

## ***LOAD RATINGS for THREADED ROD***

| NOMINAL ROD | ROOT AREA | MAXIMUM | LOAD  |
|-------------|-----------|---------|-------|
| DIAMETER    | THREAD    | 650*F   | 750*F |
| 3/8"        | 0.068     | 610     | 510   |
| 1/2"        | 0.126     | 1130    | 940   |
| 5/8"        | 0.202     | 1810    | 1510  |
| 3/4"        | 0.302     | 2710    | 2260  |
| 7/8"        | 0.419     | 3770    | 3150  |
| 1"          | 0.552     | 4960    | 4150  |
| 1-1/8"      | 0.693     | 6230    | 5450  |
| 1-1/4"      | 0.889     | 8000    | 6660  |
| 1-1/2"      | 1.293     | 11630   | 9700  |
| 1-3/4"      | 1.744     | 15700   | 12000 |
| 2"          | 2.3       | 20700   | 15460 |

## ***SPACING for IRON PIPE***

| PIPE SIZE | 1/2" | 3/4" | 1" | 1-1/2" | 2"  | 2-1/2" | 3"  | 3-1/2" | 4"  | 5"  | 6"  | 8"  | 10" | 12" | 14" | 16" | 18" | 20" | 24" |
|-----------|------|------|----|--------|-----|--------|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| MAX.SPAN  |      |      |    |        |     |        |     |        |     |     |     |     |     |     |     |     |     |     |     |
| for WATER | 5'   | 6'   | 7' | 9'     | 10' | 11'    | 12' | 13'    | 14' | 16' | 17' | 19' | 22' | 23' | 25' | 27' | 28' | 30' | 32' |
| AIR/STEAM | -    | -    | 9' | 11'    | 13' | 14'    | 15' | 16'    | 17' | 19' | 21' | 24' | 28' | 30' | 32' | 35' | 37' | 39' | 42' |

