| Section Elevation ft | Add Weight K | Self Weight K | Face | e | $C_F$ | $R_R$ | $D_F$ | $D_R$ | $A_E$ ft² | F K | w klf | Ctrl. Face |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | C | 0.286 | 2.334 | 0.612 | 0.85 | 1 | 14.731 | | | |
| T15 191.000-171.000 | 0.279 | 1.645 | A | 0.279 | 2.354 | 0.61 | 0.85 | 1 | 14.299 | 1.159 | 0.058 | B |
| | | | B | 0.356 | 2.158 | 0.635 | 0.85 | 1 | 19.010 | | | |
| | | | C | 0.286 | 2.334 | 0.612 | 0.85 | 1 | 14.731 | | | |
| T16 171.000-151.000 | 0.531 | 1.645 | A | 0.386 | 2.093 | 0.646 | 0.85 | 1 | 20.961 | 1.533 | 0.077 | B |
| | | | B | 0.487 | 1.918 | 0.691 | 0.85 | 1 | 28.291 | | | |
| | | | C | 0.286 | 2.334 | 0.612 | 0.85 | 1 | 14.731 | | | |
| T17 151.000-131.000 | 0.783 | 1.774 | A | 0.525 | 1.87 | 0.71 | 0.85 | 1 | 31.382 | 1.807 | 0.090 | B |
| | | | B | 0.566 | 1.829 | 0.734 | 0.85 | 1 | 34.971 | | | |
| | | | C | 0.295 | 2.31 | 0.614 | 0.85 | 1 | 15.231 | | | |
| T18 131.000-111.000 | 0.922 | 1.824 | A | 0.53 | 1.864 | 0.713 | 0.85 | 1 | 31.796 | 1.616 | 0.081 | B |
| | | | B | 0.658 | 1.779 | 0.791 | 0.85 | 1 | 43.844 | | | |
| | | | C | 0.297 | 2.305 | 0.615 | 0.85 | 1 | 15.348 | | | |
| T19 111.000-91.000 | 0.922 | 1.774 | A | 0.525 | 1.87 | 0.71 | 0.85 | 1 | 31.382 | 1.598 | 0.080 | B |
| | | | B | 0.654 | 1.781 | 0.788 | 0.85 | 1 | 43.333 | | | |
| | | | C | 0.295 | 2.31 | 0.614 | 0.85 | 1 | 15.231 | | | |
| T20 91.000-71.000 | 0.922 | 1.774 | A | 0.525 | 1.87 | 0.71 | 0.85 | 1 | 31.382 | 1.598 | 0.080 | B |
| | | | B | 0.654 | 1.781 | 0.788 | 0.85 | 1 | 43.333 | | | |
| | | | C | 0.295 | 2.31 | 0.614 | 0.85 | 1 | 15.231 | | | |
| T21 71.000-51.000 | 0.922 | 2.016 | A | 0.532 | 1.862 | 0.714 | 0.85 | 1 | 32.150 | 1.630 | 0.082 | B |
| | | | B | 0.66 | 1.779 | 0.792 | 0.85 | 1 | 44.237 | | | |
| | | | C | 0.303 | 2.288 | 0.617 | 0.85 | 1 | 15.809 | | | |
| T22 51.000-31.000 | 0.922 | 2.016 | A | 0.532 | 1.862 | 0.714 | 0.85 | 1 | 32.150 | 1.630 | 0.082 | B |
| | | | B | 0.66 | 1.779 | 0.792 | 0.85 | 1 | 44.237 | | | |
| | | | C | 0.303 | 2.288 | 0.617 | 0.85 | 1 | 15.809 | | | |
| T23 31.000-11.000 | 0.922 | 2.016 | A | 0.532 | 1.862 | 0.714 | 0.85 | 1 | 32.150 | 1.630 | 0.082 | B |
| | | | B | 0.66 | 1.779 | 0.792 | 0.85 | 1 | 44.237 | | | |
| | | | C | 0.303 | 2.288 | 0.617 | 0.85 | 1 | 15.809 | | | |
| T24 11.000-1.000 | 0.461 | 1.014 | A | 0.991 | 2.081 | 1 | 0.85 | 1 | 22.135 | 0.925* | 0.093 | B |
| | | | B | 1 | 2.1 | 1 | 0.85 | 1 | 27.552 | | | |
| | | | C | 0.504 | 1.895 | 0.7 | 0.85 | 1 | 7.878 | | | |
| Sum Weight: | 9.251 | 46.616 | | | *$2A_g$ limit | | | | | 32.381 | | |

## Tower Forces - With Ice - Wind Normal To Face

| Section Elevation ft | Add Weight K | Self Weight K | Face | e | $C_F$ | $R_R$ | $D_F$ | $D_R$ | $A_E$ ft² | F K | w klf | Ctrl. Face |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L1 528.000-512.205 | 0.024 | 1.252 | A | 0.371 | 2.125 | 0.64 | 1 | 1 | 12.571 | 0.858 | 0.054 | C |
| | | | B | 0.371 | 2.125 | 0.64 | 1 | 1 | 12.571 | | | |
| | | | C | 0.422 | 2.022 | 0.661 | 1 | 1 | 14.682 | | | |
| L2 512.205-496.410 | 0.024 | 1.251 | A | 0.37 | 2.125 | 0.64 | 1 | 1 | 12.562 | 0.858 | 0.054 | C |
| | | | B | 0.37 | 2.125 | 0.64 | 1 | 1 | 12.562 | | | |
| | | | C | 0.422 | 2.023 | 0.661 | 1 | 1 | 14.673 | | | |
| L3 496.410-480.615 | 0.024 | 1.244 | A | 0.369 | 2.129 | 0.639 | 1 | 1 | 12.310 | 0.845 | 0.053 | C |
| | | | B | 0.369 | 2.129 | 0.639 | 1 | 1 | 12.310 | | | |
| | | | C | 0.42 | 2.025 | 0.66 | 1 | 1 | 14.428 | | | |
| L4 480.615-470.000 | 0.058 | 1.280 | A | 0.552 | 1.841 | 0.726 | 1 | 1 | 14.700 | 0.782 | 0.074 | A |
| | | | B | 0.449 | 1.975 | 0.673 | 1 | 1 | 11.452 | | | |
| | | | C | 0.5 | 1.9 | 0.698 | 1 | 1 | 12.992 | | | |
| T1 470.000-451.000 | 0.119 | 2.473 | A | 0.395 | 2.073 | 0.65 | 1 | 1 | 22.431 | 1.417 | 0.075 | C |
| | | | B | 0.317 | 2.252 | 0.621 | 1 | 1 | 17.647 | | | |
| | | | C | 0.452 | 1.971 | 0.674 | 1 | 1 | 26.212 | | | |
| T2 451.000- | 0.170 | 1.964 | A | 0.347 | 2.179 | 0.631 | 1 | 1 | 18.786 | 1.279 | 0.064 | C |

| Section Elevation ft | Add Weight K | Self Weight K | Face | e | $C_F$ | $R_R$ | $D_F$ | $D_R$ | $A_E$ ft² | F K | w klf | Ctrl. Face |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 431.000 | | | B | 0.324 | 2.233 | 0.624 | 1 | 1 | 17.366 | | | |
| | | | C | 0.404 | 2.055 | 0.653 | 1 | 1 | 22.685 | | | |
| T3 431.000-411.000 | 0.236 | 1.964 | A | 0.347 | 2.179 | 0.631 | 1 | 1 | 18.786 | 1.331 | 0.067 | C |
| | | | B | 0.393 | 2.077 | 0.649 | 1 | 1 | 21.905 | | | |
| | | | C | 0.423 | 2.02 | 0.661 | 1 | 1 | 24.026 | | | |
| T4 411.000-391.000 | 0.253 | 1.964 | A | 0.347 | 2.179 | 0.631 | 1 | 1 | 18.786 | 1.397 | 0.070 | C |
| | | | B | 0.393 | 2.077 | 0.649 | 1 | 1 | 21.905 | | | |
| | | | C | 0.446 | 1.98 | 0.672 | 1 | 1 | 25.720 | | | |
| T5 391.000-371.000 | 0.253 | 1.964 | A | 0.347 | 2.179 | 0.631 | 1 | 1 | 18.786 | 1.397 | 0.070 | C |
| | | | B | 0.393 | 2.077 | 0.649 | 1 | 1 | 21.905 | | | |
| | | | C | 0.446 | 1.98 | 0.672 | 1 | 1 | 25.720 | | | |
| T6 371.000-351.000 | 0.253 | 2.169 | A | 0.364 | 2.14 | 0.637 | 1 | 1 | 19.904 | 1.301 | 0.065 | C |
| | | | B | 0.41 | 2.044 | 0.656 | 1 | 1 | 23.102 | | | |
| | | | C | 0.456 | 1.963 | 0.676 | 1 | 1 | 26.497 | | | |
| T7 351.000-331.000 | 0.253 | 1.964 | A | 0.347 | 2.179 | 0.631 | 1 | 1 | 18.786 | 1.274 | 0.064 | C |
| | | | B | 0.393 | 2.077 | 0.649 | 1 | 1 | 21.905 | | | |
| | | | C | 0.446 | 1.98 | 0.672 | 1 | 1 | 25.720 | | | |
| T8 331.000-311.000 | 0.282 | 1.964 | A | 0.347 | 2.179 | 0.631 | 1 | 1 | 18.786 | 1.383 | 0.069 | C |
| | | | B | 0.393 | 2.077 | 0.649 | 1 | 1 | 21.905 | | | |
| | | | C | 0.486 | 1.919 | 0.69 | 1 | 1 | 28.792 | | | |
| T9 311.000-291.000 | 0.320 | 1.964 | A | 0.382 | 2.101 | 0.644 | 1 | 1 | 21.135 | 1.388 | 0.069 | C |
| | | | B | 0.393 | 2.077 | 0.649 | 1 | 1 | 21.905 | | | |
| | | | C | 0.488 | 1.916 | 0.691 | 1 | 1 | 28.959 | | | |
| T10 291.000-271.000 | 0.363 | 1.964 | A | 0.425 | 2.016 | 0.662 | 1 | 1 | 24.178 | 1.388 | 0.069 | C |
| | | | B | 0.393 | 2.077 | 0.649 | 1 | 1 | 21.905 | | | |
| | | | C | 0.488 | 1.916 | 0.691 | 1 | 1 | 28.959 | | | |
| T11 271.000-251.000 | 0.377 | 1.964 | A | 0.425 | 2.016 | 0.662 | 1 | 1 | 24.178 | 1.388 | 0.069 | C |
| | | | B | 0.412 | 2.041 | 0.657 | 1 | 1 | 23.224 | | | |
| | | | C | 0.488 | 1.916 | 0.691 | 1 | 1 | 28.959 | | | |
| T12 251.000-231.000 | 0.401 | 2.085<br>TA 1.578 | A | 0.443 | 1.985 | 0.67 | 1 | 1 | 25.465 | 1.231 | 0.062 | C |
| | | | B | 0.453 | 1.969 | 0.674 | 1 | 1 | 26.196 | | | |
| | | | C | 0.5 | 1.9 | 0.698 | 1 | 1 | 29.950 | | | |
| T13 231.000-211.000 | 0.426 | 1.964 | A | 0.425 | 2.016 | 0.662 | 1 | 1 | 24.178 | 1.308 | 0.065 | C |
| | | | B | 0.435 | 1.999 | 0.667 | 1 | 1 | 24.889 | | | |
| | | | C | 0.53 | 1.864 | 0.713 | 1 | 1 | 32.422 | | | |
| T14 211.000-191.000 | 0.426 | 1.964 | A | 0.425 | 2.016 | 0.662 | 1 | 1 | 24.178 | 1.308 | 0.065 | C |
| | | | B | 0.435 | 1.999 | 0.667 | 1 | 1 | 24.889 | | | |
| | | | C | 0.53 | 1.864 | 0.713 | 1 | 1 | 32.422 | | | |
| T15 191.000-171.000 | 0.693 | 1.964 | A | 0.425 | 2.016 | 0.662 | 1 | 1 | 24.178 | 1.482 | 0.074 | B |
| | | | B | 0.56 | 1.835 | 0.73 | 1 | 1 | 37.327 | | | |
| | | | C | 0.53 | 1.864 | 0.713 | 1 | 1 | 32.422 | | | |
| T16 171.000-151.000 | 1.287 | 1.964 | A | 0.55 | 1.844 | 0.724 | 1 | 1 | 36.506 | 2.070 | 0.103 | B |
| | | | B | 0.712 | 1.777 | 0.828 | 1 | 1 | 53.824 | | | |
| | | | C | 0.53 | 1.864 | 0.713 | 1 | 1 | 32.422 | | | |
| T17 151.000-131.000 | 1.881 | 2.108 | A | 0.71 | 1.777 | 0.827 | 1 | 1 | 53.683 | 2.545 | 0.127 | B |
| | | | B | 0.805 | 1.82 | 0.901 | 1 | 1 | 64.620 | | | |
| | | | C | 0.538 | 1.855 | 0.718 | 1 | 1 | 33.141 | | | |
| T18 131.000-111.000 | 2.209 | 2.169 | A | 0.719 | 1.778 | 0.834 | 1 | 1 | 54.577 | 2.438 | 0.122 | B |
| | | | B | 0.918 | 1.951 | 1 | 1 | 1 | 78.802 | | | |
| | | | C | 0.54 | 1.853 | 0.719 | 1 | 1 | 33.310 | | | |
| T19 111.000-91.000 | 2.209 | 2.108 | A | 0.71 | 1.777 | 0.827 | 1 | 1 | 53.683 | 2.386 | 0.119 | B |
| | | | B | 0.909 | 1.938 | 0.992 | 1 | 1 | 77.660 | | | |
| | | | C | 0.538 | 1.855 | 0.718 | 1 | 1 | 33.141 | | | |
| T20 91.000-71.000 | 2.209 | 2.108 | A | 0.71 | 1.777 | 0.827 | 1 | 1 | 53.683 | 2.386 | 0.119 | B |
| | | | B | 0.909 | 1.938 | 0.992 | 1 | 1 | 77.660 | | | |
| | | | C | 0.538 | 1.855 | 0.718 | 1 | 1 | 33.141 | | | |
| T21 71.000-51.000 | 2.209 | 2.359 | A | 0.717 | 1.778 | 0.832 | 1 | 1 | 54.568 | 2.429 | 0.121 | B |
| | | | B | 0.915 | 1.946 | 0.997 | 1 | 1 | 78.726 | | | |
| | | | C | 0.545 | 1.848 | 0.722 | 1 | 1 | 33.923 | | | |
| T22 51.000- | 2.209 | 2.359 | A | 0.717 | 1.778 | 0.832 | 1 | 1 | 54.568 | 2.429 | 0.121 | B |

| Section Elevation ft | Add Weight K | Self Weight K | Face | e | $C_F$ | $R_R$ | $D_F$ | $D_R$ | $A_E$ ft² | F K | w klf | Ctrl. Face |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 31.000 | | | B | 0.915 | 1.946 | 0.997 | 1 | 1 | 78.726 | | | |
| | | | C | 0.545 | 1.848 | 0.722 | 1 | 1 | 33.923 | | | |
| T23 31.000-11.000 | 2.209 | 2.359 | A | 0.717 | 1.778 | 0.832 | 1 | 1 | 54.568 | 2.429 | 0.121 | B |
| | | | B | 0.915 | 1.946 | 0.997 | 1 | 1 | 78.726 | | | |
| | | | C | 0.545 | 1.848 | 0.722 | 1 | 1 | 33.923 | | | |
| T24 11.000-1.000 | 1.105 | 1.149 | A | 1 | 2.1 | 1 | 1 | 1 | 29.438 | 0.735* | 0.074 | B |
| | | | B | 1 | 2.1 | 1 | 1 | 1 | 37.980 | | | |
| | | | C | 0.828 | 1.839 | 0.919 | 1 | 1 | 17.639 | | | |
| Sum Weight: | 22.482 | 55.579 | | | *$2A_g$ limit | | | | | 43.464 | | |

## Tower Forces - With Ice - Wind 60 To Face

| Section Elevation ft | Add Weight K | Self Weight K | Face | e | $C_F$ | $R_R$ | $D_F$ | $D_R$ | $A_E$ ft² | F K | w klf | Ctrl. Face |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L1 528.000-512.205 | 0.024 | 1.252 | A | 0.371 | 2.125 | 0.64 | 0.8 | 1 | 12.354 | 0.846 | 0.054 | C |
| | | | B | 0.371 | 2.125 | 0.64 | 0.8 | 1 | 12.354 | | | |
| | | | C | 0.422 | 2.022 | 0.661 | 0.8 | 1 | 14.466 | | | |
| L2 512.205-496.410 | 0.024 | 1.251 | A | 0.37 | 2.125 | 0.64 | 0.8 | 1 | 12.345 | 0.845 | 0.054 | C |
| | | | B | 0.37 | 2.125 | 0.64 | 0.8 | 1 | 12.345 | | | |
| | | | C | 0.422 | 2.023 | 0.661 | 0.8 | 1 | 14.456 | | | |
| L3 496.410-480.615 | 0.024 | 1.244 | A | 0.369 | 2.129 | 0.639 | 0.8 | 1 | 12.202 | 0.838 | 0.053 | C |
| | | | B | 0.369 | 2.129 | 0.639 | 0.8 | 1 | 12.202 | | | |
| | | | C | 0.42 | 2.025 | 0.66 | 0.8 | 1 | 14.320 | | | |
| L4 480.615-470.000 | 0.058 | 1.280 | A | 0.552 | 1.841 | 0.726 | 0.8 | 1 | 14.067 | 0.749 | 0.071 | A |
| | | | B | 0.449 | 1.975 | 0.673 | 0.8 | 1 | 10.819 | | | |
| | | | C | 0.5 | 1.9 | 0.698 | 0.8 | 1 | 12.358 | | | |
| T1 470.000-451.000 | 0.119 | 2.473 | A | 0.395 | 2.073 | 0.65 | 0.8 | 1 | 21.587 | 1.371 | 0.072 | C |
| | | | B | 0.317 | 2.252 | 0.621 | 0.8 | 1 | 16.803 | | | |
| | | | C | 0.452 | 1.971 | 0.674 | 0.8 | 1 | 25.367 | | | |
| T2 451.000-431.000 | 0.170 | 1.964 | A | 0.347 | 2.179 | 0.631 | 0.8 | 1 | 18.786 | 1.279 | 0.064 | C |
| | | | B | 0.324 | 2.233 | 0.624 | 0.8 | 1 | 17.366 | | | |
| | | | C | 0.404 | 2.055 | 0.653 | 0.8 | 1 | 22.685 | | | |
| T3 431.000-411.000 | 0.236 | 1.964 | A | 0.347 | 2.179 | 0.631 | 0.8 | 1 | 18.786 | 1.331 | 0.067 | C |
| | | | B | 0.393 | 2.077 | 0.649 | 0.8 | 1 | 21.905 | | | |
| | | | C | 0.423 | 2.02 | 0.661 | 0.8 | 1 | 24.026 | | | |
| T4 411.000-391.000 | 0.253 | 1.964 | A | 0.347 | 2.179 | 0.631 | 0.8 | 1 | 18.786 | 1.397 | 0.070 | C |
| | | | B | 0.393 | 2.077 | 0.649 | 0.8 | 1 | 21.905 | | | |
| | | | C | 0.446 | 1.98 | 0.672 | 0.8 | 1 | 25.720 | | | |
| T5 391.000-371.000 | 0.253 | 1.964 | A | 0.347 | 2.179 | 0.631 | 0.8 | 1 | 18.786 | 1.397 | 0.070 | C |
| | | | B | 0.393 | 2.077 | 0.649 | 0.8 | 1 | 21.905 | | | |
| | | | C | 0.446 | 1.98 | 0.672 | 0.8 | 1 | 25.720 | | | |
| T6 371.000-351.000 | 0.253 | 2.169 | A | 0.364 | 2.14 | 0.637 | 0.8 | 1 | 19.904 | 1.301 | 0.065 | C |
| | | | B | 0.41 | 2.044 | 0.656 | 0.8 | 1 | 23.102 | | | |
| | | | C | 0.456 | 1.963 | 0.676 | 0.8 | 1 | 26.497 | | | |
| T7 351.000-331.000 | 0.253 | 1.964 | A | 0.347 | 2.179 | 0.631 | 0.8 | 1 | 18.786 | 1.274 | 0.064 | C |
| | | | B | 0.393 | 2.077 | 0.649 | 0.8 | 1 | 21.905 | | | |
| | | | C | 0.446 | 1.98 | 0.672 | 0.8 | 1 | 25.720 | | | |
| T8 331.000-311.000 | 0.282 | 1.964 | A | 0.347 | 2.179 | 0.631 | 0.8 | 1 | 18.786 | 1.383 | 0.069 | C |
| | | | B | 0.393 | 2.077 | 0.649 | 0.8 | 1 | 21.905 | | | |
| | | | C | 0.486 | 1.919 | 0.69 | 0.8 | 1 | 28.792 | | | |
| T9 311.000-291.000 | 0.320 | 1.964 | A | 0.382 | 2.101 | 0.644 | 0.8 | 1 | 21.135 | 1.388 | 0.069 | C |
| | | | B | 0.393 | 2.077 | 0.649 | 0.8 | 1 | 21.905 | | | |
| | | | C | 0.488 | 1.916 | 0.691 | 0.8 | 1 | 28.959 | | | |

