ lb/ft <sup>2</sup>        | 3105  | 1987  | 1380  | 1014  | 776   | 613   | 497   | 411   | 345   | 294   | 253   | 221   | 194   | 172   | 153   |
| 1/bar                            | 0.0837    | $D_u$ in.                        | 0.133 | 0.209 | 0.300 | 0.409 | 0.534 | 0.676 | 0.834 | 1.010 | 1.201 | 1.410 | 1.635 | 1.877 | 2.136 | 2.411 | 2.703 |
| 1/ft                             | 0.8374    | $C$ lb/ft                        | 3105  | 2484  | 2070  | 1774  | 1553  | 1380  | 1242  | 1129  | 1035  | 955   | 887   | 828   | 776   | 731   | 690   |
| $\lambda$                        | 32.5      | $D_c$ in.                        | 0.107 | 0.167 | 0.240 | 0.327 | 0.427 | 0.541 | 0.667 | 0.808 | 0.961 | 1.128 | 1.308 | 1.502 | 1.709 | 1.929 | 2.163 |
| 1.75                             | 0.25      | 71 $U$ lb/ft <sup>2</sup>        | 4140  | 2650  | 1840  | 1352  | 1035  | 818   | 662   | 547   | 460   | 392   | 338   | 294   | 259   | 229   | 204   |
| 1/bar                            | 0.1117    | $D_u$ in.                        | 0.133 | 0.209 | 0.300 | 0.409 | 0.534 | 0.676 | 0.834 | 1.010 | 1.201 | 1.410 | 1.635 | 1.877 | 2.136 | 2.411 | 2.703 |
| 1/ft                             | 1.1165    | $C$ lb/ft                        | 4140  | 3312  | 2760  | 2366  | 2070  | 1840  | 1656  | 1506  | 1380  | 1274  | 1183  | 1104  | 1035  | 974   | 920   |
| $\lambda$                        | 24.3      | $D_c$ in.                        | 0.107 | 0.167 | 0.240 | 0.327 | 0.427 | 0.541 | 0.667 | 0.808 | 0.961 | 1.128 | 1.308 | 1.502 | 1.709 | 1.929 | 2.163 |
| 2                                | 0.1875    | 73 $U$ lb/ft <sup>2</sup>        | 4056  | 2596  | 1803  | 1324  | 1014  | 801   | 649   | 536   | 451   | 384   | 331   | 288   | 253   | 225   | 200   |
| 1/bar                            | 0.1250    | $D_u$ in.                        | 0.117 | 0.183 | 0.263 | 0.358 | 0.467 | 0.591 | 0.730 | 0.883 | 1.051 | 1.234 | 1.431 | 1.643 | 1.869 | 2.110 | 2.365 |
| 1/ft                             | 1.2500    | $C$ lb/ft                        | 4056  | 3245  | 2704  | 2318  | 2028  | 1803  | 1622  | 1475  | 1352  | 1248  | 1159  | 1082  | 1014  | 954   | 901   |
| $\lambda$                        | 34.7      | $D_c$ in.                        | 0.093 | 0.146 | 0.210 | 0.286 | 0.374 | 0.473 | 0.584 | 0.707 | 0.841 | 0.987 | 1.145 | 1.314 | 1.495 | 1.688 | 1.892 |
| 2                                | 0.25      | 79 $U$ lb/ft <sup>2</sup>        | 5408  | 3461  | 2403  | 1766  | 1352  | 1068  | 865   | 715   | 601   | 512   | 441   | 385   | 338   | 299   | 267   |
| 1/bar                            | 0.1667    | $D_u$ in.                        | 0.117 | 0.183 | 0.263 | 0.358 | 0.467 | 0.591 | 0.730 | 0.883 | 1.051 | 1.234 | 1.431 | 1.643 | 1.869 | 2.110 | 2.365 |
| 1/ft                             | 1.6667    | $C$ lb/ft                        | 5408  | 4326  | 3605  | 3090  | 2704  | 2403  | 2163  | 1966  | 1803  | 1664  | 1545  | 1442  | 1352  | 1272  | 1202  |