**STEEL PIPE DATA**

| NOM.<br>PIPE SIZE | SCHEDULE<br>20, 40, 80 | O.D.  | WALL<br>THICKNESS | WEIGHT<br>PER FOOT | WT. OF WATER<br>PER FOOT |
|-------------------|------------------------|-------|-------------------|--------------------|--------------------------|
| 3/8"              | 40                     | 0.675 | 0.091             | 0.567              | 0.083                    |
| 1/2"              | 40                     | 0.84  | 0.109             | 0.85               | 0.132                    |
| 3/4"              | 40                     | 1.05  | 0.113             | 1.13               | 0.23                     |
| 1"                | 40                     | 1.315 | 0.133             | 1.678              | 0.374                    |
| 1-1/4"            | 40                     | 1.66  | 0.14              | 2.272              | 0.647                    |
| 1-1/2"            | 40                     | 1.9   | 0.145             | 2.717              | 0.882                    |
| 2"                | 40                     | 2.375 | 0.154             | 3.652              | 1.452                    |
| 2-1/2"            | 40                     | 2.875 | 0.203             | 5.79               | 2.072                    |
| 3"                | 40                     | 3.5   | 0.216             | 7.57               | 3.2                      |
| 3-1/2"            | 40                     | 4     | 0.226             | 9.11               | 4.28                     |
| 4"                | 40                     | 4.5   | 0.237             | 10.79              | 5.51                     |
| 5"                | 40                     | 5.563 | 0.258             | 14.62              | 8.66                     |
| 6"                | 40                     | 6.625 | 0.28              | 18.97              | 12.51                    |
| 8"                | 40                     | 8.625 | 0.322             | 28.55              | 21.6                     |
| 10"               | 40                     | 10.75 | 0.365             | 40.48              | 34.1                     |
| 12"               | 40                     | 12.75 | 0.406             | 53.6               | 48.5                     |
| 14"               | 40                     | 14    | 0.437             | 63                 | 58.5                     |
| 16"               | 40                     | 16    | 0.5               | 83                 | 76.5                     |
| 18"               | 40                     | 18    | 0.563             | 105                | 97.2                     |
| 20"               | 40                     | 20    | 0.593             | 123                | 120.4                    |
| 24"               | 40                     | 24    | 0.687             | 171                | 174.2                    |
| 30"               | 20                     | 30    | 0.5               | 158                | 286                      |
| 36"               | API                    | 36    | 0.5               | 190                | 417                      |
| 3/8"              | 80                     | 0.675 | 0.126             | 0.738              | 0.061                    |
| 1/2"              | 80                     | 0.84  | 0.147             | 1.087              | 0.101                    |
| 3/4"              | 80                     | 1.05  | 0.154             | 1.473              | 0.186                    |
| 1"                | 80                     | 1.315 | 0.179             | 2.171              | 0.311                    |
| 1-1/4"            | 80                     | 1.66  | 0.191             | 2.996              | 0.555                    |
| 1-1/2"            | 80                     | 1.9   | 0.2               | 3.631              | 0.765                    |
| 2"                | 80                     | 2.375 | 0.218             | 5.022              | 1.279                    |
| 2-1/2"            | 80                     | 2.875 | 0.276             | 7.66               | 1.834                    |
| 3"                | 80                     | 3.5   | 0.3               | 10.25              | 2.86                     |
| 3-1/2"            | 80                     | 4     | 0.318             | 12.51              | 3.85                     |
| 4"                | 80                     | 4.5   | 0.337             | 14.98              | 4.98                     |
| 5"                | 80                     | 5.563 | 0.375             | 20.78              | 7.87                     |
| 6"                | 80                     | 6.625 | 0.432             | 28.57              | 11.29                    |
| 8"                | 80                     | 8.625 | 0.5               | 43.39              | 19.8                     |
| 10"               | 80                     | 10.75 | 0.593             | 64.4               | 31.1                     |
| 12"               | 80                     | 12.75 | 0.687             | 88.6               | 44                       |
| 14"               | 80                     | 14    | 0.75              | 107                | 51.2                     |
| 16"               | 80                     | 16    | 0.843             | 137                | 69.7                     |
| 18"               | 80                     | 18    | 0.937             | 171                | 88.5                     |
| 20"               | 80                     | 20    | 1.031             | 209                | 109.4                    |
| 24"               | 80                     | 24    | 1.218             | 297                | 158.2                    |

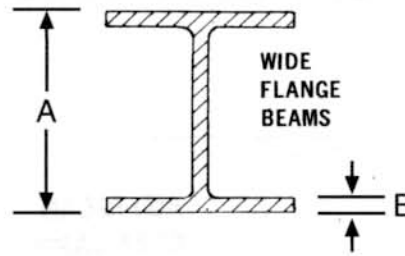
**COPPER TUBE DATA**

| NOM.      | O.D.    |        | WALL      | WEIGHT   | WT. OF WATER |
|-----------|---------|--------|-----------|----------|--------------|
| TUBE SIZE | TUBING  | O.D.   | THICKNESS | PER FOOT | PER FOOT     |
| 1/4"      | 3/8"    | 0.375  | 0.03      | 0.126    | 0.034        |
| 3/8"      | 1/2"    | 0.5    | 0.035     | 0.198    | 0.062        |
| 1/2"      | 5/8"    | 0.625  | 0.04      | 0.285    | 0.1          |
| 5/8"      | 3/4"    | 0.75   | 0.042     | 0.362    | 0.151        |
| 3/4"      | 7/8"    | 0.875  | 0.045     | 0.455    | 0.209        |
| 1"        | 1-1/8"  | 1.125  | 0.05      | 0.655    | 0.357        |
| 1-1/4"    | 1-3/8"  | 1.375  | 0.055     | 0.884    | 0.546        |
| 1-1/2"    | 1-5/8"  | 1.625  | 0.06      | 1.14     | 0.767        |
| 2"        | 2-1/8"  | 2.125  | 0.07      | 1.75     | 1.341        |
| 2-1/2"    | 2-5/8"  | 2.625  | 0.08      | 2.48     | 2.064        |
| 3"        | 3-1/8"  | 3.125  | 0.09      | 3.33     | 2.949        |
| 3-1/2"    | 3-5/8"  | 3.625  | 0.1       | 4.29     | 3.989        |
| 4"        | 4-1/8"  | 4.125  | 0.11      | 5.38     | 5.188        |
| 5"        | 5-1/8"  | 5.125  | 0.125     | 7.61     | 8.081        |
| 6"        | 6-1/8"  | 6.125  | 0.14      | 10.2     | 11.616       |
| 8"        | 8-1/8"  | 8.125  | 0.2       | 19.29    | 20.289       |
| 10"       | 10-1/8" | 10.125 | 0.25      | 30.1     | 31.59        |
| 12"       | 12-1/8" | 12.125 | 0.28      | 40.4     | 45.426       |