| Section Elevation ft | Add Weight K | Self Weight K | Face | e | $C_F$ | $R_R$ | $D_F$ | $D_R$ | $A_E$ $ft^2$ | F K | w klf | Ctrl. Face |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T10 291.000-271.000 | 0.363 | 1.964 | A | 0.425 | 2.016 | 0.662 | 0.8 | 1 | 24.178 | 1.388 | 0.069 | C |
| | | | B | 0.393 | 2.077 | 0.649 | 0.8 | 1 | 21.905 | | | |
| | | | C | 0.488 | 1.916 | 0.691 | 0.8 | 1 | 28.959 | | | |
| T11 271.000-251.000 | 0.377 | 1.964 | A | 0.425 | 2.016 | 0.662 | 0.8 | 1 | 24.178 | 1.388 | 0.069 | C |
| | | | B | 0.412 | 2.041 | 0.657 | 0.8 | 1 | 23.224 | | | |
| | | | C | 0.488 | 1.916 | 0.691 | 0.8 | 1 | 28.959 | | | |
| T12 251.000-231.000 | 0.401 | 2.085 TA 1.578 | A | 0.443 | 1.985 | 0.67 | 0.8 | 1 | 25.465 | 1.231 | 0.062 | C |
| | | | B | 0.453 | 1.969 | 0.674 | 0.8 | 1 | 26.196 | | | |
| | | | C | 0.5 | 1.9 | 0.698 | 0.8 | 1 | 29.950 | | | |
| T13 231.000-211.000 | 0.426 | 1.964 | A | 0.425 | 2.016 | 0.662 | 0.8 | 1 | 24.178 | 1.308 | 0.065 | C |
| | | | B | 0.435 | 1.999 | 0.667 | 0.8 | 1 | 24.889 | | | |
| | | | C | 0.53 | 1.864 | 0.713 | 0.8 | 1 | 32.422 | | | |
| T14 211.000-191.000 | 0.426 | 1.964 | A | 0.425 | 2.016 | 0.662 | 0.8 | 1 | 24.178 | 1.308 | 0.065 | C |
| | | | B | 0.435 | 1.999 | 0.667 | 0.8 | 1 | 24.889 | | | |
| | | | C | 0.53 | 1.864 | 0.713 | 0.8 | 1 | 32.422 | | | |
| T15 191.000-171.000 | 0.693 | 1.964 | A | 0.425 | 2.016 | 0.662 | 0.8 | 1 | 24.178 | 1.415 | 0.071 | B |
| | | | B | 0.56 | 1.835 | 0.73 | 0.8 | 1 | 35.639 | | | |
| | | | C | 0.53 | 1.864 | 0.713 | 0.8 | 1 | 32.422 | | | |
| T16 171.000-151.000 | 1.287 | 1.964 | A | 0.55 | 1.844 | 0.724 | 0.8 | 1 | 34.818 | 1.925 | 0.096 | B |
| | | | B | 0.712 | 1.777 | 0.828 | 0.8 | 1 | 50.074 | | | |
| | | | C | 0.53 | 1.864 | 0.713 | 0.8 | 1 | 32.422 | | | |
| T17 151.000-131.000 | 1.881 | 2.108 | A | 0.71 | 1.777 | 0.827 | 0.8 | 1 | 49.933 | 2.357 | 0.118 | B |
| | | | B | 0.805 | 1.82 | 0.901 | 0.8 | 1 | 59.858 | | | |
| | | | C | 0.538 | 1.855 | 0.718 | 0.8 | 1 | 33.141 | | | |
| T18 131.000-111.000 | 2.209 | 2.169 | A | 0.719 | 1.778 | 0.834 | 0.8 | 1 | 50.827 | 2.252 | 0.113 | B |
| | | | B | 0.918 | 1.951 | 1 | 0.8 | 1 | 72.802 | | | |
| | | | C | 0.54 | 1.853 | 0.719 | 0.8 | 1 | 33.310 | | | |
| T19 111.000-91.000 | 2.209 | 2.108 | A | 0.71 | 1.777 | 0.827 | 0.8 | 1 | 49.933 | 2.202 | 0.110 | B |
| | | | B | 0.909 | 1.938 | 0.992 | 0.8 | 1 | 71.660 | | | |
| | | | C | 0.538 | 1.855 | 0.718 | 0.8 | 1 | 33.141 | | | |
| T20 91.000-71.000 | 2.209 | 2.108 | A | 0.71 | 1.777 | 0.827 | 0.8 | 1 | 49.933 | 2.202 | 0.110 | B |
| | | | B | 0.909 | 1.938 | 0.992 | 0.8 | 1 | 71.660 | | | |
| | | | C | 0.538 | 1.855 | 0.718 | 0.8 | 1 | 33.141 | | | |
| T21 71.000-51.000 | 2.209 | 2.359 | A | 0.717 | 1.778 | 0.832 | 0.8 | 1 | 50.818 | 2.244 | 0.112 | B |
| | | | B | 0.915 | 1.946 | 0.997 | 0.8 | 1 | 72.726 | | | |
| | | | C | 0.545 | 1.848 | 0.722 | 0.8 | 1 | 33.923 | | | |
| T22 51.000-31.000 | 2.209 | 2.359 | A | 0.717 | 1.778 | 0.832 | 0.8 | 1 | 50.818 | 2.244 | 0.112 | B |
| | | | B | 0.915 | 1.946 | 0.997 | 0.8 | 1 | 72.726 | | | |
| | | | C | 0.545 | 1.848 | 0.722 | 0.8 | 1 | 33.923 | | | |
| T23 31.000-11.000 | 2.209 | 2.359 | A | 0.717 | 1.778 | 0.832 | 0.8 | 1 | 50.818 | 2.244 | 0.112 | B |
| | | | B | 0.915 | 1.946 | 0.997 | 0.8 | 1 | 72.726 | | | |
| | | | C | 0.545 | 1.848 | 0.722 | 0.8 | 1 | 33.923 | | | |
| T24 11.000-1.000 | 1.105 | 1.149 | A | 1 | 2.1 | 1 | 0.8 | 1 | 27.563 | 0.735* | 0.074 | B |
| | | | B | 1 | 2.1 | 1 | 0.8 | 1 | 34.980 | | | |
| | | | C | 0.828 | 1.839 | 0.919 | 0.8 | 1 | 17.639 | | | |
| Sum Weight: | 22.482 | 55.579 | | | *$2A_g$ limit | | | | | 41.844 | | |

## Tower Forces - With Ice - Wind 90 To Face

| Section Elevation ft | Add Weight K | Self Weight K | Face | e | $C_F$ | $R_R$ | $D_F$ | $D_R$ | $A_E$ $ft^2$ | F K | w klf | Ctrl. Face |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L1 528.000-512.205 | 0.024 | 1.252 | A | 0.371 | 2.125 | 0.64 | 0.85 | 1 | 12.408 | 0.849 | 0.054 | C |
| | | | B | 0.371 | 2.125 | 0.64 | 0.85 | 1 | 12.408 | | | |

| Section Elevation ft | Add Weight K | Self Weight K | Face | e | $C_F$ | $R_R$ | $D_F$ | $D_R$ | $A_E$ ft² | F K | w klf | Ctrl. Face |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | C | 0.422 | 2.022 | 0.661 | 0.85 | 1 | 14.520 | | | |
| L2 512.205-496.410 | 0.024 | 1.251 | A | 0.37 | 2.125 | 0.64 | 0.85 | 1 | 12.399 | 0.848 | 0.054 | C |
| | | | B | 0.37 | 2.125 | 0.64 | 0.85 | 1 | 12.399 | | | |
| | | | C | 0.422 | 2.023 | 0.661 | 0.85 | 1 | 14.510 | | | |
| L3 496.410-480.615 | 0.024 | 1.244 | A | 0.369 | 2.129 | 0.639 | 0.85 | 1 | 12.229 | 0.840 | 0.053 | C |
| | | | B | 0.369 | 2.129 | 0.639 | 0.85 | 1 | 12.229 | | | |
| | | | C | 0.42 | 2.025 | 0.66 | 0.85 | 1 | 14.347 | | | |
| L4 480.615-470.000 | 0.058 | 1.280 | A | 0.552 | 1.841 | 0.726 | 0.85 | 1 | 14.225 | 0.757 | 0.071 | A |
| | | | B | 0.449 | 1.975 | 0.673 | 0.85 | 1 | 10.977 | | | |
| | | | C | 0.5 | 1.9 | 0.698 | 0.85 | 1 | 12.517 | | | |
| T1 470.000-451.000 | 0.119 | 2.473 | A | 0.395 | 2.073 | 0.65 | 0.85 | 1 | 21.798 | 1.383 | 0.073 | C |
| | | | B | 0.317 | 2.252 | 0.621 | 0.85 | 1 | 17.014 | | | |
| | | | C | 0.452 | 1.971 | 0.674 | 0.85 | 1 | 25.578 | | | |
| T2 451.000-431.000 | 0.170 | 1.964 | A | 0.347 | 2.179 | 0.631 | 0.85 | 1 | 18.786 | 1.279 | 0.064 | C |
| | | | B | 0.324 | 2.233 | 0.624 | 0.85 | 1 | 17.366 | | | |
| | | | C | 0.404 | 2.055 | 0.653 | 0.85 | 1 | 22.685 | | | |
| T3 431.000-411.000 | 0.236 | 1.964 | A | 0.347 | 2.179 | 0.631 | 0.85 | 1 | 18.786 | 1.331 | 0.067 | C |
| | | | B | 0.393 | 2.077 | 0.649 | 0.85 | 1 | 21.905 | | | |
| | | | C | 0.423 | 2.02 | 0.661 | 0.85 | 1 | 24.026 | | | |
| T4 411.000-391.000 | 0.253 | 1.964 | A | 0.347 | 2.179 | 0.631 | 0.85 | 1 | 18.786 | 1.397 | 0.070 | C |
| | | | B | 0.393 | 2.077 | 0.649 | 0.85 | 1 | 21.905 | | | |
| | | | C | 0.446 | 1.98 | 0.672 | 0.85 | 1 | 25.720 | | | |
| T5 391.000-371.000 | 0.253 | 1.964 | A | 0.347 | 2.179 | 0.631 | 0.85 | 1 | 18.786 | 1.397 | 0.070 | C |
| | | | B | 0.393 | 2.077 | 0.649 | 0.85 | 1 | 21.905 | | | |
| | | | C | 0.446 | 1.98 | 0.672 | 0.85 | 1 | 25.720 | | | |
| T6 371.000-351.000 | 0.253 | 2.169 | A | 0.364 | 2.14 | 0.637 | 0.85 | 1 | 19.904 | 1.301 | 0.065 | C |
| | | | B | 0.41 | 2.044 | 0.656 | 0.85 | 1 | 23.102 | | | |
| | | | C | 0.456 | 1.963 | 0.676 | 0.85 | 1 | 26.497 | | | |
| T7 351.000-331.000 | 0.253 | 1.964 | A | 0.347 | 2.179 | 0.631 | 0.85 | 1 | 18.786 | 1.274 | 0.064 | C |
| | | | B | 0.393 | 2.077 | 0.649 | 0.85 | 1 | 21.905 | | | |
| | | | C | 0.446 | 1.98 | 0.672 | 0.85 | 1 | 25.720 | | | |
| T8 331.000-311.000 | 0.282 | 1.964 | A | 0.347 | 2.179 | 0.631 | 0.85 | 1 | 18.786 | 1.383 | 0.069 | C |
| | | | B | 0.393 | 2.077 | 0.649 | 0.85 | 1 | 21.905 | | | |
| | | | C | 0.486 | 1.919 | 0.69 | 0.85 | 1 | 28.792 | | | |
| T9 311.000-291.000 | 0.320 | 1.964 | A | 0.382 | 2.101 | 0.644 | 0.85 | 1 | 21.135 | 1.388 | 0.069 | C |
| | | | B | 0.393 | 2.077 | 0.649 | 0.85 | 1 | 21.905 | | | |
| | | | C | 0.488 | 1.916 | 0.691 | 0.85 | 1 | 28.959 | | | |
| T10 291.000-271.000 | 0.363 | 1.964 | A | 0.425 | 2.016 | 0.662 | 0.85 | 1 | 24.178 | 1.388 | 0.069 | C |
| | | | B | 0.393 | 2.077 | 0.649 | 0.85 | 1 | 21.905 | | | |
| | | | C | 0.488 | 1.916 | 0.691 | 0.85 | 1 | 28.959 | | | |
| T11 271.000-251.000 | 0.377 | 1.964 | A | 0.425 | 2.016 | 0.662 | 0.85 | 1 | 24.178 | 1.388 | 0.069 | C |
| | | | B | 0.412 | 2.041 | 0.657 | 0.85 | 1 | 23.224 | | | |
| | | | C | 0.488 | 1.916 | 0.691 | 0.85 | 1 | 28.959 | | | |
| T12 251.000-231.000 | 0.401 | 2.085 TA 1.578 | A | 0.443 | 1.985 | 0.67 | 0.85 | 1 | 25.465 | 1.231 | 0.062 | C |
| | | | B | 0.453 | 1.969 | 0.674 | 0.85 | 1 | 26.196 | | | |
| | | | C | 0.5 | 1.9 | 0.698 | 0.85 | 1 | 29.950 | | | |
| T13 231.000-211.000 | 0.426 | 1.964 | A | 0.425 | 2.016 | 0.662 | 0.85 | 1 | 24.178 | 1.308 | 0.065 | C |
| | | | B | 0.435 | 1.999 | 0.667 | 0.85 | 1 | 24.889 | | | |
| | | | C | 0.53 | 1.864 | 0.713 | 0.85 | 1 | 32.422 | | | |
| T14 211.000-191.000 | 0.426 | 1.964 | A | 0.425 | 2.016 | 0.662 | 0.85 | 1 | 24.178 | 1.308 | 0.065 | C |
| | | | B | 0.435 | 1.999 | 0.667 | 0.85 | 1 | 24.889 | | | |
| | | | C | 0.53 | 1.864 | 0.713 | 0.85 | 1 | 32.422 | | | |
| T15 191.000-171.000 | 0.693 | 1.964 | A | 0.425 | 2.016 | 0.662 | 0.85 | 1 | 24.178 | 1.431 | 0.072 | B |
| | | | B | 0.56 | 1.835 | 0.73 | 0.85 | 1 | 36.061 | | | |
| | | | C | 0.53 | 1.864 | 0.713 | 0.85 | 1 | 32.422 | | | |
| T16 171.000-151.000 | 1.287 | 1.964 | A | 0.55 | 1.844 | 0.724 | 0.85 | 1 | 35.240 | 1.962 | 0.098 | B |
| | | | B | 0.712 | 1.777 | 0.828 | 0.85 | 1 | 51.011 | | | |
| | | | C | 0.53 | 1.864 | 0.713 | 0.85 | 1 | 32.422 | | | |
| T17 151.000-131.000 | 1.881 | 2.108 | A | 0.71 | 1.777 | 0.827 | 0.85 | 1 | 50.871 | 2.404 | 0.120 | B |
| | | | B | 0.805 | 1.82 | 0.901 | 0.85 | 1 | 61.048 | | | |

| Section Elevation ft | Add Weight K | Self Weight K | Face | $e$ | $C_F$ | $R_R$ | $D_F$ | $D_R$ | $A_E$ ft² | $F$ K | $w$ klf | Ctrl. Face |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T18 131.000-111.000 | 2.209 | 2.169 | C | 0.538 | 1.855 | 0.718 | 0.85 | 1 | 33.141 | 2.299 | 0.115 | B |
| | | | A | 0.719 | 1.778 | 0.834 | 0.85 | 1 | 51.765 | | | |
| | | | B | 0.918 | 1.951 | 1 | 0.85 | 1 | 74.302 | | | |
| T19 111.000-91.000 | 2.209 | 2.108 | C | 0.54 | 1.853 | 0.719 | 0.85 | 1 | 33.310 | 2.248 | 0.112 | B |
| | | | A | 0.71 | 1.777 | 0.827 | 0.85 | 1 | 50.871 | | | |
| | | | B | 0.909 | 1.938 | 0.992 | 0.85 | 1 | 73.160 | | | |
| T20 91.000-71.000 | 2.209 | 2.108 | C | 0.538 | 1.855 | 0.718 | 0.85 | 1 | 33.141 | 2.248 | 0.112 | B |
| | | | A | 0.71 | 1.777 | 0.827 | 0.85 | 1 | 50.871 | | | |
| | | | B | 0.909 | 1.938 | 0.992 | 0.85 | 1 | 73.160 | | | |
| T21 71.000-51.000 | 2.209 | 2.359 | C | 0.538 | 1.855 | 0.718 | 0.85 | 1 | 33.141 | 2.290 | 0.115 | B |
| | | | A | 0.717 | 1.778 | 0.832 | 0.85 | 1 | 51.755 | | | |
| | | | B | 0.915 | 1.946 | 0.997 | 0.85 | 1 | 74.226 | | | |
| T22 51.000-31.000 | 2.209 | 2.359 | C | 0.545 | 1.848 | 0.722 | 0.85 | 1 | 33.923 | 2.290 | 0.115 | B |
| | | | A | 0.717 | 1.778 | 0.832 | 0.85 | 1 | 51.755 | | | |
| | | | B | 0.915 | 1.946 | 0.997 | 0.85 | 1 | 74.226 | | | |
| T23 31.000-11.000 | 2.209 | 2.359 | C | 0.545 | 1.848 | 0.722 | 0.85 | 1 | 33.923 | 2.290 | 0.115 | B |
| | | | A | 0.717 | 1.778 | 0.832 | 0.85 | 1 | 51.755 | | | |
| | | | B | 0.915 | 1.946 | 0.997 | 0.85 | 1 | 74.226 | | | |
| T24 11.000-1.000 | 1.105 | 1.149 | C | 0.545 | 1.848 | 0.722 | 0.85 | 1 | 33.923 | 0.735* | 0.074 | B |
| | | | A | 1 | 2.1 | 1 | 0.85 | 1 | 28.032 | | | |
| | | | B | 1 | 2.1 | 1 | 0.85 | 1 | 35.730 | | | |
| | | | C | 0.828 | 1.839 | 0.919 | 0.85 | 1 | 17.639 | | | |
| Sum Weight: | 22.482 | 55.579 | | | *2$A_g$ limit | | | | | 42.249 | | |

## Discrete Appurtenance Pressures - No Ice $G_H = 1.061$

| Description | Aiming Azimuth ° | Weight K | $Offset_x$ ft | $Offset_z$ ft | $z$ ft | $K_z$ | $q_z$ psf | $C_AA_C$ Front ft² | $C_AA_C$ Side ft² |
|---|---|---|---|---|---|---|---|---|---|
| Torque Arm Face C | 180.0000 | 0.000 | 0.000 | 4.330 | 241.000 | 1.765 | 28.916 | 6.998 | 17.266 |
| Torque Arm Face B | 60.0000 | 0.000 | 3.750 | -2.165 | 241.000 | 1.765 | 28.916 | 6.998 | 17.266 |
| Torque Arm Face A | 300.0000 | 0.000 | -3.750 | -2.165 | 241.000 | 1.765 | 28.916 | 6.998 | 17.266 |
| Red A-2/3 lighting Kit w/ A-3 Spur | 0.0000 | 0.175 | 0.000 | 0.000 | 528.000 | 2.208 | 36.179 | 12.000 | 12.000 |
| Mid Beacon Level | 0.0000 | 0.200 | 0.000 | 0.000 | 265.000 | 1.813 | 29.711 | 6.000 | 6.000 |
| ERI---A-3 Lightning Spur | 0.0000 | 0.150 | 0.000 | 0.000 | 265.000 | 1.813 | 29.711 | 8.000 | 8.000 |
| SHPX-5AE-Radomes (3" Coax) | 240.0000 | 0.810 | -3.665 | 2.116 | 501.650 | 2.176 | 35.653 | 48.000 | 48.000 |
| (3) DB224 w/ Long Arm Mounts (7/8" Coax) | 0.0000 | 0.630 | 0.000 | 0.000 | 440.000 | 2.096 | 34.342 | 27.000 | 27.000 |
| Ice Shield (4' x 6') | 0.0000 | 0.250 | 0.000 | -2.809 | 329.200 | 1.929 | 31.611 | 10.000 | 10.000 |
| DCR-C 4 Bay w/ domes (3" Coax) | 120.0000 | 0.425 | 4.165 | 2.405 | 300.000 | 1.879 | 30.783 | 50.000 | 50.000 |
| (12) 5' x 1' Panels (1 5/8" Coax) | 0.0000 | 2.400 | 0.000 | 0.000 | 180.000 | 1.624 | 26.602 | 109.000 | 109.000 |
| (12) 5' x 1' Panels (1 5/8" Coax) | 0.0000 | 2.400 | 0.000 | 0.000 | 160.000 | 1.570 | 25.722 | 109.000 | 109.000 |
| (12) 5' x 1' Panels (1 5/8" Coax) | 0.0000 | 2.400 | 0.000 | 0.000 | 140.000 | 1.511 | 24.759 | 109.000 | 109.000 |
| | Sum Weight: | 9.840 | | | | | | | |