**Table 4-6**  
**DEFLECTIONS AND ALLOWABLE LOADS FOR 6061-T6 ALUMINUM BAR GRATING**

| Type P-19<br>bearing bar spacing |           | 1 3/16in. cross bar spacing 4in. |       |                    |       |       |       |       |       |       |       |       |       |       |       |       |       |
|----------------------------------|-----------|----------------------------------|-------|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Bearing Bar                      |           | Span (in.)                       |       |                    |       |       |       |       |       |       |       |       |       |       |       |       |       |
| depth                            | thickness | $L_{max}$                        | 24    | 30                 | 36    | 42    | 48    | 54    | 60    | 66    | 72    | 78    | 84    | 90    | 96    | 102   | 108   |
| $\lambda$                        | 26.0      | $D_c$                            | in.   | 0.093              | 0.146 | 0.210 | 0.286 | 0.374 | 0.473 | 0.584 | 0.707 | 0.841 | 0.987 | 1.145 | 1.314 | 1.495 | 1.688 |
| 2.25                             | 0.1875    | 80                               | $U$   | lb/ft <sup>2</sup> | 5133  | 3285  | 2281  | 1676  | 1283  | 1014  | 821   | 679   | 570   | 486   | 419   | 365   | 321   |
| I/bar                            | 0.1780    |                                  | $D_u$ | in.                | 0.104 | 0.162 | 0.234 | 0.318 | 0.415 | 0.526 | 0.649 | 0.785 | 0.934 | 1.097 | 1.272 | 1.460 | 1.661 |
| I/ft                             | 1.7798    |                                  | $C$   | lb/ft              | 5133  | 4106  | 3422  | 2933  | 2566  | 2281  | 2053  | 1867  | 1711  | 1579  | 1467  | 1369  | 1283  |
| $\lambda$                        | 36.8      | $D_c$                            | in.   | 0.083              | 0.130 | 0.187 | 0.254 | 0.332 | 0.420 | 0.519 | 0.628 | 0.748 | 0.877 | 1.017 | 1.168 | 1.329 | 1.500 |
| 2.25                             | 0.25      | 86                               | $U$   | lb/ft <sup>2</sup> | 6844  | 4380  | 3042  | 2235  | 1711  | 1352  | 1095  | 905   | 760   | 648   | 559   | 487   | 428   |
| I/bar                            | 0.2373    |                                  | $D_u$ | in.                | 0.104 | 0.162 | 0.234 | 0.318 | 0.415 | 0.526 | 0.649 | 0.785 | 0.934 | 1.097 | 1.272 | 1.460 | 1.661 |
| I/ft                             | 2.3730    |                                  | $C$   | lb/ft              | 6844  | 5475  | 4563  | 3911  | 3422  | 3042  | 2738  | 2489  | 2281  | 2106  | 1955  | 1825  | 1711  |
| $\lambda$                        | 27.6      | $D_c$                            | in.   | 0.083              | 0.130 | 0.187 | 0.254 | 0.332 | 0.420 | 0.519 | 0.628 | 0.748 | 0.877 | 1.017 | 1.168 | 1.329 | 1.500 |
| 2.5                              | 0.1875    | 87                               | $U$   | lb/ft <sup>2</sup> | 6337  | 4056  | 2816  | 2069  | 1584  | 1252  | 1014  | 838   | 704   | 600   | 517   | 451   | 396   |
| I/bar                            | 0.2441    |                                  | $D_u$ | in.                | 0.093 | 0.146 | 0.210 | 0.286 | 0.374 | 0.473 | 0.584 | 0.707 | 0.841 | 0.987 | 1.145 | 1.314 | 1.495 |
| I/ft                             | 2.4414    |                                  | $C$   | lb/ft              | 6337  | 5070  | 4225  | 3621  | 3168  | 2816  | 2535  | 2304  | 2112  | 1950  | 1811  | 1690  | 1584  |
| $\lambda$                        | 38.8      | $D_c$                            | in.   | 0.075              | 0.117 | 0.168 | 0.229 | 0.299 | 0.378 | 0.467 | 0.565 | 0.673 | 0.790 | 0.916 | 1.051 | 1.196 | 1.350 |
| 2.5                              | 0.25      | 93                               | $U$   | lb/ft <sup>2</sup> | 8449  | 5408  | 3755  | 2759  | 2112  | 1669  | 1352  | 1117  | 939   | 800   | 690   | 601   | 528   |
| I/bar                            | 0.3255    |                                  | $D_u$ | in.                | 0.093 | 0.146 | 0.210 | 0.286 | 0.374 | 0.473 | 0.584 | 0.707 | 0.841 | 0.987 | 1.145 | 1.314 | 1.495 |
| I/ft                             | 3.2552    |                                  | $C$   | lb/ft              | 8449  | 6759  | 5633  | 4828  | 4225  | 3755  | 3380  | 3072  | 2816  | 2600  | 2414  | 2253  | 2112  |
| $\lambda$                        | 29.1      | $D_c$                            | in.   | 0.075              | 0.117 | 0.168 | 0.229 | 0.299 | 0.378 | 0.467 | 0.565 | 0.673 | 0.790 | 0.916 | 1.051 | 1.196 | 1.350 |

#### Notes

1. Allowable loads are for building-type structures.
2.  $L_{max}$  is the maximum span (in.) supporting 100 psf live load with no more than 0.25" deflection.
3.  $U$  is the maximum allowable uniform load.
4.  $D_u$  is the deflection at the maximum allowable uniform load.
5.  $C$  is maximum allowable concentrated load.
6.  $D_c$  is the deflection at the maximum allowable concentrated load.
7. NAAAM MBG531 also provides aluminum grating span tables.