**SPACING**

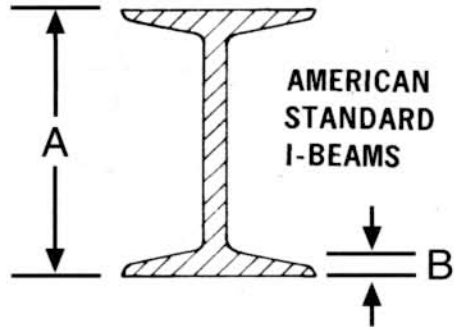
| TUBE SIZE | 1/2" | 3/4" | 1" | 1-1/2" | 2" | 2-1/2" | 3"  | 3-1/2" | 4"  |
|-----------|------|------|----|--------|----|--------|-----|--------|-----|
| MAX. SPAN | 5'   | 6'   | 6' | 8'     | 9' | 10'    | 10' | 11'    | 12' |

**BEAM DIMENSIONS**



| SIZE OF "A" | FLANGE WIDTH | THICK. "B" | WEIGHT PER FT/# | SIZE OF "A" | FLANGE WIDTH | THICK. "B" | WEIGHT PER FT/# | SIZE OF "A" | FLANGE WIDTH | THICK. "B" | WEIGHT PER FT/# |
|-------------|--------------|------------|-----------------|-------------|--------------|------------|-----------------|-------------|--------------|------------|-----------------|
| 5"          | 5"           | 0.42       | 18.5            | 12"         | 12-3/8"      | 1.106      | 120             | 16"         | 11-1/2"      | 0.795      | 88              |
| 6"          | 6"           | 0.456      | 25              | 12"         | 12-3/8"      | 1.236      | 133             | 16"         | 11-1/2"      | 0.875      | 96              |
| 8"          | 5-1/4"       | 0.308      | 17              | 12"         | 12-1/2"      | 1.486      | 161             | 18"         | 7-1/2"       | 0.57       | 50              |
| 8"          | 5-1/4"       | 0.378      | 20              | 12"         | 12-5/8"      | 1.736      | 190             | 18"         | 7-1/2"       | 0.63       | 55              |
| 8"          | 6-1/2"       | 0.398      | 24              | 14"         | 6-3/4"       | 0.383      | 30              | 18"         | 7-1/2"       | 0.695      | 60              |
| 8"          | 6-1/2"       | 0.463      | 28              | 14"         | 6-3/4"       | 0.453      | 34              | 18"         | 8-3/4"       | 0.686      | 64              |
| 8"          | 8"           | 0.433      | 31              | 14"         | 6-3/4"       | 0.513      | 38              | 18"         | 8-3/4"       | 0.751      | 70              |
| 8"          | 8"           | 0.493      | 35              | 14"         | 8"           | 0.528      | 43              | 18"         | 8-3/4"       | 0.831      | 77              |
| 8"          | 8-1/8"       | 0.558      | 40              | 14"         | 8"           | 0.593      | 48              | 18"         | 8-7/8"       | 0.911      | 85              |
| 8"          | 8-1/8"       | 0.683      | 48              | 14"         | 8"           | 0.658      | 53              | 18"         | 11-3/4"      | 0.831      | 96              |
| 8"          | 8-1/4"       | 0.808      | 58              | 14"         | 10"          | 0.643      | 61              | 18"         | 11-3/4"      | 0.911      | 105             |
| 8"          | 8-1/4"       | 0.933      | 67              | 14"         | 10"          | 0.718      | 68              | 18"         | 11-7/8"      | 0.991      | 114             |
| 10"         | 5-3/4"       | 0.34       | 21              | 14"         | 10-1/8"      | 0.783      | 74              | 21"         | 8-1/4"       | 0.615      | 62              |
| 10"         | 5-3/4"       | 0.43       | 25              | 14"         | 12"          | 0.718      | 78              | 21"         | 8-1/4"       | 0.685      | 68              |
| 10"         | 5-3/4"       | 0.5        | 29              | 14"         | 12"          | 0.778      | 84              | 21"         | 8-1/4"       | 0.74       | 73              |
| 10"         | 8"           | 0.433      | 33              | 14"         | 14-1/2"      | 0.688      | 87              | 21"         | 9"           | 0.795      | 82              |
| 10"         | 8"           | 0.528      | 39              | 14"         | 14-1/2"      | 0.748      | 95              | 21"         | 9"           | 0.935      | 96              |
| 10"         | 8"           | 0.618      | 45              | 14"         | 14-5/8"      | 0.813      | 103             | 21"         | 13"          | 0.865      | 112             |
| 10"         | 10"          | 0.558      | 49              | 14"         | 14-5/8"      | 0.873      | 111             | 21"         | 13"          | 0.985      | 127             |