## Discrete Appurtenance Pressures - With Ice $G_H = 1.061$

| Description | Aiming Azimuth ° | Weight K | $Offset_x$ ft | $Offset_z$ ft | z ft | $K_z$ | $q_z$ psf | $C_AA_C$ Front $ft^2$ | $C_AA_C$ Side $ft^2$ | $t_z$ in |
|---|---|---|---|---|---|---|---|---|---|---|
| Torque Arm Face C | 180.0000 | 0.000 | 0.000 | 4.330 | 241.000 | 1.765 | 22.139 | 7.898 | 19.069 | 0.500 |
| Torque Arm Face B | 60.0000 | 0.000 | 3.750 | -2.165 | 241.000 | 1.765 | 22.139 | 7.898 | 19.069 | 0.500 |
| Torque Arm Face A | 300.0000 | 0.000 | -3.750 | -2.165 | 241.000 | 1.765 | 22.139 | 7.898 | 19.069 | 0.500 |
| Red A-2/3 lighting Kit w/ A-3 Spur | 0.0000 | 0.000 | 0.000 | 0.000 | 528.000 | 2.208 | 27.699 | 17.000 | 17.000 | 0.500 |
| Mid Beacon Level | 0.0000 | 0.250 | 0.000 | 0.000 | 265.000 | 1.813 | 22.747 | 8.000 | 8.000 | 0.500 |
| ERI---A-3 Lightning Spur | 0.0000 | 0.225 | 0.000 | 0.000 | 265.000 | 1.813 | 22.747 | 13.000 | 13.000 | 0.500 |
| SHPX-5AE-Radomes (3" Coax) | 240.0000 | 1.585 | -3.665 | 2.116 | 501.650 | 2.176 | 27.297 | 56.000 | 56.000 | 0.500 |
| (3) DB224 w/ Long Arm Mounts (7/8" Coax) | 0.0000 | 0.885 | 0.000 | 0.000 | 440.000 | 2.096 | 26.293 | 39.000 | 39.000 | 0.500 |
| Ice Shield (4' x 6') | 0.0000 | 0.350 | 0.000 | -2.809 | 329.200 | 1.929 | 24.202 | 12.000 | 12.000 | 0.500 |
| DCR-C 4 Bay w/ domes (3" Coax) | 120.0000 | 0.565 | 4.165 | 2.405 | 300.000 | 1.879 | 23.568 | 67.000 | 67.000 | 0.500 |
| (12) 5' x 1' Panels (1 5/8" Coax) | 0.0000 | 3.600 | 0.000 | 0.000 | 180.000 | 1.624 | 20.368 | 128.000 | 128.000 | 0.500 |
| (12) 5' x 1' Panels (1 5/8" Coax) | 0.0000 | 3.600 | 0.000 | 0.000 | 160.000 | 1.570 | 19.694 | 128.000 | 128.000 | 0.500 |
| (12) 5' x 1' Panels (1 5/8" Coax) | 0.0000 | 3.600 | 0.000 | 0.000 | 140.000 | 1.511 | 18.956 | 128.000 | 128.000 | 0.500 |
| | Sum Weight: | 14.660 | | | | | | | | |

## Dish Pressures - No Ice

| Elevation ft | Dish Description | Aiming Azimuth ° | Weight K | $Offset_x$ ft | $Offset_z$ ft | $K_z$ | $A_A$ $ft^2$ | $q_z$ psf |
|---|---|---|---|---|---|---|---|---|
| 420.000 | 6' Grid (7/8" Coax) | 120.0000 | 0.130 | 2.866 | 1.655 | 2.068 | 28.274 | 33.889 |
| 330.000 | 4' Grid (7/8" Coax) | 0.0000 | 0.100 | 0.000 | -3.309 | 1.931 | 12.566 | 31.633 |
| 260.000 | 4' Grid (7/8" Coax) | 240.0000 | 0.100 | -2.866 | 1.655 | 1.804 | 12.566 | 29.550 |
| 235.000 | 4' Grid (7/8" Coax) | 120.0000 | 0.100 | 2.866 | 1.655 | 1.752 | 12.566 | 28.708 |
| | | Sum Weight: | 0.430 | | | | | |

## Dish Pressures - With Ice

| Elevation ft | Dish Description | Aiming Azimuth ° | Weight K | $Offset_x$ ft | $Offset_z$ ft | $K_z$ | $A_A$ $ft^2$ | $q_z$ psf | $t_z$ in |
|---|---|---|---|---|---|---|---|---|---|
| 420.000 | 6' Grid (7/8" Coax) | 120.0000 | 0.275 | 2.866 | 1.655 | 2.068 | 29.065 | 25.946 | 0.500 |
| 330.000 | 4' Grid (7/8" Coax) | 0.0000 | 0.175 | 0.000 | -3.309 | 1.931 | 13.095 | 24.219 | 0.500 |
| 260.000 | 4' Grid (7/8" Coax) | 240.0000 | 0.175 | -2.866 | 1.655 | 1.804 | 13.095 | 22.624 | 0.500 |
| 235.000 | 4' Grid (7/8" Coax) | 120.0000 | 0.175 | 2.866 | 1.655 | 1.752 | 13.095 | 21.980 | 0.500 |
| | | Sum Weight: | 0.800 | | | | | | |

## Force Totals (Does not include forces on guys)

| Load Case | Vertical Forces K | Sum of Forces X K | Sum of Forces Z K | Sum of Torques kip-ft |
|---|---|---|---|---|
| Leg Weight | 30.031 | | | |
| Bracing Weight | 16.585 | | | |
| Total Member Self-Weight | 46.616 | | | |
| Guy Weight | 9.366 | | | |
| Total Weight | 75.503 | | | |
| Wind 0 deg - No Ice | | 0.000 | -49.978 | 1.857 |
| Wind 90 deg - No Ice | | 49.864 | 0.000 | 7.758 |
| Wind 180 deg - No Ice | | 0.000 | 49.826 | -1.857 |
| Member Ice | 8.963 | | | |
| Guy Ice | 5.025 | | | |
| Total Weight Ice | 107.912 | | | |
| Wind 0 deg - Ice | | 0.000 | -61.439 | 4.806 |
| Wind 90 deg - Ice | | 60.225 | 0.000 | 8.649 |
| Wind 180 deg - Ice | | 0.000 | 59.820 | -4.806 |

## Load Combinations

| Comb. No. | Description |
|---|---|
| 1 | Dead Only |
| 2 | Dead+Wind 0 deg - No Ice+Guy |
| 3 | Dead+Wind 90 deg - No Ice+Guy |
| 4 | Dead+Wind 180 deg - No Ice+Guy |
| 5 | Dead+Ice+Temp+Guy |
| 6 | Dead+Wind 0 deg+Ice+Temp+Guy |
| 7 | Dead+Wind 90 deg+Ice+Temp+Guy |
| 8 | Dead+Wind 180 deg+Ice+Temp+Guy |

## Maximum Member Forces

| Section No. | Elevation ft | Component Type | Condition | Gov. Load Comb. | Force K | Major Axis Moment kip-ft | Minor Axis Moment kip-ft |
|---|---|---|---|---|---|---|---|
| L1 | 528 - 512.205 | Latticed Pole Leg | Max Tension | 8 | 6.257 | -0.025 | 0.055 |
| | | | Max. Compression | 6 | -6.754 | 0.026 | -0.056 |
| | | | Max. Mx | 7 | 4.380 | 0.056 | -0.002 |
| | | | Max. My | 6 | -6.754 | 0.026 | -0.056 |
| | | | Max. Vy | 7 | 0.806 | -0.012 | -0.006 |
| | | | Max. Vx | 6 | -0.862 | 0.002 | 0.016 |
| | | Latticed Pole Diagonal | Max Tension | 8 | 0.853 | 0.000 | 0.000 |
| | | | Max. Compression | 6 | -0.862 | 0.000 | 0.000 |
| | | | Max. Mx | 3 | 0.752 | -0.002 | 0.000 |
| | | | Max. Vy | 7 | 0.003 | -0.002 | 0.000 |
| | | Latticed Pole K-Brace | Max Tension | 8 | 0.975 | 0.000 | 0.000 |
| | | | Max. Compression | 6 | -0.950 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.160 | 0.001 | 0.000 |
| | | | Max. Vy | 6 | 0.002 | 0.000 | 0.000 |
| | | Latticed Pole Top Girt | Max Tension | 8 | 0.196 | -0.001 | -0.000 |

| Section No. | Elevation ft | Component Type | Condition | Gov. Load Comb. | Force K | Major Axis Moment kip-ft | Minor Axis Moment kip-ft |
|---|---|---|---|---|---|---|---|
| | | | Max. Compression | 6 | -0.195 | -0.001 | 0.000 |
| | | | Max. Mx | 8 | -0.100 | -0.001 | 0.000 |
| | | | Max. Vy | 8 | 0.004 | -0.001 | 0.000 |
| | | Latticed Pole Bottom Girt | Max Tension | 6 | 0.867 | 0.000 | 0.000 |
| | | | Max. Compression | 8 | -0.871 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.270 | -0.001 | -0.000 |
| | | | Max. Vy | 6 | 0.004 | -0.001 | -0.000 |
| | | Latticed Pole Mid Girt | Max Tension | 6 | 0.037 | -0.001 | 0.000 |
| | | | Max. Compression | 8 | -0.034 | -0.001 | -0.000 |
| | | | Max. Mx | 6 | -0.017 | -0.001 | -0.000 |
| | | | Max. Vy | 6 | 0.003 | -0.001 | -0.000 |
| L2 | 512.205 - 496.41 | Latticed Pole Leg | Max Tension | 8 | 21.375 | -0.061 | 0.072 |
| | | | Max. Compression | 6 | -22.300 | 0.064 | -0.073 |
| | | | Max. Mx | 7 | 15.894 | 0.087 | 0.013 |
| | | | Max. My | 2 | 7.854 | -0.017 | -0.104 |
| | | | Max. Vy | 7 | 1.541 | -0.046 | -0.022 |
| | | | Max. Vx | 6 | -1.581 | 0.003 | 0.058 |
| | | Latticed Pole Diagonal | Max Tension | 4 | 1.886 | 0.000 | 0.000 |
| | | | Max. Compression | 6 | -1.897 | 0.000 | 0.000 |
| | | | Max. Mx | 3 | 1.623 | -0.002 | 0.000 |
| | | | Max. My | 4 | -1.848 | -0.001 | 0.001 |
| | | | Max. Vy | 7 | 0.003 | -0.002 | 0.000 |
| | | | Max. Vx | 4 | -0.001 | -0.001 | 0.001 |
| | | Latticed Pole K-Brace | Max Tension | 6 | 2.019 | 0.000 | 0.000 |
| | | | Max. Compression | 6 | -1.995 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.232 | 0.001 | 0.000 |
| | | | Max. Vy | 6 | 0.002 | 0.000 | 0.000 |
| | | Latticed Pole Top Girt | Max Tension | 8 | 0.926 | -0.001 | -0.000 |
| | | | Max. Compression | 6 | -0.913 | -0.001 | -0.000 |
| | | | Max. Mx | 8 | 0.268 | -0.002 | 0.000 |
| | | | Max. Vy | 8 | 0.004 | -0.002 | 0.000 |
| | | Latticed Pole Bottom Girt | Max Tension | 6 | 1.820 | 0.000 | 0.000 |
| | | | Max. Compression | 4 | -1.811 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.687 | -0.002 | -0.000 |
| | | | Max. My | 4 | 1.730 | -0.001 | -0.001 |
| | | | Max. Vy | 6 | 0.004 | -0.002 | -0.000 |
| | | Latticed Pole Mid Girt | Max Tension | 6 | 0.098 | -0.001 | -0.000 |
| | | | Max. Compression | 8 | -0.088 | -0.001 | -0.001 |
| | | | Max. Mx | 6 | -0.069 | -0.001 | -0.000 |
| | | | Max. My | 4 | -0.083 | -0.001 | -0.001 |
| | | | Max. Vy | 6 | 0.003 | -0.001 | -0.000 |
| L3 | 496.41 - 480.615 | Latticed Pole Leg | Max Tension | 8 | 45.405 | 0.001 | -0.124 |
| | | | Max. Compression | 6 | -46.864 | 0.046 | -0.005 |
| | | | Max. Mx | 7 | -19.442 | -0.176 | -0.026 |
| | | | Max. My | 6 | -22.299 | -0.059 | 0.190 |
| | | | Max. Vy | 7 | 2.276 | -0.099 | -0.046 |
| | | | Max. Vx | 6 | -2.308 | 0.002 | 0.125 |
| | | Latticed Pole Diagonal | Max Tension | 4 | 2.947 | 0.000 | 0.000 |
| | | | Max. Compression | 6 | -2.947 | 0.000 | 0.000 |
| | | | Max. Mx | 7 | 2.570 | -0.003 | 0.000 |
| | | | Max. My | 4 | -2.697 | 0.000 | 0.002 |

| Section No. | Elevation ft | Component Type | Condition | Gov. Load Comb. | Force K | Major Axis Moment kip-ft | Minor Axis Moment kip-ft |
|---|---|---|---|---|---|---|---|
| | | | Max. Vy | 7 | 0.003 | -0.003 | 0.000 |
| | | | Max. Vx | 4 | -0.001 | 0.000 | 0.002 |
| | | Latticed Pole K-Brace | Max Tension | 6 | 3.031 | 0.000 | 0.000 |
| | | | Max. Compression | 2 | -3.010 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.162 | 0.001 | 0.000 |
| | | | Max. Vy | 6 | 0.002 | 0.000 | 0.000 |
| | | Latticed Pole Top Girt | Max Tension | 8 | 1.886 | -0.000 | -0.001 |
| | | | Max. Compression | 6 | -1.881 | -0.002 | -0.001 |
| | | | Max. Mx | 8 | -0.821 | -0.003 | -0.000 |
| | | | Max. My | 2 | -1.866 | -0.002 | -0.001 |
| | | | Max. Vy | 8 | -0.005 | -0.003 | -0.000 |
| | | | Max. Vx | 2 | 0.001 | -0.002 | -0.001 |
| | | Latticed Pole Bottom Girt | Max Tension | 6 | 2.742 | 0.000 | 0.000 |
| | | | Max. Compression | 4 | -2.720 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 1.085 | -0.001 | -0.001 |
| | | | Max. My | 4 | 2.601 | -0.001 | -0.002 |
| | | | Max. Vy | 6 | 0.003 | -0.001 | -0.001 |
| | | | Max. Vx | 4 | 0.001 | 0.000 | 0.000 |
| | | Latticed Pole Mid Girt | Max Tension | 6 | 0.197 | -0.001 | -0.001 |
| | | | Max. Compression | 8 | -0.188 | -0.001 | -0.002 |
| | | | Max. Mx | 6 | -0.163 | -0.001 | -0.001 |
| | | | Max. My | 4 | -0.176 | -0.001 | -0.002 |
| | | | Max. Vy | 6 | 0.003 | -0.001 | -0.001 |
| | | | Max. Vx | 4 | 0.001 | 0.000 | 0.000 |
| L4 | 480.615 - 470 | Latticed Pole Leg | Max Tension | 8 | 65.856 | 0.004 | -0.043 |
| | | | Max. Compression | 6 | -68.426 | 0.000 | 0.000 |
| | | | Max. Mx | 7 | -40.759 | -0.290 | -0.048 |
| | | | Max. My | 6 | -46.861 | -0.097 | 0.317 |
| | | | Max. Vy | 7 | 2.640 | 0.000 | 0.000 |
| | | | Max. Vx | 8 | 3.055 | 0.000 | 0.000 |
| | | Latticed Pole Diagonal | Max Tension | 4 | 3.179 | 0.000 | 0.000 |
| | | | Max. Compression | 6 | -3.210 | 0.000 | 0.000 |
| | | | Max. Mx | 7 | 0.228 | -0.003 | 0.001 |
| | | | Max. My | 4 | -3.007 | 0.001 | 0.003 |
| | | | Max. Vy | 7 | 0.004 | -0.003 | 0.001 |
| | | | Max. Vx | 4 | -0.002 | 0.001 | 0.003 |
| | | Latticed Pole K-Brace | Max Tension | 8 | 3.602 | 0.000 | 0.000 |
| | | | Max. Compression | 6 | -3.601 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.181 | 0.001 | 0.000 |
| | | | Max. Vy | 6 | -0.002 | 0.000 | 0.000 |
| | | Latticed Pole Top Girt | Max Tension | 4 | 2.809 | -0.000 | -0.002 |
| | | | Max. Compression | 6 | -2.826 | -0.001 | -0.002 |
| | | | Max. Mx | 8 | -1.270 | -0.002 | -0.001 |
| | | | Max. My | 2 | -2.818 | -0.001 | -0.002 |
| | | | Max. Vy | 8 | -0.003 | -0.002 | -0.001 |
| | | | Max. Vx | 2 | 0.001 | -0.001 | -0.002 |
| | | Latticed Pole Bottom Girt | Max Tension | 4 | 3.386 | 0.223 | -0.002 |
| | | | Max. Compression | 8 | -3.961 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | 3.355 | 0.240 | -0.002 |
| | | | Max. My | 8 | 3.355 | 0.240 | -0.002 |
| | | | Max. Vy | 8 | 0.199 | 0.000 | 0.000 |
| | | | Max. Vx | 8 | -0.001 | 0.000 | 0.000 |
| | | Latticed Pole Mid | Max Tension | 7 | 0.266 | -0.001 | 0.000 |

| Section No. | Elevation ft | Component Type | Condition | Gov. Load Comb. | Force K | Major Axis Moment kip-ft | Minor Axis Moment kip-ft |
|---|---|---|---|---|---|---|---|
| | | Girt | | | | | |
| | | | Max. Compression | 8 | -0.272 | -0.001 | 0.000 |
| | | | Max. Mx | 6 | -0.219 | -0.001 | -0.001 |
| | | | Max. My | 4 | -0.235 | -0.001 | -0.002 |
| | | | Max. Vy | 6 | 0.003 | -0.001 | -0.001 |
| | | | Max. Vx | 4 | 0.002 | 0.000 | 0.000 |
| T1 | 470 - 451 | Leg | Max Tension | 8 | 48.786 | -0.000 | -0.000 |
| | | | Max. Compression | 6 | -55.900 | -0.015 | 0.012 |
| | | | Max. Mx | 7 | 38.905 | -0.542 | 0.151 |
| | | | Max. My | 8 | 15.206 | 0.078 | -0.604 |
| | | | Max. Vy | 7 | 6.500 | -0.542 | 0.151 |
| | | | Max. Vx | 8 | 7.251 | 0.078 | -0.604 |
| | | Diagonal | Max Tension | 8 | 2.746 | 0.000 | 0.000 |
| | | | Max. Compression | 8 | -2.700 | 0.000 | 0.000 |
| | | | Max. Mx | 7 | -1.204 | -0.003 | 0.000 |
| | | | Max. My | 7 | 1.165 | -0.002 | 0.017 |
| | | | Max. Vy | 7 | 0.004 | -0.003 | 0.000 |
| | | | Max. Vx | 7 | -0.007 | -0.002 | 0.017 |
| | | K-Brace | Max Tension | 8 | 2.655 | 0.000 | 0.000 |
| | | | Max. Compression | 8 | -2.110 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | -2.073 | 0.001 | 0.000 |
| | | | Max. Vy | 6 | -0.003 | 0.000 | 0.000 |
| | | Horizontal | Max Tension | 8 | 0.858 | 0.000 | 0.000 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.217 | 0.005 | 0.000 |
| | | | Max. Vy | 6 | -0.005 | 0.000 | 0.000 |
| | | Secondary Horizontal | Max Tension | 7 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 3 | -0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.000 | 0.001 | 0.000 |
| | | | Max. Vy | 7 | 0.026 | 0.000 | 0.000 |
| | | | Max. Vx | 7 | -0.024 | 0.000 | 0.000 |
| | | Top Girt | Max Tension | 6 | 9.824 | 0.156 | 0.000 |
| | | | Max. Compression | 2 | -0.159 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | 4.689 | 0.348 | -0.000 |
| | | | Max. My | 6 | 4.171 | 0.318 | -0.002 |
| | | | Max. Vy | 8 | -0.226 | 0.000 | 0.000 |
| | | | Max. Vx | 6 | 0.002 | 0.000 | 0.000 |
| | | Bottom Girt | Max Tension | 8 | 1.995 | -0.002 | -0.001 |
| | | | Max. Compression | 8 | -1.854 | -0.002 | -0.001 |
| | | | Max. Mx | 7 | -0.784 | -0.002 | -0.000 |
| | | | Max. My | 8 | 1.995 | -0.002 | -0.001 |
| | | | Max. Vy | 7 | 0.005 | -0.002 | -0.000 |
| | | Guy A | Bottom Tension | 8 | 36.890 | | |
| | | | Top Tension | 8 | 38.271 | | |
| | | | Top Cable Vert | 8 | 32.964 | | |
| | | | Top Cable Norm | 8 | 19.443 | | |
| | | | Top Cable Tan | 8 | 0.003 | | |
| | | | Bot Cable Vert | 8 | -30.339 | | |
| | | | Bot Cable Norm | 8 | 20.986 | | |
| | | | Bot Cable Tan | 8 | 0.003 | | |
| | | Guy B | Bottom Tension | 6 | 29.020 | | |
| | | | Top Tension | 6 | 30.403 | | |
| | | | Top Cable Vert | 6 | 26.173 | | |
| | | | Top Cable Norm | 6 | 15.441 | | |
| | | | Top Cable Tan | 6 | 0.938 | | |
| | | | Bot Cable Vert | 6 | -23.962 | | |
| | | | Bot Cable Norm | 6 | 16.325 | | |
| | | | Bot Cable Tan | 6 | 1.203 | | |
| | | Guy C | Bottom Tension | 7 | 35.701 | | |
| | | | Top Tension | 7 | 37.134 | | |

| Section No. | Elevation ft | Component Type | Condition | Gov. Load Comb. | Force K | Major Axis Moment kip-ft | Minor Axis Moment kip-ft |
|---|---|---|---|---|---|---|---|
| | | | Top Cable Vert | 7 | 32.301 | | |
| | | | Top Cable Norm | 7 | 18.313 | | |
| | | | Top Cable Tan | 7 | 0.475 | | |
| | | | Bot Cable Vert | 7 | -29.712 | | |
| | | | Bot Cable Norm | 7 | 19.780 | | |
| | | | Bot Cable Tan | 7 | 0.686 | | |
| | | Index Plate | Max Tension | 8 | 7.256 | -28.164 | 0.591 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 3.820 | 29.952 | -0.525 |
| | | | Max. My | 8 | 1.674 | 1.291 | -4.560 |
| | | | Max. Vy | 6 | 51.876 | 29.951 | -0.532 |
| | | | Max. Vx | 8 | -2.784 | 1.291 | -4.560 |
| T2 | 451 - 431 | Leg | Max Tension | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 2 | -35.316 | -0.021 | -0.012 |
| | | | Max. Mx | 7 | -20.172 | 0.185 | 0.015 |
| | | | Max. My | 8 | -8.486 | 0.087 | 0.185 |
| | | | Max. Vy | 7 | -1.281 | -0.050 | -0.056 |
| | | | Max. Vx | 8 | -1.759 | 0.019 | 0.038 |
| | | Diagonal | Max Tension | 8 | 2.233 | 0.000 | 0.000 |
| | | | Max. Compression | 8 | -2.246 | 0.000 | 0.000 |
| | | | Max. Mx | 7 | -0.871 | -0.002 | 0.000 |
| | | | Max. My | 7 | 0.692 | -0.002 | 0.017 |
| | | | Max. Vy | 7 | 0.003 | -0.002 | 0.000 |
| | | | Max. Vx | 7 | -0.007 | -0.002 | 0.017 |
| | | K-Brace | Max Tension | 8 | 2.377 | 0.000 | 0.000 |
| | | | Max. Compression | 8 | -2.405 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | -0.134 | 0.002 | 0.000 |
| | | | Max. Vy | 6 | -0.003 | 0.000 | 0.000 |
| | | Horizontal | Max Tension | 8 | 0.625 | 0.000 | 0.000 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.555 | 0.005 | 0.000 |
| | | | Max. Vy | 6 | -0.005 | 0.000 | 0.000 |
| | | Secondary Horizontal | Max Tension | 7 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 3 | -0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.000 | 0.001 | 0.000 |
| | | | Max. Vy | 7 | 0.023 | 0.000 | 0.000 |
| | | | Max. Vx | 7 | -0.022 | 0.000 | 0.000 |
| | | Top Girt | Max Tension | 8 | 1.947 | 0.000 | 0.000 |
| | | | Max. Compression | 8 | -1.952 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | -0.822 | -0.003 | -0.000 |
| | | | Max. My | 8 | -1.952 | -0.002 | -0.001 |
| | | | Max. Vy | 8 | -0.006 | -0.003 | -0.000 |
| | | | Max. Vx | 8 | 0.001 | 0.000 | 0.000 |
| | | Bottom Girt | Max Tension | 8 | 1.287 | -0.001 | -0.001 |
| | | | Max. Compression | 8 | -1.186 | -0.001 | -0.001 |
| | | | Max. Mx | 7 | 0.126 | 0.002 | 0.000 |
| | | | Max. My | 8 | 1.287 | -0.001 | -0.001 |
| | | | Max. Vy | 5 | -0.005 | -0.001 | -0.000 |
| T3 | 431 - 411 | Leg | Max Tension | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 2 | -31.615 | -0.001 | 0.092 |
| | | | Max. Mx | 7 | -20.565 | 0.296 | 0.037 |
| | | | Max. My | 8 | -19.491 | 0.042 | 0.461 |
| | | | Max. Vy | 7 | 0.972 | -0.021 | -0.042 |
| | | | Max. Vx | 8 | -1.029 | -0.019 | -0.039 |
| | | Diagonal | Max Tension | 8 | 1.377 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -1.629 | 0.000 | 0.000 |
| | | | Max. Mx | 7 | 0.549 | -0.002 | 0.000 |
| | | | Max. My | 7 | -0.276 | -0.002 | 0.016 |
| | | | Max. Vy | 7 | 0.003 | -0.002 | 0.000 |
| | | | Max. Vx | 7 | -0.007 | -0.002 | 0.016 |

| Section No. | Elevation ft | Component Type | Condition | Gov. Load Comb. | Force K | Major Axis Moment kip-ft | Minor Axis Moment kip-ft |
|---|---|---|---|---|---|---|---|
| | | K-Brace | Max Tension | 8 | 1.474 | 0.000 | 0.000 |
| | | | Max. Compression | 8 | -1.502 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 1.044 | 0.002 | 0.000 |
| | | | Max. Vy | 6 | -0.003 | 0.000 | 0.000 |
| | | Horizontal | Max Tension | 6 | 0.697 | 0.000 | 0.000 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 5 | 0.217 | 0.005 | 0.000 |
| | | | Max. Vy | 5 | -0.005 | 0.000 | 0.000 |
| | | Secondary Horizontal | Max Tension | 7 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 3 | -0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.000 | 0.001 | 0.000 |
| | | | Max. Vy | 7 | 0.024 | 0.000 | 0.000 |
| | | | Max. Vx | 7 | -0.020 | 0.000 | 0.000 |
| | | Top Girt | Max Tension | 8 | 1.239 | 0.000 | 0.000 |
| | | | Max. Compression | 8 | -1.187 | 0.000 | 0.000 |
| | | | Max. Mx | 7 | -0.106 | -0.003 | 0.000 |
| | | | Max. My | 8 | -1.187 | -0.003 | -0.001 |
| | | | Max. Vy | 7 | 0.006 | -0.003 | 0.000 |
| | | Bottom Girt | Max Tension | 7 | 1.132 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -1.127 | 0.000 | 0.000 |
| | | | Max. Mx | 7 | -1.127 | 0.002 | -0.000 |
| | | | Max. Vy | 5 | -0.005 | -0.001 | -0.000 |
| T4 | 411 - 391 | Leg | Max Tension | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 2 | -42.729 | -0.001 | 0.134 |
| | | | Max. Mx | 7 | -14.735 | 0.118 | -0.039 |
| | | | Max. My | 2 | -31.616 | -0.052 | 0.146 |
| | | | Max. Vy | 7 | 1.538 | -0.064 | -0.064 |
| | | | Max. Vx | 6 | -1.589 | 0.000 | 0.126 |
| | | Diagonal | Max Tension | 2 | 1.488 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -2.213 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 1.368 | -0.002 | -0.000 |
| | | | Max. My | 7 | -1.775 | -0.002 | 0.015 |
| | | | Max. Vy | 6 | 0.003 | -0.002 | -0.000 |
| | | | Max. Vx | 7 | -0.006 | -0.002 | 0.015 |
| | | K-Brace | Max Tension | 7 | 1.944 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -1.918 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 1.037 | 0.002 | 0.000 |
| | | | Max. Vy | 6 | -0.003 | 0.000 | 0.000 |
| | | Horizontal | Max Tension | 8 | 0.673 | 0.000 | 0.000 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 5 | 0.226 | 0.005 | 0.000 |
| | | | Max. Vy | 5 | -0.005 | 0.000 | 0.000 |
| | | Secondary Horizontal | Max Tension | 7 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 3 | -0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.000 | 0.001 | 0.000 |
| | | | Max. Vy | 7 | 0.024 | 0.000 | 0.000 |
| | | | Max. Vx | 7 | -0.018 | 0.000 | 0.000 |
| | | Top Girt | Max Tension | 7 | 1.152 | -0.003 | -0.000 |
| | | | Max. Compression | 7 | -1.151 | -0.003 | -0.000 |
| | | | Max. Mx | 7 | -1.151 | -0.003 | -0.000 |
| | | | Max. Vy | 7 | -0.006 | -0.003 | -0.000 |
| | | Bottom Girt | Max Tension | 7 | 1.578 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -1.571 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | 0.328 | 0.002 | 0.000 |
| | | | Max. My | 4 | 1.204 | -0.001 | -0.001 |
| | | | Max. Vy | 5 | -0.005 | -0.001 | -0.000 |
| T5 | 391 - 371 | Leg | Max Tension | 4 | 10.324 | -0.016 | -0.016 |
| | | | Max. Compression | 6 | -65.453 | -0.009 | 0.248 |
| | | | Max. Mx | 7 | -37.382 | -0.192 | -0.064 |

| Section No. | Elevation ft | Component Type | Condition | Gov. Load Comb. | Force K | Major Axis Moment kip-ft | Minor Axis Moment kip-ft |
|---|---|---|---|---|---|---|---|
| | | | Max. My | 6 | -42.351 | -0.023 | 0.259 |
| | | | Max. Vy | 7 | 2.070 | -0.167 | -0.088 |
| | | | Max. Vx | 6 | -2.234 | -0.009 | 0.248 |
| | | Diagonal | Max Tension | 7 | 1.924 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -2.768 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 1.849 | -0.003 | 0.000 |
| | | | Max. My | 7 | -2.333 | -0.002 | 0.013 |
| | | | Max. Vy | 6 | 0.004 | -0.003 | 0.000 |
| | | | Max. Vx | 7 | -0.005 | -0.002 | 0.013 |
| | | K-Brace | Max Tension | 7 | 2.420 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -2.393 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 1.582 | 0.002 | 0.000 |
| | | | Max. Vy | 6 | -0.003 | 0.000 | 0.000 |
| | | Horizontal | Max Tension | 8 | 0.917 | 0.000 | 0.000 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 5 | 0.233 | 0.005 | 0.000 |
| | | | Max. Vy | 5 | -0.005 | 0.000 | 0.000 |
| | | Secondary Horizontal | Max Tension | 7 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 3 | -0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.000 | 0.002 | 0.000 |
| | | | Max. Vy | 7 | 0.023 | 0.000 | 0.000 |
| | | | Max. Vx | 7 | -0.015 | 0.000 | 0.000 |
| | | Top Girt | Max Tension | 7 | 1.629 | -0.003 | -0.001 |
| | | | Max. Compression | 7 | -1.626 | -0.003 | -0.001 |
| | | | Max. Mx | 8 | 0.260 | -0.003 | 0.000 |
| | | | Max. My | 2 | -1.353 | -0.002 | -0.001 |
| | | | Max. Vy | 8 | 0.006 | -0.003 | 0.000 |
| | | Bottom Girt | Max Tension | 7 | 1.966 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -1.958 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | 0.360 | 0.002 | 0.000 |
| | | | Max. My | 4 | 1.461 | -0.001 | -0.001 |
| | | | Max. Vy | 6 | 0.005 | -0.002 | -0.000 |
| T6 | 371 - 351 | Leg | Max Tension | 4 | 17.666 | 0.002 | 0.052 |
| | | | Max. Compression | 6 | -79.301 | 0.001 | 0.010 |
| | | | Max. Mx | 7 | -57.049 | -0.340 | -0.103 |
| | | | Max. My | 6 | -65.454 | -0.034 | 0.434 |
| | | | Max. Vy | 7 | 2.070 | -0.340 | -0.103 |
| | | | Max. Vx | 8 | -2.285 | -0.039 | -0.202 |
| | | Diagonal | Max Tension | 7 | 2.554 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -3.020 | 0.000 | 0.000 |
| | | | Max. Mx | 7 | -1.872 | -0.005 | -0.009 |
| | | | Max. My | 7 | -2.986 | -0.002 | 0.013 |
| | | | Max. Vy | 7 | 0.005 | -0.005 | -0.009 |
| | | | Max. Vx | 7 | -0.005 | -0.002 | 0.013 |
| | | K-Brace | Max Tension | 7 | 2.563 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -2.596 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 2.131 | 0.002 | 0.000 |
| | | | Max. Vy | 6 | -0.003 | 0.000 | 0.000 |
| | | Horizontal | Max Tension | 8 | 1.473 | 0.000 | 0.000 |
| | | | Max. Compression | 6 | -0.469 | 0.000 | 0.000 |
| | | | Max. Mx | 5 | 0.422 | 0.005 | 0.000 |
| | | | Max. Vy | 5 | -0.005 | 0.000 | 0.000 |
| | | Secondary Horizontal | Max Tension | 7 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 3 | -0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.000 | 0.002 | 0.000 |
| | | | Max. Vy | 7 | 0.019 | 0.000 | 0.000 |
| | | | Max. Vx | 7 | -0.016 | 0.000 | 0.000 |
| | | Top Girt | Max Tension | 7 | 2.108 | -0.003 | -0.001 |
| | | | Max. Compression | 7 | -2.098 | -0.003 | -0.001 |

| Section No. | Elevation ft | Component Type | Condition | Gov. Load Comb. | Force K | Major Axis Moment kip-ft | Minor Axis Moment kip-ft |
|---|---|---|---|---|---|---|---|
| | | | Max. Mx | 8 | 0.283 | -0.004 | 0.000 |
| | | | Max. My | 7 | 2.108 | -0.003 | -0.001 |
| | | | Max. Vy | 8 | 0.006 | -0.004 | 0.000 |
| | | Bottom Girt | Max Tension | 8 | 1.893 | -0.001 | -0.000 |
| | | | Max. Compression | 8 | -1.777 | -0.001 | -0.000 |
| | | | Max. Mx | 8 | -0.413 | 0.002 | -0.000 |
| | | | Max. My | 2 | 1.856 | -0.001 | -0.001 |
| | | | Max. Vy | 5 | 0.005 | -0.001 | -0.000 |
| | | Guy A | Bottom Tension | 8 | 27.221 | | |
| | | | Top Tension | 8 | 28.070 | | |
| | | | Top Cable Vert | 8 | 22.130 | | |
| | | | Top Cable Norm | 8 | 17.268 | | |
| | | | Top Cable Tan | 8 | 0.001 | | |
| | | | Bot Cable Vert | 8 | -20.314 | | |
| | | | Bot Cable Norm | 8 | 18.120 | | |
| | | | Bot Cable Tan | 8 | 0.001 | | |
| | | Guy B | Bottom Tension | 6 | 20.282 | | |
| | | | Top Tension | 6 | 21.133 | | |
| | | | Top Cable Vert | 6 | 16.718 | | |
| | | | Top Cable Norm | 6 | 12.908 | | |
| | | | Top Cable Tan | 6 | 0.705 | | |
| | | | Bot Cable Vert | 6 | -15.169 | | |
| | | | Bot Cable Norm | 6 | 13.437 | | |
| | | | Bot Cable Tan | 6 | 0.833 | | |
| | | Guy C | Bottom Tension | 7 | 26.264 | | |
| | | | Top Tension | 7 | 27.155 | | |
| | | | Top Cable Vert | 7 | 21.827 | | |
| | | | Top Cable Norm | 7 | 16.151 | | |
| | | | Top Cable Tan | 7 | 0.347 | | |
| | | | Bot Cable Vert | 7 | -20.009 | | |
| | | | Bot Cable Norm | 7 | 17.007 | | |
| | | | Bot Cable Tan | 7 | 0.455 | | |
| | | Top Guy Pull-Off | Max Tension | 7 | 7.236 | 0.000 | 0.000 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 5 | 3.484 | 0.012 | 0.000 |
| | | | Max. Vy | 5 | -0.012 | 0.000 | 0.000 |
| T7 | 351 - 331 | Leg | Max Tension | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 6 | -68.978 | -0.011 | -0.026 |
| | | | Max. Mx | 7 | -42.686 | -0.153 | -0.127 |
| | | | Max. My | 6 | -68.941 | 0.012 | 0.257 |
| | | | Max. Vy | 7 | -1.692 | -0.143 | -0.129 |
| | | | Max. Vx | 8 | -2.283 | -0.011 | -0.011 |
| | | Diagonal | Max Tension | 8 | 2.010 | 0.000 | 0.000 |
| | | | Max. Compression | 2 | -2.105 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | -0.884 | -0.003 | -0.000 |
| | | | Max. My | 7 | 0.728 | -0.002 | 0.010 |
| | | | Max. Vy | 6 | 0.004 | -0.003 | -0.000 |
| | | | Max. Vx | 7 | -0.004 | -0.002 | 0.010 |
| | | K-Brace | Max Tension | 8 | 2.088 | 0.000 | 0.000 |
| | | | Max. Compression | 8 | -2.116 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | -1.096 | 0.002 | 0.000 |
| | | | Max. Vy | 6 | -0.003 | 0.000 | 0.000 |
| | | Horizontal | Max Tension | 8 | 1.099 | 0.000 | 0.000 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 5 | 0.616 | 0.005 | 0.000 |
| | | | Max. Vy | 5 | -0.005 | 0.000 | 0.000 |
| | | Secondary Horizontal | Max Tension | 7 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 3 | -0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.000 | 0.002 | 0.000 |
| | | | Max. Vy | 7 | 0.014 | 0.000 | 0.000 |

| Section No. | Elevation ft | Component Type | Condition | Gov. Load Comb. | Force K | Major Axis Moment kip-ft | Minor Axis Moment kip-ft |
|---|---|---|---|---|---|---|---|
| | | | Max. Vx | 7 | -0.010 | 0.000 | 0.000 |
| | | Top Girt | Max Tension | 2 | 1.773 | 0.000 | 0.000 |
| | | | Max. Compression | 8 | -1.682 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | -0.298 | -0.004 | -0.000 |
| | | | Max. My | 4 | -1.643 | -0.002 | -0.001 |
| | | | Max. Vy | 8 | -0.006 | -0.004 | -0.000 |
| | | Bottom Girt | Max Tension | 4 | 1.532 | -0.001 | -0.001 |
| | | | Max. Compression | 2 | -1.480 | -0.001 | -0.001 |
| | | | Max. Mx | 7 | -0.842 | 0.002 | 0.000 |
| | | | Max. My | 2 | 1.526 | -0.001 | -0.001 |
| | | | Max. Vy | 5 | 0.005 | -0.001 | -0.000 |
| T8 | 331 - 311 | Leg | Max Tension | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 8 | -52.733 | 0.002 | 0.163 |
| | | | Max. Mx | 7 | -34.168 | 0.179 | 0.086 |
| | | | Max. My | 8 | -41.212 | 0.029 | 0.264 |
| | | | Max. Vy | 7 | -1.193 | 0.042 | -0.095 |
| | | | Max. Vx | 8 | -1.682 | -0.001 | 0.124 |
| | | Diagonal | Max Tension | 2 | 1.463 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -1.701 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | 0.031 | -0.003 | 0.000 |
| | | | Max. My | 6 | -0.894 | -0.001 | -0.010 |
| | | | Max. Vy | 8 | 0.004 | -0.003 | 0.000 |
| | | | Max. Vx | 6 | -0.004 | 0.000 | 0.000 |
| | | K-Brace | Max Tension | 2 | 1.772 | 0.000 | 0.000 |
| | | | Max. Compression | 2 | -1.794 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | -0.609 | 0.002 | 0.000 |
| | | | Max. Vy | 6 | -0.003 | 0.000 | 0.000 |
| | | Horizontal | Max Tension | 7 | 1.036 | 0.000 | 0.000 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | 0.747 | 0.005 | 0.000 |
| | | | Max. Vy | 8 | -0.005 | 0.000 | 0.000 |
| | | Secondary Horizontal | Max Tension | 7 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 3 | -0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.000 | 0.002 | 0.000 |
| | | | Max. Vy | 7 | 0.013 | 0.000 | 0.000 |
| | | | Max. Vx | 8 | 0.011 | 0.000 | 0.000 |
| | | Top Girt | Max Tension | 2 | 1.498 | 0.000 | 0.000 |
| | | | Max. Compression | 2 | -1.410 | 0.000 | 0.000 |
| | | | Max. Mx | 7 | -0.830 | -0.004 | 0.000 |
| | | | Max. My | 4 | -1.348 | -0.002 | -0.001 |
| | | | Max. Vy | 7 | 0.006 | -0.004 | 0.000 |
| | | Bottom Girt | Max Tension | 2 | 0.721 | -0.001 | -0.000 |
| | | | Max. Compression | 2 | -0.659 | -0.001 | -0.000 |
| | | | Max. Mx | 7 | 0.217 | 0.002 | 0.000 |
| | | | Max. Vy | 5 | 0.005 | -0.001 | -0.000 |
| T9 | 311 - 291 | Leg | Max Tension | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 8 | -53.586 | -0.013 | 0.026 |
| | | | Max. Mx | 7 | -46.973 | 0.139 | -0.095 |
| | | | Max. My | 8 | -50.457 | 0.031 | 0.223 |
| | | | Max. Vy | 7 | 0.889 | -0.034 | -0.075 |
| | | | Max. Vx | 6 | -0.908 | -0.002 | 0.123 |
| | | Diagonal | Max Tension | 6 | 0.799 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -1.637 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | -0.176 | -0.003 | -0.000 |
| | | | Max. My | 6 | -0.716 | -0.001 | -0.010 |
| | | | Max. Vy | 8 | 0.004 | -0.003 | -0.000 |
| | | | Max. Vx | 6 | -0.004 | 0.000 | 0.000 |
| | | K-Brace | Max Tension | 3 | 1.165 | 0.000 | 0.000 |
| | | | Max. Compression | 3 | -1.148 | 0.000 | 0.000 |
| | | | Max. Mx | 7 | 1.142 | 0.002 | 0.000 |