| 10"         | 10"          | 0.618      | 54              | 14"         | 14-5/8"      | 0.938      | 119             | 21"         | 13-1/8"      | 1.095      | 142             |
| 10"         | 10-1/8"      | 0.683      | 60              | 14"         | 14-3/4"      | 0.998      | 127             | 24"         | 9"           | 0.682      | 76              |
| 10"         | 10-1/8"      | 0.748      | 66              | 14"         | 14-3/4"      | 1.063      | 136             | 24"         | 9"           | 0.772      | 84              |
| 10"         | 10-1/8"      | 0.808      | 72              | 14"         | 15-1/2"      | 1.063      | 142             | 24"         | 9"           | 0.872      | 94              |
| 10"         | 10-1/4"      | 0.868      | 77              | 14"         | 15-1/2"      | 1.128      | 150             | 24"         | 12"          | 0.775      | 100             |
| 10"         | 10-1/4"      | 0.998      | 89              | 14"         | 15-1/2"      | 1.188      | 158             | 24"         | 12"          | 0.885      | 110             |
| 10"         | 10-3/8"      | 1.118      | 100             | 14"         | 15-5/8"      | 1.248      | 167             | 24"         | 12-1/8"      | 0.93       | 120             |
| 10"         | 10-3/8"      | 1.248      | 112             | 14"         | 15-5/8"      | 1.313      | 176             | 24"         | 14"          | 0.9        | 130             |
| 12"         | 6-1/2"       | 0.44       | 27              | 14"         | 15-5/8"      | 1.378      | 184             | 24"         | 14"          | 1.02       | 145             |
| 12"         | 6-1/2"       | 0.465      | 31              | 14"         | 15-3/4"      | 1.438      | 193             | 24"         | 14-1/8"      | 1.135      | 160             |
| 12"         | 6-5/8"       | 0.54       | 36              | 14"         | 15-3/4"      | 1.503      | 202             | 27"         | 10"          | 0.747      | 94              |
| 12"         | 8"           | 0.516      | 40              | 14"         | 15-3/4"      | 1.563      | 211             | 27"         | 10"          | 0.827      | 102             |
| 12"         | 8"           | 0.576      | 45              | 14"         | 15-7/8"      | 1.623      | 219             | 27"         | 10-1/8"      | 0.932      | 114             |
| 12"         | 8-1/8"       | 0.641      | 50              | 14"         | 15-7/8"      | 1.688      | 228             | 27"         | 14"          | 0.975      | 145             |
| 12"         | 10"          | 0.576      | 53              | 14"         | 15-7/8"      | 1.748      | 237             | 27"         | 14"          | 1.075      | 160             |
| 12"         | 10"          | 0.641      | 58              | 16"         | 7"           | 0.428      | 36              | 27"         | 14-1/8"      | 1.19       | 177             |
| 12"         | 12"          | 0.606      | 65              | 16"         | 7"           | 0.503      | 40              | 30"         | 10-1/2"      | 0.75       | 108             |
| 12"         | 12"          | 0.671      | 72              | 16"         | 7"           | 0.563      | 45              | 30"         | 10-1/2"      | 0.875      | 116             |
| 12"         | 12-1/8"      | 0.736      | 79              | 16"         | 7-1/8"       | 0.628      | 50              | 30"         | 10-1/2"      | 0.93       | 124             |
| 12"         | 12-1/8"      | 0.796      | 85              | 16"         | 8-1/2"       | 0.645      | 58              | 30"         | 10-1/2"      | 1          | 132             |
| 12"         | 12-1/8"      | 0.856      | 92              | 16"         | 8-1/2"       | 0.715      | 64              | 30"         | 15"          | 1.065      | 172             |
| 12"         | 12-1/4"      | 0.921      | 99              | 16"         | 8-1/2"       | 0.795      | 71              | 30"         | 15"          | 1.185      | 190             |
| 12"         | 12-1/4"      | 0.986      | 106             | 16"         | 8-5/8"       | 0.875      | 78              | 30"         | 15-1/8"      | 1.315      | 210             |