| Section No. | Elevation ft | Component Type | Condition | Gov. Load Comb. | Force K | Major Axis Moment kip-ft | Minor Axis Moment kip-ft |
|---|---|---|---|---|---|---|---|
| | | | Max. Vy | 7 | -0.003 | 0.000 | 0.000 |
| | | Horizontal | Max Tension | 7 | 1.064 | 0.000 | 0.000 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | 0.395 | 0.005 | 0.000 |
| | | | Max. Vy | 8 | -0.005 | 0.000 | 0.000 |
| | | Secondary Horizontal | Max Tension | 7 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 3 | -0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.000 | 0.002 | 0.000 |
| | | | Max. Vy | 7 | 0.014 | 0.000 | 0.000 |
| | | | Max. Vx | 8 | 0.011 | 0.000 | 0.000 |
| | | Top Girt | Max Tension | 2 | 0.696 | 0.000 | 0.000 |
| | | | Max. Compression | 2 | -0.598 | 0.000 | 0.000 |
| | | | Max. Mx | 7 | -0.163 | -0.004 | 0.000 |
| | | | Max. Vy | 7 | -0.006 | -0.004 | 0.000 |
| | | Bottom Girt | Max Tension | 6 | 0.971 | 0.000 | 0.000 |
| | | | Max. Compression | 3 | -0.939 | 0.000 | 0.000 |
| | | | Max. Mx | 7 | -0.914 | 0.002 | -0.000 |
| | | | Max. Vy | 5 | -0.005 | -0.001 | 0.000 |
| T10 | 291 - 271 | Leg | Max Tension | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 6 | -63.452 | 0.001 | 0.192 |
| | | | Max. Mx | 7 | -33.694 | 0.160 | -0.081 |
| | | | Max. My | 8 | -35.253 | 0.051 | 0.236 |
| | | | Max. Vy | 7 | 1.724 | 0.017 | -0.072 |
| | | | Max. Vx | 6 | -1.781 | 0.001 | 0.192 |
| | | Diagonal | Max Tension | 8 | 1.963 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -2.710 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.362 | -0.003 | 0.000 |
| | | | Max. My | 8 | -0.079 | -0.002 | -0.010 |
| | | | Max. Vy | 6 | 0.004 | -0.003 | 0.000 |
| | | | Max. Vx | 8 | 0.004 | -0.002 | -0.010 |
| | | K-Brace | Max Tension | 7 | 2.124 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -2.100 | 0.000 | 0.000 |
| | | | Max. Mx | 7 | 1.174 | 0.002 | 0.000 |
| | | | Max. Vy | 7 | -0.003 | 0.000 | 0.000 |
| | | Horizontal | Max Tension | 7 | 1.097 | 0.000 | 0.000 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | 0.546 | 0.005 | 0.000 |
| | | | Max. Vy | 8 | -0.005 | 0.000 | 0.000 |
| | | Secondary Horizontal | Max Tension | 7 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 3 | -0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.000 | 0.002 | 0.000 |
| | | | Max. Vy | 7 | 0.015 | 0.000 | 0.000 |
| | | | Max. Vx | 8 | 0.010 | 0.000 | 0.000 |
| | | Top Girt | Max Tension | 8 | 1.016 | -0.003 | -0.000 |
| | | | Max. Compression | 3 | -0.980 | -0.003 | -0.000 |
| | | | Max. Mx | 7 | -0.962 | -0.004 | -0.000 |
| | | | Max. Vy | 7 | -0.006 | -0.004 | -0.000 |
| | | Bottom Girt | Max Tension | 6 | 1.806 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -1.715 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | 0.667 | 0.002 | -0.000 |
| | | | Max. My | 8 | -1.671 | -0.001 | -0.001 |
| | | | Max. Vy | 5 | -0.005 | -0.001 | 0.000 |
| T11 | 271 - 251 | Leg | Max Tension | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 6 | -91.961 | 0.000 | 0.277 |
| | | | Max. Mx | 7 | -54.679 | -0.231 | -0.109 |
| | | | Max. My | 6 | -63.454 | 0.053 | 0.341 |
| | | | Max. Vy | 7 | 2.724 | -0.059 | -0.030 |
| | | | Max. Vx | 8 | 2.891 | 0.000 | -0.019 |
| | | Diagonal | Max Tension | 8 | 2.502 | 0.000 | 0.000 |

| Section No. | Elevation ft | Component Type | Condition | Gov. Load Comb. | Force K | Major Axis Moment kip-ft | Minor Axis Moment kip-ft |
|---|---|---|---|---|---|---|---|
| | | | Max. Compression | 7 | -3.824 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 1.433 | -0.003 | -0.000 |
| | | | Max. My | 8 | -0.018 | -0.002 | -0.008 |
| | | | Max. Vy | 6 | 0.004 | -0.003 | -0.000 |
| | | | Max. Vx | 8 | 0.003 | -0.002 | -0.008 |
| | | K-Brace | Max Tension | 7 | 3.229 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -3.203 | 0.000 | 0.000 |
| | | | Max. Mx | 7 | 2.163 | 0.002 | 0.000 |
| | | | Max. Vy | 7 | -0.003 | 0.000 | 0.000 |
| | | Horizontal | Max Tension | 8 | 1.368 | 0.000 | 0.000 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | 0.748 | 0.005 | 0.000 |
| | | | Max. Vy | 8 | -0.005 | 0.000 | 0.000 |
| | | Secondary Horizontal | Max Tension | 7 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 3 | -0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.000 | 0.001 | 0.000 |
| | | | Max. Vy | 7 | 0.014 | 0.000 | 0.000 |
| | | | Max. Vx | 6 | -0.006 | 0.000 | 0.000 |
| | | Top Girt | Max Tension | 8 | 1.858 | -0.003 | -0.001 |
| | | | Max. Compression | 7 | -1.767 | -0.004 | -0.001 |
| | | | Max. Mx | 7 | 1.785 | -0.004 | -0.001 |
| | | | Max. My | 6 | 1.815 | -0.003 | -0.001 |
| | | | Max. Vy | 7 | 0.006 | -0.004 | -0.001 |
| | | Bottom Girt | Max Tension | 7 | 2.634 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -2.611 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | 0.486 | 0.003 | -0.000 |
| | | | Max. My | 3 | -2.267 | 0.000 | -0.001 |
| | | | Max. Vy | 7 | -0.005 | -0.001 | 0.000 |
| | | | Max. Vx | 3 | 0.001 | 0.000 | 0.000 |
| T12 | 251 - 231 | Leg | Max Tension | 4 | 4.462 | 0.008 | -0.110 |
| | | | Max. Compression | 6 | -109.677 | -0.009 | -0.116 |
| | | | Max. Mx | 7 | -79.547 | -0.388 | -0.151 |
| | | | Max. My | 6 | -91.963 | 0.033 | 0.514 |
| | | | Max. Vy | 7 | 2.726 | -0.286 | -0.004 |
| | | | Max. Vx | 6 | 3.347 | -0.010 | 0.491 |
| | | Diagonal | Max Tension | 8 | 2.732 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -3.980 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | -2.064 | -0.004 | -0.000 |
| | | | Max. My | 8 | -0.642 | -0.002 | -0.007 |
| | | | Max. Vy | 6 | 0.004 | -0.004 | -0.000 |
| | | | Max. Vx | 8 | 0.003 | -0.002 | -0.007 |
| | | K-Brace | Max Tension | 7 | 3.289 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -3.321 | 0.000 | 0.000 |
| | | | Max. Mx | 7 | 3.289 | 0.002 | 0.000 |
| | | | Max. Vy | 7 | -0.002 | 0.000 | 0.000 |
| | | Horizontal | Max Tension | 7 | 1.716 | 0.000 | 0.000 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | 0.744 | 0.005 | 0.000 |
| | | | Max. Vy | 8 | -0.005 | 0.000 | 0.000 |
| | | Secondary Horizontal | Max Tension | 7 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 3 | -0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.000 | 0.002 | 0.000 |
| | | | Max. Vy | 7 | 0.010 | 0.000 | 0.000 |
| | | | Max. Vx | 6 | -0.005 | 0.000 | 0.000 |
| | | Top Girt | Max Tension | 7 | 2.706 | -0.004 | -0.001 |
| | | | Max. Compression | 7 | -2.686 | -0.004 | -0.001 |
| | | | Max. Mx | 8 | 0.360 | -0.005 | -0.000 |
| | | | Max. My | 3 | -2.322 | -0.003 | -0.001 |
| | | | Max. Vy | 8 | -0.007 | -0.005 | -0.000 |

| Section No. | Elevation ft | Component Type | Condition | Gov. Load Comb. | Force K | Major Axis Moment kip-ft | Minor Axis Moment kip-ft |
|---|---|---|---|---|---|---|---|
| | | Bottom Girt | Max. Vx | 3 | 0.001 | 0.000 | 0.000 |
| | | | Max Tension | 6 | 2.204 | 0.000 | 0.000 |
| | | | Max. Compression | 6 | -2.303 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | -0.110 | 0.003 | 0.000 |
| | | | Max. Vy | 8 | 0.005 | 0.000 | 0.000 |
| | | Guy A | Bottom Tension | 8 | 16.007 | | |
| | | | Top Tension | 8 | 16.355 | | |
| | | | Top Cable Vert | 8 | 10.852 | | |
| | | | Top Cable Norm | 8 | 12.235 | | |
| | | | Top Cable Tan | 8 | 0.008 | | |
| | | | Bot Cable Vert | 8 | -9.948 | | |
| | | | Bot Cable Norm | 8 | 12.541 | | |
| | | | Bot Cable Tan | 8 | 0.009 | | |
| | | Guy B | Bottom Tension | 6 | 11.801 | | |
| | | | Top Tension | 6 | 12.150 | | |
| | | | Top Cable Vert | 6 | 8.150 | | |
| | | | Top Cable Norm | 6 | 9.002 | | |
| | | | Top Cable Tan | 6 | 0.418 | | |
| | | | Bot Cable Vert | 6 | -7.337 | | |
| | | | Bot Cable Norm. | 6 | 9.231 | | |
| | | | Bot Cable Tan | 6 | 0.478 | | |
| | | Guy C | Bottom Tension | 7 | 15.282 | | |
| | | | Top Tension | 7 | 15.656 | | |
| | | | Top Cable Vert | 7 | 10.849 | | |
| | | | Top Cable Norm | 7 | 11.286 | | |
| | | | Top Cable Tan | 7 | 0.186 | | |
| | | | Bot Cable Vert | 7 | -9.906 | | |
| | | | Bot Cable Norm | 7 | 11.634 | | |
| | | | Bot Cable Tan | 7 | 0.234 | | |
| | | Top Guy Pull-Off | Max Tension | 8 | 9.838 | 0.000 | 0.000 |
| | | | Max. Compression | 6 | -4.055 | 0.000 | 0.000 |
| | | | Max. Mx | 5 | 1.585 | 0.012 | 0.000 |
| | | | Max. Vy | 5 | -0.012 | 0.000 | 0.000 |
| | | Bottom Guy Pull-Off | Max Tension | 8 | 6.350 | 0.000 | 0.000 |
| | | | Max. Compression | 6 | -6.445 | 0.000 | 0.000 |
| | | | Max. Mx | 5 | -0.476 | 0.012 | 0.000 |
| | | | Max. Vy | 5 | -0.012 | 0.000 | 0.000 |
| | | Torque Arm Top | Max Tension | 8 | 14.365 | 0.000 | 0.000 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 7 | 13.571 | -0.109 | 0.000 |
| | | | Max. Vy | 7 | 0.061 | 0.000 | 0.000 |
| | | Torque Arm Bottom | Max Tension | 6 | 6.328 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -18.132 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | -3.473 | -0.110 | 0.000 |
| | | | Max. Vy | 8 | 0.061 | 0.000 | 0.000 |
| T13 | 231 - 211 | Leg | Max Tension | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 6 | -83.797 | 0.003 | -0.039 |
| | | | Max. Mx | 7 | -40.236 | 0.210 | -0.117 |
| | | | Max. My | 6 | -48.140 | -0.009 | 0.350 |
| | | | Max. Vy | 7 | -2.532 | -0.119 | -0.114 |
| | | | Max. Vx | 6 | 3.349 | -0.001 | 0.212 |
| | | Diagonal | Max Tension | 6 | 2.512 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -3.329 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | -2.117 | -0.003 | 0.000 |
| | | | Max. My | 8 | -0.960 | -0.002 | -0.005 |
| | | | Max. Vy | 6 | 0.004 | -0.003 | 0.000 |
| | | | Max. Vx | 8 | 0.002 | -0.002 | -0.005 |
| | | K-Brace | Max Tension | 6 | 2.685 | 0.000 | 0.000 |
| | | | Max. Compression | 6 | -2.714 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 1.990 | 0.002 | 0.000 |

| Section No. | Elevation ft | Component Type | Condition | Gov. Load Comb. | Force K | Major Axis Moment kip-ft | Minor Axis Moment kip-ft |
|---|---|---|---|---|---|---|---|
| | | | Max. Vy | 6 | 0.002 | 0.000 | 0.000 |
| | | Horizontal | Max Tension | 8 | 1.505 | 0.000 | 0.000 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | 0.653 | 0.005 | 0.000 |
| | | | Max. Vy | 8 | -0.005 | 0.000 | 0.000 |
| | | Secondary Horizontal | Max Tension | 7 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 3 | -0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.000 | 0.001 | 0.000 |
| | | | Max. Vy | 7 | 0.004 | 0.000 | 0.000 |
| | | | Max. Vx | 8 | 0.003 | 0.000 | 0.000 |
| | | Top Girt | Max Tension | 6 | 2.355 | -0.003 | 0.000 |
| | | | Max. Compression | 6 | -2.048 | -0.003 | 0.000 |
| | | | Max. Mx | 8 | 0.044 | -0.005 | 0.000 |
| | | | Max. Vy | 8 | 0.007 | -0.005 | 0.000 |
| | | Bottom Girt | Max Tension | 6 | 1.867 | 0.000 | 0.000 |
| | | | Max. Compression | 6 | -1.804 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.199 | 0.003 | 0.000 |
| | | | Max. Vy | 6 | 0.005 | 0.000 | 0.000 |
| T14 | 211 - 191 | Leg | Max Tension | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 8 | -91.724 | -0.001 | 0.278 |
| | | | Max. Mx | 7 | -68.041 | 0.265 | -0.189 |
| | | | Max. My | 8 | -68.869 | -0.006 | 0.392 |
| | | | Max. Vy | 7 | -2.034 | -0.035 | -0.093 |
| | | | Max. Vx | 6 | 2.787 | 0.000 | 0.118 |
| | | Diagonal | Max Tension | 6 | 2.043 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -2.774 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | 1.012 | -0.004 | -0.000 |
| | | | Max. My | 6 | -1.339 | -0.003 | 0.004 |
| | | | Max. Vy | 8 | 0.004 | -0.004 | -0.000 |
| | | | Max. Vx | 6 | -0.002 | -0.003 | 0.004 |
| | | K-Brace | Max Tension | 6 | 2.259 | 0.000 | 0.000 |
| | | | Max. Compression | 6 | -2.289 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | -1.171 | 0.002 | 0.000 |
| | | | Max. Vy | 8 | 0.002 | 0.000 | 0.000 |
| | | Horizontal | Max Tension | 6 | 1.833 | 0.000 | 0.000 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | 0.643 | 0.005 | 0.000 |
| | | | Max. Vy | 8 | -0.005 | 0.000 | 0.000 |
| | | Secondary Horizontal | Max Tension | 7 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 3 | -0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.000 | 0.001 | 0.000 |
| | | | Max. Vy | 7 | 0.007 | 0.000 | 0.000 |
| | | | Max. Vx | 8 | 0.004 | 0.000 | 0.000 |
| | | Top Girt | Max Tension | 6 | 1.970 | -0.003 | -0.000 |
| | | | Max. Compression | 6 | -1.738 | -0.003 | -0.000 |
| | | | Max. Mx | 6 | 0.067 | -0.005 | 0.000 |
| | | | Max. Vy | 6 | 0.006 | -0.005 | 0.000 |
| | | Bottom Girt | Max Tension | 6 | 1.360 | -0.000 | -0.000 |
| | | | Max. Compression | 6 | -1.302 | -0.000 | -0.000 |
| | | | Max. Mx | 6 | -0.038 | 0.003 | -0.000 |
| | | | Max. Vy | 6 | -0.005 | 0.000 | 0.000 |
| T15 | 191 - 171 | Leg | Max Tension | 2 | 9.113 | 0.000 | 0.166 |
| | | | Max. Compression | 8 | -101.213 | -0.001 | -0.051 |
| | | | Max. Mx | 3 | -47.312 | 0.575 | 0.038 |
| | | | Max. My | 2 | -69.819 | 0.010 | -0.576 |
| | | | Max. Vy | 3 | -1.395 | 0.064 | -0.030 |
| | | | Max. Vx | 6 | 2.009 | 0.001 | 0.022 |
| | | Diagonal | Max Tension | 6 | 1.465 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -2.099 | 0.000 | 0.000 |

| Section No. | Elevation ft | Component Type | Condition | Gov. Load Comb. | Force K | Major Axis Moment kip-ft | Minor Axis Moment kip-ft |
|---|---|---|---|---|---|---|---|
| | | | Max. Mx | 8 | -0.520 | -0.004 | 0.000 |
| | | | Max. My | 6 | -1.503 | -0.003 | 0.004 |
| | | | Max. Vy | 8 | 0.004 | -0.004 | 0.000 |
| | | | Max. Vx | 6 | -0.002 | -0.003 | 0.004 |
| | | K-Brace | Max Tension | 6 | 1.700 | 0.000 | 0.000 |
| | | | Max. Compression | 6 | -1.730 | 0.000 | 0.000 |
| | | | Max. Mx | 7 | 0.782 | 0.002 | 0.000 |
| | | | Max. Vy | 7 | -0.003 | 0.000 | 0.000 |
| | | Horizontal | Max Tension | 6 | 2.176 | 0.000 | 0.000 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | 0.477 | 0.005 | 0.000 |
| | | | Max. Vy | 8 | -0.005 | 0.000 | 0.000 |
| | | Secondary Horizontal | Max Tension | 7 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 3 | -0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | -0.000 | 0.001 | 0.000 |
| | | | Max. Vy | 7 | 0.013 | 0.000 | 0.000 |
| | | | Max. Vx | 8 | 0.004 | 0.000 | 0.000 |
| | | Top Girt | Max Tension | 6 | 1.506 | 0.000 | 0.000 |
| | | | Max. Compression | 6 | -1.291 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | -0.132 | -0.006 | -0.000 |
| | | | Max. Vy | 6 | -0.007 | -0.006 | -0.000 |
| | | Bottom Girt | Max Tension | 8 | 0.670 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -0.628 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.140 | 0.003 | -0.000 |
| | | | Max. Vy | 6 | 0.005 | 0.000 | 0.000 |
| T16 | 171 - 151 | Leg | Max Tension | 2 | 6.636 | -0.000 | -0.073 |
| | | | Max. Compression | 8 | -98.558 | -0.001 | -0.037 |
| | | | Max. Mx | 3 | -49.532 | 0.553 | 0.041 |
| | | | Max. My | 2 | -68.181 | 0.010 | -0.555 |
| | | | Max. Vy | 7 | 2.789 | 0.096 | -0.142 |
| | | | Max. Vx | 8 | 3.312 | -0.002 | 0.186 |
| | | Diagonal | Max Tension | 8 | 2.380 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -3.673 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | -0.828 | -0.004 | -0.000 |
| | | | Max. My | 8 | -0.716 | -0.002 | -0.004 |
| | | | Max. Vy | 8 | 0.004 | -0.004 | -0.000 |
| | | | Max. Vx | 8 | 0.002 | 0.000 | 0.000 |
| | | K-Brace | Max Tension | 7 | 2.928 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -2.905 | 0.000 | 0.000 |
| | | | Max. Mx | 7 | 2.928 | 0.002 | 0.000 |
| | | | Max. Vy | 7 | 0.003 | 0.000 | 0.000 |
| | | Horizontal | Max Tension | 6 | 2.191 | 0.000 | 0.000 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | 0.656 | 0.005 | 0.000 |
| | | | Max. Vy | 8 | -0.005 | 0.000 | 0.000 |
| | | Secondary Horizontal | Max Tension | 7 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 3 | -0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | -0.000 | 0.001 | 0.000 |
| | | | Max. Vy | 7 | 0.018 | 0.000 | 0.000 |
| | | | Max. Vx | 8 | 0.003 | 0.000 | 0.000 |
| | | Top Girt | Max Tension | 8 | 0.650 | -0.004 | -0.000 |
| | | | Max. Compression | 7 | -0.570 | -0.005 | -0.000 |
| | | | Max. Mx | 6 | 0.151 | -0.006 | -0.000 |
| | | | Max. Vy | 6 | 0.007 | -0.006 | -0.000 |
| | | Bottom Girt | Max Tension | 7 | 2.381 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -2.376 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.080 | 0.003 | -0.000 |
| | | | Max. Vy | 6 | 0.005 | 0.000 | 0.000 |
| T17 | 151 - 131 | Leg | Max Tension | 1 | 0.000 | 0.000 | 0.000 |

| Section No. | Elevation ft | Component Type | Condition | Gov. Load Comb. | Force K | Major Axis Moment kip-ft | Minor Axis Moment kip-ft |
|---|---|---|---|---|---|---|---|
| | | | Max. Compression | 7 | -89.094 | -0.175 | -0.163 |
| | | | Max. Mx | 3 | -51.684 | 0.482 | 0.044 |
| | | | Max. My | 8 | -27.381 | 0.003 | 0.513 |
| | | | Max. Vy | 7 | 4.871 | -0.005 | -0.068 |
| | | | Max. Vx | 8 | 5.753 | 0.001 | 0.033 |
| | | Diagonal | Max Tension | 8 | 4.102 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -5.970 | 0.000 | 0.000 |
| | | | Max. Mx | 7 | 1.865 | -0.005 | -0.000 |
| | | | Max. My | 8 | -1.522 | -0.004 | -0.005 |
| | | | Max. Vy | 7 | 0.005 | -0.005 | -0.000 |
| | | | Max. Vx | 8 | 0.002 | 0.000 | 0.000 |
| | | K-Brace | Max Tension | 7 | 5.095 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -5.065 | 0.000 | 0.000 |
| | | | Max. Mx | 7 | 2.967 | 0.002 | 0.000 |
| | | | Max. Vy | 7 | -0.003 | 0.000 | 0.000 |
| | | Horizontal | Max Tension | 8 | 2.205 | 0.000 | 0.000 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | 1.211 | 0.005 | 0.000 |
| | | | Max. Vy | 8 | -0.005 | 0.000 | 0.000 |
| | | Secondary Horizontal | Max Tension | 7 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 3 | -0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.000 | 0.001 | 0.000 |
| | | | Max. Vy | 7 | 0.019 | 0.000 | 0.000 |
| | | | Max. Vx | 8 | 0.004 | 0.000 | 0.000 |
| | | Top Girt | Max Tension | 7 | 2.461 | -0.005 | -0.000 |
| | | | Max. Compression | 7 | -2.406 | -0.005 | -0.000 |
| | | | Max. Mx | 6 | 0.238 | -0.006 | -0.000 |
| | | | Max. Vy | 6 | 0.007 | -0.006 | -0.000 |
| | | Bottom Girt | Max Tension | 7 | 4.156 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -4.132 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | 0.131 | 0.003 | 0.000 |
| | | | Max. Vy | 8 | 0.005 | 0.000 | 0.000 |
| T18 | 131 - 111 | Leg | Max Tension | 4 | 3.806 | 0.001 | 0.083 |
| | | | Max. Compression | 7 | -117.455 | -0.060 | 0.111 |
| | | | Max. Mx | 7 | -89.106 | -0.576 | -0.279 |
| | | | Max. My | 6 | -83.706 | 0.007 | 0.716 |
| | | | Max. Vy | 7 | 4.874 | -0.411 | 0.061 |
| | | | Max. Vx | 8 | 5.756 | -0.002 | -0.446 |
| | | Diagonal | Max Tension | 7 | 4.719 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -6.204 | 0.000 | 0.000 |
| | | | Max. Mx | 7 | -3.954 | -0.007 | 0.002 |
| | | | Max. My | 8 | -1.924 | -0.005 | -0.005 |
| | | | Max. Vy | 7 | 0.006 | -0.007 | 0.002 |
| | | | Max. Vx | 8 | -0.002 | 0.000 | 0.000 |
| | | K-Brace | Max Tension | 7 | 5.149 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -5.184 | 0.000 | 0.000 |
| | | | Max. Mx | 7 | 5.149 | 0.002 | 0.000 |
| | | | Max. Vy | 7 | -0.003 | 0.000 | 0.000 |
| | | Horizontal | Max Tension | 8 | 2.829 | 0.000 | 0.000 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | 2.687 | 0.005 | 0.000 |
| | | | Max. Vy | 8 | -0.005 | 0.000 | 0.000 |
| | | Secondary Horizontal | Max Tension | 7 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 3 | -0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | -0.000 | 0.002 | 0.000 |
| | | | Max. Vy | 7 | 0.017 | 0.000 | 0.000 |
| | | | Max. Vx | 8 | 0.003 | 0.000 | 0.000 |
| | | Top Girt | Max Tension | 7 | 4.227 | -0.005 | -0.001 |
| | | | Max. Compression | 7 | -4.202 | -0.005 | -0.001 |

| Section No. | Elevation ft | Component Type | Condition | Gov. Load Comb. | Force K | Major Axis Moment kip-ft | Minor Axis Moment kip-ft |
|---|---|---|---|---|---|---|---|
| | | | Max. Mx | 8 | -0.138 | -0.006 | 0.000 |
| | | | Max. My | 7 | -4.202 | -0.005 | -0.001 |
| | | | Max. Vy | 8 | 0.007 | -0.006 | 0.000 |
| | | Bottom Girt | Max Tension | 7 | 2.795 | 0.001 | -0.000 |
| | | | Max. Compression | 7 | -2.777 | 0.001 | -0.000 |
| | | | Max. Mx | 8 | -0.060 | 0.003 | 0.000 |
| | | | Max. Vy | 8 | 0.005 | 0.000 | 0.000 |
| | | Guy A | Bottom Tension | 8 | 31.423 | | |
| | | | Top Tension | 8 | 31.763 | | |
| | | | Top Cable Vert | 8 | 12.395 | | |
| | | | Top Cable Norm | 8 | 29.245 | | |
| | | | Top Cable Tan | 8 | 0.001 | | |
| | | | Bot Cable Vert | 8 | -11.365 | | |
| | | | Bot Cable Norm | 8 | 29.296 | | |
| | | | Bot Cable Tan | 8 | 0.001 | | |
| | | Guy B | Bottom Tension | 6 | 26.922 | | |
| | | | Top Tension | 6 | 27.267 | | |
| | | | Top Cable Vert | 6 | 10.897 | | |
| | | | Top Cable Norm | 6 | 24.993 | | |
| | | | Top Cable Tan | 6 | 0.301 | | |
| | | | Bot Cable Vert | 6 | -9.839 | | |
| | | | Bot Cable Norm | 6 | 25.056 | | |
| | | | Bot Cable Tan | 6 | 0.439 | | |
| | | Guy C | Bottom Tension | 7 | 31.467 | | |
| | | | Top Tension | 7 | 31.861 | | |
| | | | Top Cable Vert | 7 | 14.065 | | |
| | | | Top Cable Norm | 7 | 28.588 | | |
| | | | Top Cable Tan | 7 | 0.102 | | |
| | | | Bot Cable Vert | 7 | -12.942 | | |
| | | | Bot Cable Norm | 7 | 28.681 | | |
| | | | Bot Cable Tan | 7 | 0.192 | | |
| | | Top Guy Pull-Off | Max Tension | 6 | 13.702 | 0.000 | 0.000 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 5 | 7.166 | 0.012 | 0.000 |
| | | | Max. Vy | 5 | -0.012 | 0.000 | 0.000 |
| T19 | 111 - 91 | Leg | Max Tension | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -100.921 | 0.016 | 0.033 |
| | | | Max. Mx | 7 | -67.730 | -0.281 | -0.190 |
| | | | Max. My | 6 | -54.779 | -0.006 | 0.371 |
| | | | Max. Vy | 7 | -3.297 | -0.200 | -0.194 |
| | | | Max. Vx | 6 | 4.158 | 0.000 | 0.298 |
| | | Diagonal | Max Tension | 6 | 2.915 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -4.522 | 0.000 | 0.000 |
| | | | Max. Mx | 7 | -1.464 | -0.006 | -0.000 |
| | | | Max. My | 8 | -1.811 | -0.004 | -0.005 |
| | | | Max. Vy | 7 | 0.006 | -0.006 | -0.000 |
| | | | Max. Vx | 8 | 0.002 | 0.000 | 0.000 |
| | | K-Brace | Max Tension | 7 | 3.302 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -3.336 | 0.000 | 0.000 |
| | | | Max. Mx | 7 | -3.332 | 0.002 | 0.000 |
| | | | Max. Vy | 7 | -0.003 | 0.000 | 0.000 |
| | | Horizontal | Max Tension | 8 | 2.557 | 0.000 | 0.000 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | 1.430 | 0.005 | 0.000 |
| | | | Max. Vy | 8 | -0.005 | 0.000 | 0.000 |
| | | Secondary Horizontal | Max Tension | 7 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 3 | -0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | -0.000 | 0.001 | 0.000 |
| | | | Max. Vy | 7 | 0.011 | 0.000 | 0.000 |
| | | | Max. Vx | 8 | 0.003 | 0.000 | 0.000 |

| Section No. | Elevation ft | Component Type | Condition | Gov. Load Comb. | Force K | Major Axis Moment kip-ft | Minor Axis Moment kip-ft |
|---|---|---|---|---|---|---|---|
| | | Top Girt | Max Tension | 6 | 2.795 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -2.691 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | 0.120 | -0.006 | 0.000 |
| | | | Max. Vy | 8 | 0.007 | -0.006 | 0.000 |
| | | Bottom Girt | Max Tension | 7 | 2.048 | 0.002 | 0.000 |
| | | | Max. Compression | 7 | -2.002 | 0.002 | 0.000 |
| | | | Max. Mx | 6 | 0.199 | 0.003 | -0.000 |
| | | | Max. Vy | 6 | 0.005 | 0.000 | 0.000 |
| T20 | 91 - 71 | Leg | Max Tension | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -101.923 | 0.232 | -0.206 |
| | | | Max. Mx | 7 | -77.269 | 0.321 | -0.221 |
| | | | Max. My | 8 | -71.193 | 0.000 | 0.445 |
| | | | Max. Vy | 7 | -2.415 | 0.119 | -0.149 |
| | | | Max. Vx | 6 | 2.931 | 0.000 | 0.127 |
| | | Diagonal | Max Tension | 8 | 1.988 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -3.646 | 0.000 | 0.000 |
| | | | Max. Mx | 7 | 0.739 | -0.006 | 0.000 |
| | | | Max. My | 8 | -1.457 | -0.004 | 0.004 |
| | | | Max. Vy | 7 | 0.006 | -0.006 | 0.000 |
| | | | Max. Vx | 8 | 0.002 | 0.000 | 0.000 |
| | | K-Brace | Max Tension | 7 | 2.428 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -2.465 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | -1.156 | 0.002 | 0.000 |
| | | | Max. Vy | 6 | -0.003 | 0.000 | 0.000 |
| | | Horizontal | Max Tension | 6 | 2.873 | 0.000 | 0.000 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | 1.138 | 0.005 | 0.000 |
| | | | Max. Vy | 8 | -0.005 | 0.000 | 0.000 |
| | | Secondary Horizontal | Max Tension | 7 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 3 | -0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | -0.000 | 0.002 | 0.000 |
| | | | Max. Vy | 7 | 0.012 | 0.000 | 0.000 |
| | | | Max. Vx | 8 | 0.004 | 0.000 | 0.000 |
| | | Top Girt | Max Tension | 6 | 2.047 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -1.973 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.059 | -0.006 | -0.000 |
| | | | Max. Vy | 6 | 0.007 | -0.006 | -0.000 |
| | | Bottom Girt | Max Tension | 8 | 1.200 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -1.059 | 0.002 | 0.000 |
| | | | Max. Mx | 6 | 0.169 | 0.004 | -0.000 |
| | | | Max. Vy | 6 | 0.005 | 0.000 | 0.000 |
| T21 | 71 - 51 | Leg | Max Tension | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -113.376 | 0.276 | -0.235 |
| | | | Max. Mx | 7 | -101.925 | 0.346 | -0.251 |
| | | | Max. My | 8 | -99.493 | 0.001 | 0.494 |
| | | | Max. Vy | 7 | -1.366 | 0.232 | -0.206 |
| | | | Max. Vx | 8 | -1.714 | -0.000 | 0.351 |
| | | Diagonal | Max Tension | 8 | 1.133 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -2.353 | 0.000 | 0.000 |
| | | | Max. Mx | 7 | 0.163 | -0.006 | 0.000 |
| | | | Max. My | 8 | -0.953 | -0.004 | 0.004 |
| | | | Max. Vy | 7 | 0.006 | -0.006 | 0.000 |
| | | | Max. Vx | 8 | -0.001 | 0.000 | 0.000 |
| | | K-Brace | Max Tension | 7 | 1.347 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -1.383 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.010 | 0.002 | 0.000 |
| | | | Max. Vy | 6 | -0.003 | 0.000 | 0.000 |
| | | Horizontal | Max Tension | 6 | 2.580 | 0.000 | 0.000 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | 0.783 | 0.005 | 0.000 |

| Section No. | Elevation ft | Component Type | Condition | Gov. Load Comb. | Force K | Major Axis Moment kip-ft | Minor Axis Moment kip-ft |
|---|---|---|---|---|---|---|---|
| | | | Max. Vy | 8 | -0.005 | 0.000 | 0.000 |
| | | Secondary Horizontal | Max Tension | 7 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 3 | -0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | -0.000 | 0.002 | 0.000 |
| | | | Max. Vy | 7 | 0.016 | 0.000 | 0.000 |
| | | | Max. Vx | 8 | 0.004 | 0.000 | 0.000 |
| | | Top Girt | Max Tension | 8 | 1.188 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -1.082 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.129 | -0.006 | -0.000 |
| | | | Max. Vy | 6 | 0.007 | -0.006 | -0.000 |
| | | Bottom Girt | Max Tension | 8 | 0.405 | -0.000 | -0.000 |
| | | | Max. Compression | 4 | -0.123 | -0.000 | -0.000 |
| | | | Max. Mx | 6 | 0.163 | 0.003 | -0.000 |
| | | | Max. Vy | 6 | 0.005 | 0.000 | 0.000 |
| T22 | 51 - 31 | Leg | Max Tension | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 8 | -114.399 | 0.000 | 0.107 |
| | | | Max. Mx | 7 | -110.785 | 0.343 | -0.251 |
| | | | Max. My | 8 | -111.222 | -0.003 | 0.486 |
| | | | Max. Vy | 7 | 1.052 | 0.004 | -0.101 |
| | | | Max. Vx | 6 | -1.568 | 0.000 | 0.047 |
| | | Diagonal | Max Tension | 6 | 0.978 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -2.185 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | -0.728 | -0.006 | 0.000 |
| | | | Max. My | 8 | -0.977 | -0.004 | 0.004 |
| | | | Max. Vy | 8 | 0.006 | -0.006 | 0.000 |
| | | | Max. Vx | 8 | -0.002 | 0.000 | 0.000 |
| | | K-Brace | Max Tension | 6 | 1.340 | 0.000 | 0.000 |
| | | | Max. Compression | 6 | -1.313 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 1.160 | 0.002 | 0.000 |
| | | | Max. Vy | 6 | -0.003 | 0.000 | 0.000 |
| | | Horizontal | Max Tension | 6 | 2.589 | 0.000 | 0.000 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 5 | 0.785 | 0.005 | 0.000 |
| | | | Max. Vy | 5 | -0.005 | 0.000 | 0.000 |
| | | Secondary Horizontal | Max Tension | 7 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 3 | -0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | -0.000 | 0.002 | 0.000 |
| | | | Max. Vy | 7 | 0.021 | 0.000 | 0.000 |
| | | | Max. Vx | 8 | 0.004 | 0.000 | 0.000 |
| | | Top Girt | Max Tension | 7 | 0.415 | 0.000 | 0.000 |
| | | | Max. Compression | 3 | -0.127 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.161 | -0.006 | -0.000 |
| | | | Max. Vy | 6 | 0.007 | -0.006 | -0.000 |
| | | Bottom Girt | Max Tension | 6 | 1.194 | 0.000 | 0.000 |
| | | | Max. Compression | 6 | -0.967 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 0.134 | 0.003 | -0.000 |
| | | | Max. Vy | 6 | 0.005 | 0.000 | 0.000 |
| T23 | 31 - 11 | Leg | Max Tension | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 8 | -111.266 | 0.001 | -0.094 |
| | | | Max. Mx | 7 | -94.519 | -1.050 | 0.522 |
| | | | Max. My | 8 | -93.972 | 0.047 | -1.100 |
| | | | Max. Vy | 7 | 9.068 | -1.050 | 0.522 |
| | | | Max. Vx | 8 | 10.315 | 0.047 | -1.100 |
| | | Diagonal | Max Tension | 6 | 2.132 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -3.301 | 0.000 | 0.000 |
| | | | Max. Mx | 8 | -0.743 | -0.006 | -0.000 |
| | | | Max. My | 8 | -1.067 | -0.004 | 0.004 |
| | | | Max. Vy | 8 | 0.005 | -0.006 | -0.000 |
| | | | Max. Vx | 8 | -0.002 | 0.000 | 0.000 |

| Section No. | Elevation ft | Component Type | Condition | Gov. Load Comb. | Force K | Major Axis Moment kip-ft | Minor Axis Moment kip-ft |
|---|---|---|---|---|---|---|---|
| | | K-Brace | Max Tension | 6 | 2.249 | 0.000 | 0.000 |
| | | | Max. Compression | 6 | -2.218 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 1.962 | 0.002 | 0.000 |
| | | | Max. Vy | 6 | -0.003 | 0.000 | 0.000 |
| | | Horizontal | Max Tension | 6 | 2.457 | 0.000 | 0.000 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 5 | 0.806 | 0.005 | 0.000 |
| | | | Max. Vy | 5 | -0.005 | 0.000 | 0.000 |
| | | Secondary Horizontal | Max Tension | 7 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 3 | -0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | -0.000 | 0.002 | 0.000 |
| | | | Max. Vy | 7 | 0.025 | 0.000 | 0.000 |
| | | | Max. Vx | 8 | 0.004 | 0.000 | 0.000 |
| | | Top Girt | Max Tension | 6 | 1.082 | -0.004 | 0.000 |
| | | | Max. Compression | 6 | -0.903 | -0.004 | 0.000 |
| | | | Max. Mx | 6 | 0.185 | -0.006 | -0.000 |
| | | | Max. Vy | 6 | 0.007 | -0.006 | -0.000 |
| | | Bottom Girt | Max Tension | 6 | 6.071 | 0.000 | 0.000 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | 4.881 | 0.003 | -0.000 |
| | | | Max. Vy | 7 | 0.005 | -0.002 | -0.000 |
| T24 | 11 - 1 | Leg | Max Tension | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 7 | -98.129 | -0.122 | 0.589 |
| | | | Max. Mx | 7 | -94.405 | 1.170 | 0.071 |
| | | | Max. My | 6 | -93.546 | -0.055 | -1.151 |
| | | | Max. Vy | 7 | 11.275 | 1.170 | 0.071 |
| | | | Max. Vx | 6 | 1.070 | -0.098 | 0.966 |
| | | Diagonal | Max Tension | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Compression | 6 | -4.797 | 0.000 | 0.000 |
| | | | Max. Mx | 6 | -0.407 | 0.009 | 0.000 |
| | | | Max. Vy | 6 | -0.009 | 0.000 | 0.000 |
| | | Horizontal | Max Tension | 6 | 1.917 | 0.000 | 0.000 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 5 | 0.598 | 0.006 | 0.000 |
| | | | Max. Vy | 5 | -0.008 | 0.000 | 0.000 |
| | | Top Girt | Max Tension | 6 | 7.203 | 0.000 | 0.000 |
| | | | Max. Compression | 1 | 0.000 | 0.000 | 0.000 |
| | | | Max. Mx | 5 | 4.998 | 0.012 | 0.000 |
| | | | Max. Vy | 5 | -0.012 | 0.000 | 0.000 |