**BEAM DIMENSIONS**



| SIZE OF "A" | FLANGE WIDTH | THICK. "B" | WEIGHT PER FT/# | SIZE OF "A" | FLANGE WIDTH | THICK. "B" | WEIGHT PER FT/# |
|-------------|--------------|------------|-----------------|-------------|--------------|------------|-----------------|
| 3"          | 2-3/8"       | 0.25       | 5.7             | 12"         | 5-1/4"       | 0.688      | 40.8            |
| 3"          | 2-1/2"       | 0.25       | 7.5             | 12"         | 5-1/2"       | 0.688      | 50              |
| 4"          | 2-5/8"       | 0.313      | 7.7             | 15"         | 5-1/2"       | 0.625      | 42.9            |
| 4"          | 2-3/4"       | 0.313      | 9.5             | 15"         | 5-5/8"       | 0.625      | 50              |
| 5"          | 3"           | 0.313      | 10              | 18"         | 6"           | 0.688      | 54.7            |
| 5"          | 3-1/4"       | 0.313      | 14.75           | 18"         | 6-1/4"       | 0.688      | 70              |
| 6"          | 3-3/8"       | 0.375      | 12.5            | 20"         | 6-1/4"       | 0.813      | 65.4            |
| 6"          | 3-5/8"       | 0.375      | 17.25           | 20"         | 6-3/8"       | 0.813      | 75              |
| 7"          | 3-5/8"       | 0.375      | 15.3            | 20"         | 7"           | 0.938      | 85              |
| 7"          | 3-7/8"       | 0.375      | 20              | 20"         | 7-1/4"       | 0.938      | 95              |
| 8"          | 4"           | 0.438      | 18.4            | 24"         | 7"           | 0.875      | 79.9            |
| 8"          | 4-1/8"       | 0.438      | 23              | 24"         | 7-1/8"       | 0.875      | 90              |
| 10"         | 4-5/8"       | 0.5        | 25.4            | 24"         | 7-1/4"       | 0.875      | 100             |
| 10"         | 5"           | 0.5        | 35              | 24"         | 7-7/8"       | 1.125      | 105.9           |
| 12"         | 5"           | 0.563      | 31.8            | 24"         | 8"           | 1.125      | 120             |
| 12"         | 5-1/8"       | 0.563      | 35              |             |              |            |                 |