## Maximum Reactions

| Location | Condition | Gov. Load Comb. | Vertical K | Horizontal, X K | Horizontal, Z K |
|---|---|---|---|---|---|
| Mast | Max. Vert | 7 | 245.294 | -3.337 | 0.034 |
| | Max. $H_x$ | 6 | 244.629 | 0.029 | 3.723 |
| | Max. $H_z$ | 6 | 244.629 | 0.029 | 3.723 |
| | Max. $M_x$ | 1 | 0.000 | -0.000 | 0.010 |
| | Max. $M_z$ | 1 | 0.000 | -0.000 | 0.010 |
| | Max. Torsion | 4 | -0.096 | -0.004 | -2.792 |
| | Min. Vert | 1 | 147.439 | -0.000 | 0.010 |
| | Min. $H_x$ | 7 | 245.294 | -3.337 | 0.034 |
| | Min. $H_z$ | 8 | 240.595 | -0.001 | -3.370 |
| | Min. $M_x$ | 1 | 0.000 | -0.000 | 0.010 |
| | Min. $M_z$ | 1 | 0.000 | -0.000 | 0.010 |

| Location | Condition | Gov. Load Comb. | Vertical K | Horizontal, X K | Horizontal, Z K |
|---|---|---|---|---|---|
| | Min. Torsion | 6 | -0.511 | 0.029 | 3.723 |
| Guy C @ 295 ft Elev -10.3 ft Azimuth 240 deg | Max. Vert | 4 | -13.321 | -8.429 | 3.471 |
| | Max. $H_x$ | 4 | -13.321 | -8.429 | 3.471 |
| | Max. $H_z$ | 7 | -49.721 | -32.429 | 17.405 |
| | Min. Vert | 7 | -49.721 | -32.429 | 17.405 |
| | Min. $H_x$ | 7 | -49.721 | -32.429 | 17.405 |
| | Min. $H_z$ | 4 | -13.321 | -8.429 | 3.471 |
| Guy B @ 295 ft Elev 5.7 ft Azimuth 120 deg | Max. Vert | 3 | -5.984 | 2.997 | 2.425 |
| | Max. $H_x$ | 6 | -39.131 | 24.757 | 16.644 |
| | Max. $H_z$ | 6 | -39.131 | 24.757 | 16.644 |
| | Min. Vert | 6 | -39.131 | 24.757 | 16.644 |
| | Min. $H_x$ | 3 | -5.984 | 2.997 | 2.425 |
| | Min. $H_z$ | 3 | -5.984 | 2.997 | 2.425 |
| Guy A @ 295 ft Elev 8 ft Azimuth 0 deg | Max. Vert | 2 | -3.183 | -0.001 | -1.730 |
| | Max. $H_x$ | 4 | -39.901 | 0.003 | -30.223 |
| | Max. $H_z$ | 2 | -3.183 | -0.001 | -1.730 |
| | Min. Vert | 8 | -50.652 | 0.002 | -39.106 |
| | Min. $H_x$ | 7 | -27.506 | -2.353 | -20.556 |
| | Min. $H_z$ | 8 | -50.652 | 0.002 | -39.106 |
| Guy C @ 280 ft Elev -10.3 ft Azimuth 240 deg | Max. Vert | 4 | -6.965 | -9.665 | 4.747 |
| | Max. $H_x$ | 4 | -6.965 | -9.665 | 4.747 |
| | Max. $H_z$ | 7 | -32.506 | -45.088 | 25.233 |
| | Min. Vert | 7 | -32.506 | -45.088 | 25.233 |
| | Min. $H_x$ | 7 | -32.506 | -45.088 | 25.233 |
| | Min. $H_z$ | 4 | -6.965 | -9.665 | 4.747 |
| Guy B @ 280 ft Elev 5.7 ft Azimuth 120 deg | Max. Vert | 3 | -2.297 | 3.544 | 2.405 |
| | Max. $H_x$ | 6 | -24.168 | 36.602 | 22.775 |
| | Max. $H_z$ | 6 | -24.168 | 36.602 | 22.775 |
| | Min. Vert | 6 | -24.168 | 36.602 | 22.775 |
| | Min. $H_x$ | 3 | -2.297 | 3.544 | 2.405 |
| | Min. $H_z$ | 3 | -2.297 | 3.544 | 2.405 |
| Guy A @ 280 ft Elev 8 ft Azimuth 0 deg | Max. Vert | 2 | -0.711 | -0.000 | -2.305 |
| | Max. $H_x$ | 2 | -0.711 | -0.000 | -2.305 |
| | Max. $H_z$ | 2 | -0.711 | -0.000 | -2.305 |
| | Min. Vert | 8 | -31.016 | -0.009 | -54.080 |
| | Min. $H_x$ | 7 | -16.419 | -1.713 | -28.852 |
| | Min. $H_z$ | 8 | -31.016 | -0.009 | -54.080 |

## Tower Mast Reaction Summary

| Load Combination | Vertical K | $Shear_x$ K | $Shear_z$ K | Overturning Moment, $M_x$ kip-ft | Overturning Moment, $M_z$ kip-ft | Torque kip-ft |
|---|---|---|---|---|---|---|
| Dead Only | 147.439 | 0.000 | -0.010 | 0.000 | 0.000 | 0.192 |
| Dead+Wind 0 deg - No | 183.187 | -0.014 | -2.773 | 0.000 | 0.000 | 0.371 |

| Load Combination | Vertical K | Shear$_x$ K | Shear$_z$ K | Overturning Moment, $M_x$ kip-ft | Overturning Moment, $M_z$ kip-ft | Torque kip-ft |
|---|---|---|---|---|---|---|
| Ice+Guy | | | | | | |
| Dead+Wind 90 deg - No Ice+Guy | 183.504 | 2.695 | -0.052 | 0.000 | 0.000 | 0.420 |
| Dead+Wind 180 deg - No Ice+Guy | 179.091 | 0.004 | 2.792 | 0.000 | 0.000 | 0.096 |
| Dead+Ice+Temp+Guy | 192.143 | -0.003 | -0.010 | 0.000 | 0.000 | 0.289 |
| Dead+Wind 0 deg+Ice+Temp+Guy | 244.629 | -0.029 | -3.723 | 0.000 | 0.000 | 0.511 |
| Dead+Wind 90 deg+Ice+Temp+Guy | 245.294 | 3.337 | -0.034 | 0.000 | 0.000 | 0.413 |
| Dead+Wind 180 deg+Ice+Temp+Guy | 240.595 | 0.001 | 3.370 | 0.000 | 0.000 | 0.229 |

## Solution Summary

| | Sum of Applied Forces | | | Sum of Reactions | | | |
|---|---|---|---|---|---|---|---|
| Load Comb. | PX K | PY K | PZ. K | PX K | PY K | PZ K | % Error |
| 1 | 0.000 | -75.502 | 0.000 | 0.006 | 75.502 | -0.005 | 0.011% |
| 2 | 0.035 | -75.982 | -59.559 | -0.035 | 75.982 | 59.536 | 0.024% |
| 3 | 59.487 | -75.539 | -0.019 | -59.470 | 75.539 | 0.032 | 0.023% |
| 4 | -0.035 | -75.021 | 59.407 | 0.044 | 75.022 | -59.424 | 0.020% |
| 5 | 0.000 | -107.910 | -0.000 | 0.016 | 107.910 | -0.012 | 0.019% |
| 6 | 0.060 | -108.733 | -77.367 | -0.059 | 108.732 | 77.336 | 0.023% |
| 7 | 76.225 | -107.975 | -0.032 | -76.201 | 107.974 | 0.051 | 0.023% |
| 8 | -0.060 | -107.087 | 75.747 | 0.087 | 107.087 | -75.737 | 0.022% |

## Non-Linear Convergence Results

| Load Combination | Converged? | Number of Cycles | Displacement Tolerance | Force Tolerance |
|---|---|---|---|---|
| 1 | Yes | 23 | 0.00010000 | 0.00001341 |
| 2 | Yes | 167 | 0.00009753 | 0.00004077 |
| 3 | Yes | 153 | 0.00009708 | 0.00004591 |
| 4 | Yes | 57 | 0.00009502 | 0.00005093 |
| 5 | Yes | 17 | 0.00010000 | 0.00005015 |
| 6 | Yes | 185 | 0.00009812 | 0.00004372 |
| 7 | Yes | 173 | 0.00009914 | 0.00004887 |
| 8 | Yes | 41 | 0.00009526 | 0.00006190 |

## Maximum Tower Deflections - Design Wind

| Section No. | Elevation ft | Horz. Deflection in | Gov. Load Comb. | Tilt ° | Twist ° |
|---|---|---|---|---|---|
| L1 | 528 - 512.205 | 49.828 | 6 | 1.2681 | 1.6008 |
| L2 | 512.205 - 496.41 | 45.637 | 6 | 1.2538 | 1.5860 |
| L3 | 496.41 - 480.615 | 41.557 | 6 | 1.1795 | 1.5102 |
| L4 | 480.615 - 470 | 37.872 | 6 | 0.9934 | 1.3683 |

| Section No. | Elevation ft | Horz. Deflection in | Gov. Load Comb. | Tilt ° | Twist ° |
|---|---|---|---|---|---|
| T1 | 470 - 451 | 35.838 | 6 | 0.7783 | 1.2508 |
| T2 | 451 - 431 | 32.984 | 6 | 0.7013 | 1.1802 |
| T3 | 431 - 411 | 30.141 | 6 | 0.6818 | 1.1053 |
| T4 | 411 - 391 | 27.281 | 6 | 0.6801 | 1.0164 |
| T5 | 391 - 371 | 24.716 | 7 | 0.6457 | 0.9106 |
| T6 | 371 - 351 | 22.596 | 7 | 0.5466 | 0.8049 |
| T7 | 351 - 331 | 21.024 | 7 | 0.4008 | 0.7353 |
| T8 | 331 - 311 | 19.881 | 7 | 0.3313 | 0.6559 |
| T9 | 311 - 291 | 18.745 | 7 | 0.3128 | 0.6205 |
| T10 | 291 - 271 | 17.474 | 7 | 0.3130 | 0.5380 |
| T11 | 271 - 251 | 16.121 | 7 | 0.3011 | 0.3997 |
| T12 | 251 - 231 | 14.923 | 7 | 0.2149 | 0.2471 |
| T13 | 231 - 211 | 14.377 | 7 | 0.1132 | 0.1814 |
| T14 | 211 - 191 | 14.230 | 7 | 0.1090 | 0.1580 |
| T15 | 191 - 171 | 14.117 | 6 | 0.1683 | 0.1463 |
| T16 | 171 - 151 | 13.807 | 6 | 0.3082 | 0.1359 |
| T17 | 151 - 131 | 12.755 | 6 | 0.4159 | 0.1268 |
| T18 | 131 - 111 | 11.260 | 6 | 0.4001 | 0.1208 |
| T19 | 111 - 91 | 10.126 | 6 | 0.2648 | 0.1182 |
| T20 | 91 - 71 | 9.411 | 6 | 0.2336 | 0.1189 |
| T21 | 71 - 51 | 8.395 | 6 | 0.3239 | 0.1206 |
| T22 | 51 - 31 | 6.757 | 6 | 0.4723 | 0.1232 |
| T23 | 31 - 11 | 4.441 | 6 | 0.6198 | 0.1270 |
| T24 | 11 - 1 | 1.560 | 6 | 0.7153 | 0.1311 |

## Critical Deflections and Radius of Curvature - Design Wind

| Elevation ft | Appurtenance | Gov. Load Comb. | Deflection in | Tilt ° | Twist ° | Radius of Curvature ft |
|---|---|---|---|---|---|---|
| 528.000 | Red A-2/3 lighting Kit w/ A-3 Spur | 6 | 49.828 | 1.2681 | 1.6008 | 51456 |
| 522.700 | SHPX-5AE-Radomes (3" Coax) | 6 | 48.418 | 1.2669 | 1.5996 | 48544 |
| 517.438 | SHPX-5AE-Radomes (3" Coax) | 6 | 47.020 | 1.2630 | 1.5956 | 24358 |
| 512.175 | SHPX-5AE-Radomes (3" Coax) | 6 | 45.629 | 1.2538 | 1.5859 | 18543 |
| 506.913 | SHPX-5AE-Radomes (3" Coax) | 6 | 44.247 | 1.2369 | 1.5682 | 16061 |
| 501.650 | SHPX-5AE-Radomes (3" Coax) | 6 | 42.885 | 1.2120 | 1.5427 | 10661 |
| 496.388 | SHPX-5AE-Radomes (3" Coax) | 6 | 41.551 | 1.1793 | 1.5100 | 7672 |
| 491.125 | SHPX-5AE-Radomes (3" Coax) | 6 | 40.258 | 1.1373 | 1.4705 | 5313 |
| 485.863 | SHPX-5AE-Radomes (3" Coax) | 6 | 39.024 | 1.0782 | 1.4236 | 3985 |
| 480.600 | SHPX-5AE-Radomes (3" Coax) | 6 | 37.869 | 0.9931 | 1.3681 | 3293 |
| 469.917 | Guy | 6 | 35.824 | 0.7770 | 1.2501 | 3359 |
| 440.000 | (3) DB224 w/ Long Arm Mounts (7/8" Coax) | 6 | 31.427 | 0.6931 | 1.1438 | 55639 |
| 420.000 | 6' Grid (7/8" Coax) | 6 | 28.569 | 0.6800 | 1.0576 | 31357 |
| 361.000 | Guy | 7 | 21.737 | 0.4712 | 0.7692 | 7227 |
| 330.000 | 4' Grid (7/8" Coax) | 7 | 19.827 | 0.3296 | 0.6532 | 34331 |
| 329.200 | Ice Shield (4' x 6') | 7 | 19.783 | 0.3283 | 0.6513 | 32230 |
| 319.200 | DCR-C 4 Bay w/ domes (3" Coax) | 7 | 19.226 | 0.3173 | 0.6346 | 23339 |
| 313.714 | DCR-C 4 Bay w/ domes (3" Coax) | 7 | 18.907 | 0.3140 | 0.6261 | 20578 |
| 308.229 | DCR-C 4 Bay w/ domes (3" Coax) | 7 | 18.577 | 0.3118 | 0.6134 | 20107 |
| 302.743 | DCR-C 4 Bay w/ domes (3" Coax) | 7 | 18.236 | 0.3099 | 0.5948 | 21584 |
| 297.257 | DCR-C 4 Bay w/ domes (3" Coax) | 7 | 17.885 | 0.3074 | 0.5709 | 23364 |
| 291.771 | DCR-C 4 Bay w/ domes (3" Coax) | 7 | 17.525 | 0.3124 | 0.5424 | 25710 |
| 286.286 | DCR-C 4 Bay w/ domes (3" Coax) | 7 | 17.159 | 0.3149 | 0.5097 | 31025 |
| 280.800 | DCR-C 4 Bay w/ domes (3" Coax) | 7 | 16.787 | 0.3140 | 0.4733 | 39550 |
| 265.000 | Mid Beacon Level | 7 | 15.720 | 0.2845 | 0.3503 | 11116 |
| 260.000 | 4' Grid (7/8" Coax) | 7 | 15.405 | 0.2649 | 0.3098 | 7541 |

| Elevation<br>ft | Appurtenance | Gov. Load Comb. | Deflection<br>in | Tilt<br>° | Twist<br>° | Radius of Curvature<br>ft |
|---|---|---|---|---|---|---|
| 241.000 | Guy | 7 | 14.569 | 0.1444 | 0.2040 | 6093 |
| 235.000 | 4' Grid (7/8" Coax) | 7 | 14.438 | 0.1073 | 0.1888 | 7300 |
| 180.000 | (12) 5' x 1' Panels (1 5/8" Coax) | 6 | 14.034 | 0.2432 | 0.1405 | 6046 |
| 160.000 | (12) 5' x 1' Panels (1 5/8" Coax) | 6 | 13.315 | 0.3775 | 0.1306 | 6408 |
| 140.000 | (12) 5' x 1' Panels (1 5/8" Coax) | 6 | 11.934 | 0.4281 | 0.1231 | 20013 |
| 121.000 | Guy | 6 | 10.622 | 0.3331 | 0.1191 | 5805 |

## Guy Design Data

| Section No. | Elevation<br>ft | Size | Initial Tension<br>K | Breaking Load<br>K | Actual T<br>K | Allowable $T_a$<br>K | Required S.F. | Actual S.F. |
|---|---|---|---|---|---|---|---|---|
| T1 | 469.917 (A) (1964) | 1 EHS | 10.450 | 104.500 | 38.271 | 41.800 | 2.500 | 2.731 ✓ |
| | 469.917 (B) (1963) | 1 EHS | 10.450 | 104.500 | 30.403 | 41.800 | 2.500 | 3.437 ✓ |
| | 469.917 (C) (1962) | 1 EHS | 10.450 | 104.500 | 37.134 | 41.800 | 2.500 | 2.814 ✓ |
| T6 | 361.000 (A) (1969) | 7/8 EHS | 7.970 | 79.700 | 28.070 | 31.880 | 2.500 | 2.839 ✓ |
| | 361.000 (B) (1968) | 7/8 EHS | 7.970 | 79.700 | 21.133 | 31.880 | 2.500 | 3.771 ✓ |
| | 361.000 (C) (1965) | 7/8 EHS | 7.970 | 79.700 | 27.155 | 31.880 | 2.500 | 2.935 ✓ |
| T12 | 241.000 (A) (1986) | 5/8 EHS | 4.240 | 42.400 | 16.355 | 16.960 | 2.500 | 2.593 ✓ |
| | 241.000 (A) (1987) | 5/8 EHS | 4.240 | 42.400 | 15.974 | 16.960 | 2.500 | 2.654 ✓ |
| | 241.000 (B) (1980) | 5/8 EHS | 4.240 | 42.400 | 11.602 | 16.960 | 2.500 | 3.655 ✓ |
| | 241.000 (B) (1981) | 5/8 EHS | 4.240 | 42.400 | 12.150 | 16.960 | 2.500 | 3.490 ✓ |
| | 241.000 (C) (1970) | 5/8 EHS | 4.240 | 42.400 | 15.282 | 16.960 | 2.500 | 2.775 ✓ |
| | 241.000 (C) (1971) | 5/8 EHS | 4.240 | 42.400 | 15.656 | 16.960 | 2.500 | 2.708 ✓ |
| T18 | 121.000 (A) (1996) | 1 EHS | 10.450 | 104.500 | 31.763 | 41.800 | 2.500 | 3.290 ✓ |
| | 121.000 (B) (1995) | 1 EHS | 10.450 | 104.500 | 27.267 | 41.800 | 2.500 | 3.833 ✓ |
| | 121.000 (C) (1992) | 1 EHS | 10.450 | 104.500 | 31.861 | 41.800 | 2.500 | 3.280 ✓ |

## *Compression Checks*

## Leg Design Data (Compression)

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | Mast Stability Index | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| L1 | 528 - 512.205 | 2 | 15.795 | 1.755 | 42.1<br>K=1.00 | 0.98 | 24.960 | 3.142 | -6.754 | 78.415 | 0.086 ✓ |
| L2 | 512.205 - 496.41 | 2 | 15.795 | 1.755 | 42.1<br>K=1.00 | 0.99 | 25.258 | 3.142 | -22.300 | 79.350 | 0.281 ✓ |
| L3 | 496.41 - 480.615 | 2 | 15.795 | 1.755 | 42.1<br>K=1.00 | 0.99 | 25.357 | 3.142 | -46.864 | 79.660 | 0.588 ✓ |
| L4 | 480.615 - 470 | 2 | 10.615 | 1.769 | 42.5<br>K=1.00 | 0.99 | 25.259 | 3.142 | -68.426 | 79.353 | 0.862 ✓ |
| T1 | 470 - 451 | 2 1/2 | 19.000 | 2.833 | 54.4<br>K=1.00 | 0.97 | 23.052 | 4.909 | -55.900 | 113.154 | 0.494 ✓ |
| T2 | 451 - 431 | 2 1/2 | 20.000 | 2.833 | 54.4<br>K=1.00 | 0.96 | 22.786 | 4.909 | -35.316 | 111.853 | 0.316 ✓ |
| T3 | 431 - 411 | 2 1/2 | 20.000 | 2.833 | 54.4<br>K=1.00 | 0.95 | 22.573 | 4.909 | -31.615 | 110.804 | 0.285 ✓ |
| T4 | 411 - 391 | 2 1/2 | 20.000 | 2.833 | 54.4<br>K=1.00 | 0.96 | 22.804 | 4.909 | -42.729 | 111.938 | 0.382 ✓ |
| T5 | 391 - 371 | 2 1/2 | 20.000 | 2.833 | 54.4<br>K=1.00 | 0.97 | 22.960 | 4.909 | -65.453 | 112.704 | 0.581 ✓ |
| T6 | 371 - 351 | 2 1/2 | 20.000 | 2.833 | 54.4<br>K=1.00 | 0.94 | 22.297 | 4.909 | -79.301 | 109.453 | 0.725 ✓ |
| T7 | 351 - 331 | 2 1/2 | 20.000 | 2.833 | 54.4<br>K=1.00 | 0.93 | 22.084 | 4.909 | -68.978 | 108.403 | 0.636 ✓ |
| T8 | 331 - 311 | 2 1/2 | 20.000 | 2.833 | 54.4<br>K=1.00 | 0.91 | 21.487 | 4.909 | -52.733 | 105.475 | 0.500 ✓ |
| T9 | 311 - 291 | 2 1/2 | 20.000 | 2.833 | 54.4<br>K=1.00 | 0.91 | 21.500 | 4.909 | -53.586 | 105.537 | 0.508 ✓ |
| T10 | 291 - 271 | 2 1/2 | 20.000 | 2.833 | 54.4<br>K=1.00 | 0.92 | 21.734 | 4.909 | -63.452 | 106.686 | 0.595 ✓ |
| T11 | 271 - 251 | 2 1/2 | 20.000 | 2.833 | 54.4<br>K=1.00 | 0.94 | 22.252 | 4.909 | -91.961 | 109.230 | 0.842 ✓ |
| T12 | 251 - 231 | 2 1/2 | 20.000 | 2.833 | 54.4<br>K=1.00 | 0.94 | 22.273 | 4.909 | -109.677 | 109.331 | 1.003 ✓ |
| T13 | 231 - 211 | 2 1/2 | 20.000 | 2.833 | 54.4<br>K=1.00 | 0.92 | 21.722 | 4.909 | -83.797 | 106.630 | 0.786 ✓ |
| T14 | 211 - 191 | 2 1/2 | 20.000 | 2.833 | 54.4<br>K=1.00 | 0.92 | 21.809 | 4.909 | -91.724 | 107.053 | 0.857 ✓ |
| T15 | 191 - 171 | 2 1/2 | 20.000 | 2.833 | 54.4<br>K=1.00 | 0.93 | 21.904 | 4.909 | -101.213 | 107.522 | 0.941 ✓ |
| T16 | 171 - 151 | 2 1/2 | 20.000 | 2.833 | 54.4<br>K=1.00 | 0.92 | 21.843 | 4.909 | -98.558 | 107.223 | 0.919 ✓ |
| T17 | 151 - 131 | 2 1/2 | 20.000 | 2.833 | 54.4<br>K=1.00 | 0.91 | 21.451 | 4.909 | -89.094 | 105.295 | 0.846 ✓ |
| T18 | 131 - 111 | 2 1/2 | 20.000 | 2.833 | 54.4<br>K=1.00 | 0.92 | 21.748 | 4.909 | -117.455 | 106.754 | 1.100 ✓ |
| T19 | 111 - 91 | 2 1/2 | 20.000 | 2.833 | 54.4<br>K=1.00 | 0.91 | 21.432 | 4.909 | -100.921 | 105.201 | 0.959 ✓ |
| T20 | 91 - 71 | 2 1/2 | 20.000 | 2.833 | 54.4<br>K=1.00 | 0.90 | 21.341 | 4.909 | -101.923 | 104.758 | 0.973 ✓ |
| T21 | 71 - 51 | 2 3/4 | 20.000 | 2.833 | 49.5<br>K=1.00 | 0.89 | 21.805 | 5.940 | -113.376 | 129.514 | 0.875 ✓ |
| T22 | 51 - 31 | 2 3/4 | 20.000 | 2.833 | 49.5<br>K=1.00 | 0.89 | 21.817 | 5.940 | -114.399 | 129.586 | 0.883 ✓ |

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | Mast Stability Index | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| T23 | 31 - 11 | 2 3/4 | 20.000 | 2.833 | 49.5<br>K=1.00 | 0.89 | 21.710 | 5.940 | -111.266 | 128.946 | 0.863 ✓ |
| T24 | 11 - 1 | 2 3/4 | 10.263 | 2.104 | 36.7<br>K=1.00 | 0.82 | 21.654 | 5.940 | -98.129 | 128.614 | 0.763 ✓ |

## Diagonal Design Data (Compression)

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| L1 | 528 - 512.205 | 3/4 | 3.476 | 1.738 | 105.0<br>K=0.94 | 13.532 | 0.442 | -0.862 | 5.978 | 0.144 ✓ |
| L2 | 512.205 - 496.41 | 3/4 | 3.476 | 1.738 | 105.0<br>K=0.94 | 13.532 | 0.442 | -1.897 | 5.978 | 0.317 ✓ |
| L3 | 496.41 - 480.615 | 3/4 | 3.476 | 1.738 | 105.0<br>K=0.94 | 13.532 | 0.442 | -2.947 | 5.978 | 0.493 ✓ |
| L4 | 480.615 - 470 | 3/4 | 3.483 | 1.741 | 105.1<br>K=0.94 | 13.511 | 0.442 | -3.210 | 5.969 | 0.538 ✓ |
| T1 | 470 - 451 | 3/4 | 4.902 | 2.451 | 141.2<br>K=0.90 | 7.493 | 0.442 | -2.700 | 3.310 | 0.816 ✓ |
| T2 | 451 - 431 | 3/4 | 4.902 | 2.451 | 141.2<br>K=0.90 | 7.493 | 0.442 | -2.246 | 3.310 | 0.678 ✓ |
| T3 | 431 - 411 | 3/4 | 4.902 | 2.451 | 141.2<br>K=0.90 | 7.493 | 0.442 | -1.629 | 3.310 | 0.492 ✓ |
| T4 | 411 - 391 | 3/4 | 4.902 | 2.451 | 141.2<br>K=0.90 | 7.493 | 0.442 | -2.213 | 3.310 | 0.669 ✓ |
| T5 | 391 - 371 | 3/4 | 4.902 | 2.451 | 141.2<br>K=0.90 | 7.493 | 0.442 | -2.768 | 3.310 | 0.836 ✓ |
| T6 | 371 - 351 | 7/8 | 4.902 | 2.451 | 121.0<br>K=0.90 | 10.199 | 0.601 | -3.020 | 6.133 | 0.492 ✓ |
| T7 | 351 - 331 | 3/4 | 4.902 | 2.451 | 141.2<br>K=0.90 | 7.493 | 0.442 | -2.105 | 3.310 | 0.636 ✓ |
| T8 | 331 - 311 | 3/4 | 4.902 | 2.451 | 141.2<br>K=0.90 | 7.493 | 0.442 | -1.701 | 3.310 | 0.514 ✓ |
| T9 | 311 - 291 | 3/4 | 4.902 | 2.451 | 141.2<br>K=0.90 | 7.493 | 0.442 | -1.637 | 3.310 | 0.494 ✓ |
| T10 | 291 - 271 | 3/4 | 4.902 | 2.451 | 141.2<br>K=0.90 | 7.493 | 0.442 | -2.710 | 3.310 | 0.819 ✓ |
| T11 | 271 - 251 | 3/4 | 4.902 | 2.451 | 141.2<br>K=0.90 | 7.493 | 0.442 | -3.824 | 3.310 | 1.155 ✓ |
| T12 | 251 - 231 | 3/4 | 4.902 | 2.451 | 141.2<br>K=0.90 | 7.493 | 0.442 | -3.980 | 3.310 | 1.202 ✓ |
| T13 | 231 - 211 | 3/4 | 4.902 | 2.451 | 141.2<br>K=0.90 | 7.493 | 0.442 | -3.329 | 3.310 | 1.006 ✓ |
| T14 | 211 - 191 | 3/4 | 4.902 | 2.451 | 141.2<br>K=0.90 | 7.493 | 0.442 | -2.774 | 3.310 | 0.838 ✓ |
| T15 | 191 - 171 | 3/4 | 4.902 | 2.451 | 141.2<br>K=0.90 | 7.493 | 0.442 | -2.099 | 3.310 | 0.634 ✓ |

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| T16 | 171 - 151 | 3/4 | 4.902 | 2.451 | 141.2<br>K=0.90 | 7.493 | 0.442 | -3.673 | 3.310 | 1.110 ✓ |
| T17 | 151 - 131 | 7/8 | 4.902 | 2.451 | 121.0<br>K=0.90 | 10.199 | 0.601 | -5.970 | 6.133 | 0.973 ✓ |
| T18 | 131 - 111 | 7/8 | 4.902 | 2.451 | 121.0<br>K=0.90 | 10.199 | 0.601 | -6.204 | 6.133 | 1.012 ✓ |
| T19 | 111 - 91 | 7/8 | 4.902 | 2.451 | 121.0<br>K=0.90 | 10.199 | 0.601 | -4.522 | 6.133 | 0.737 ✓ |
| T20 | 91 - 71 | 7/8 | 4.902 | 2.451 | 121.0<br>K=0.90 | 10.199 | 0.601 | -3.646 | 6.133 | 0.595 ✓ |
| T21 | 71 - 51 | 7/8 | 4.902 | 2.451 | 121.0<br>K=0.90 | 10.199 | 0.601 | -2.353 | 6.133 | 0.384 ✓ |
| T22 | 51 - 31 | 7/8 | 4.902 | 2.451 | 121.0<br>K=0.90 | 10.199 | 0.601 | -2.185 | 6.133 | 0.356 ✓ |
| T23 | 31 - 11 | 7/8 | 4.902 | 2.451 | 121.0<br>K=0.90 | 10.199 | 0.601 | -3.301 | 6.133 | 0.538 ✓ |
| T24 | 11 - 1 | 1 1/8 | 2.322 | 2.322 | 94.8<br>K=0.96 | 15.885 | 0.994 | -4.797 | 15.790 | 0.304 ✓ |

## K-Brace Design Data (Compression)

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| L1 | 528 - 512.205 | 3/4 | 1.697 | 1.697 | 96.2<br>K=0.89 | 15.581 | 0.442 | -0.950 | 6.883 | 0.138 ✓ |
| L2 | 512.205 - 496.41 | 3/4 | 1.697 | 1.697 | 96.2<br>K=0.89 | 15.581 | 0.442 | -1.995 | 6.883 | 0.290 ✓ |
| L3 | 496.41 - 480.615 | 3/4 | 1.697 | 1.697 | 96.2<br>K=0.89 | 15.581 | 0.442 | -3.010 | 6.883 | 0.437 ✓ |
| L4 | 480.615 - 470 | 3/4 | 1.701 | 1.701 | 96.2<br>K=0.88 | 15.578 | 0.442 | -3.601 | 6.882 | 0.523 ✓ |
| T1 | 470 - 451 | 3/4 | 2.200 | 2.200 | 112.6<br>K=0.80 | 11.769 | 0.442 | -2.110 | 5.199 | 0.406 ✓ |
| T2 | 451 - 431 | 3/4 | 2.451 | 2.451 | 125.5<br>K=0.80 | 9.483 | 0.442 | -2.405 | 4.189 | 0.574 ✓ |
| T3 | 431 - 411 | 3/4 | 2.451 | 2.451 | 125.5<br>K=0.80 | 9.483 | 0.442 | -1.502 | 4.189 | 0.359 ✓ |
| T4 | 411 - 391 | 3/4 | 2.451 | 2.451 | 125.5<br>K=0.80 | 9.483 | 0.442 | -1.918 | 4.189 | 0.458 ✓ |
| T5 | 391 - 371 | 3/4 | 2.451 | 2.451 | 125.5<br>K=0.80 | 9.483 | 0.442 | -2.393 | 4.189 | 0.571 ✓ |
| T6 | 371 - 351 | 7/8 | 2.451 | 2.451 | 107.6<br>K=0.80 | 12.907 | 0.601 | -2.596 | 7.761 | 0.335 ✓ |
| T7 | 351 - 331 | 3/4 | 2.451 | 2.451 | 125.5<br>K=0.80 | 9.483 | 0.442 | -2.116 | 4.189 | 0.505 ✓ |
| T8 | 331 - 311 | 3/4 | 2.451 | 2.451 | 125.5<br>K=0.80 | 9.483 | 0.442 | -1.794 | 4.189 | 0.428 ✓ |
| T9 | 311 - 291 | 3/4 | 2.451 | 2.451 | 125.5<br>K=0.80 | 9.483 | 0.442 | -1.148 | 4.189 | 0.274 ✓ |

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| T10 | 291 - 271 | 3/4 | 2.451 | 2.451 | 125.5<br>K=0.80 | 9.483 | 0.442 | -2.100 | 4.189 | 0.501 ✓ |
| T11 | 271 - 251 | 3/4 | 2.451 | 2.451 | 125.5<br>K=0.80 | 9.483 | 0.442 | -3.203 | 4.189 | 0.764 ✓ |
| T12 | 251 - 231 | 3/4 | 2.451 | 2.451 | 125.5<br>K=0.80 | 9.483 | 0.442 | -3.321 | 4.189 | 0.793 ✓ |
| T13 | 231 - 211 | 3/4 | 2.451 | 2.451 | 125.5<br>K=0.80 | 9.483 | 0.442 | -2.714 | 4.189 | 0.648 ✓ |
| T14 | 211 - 191 | 3/4 | 2.451 | 2.451 | 125.5<br>K=0.80 | 9.483 | 0.442 | -2.289 | 4.189 | 0.546 ✓ |
| T15 | 191 - 171 | 3/4 | 2.451 | 2.451 | 125.5<br>K=0.80 | 9.483 | 0.442 | -1.730 | 4.189 | 0.413 ✓ |
| T16 | 171 - 151 | 3/4 | 2.451 | 2.451 | 125.5<br>K=0.80 | 9.483 | 0.442 | -2.905 | 4.189 | 0.693 ✓ |
| T17 | 151 - 131 | 7/8 | 2.451 | 2.451 | 107.6<br>K=0.80 | 12.907 | 0.601 | -5.065 | 7.761 | 0.653 ✓ |
| T18 | 131 - 111 | 7/8 | 2.451 | 2.451 | 107.6<br>K=0.80 | 12.907 | 0.601 | -5.184 | 7.761 | 0.668 ✓ |
| T19 | 111 - 91 | 7/8 | 2.451 | 2.451 | 107.6<br>K=0.80 | 12.907 | 0.601 | -3.336 | 7.761 | 0.430 ✓ |
| T20 | 91 - 71 | 7/8 | 2.451 | 2.451 | 107.6<br>K=0.80 | 12.907 | 0.601 | -2.465 | 7.761 | 0.318 ✓ |
| T21 | 71 - 51 | 7/8 | 2.451 | 2.451 | 107.6<br>K=0.80 | 12.907 | 0.601 | -1.383 | 7.761 | 0.178 ✓ |
| T22 | 51 - 31 | 7/8 | 2.451 | 2.451 | 107.6<br>K=0.80 | 12.907 | 0.601 | -1.313 | 7.761 | 0.169 ✓ |
| T23 | 31 - 11 | 7/8 | 2.451 | 2.451 | 107.6<br>K=0.80 | 12.907 | 0.601 | -2.218 | 7.761 | 0.286 ✓ |

## Horizontal Design Data (Compression)

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| T6 | 371 - 351 | 3/4 | 4.000 | 4.000 | 204.8<br>K=0.80 | 3.560 | 0.442 | -0.469 | 1.573 | 0.298 ✓ |
| | | KL/R > 200 (C) - 719 | | | | | | | | |

## Secondary Horizontal Design Data (Compression)

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| T1 | 470 - 451 | 5/8 | 2.000 | 2.000 | 122.9<br>K=0.80 | 9.866 | 0.307 | -0.000 | 3.027 | 0.000 ✓ |
| T2 | 451 - 431 | 5/8 | 2.000 | 2.000 | 122.9<br>K=0.80 | 9.866 | 0.307 | -0.000 | 3.027 | 0.000 ✓ |

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| T3 | 431 - 411 | 5/8 | 2.000 | 2.000 | 122.9 K=0.80 | 9.866 | 0.307 | -0.000 | 3.027 | 0.000 ✓ |
| T4 | 411 - 391 | 5/8 | 2.000 | 2.000 | 122.9 K=0.80 | 9.866 | 0.307 | -0.000 | 3.027 | 0.000 ✓ |
| T5 | 391 - 371 | 5/8 | 2.000 | 2.000 | 122.9 K=0.80 | 9.866 | 0.307 | -0.000 | 3.027 | 0.000 ✓ |
| T6 | 371 - 351 | 5/8 | 2.000 | 2.000 | 122.9 K=0.80 | 9.866 | 0.307 | -0.000 | 3.027 | 0.000 ✓ |
| T7 | 351 - 331 | 5/8 | 2.000 | 2.000 | 122.9 K=0.80 | 9.866 | 0.307 | -0.000 | 3.027 | 0.000 ✓ |
| T8 | 331 - 311 | 5/8 | 2.000 | 2.000 | 122.9 K=0.80 | 9.866 | 0.307 | -0.000 | 3.027 | 0.000 ✓ |
| T9 | 311 - 291 | 5/8 | 2.000 | 2.000 | 122.9 K=0.80 | 9.866 | 0.307 | -0.000 | 3.027 | 0.000 ✓ |
| T10 | 291 - 271 | 5/8 | 2.000 | 2.000 | 122.9 K=0.80 | 9.866 | 0.307 | -0.000 | 3.027 | 0.000 ✓ |
| T11 | 271 - 251 | 5/8 | 2.000 | 2.000 | 122.9 K=0.80 | 9.866 | 0.307 | -0.000 | 3.027 | 0.000 ✓ |
| T12 | 251 - 231 | 5/8 | 2.000 | 2.000 | 122.9 K=0.80 | 9.866 | 0.307 | -0.000 | 3.027 | 0.000 ✓ |
| T13 | 231 - 211 | 5/8 | 2.000 | 2.000 | 122.9 K=0.80 | 9.866 | 0.307 | -0.000 | 3.027 | 0.000 ✓ |
| T14 | 211 - 191 | 5/8 | 2.000 | 2.000 | 122.9 K=0.80 | 9.866 | 0.307 | -0.000 | 3.027 | 0.000 ✓ |
| T15 | 191 - 171 | 5/8 | 2.000 | 2.000 | 122.9 K=0.80 | 9.866 | 0.307 | -0.000 | 3.027 | 0.000 ✓ |
| T16 | 171 - 151 | 5/8 | 2.000 | 2.000 | 122.9 K=0.80 | 9.866 | 0.307 | -0.000 | 3.027 | 0.000 ✓ |
| T17 | 151 - 131 | 5/8 | 2.000 | 2.000 | 122.9 K=0.80 | 9.866 | 0.307 | -0.000 | 3.027 | 0.000 ✓ |
| T18 | 131 - 111 | 5/8 | 2.000 | 2.000 | 122.9 K=0.80 | 9.866 | 0.307 | -0.000 | 3.027 | 0.000 ✓ |
| T19 | 111 - 91 | 5/8 | 2.000 | 2.000 | 122.9 K=0.80 | 9.866 | 0.307 | -0.000 | 3.027 | 0.000 ✓ |
| T20 | 91 - 71 | 5/8 | 2.000 | 2.000 | 122.9 K=0.80 | 9.866 | 0.307 | -0.000 | 3.027 | 0.000 ✓ |
| T21 | 71 - 51 | 5/8 | 2.000 | 2.000 | 122.9 K=0.80 | 9.866 | 0.307 | -0.000 | 3.027 | 0.000 ✓ |
| T22 | 51 - 31 | 5/8 | 2.000 | 2.000 | 122.9 K=0.80 | 9.866 | 0.307 | -0.000 | 3.027 | 0.000 ✓ |
| T23 | 31 - 11 | 5/8 | 2.000 | 2.000 | 122.9 K=0.80 | 9.866 | 0.307 | -0.000 | 3.027 | 0.000 ✓ |

## Top Girt Design Data (Compression)

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| L1 | 528 - 512.205 | 1 1/2x1/2 | 3.000 | 3.000 | 199.5 K=0.80 | 3.751 | 0.750 | -0.195 | 2.813 | 0.069 ✓ |

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| L2 | 512.205 - 496.41 | 1 1/2x1/2 | 3.000 | 3.000 | 199.5 K=0.80 | 3.751 | 0.750 | -0.913 | 2.813 | 0.325 ✓ |
| L3 | 496.41 - 480.615 | 1 1/2x1/2 | 3.000 | 3.000 | 199.5 K=0.80 | 3.751 | 0.750 | -1.881 | 2.813 | 0.669 ✓ |
| L4 | 480.615 - 470 | 7/8 | 3.000 | 3.000 | 131.7 K=0.80 | 8.615 | 0.601 | -2.826 | 5.180 | 0.546 ✓ |
| T1 | 470 - 451 | 12x1 | 4.000 | 4.000 | 166.3 K=1.00 | 5.401 | 12.000 | -0.159 | 64.814 | 0.002 ✓ |
| T2 | 451 - 431 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -1.952 | 4.971 | 0.393 ✓ |
| T3 | 431 - 411 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -1.187 | 4.971 | 0.239 ✓ |
| T4 | 411 - 391 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -1.151 | 4.971 | 0.231 ✓ |
| T5 | 391 - 371 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -1.626 | 4.971 | 0.327 ✓ |
| T6 | 371 - 351 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -2.098 | 4.971 | 0.422 ✓ |
| T7 | 351 - 331 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -1.682 | 4.971 | 0.338 ✓ |
| T8 | 331 - 311 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -1.410 | 4.971 | 0.284 ✓ |
| T9 | 311 - 291 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -0.598 | 4.971 | 0.120 ✓ |
| T10 | 291 - 271 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -0.980 | 4.971 | 0.197 ✓ |
| T11 | 271 - 251 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -1.767 | 4.971 | 0.356 ✓ |
| T12 | 251 - 231 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -2.686 | 4.971 | 0.540 ✓ |
| T13 | 231 - 211 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -2.048 | 4.971 | 0.412 ✓ |
| T14 | 211 - 191 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -1.738 | 4.971 | 0.350 ✓ |
| T15 | 191 - 171 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -1.291 | 4.971 | 0.260 ✓ |
| T16 | 171 - 151 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -0.570 | 4.971 | 0.115 ✓ |
| T17 | 151 - 131 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -2.406 | 4.971 | 0.484 ✓ |
| T18 | 131 - 111 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -4.202 | 4.971 | 0.845 ✓ |
| T19 | 111 - 91 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -2.691 | 4.971 | 0.541 ✓ |
| T20 | 91 - 71 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -1.973 | 4.971 | 0.397 ✓ |
| T21 | 71 - 51 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -1.082 | 4.971 | 0.218 ✓ |
| T22 | 51 - 31 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -0.127 | 4.971 | 0.026 ✓ |
| T23 | 31 - 11 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -0.903 | 4.971 | 0.182 ✓ |

## Bottom Girt Design Data (Compression)

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| L1 | 528 - 512.205 | 1 1/2x1/2 | 3.000 | 3.000 | 199.5 K=0.80 | 3.751 | 0.750 | -0.871 | 2.813 | 0.309 ✓ |
| L2 | 512.205 - 496.41 | 1 1/2x1/2 | 3.000 | 3.000 | 199.5 K=0.80 | 3.751 | 0.750 | -1.811 | 2.813 | 0.644 ✓ |
| L3 | 496.41 - 480.615 | 7/8 | 3.000 | 3.000 | 105.3 K=0.64 | 13.449 | 0.601 | -2.720 | 8.087 | 0.336 ✓ |
| L4 | 480.615 - 470 | 12x1 | 3.000 | 3.000 | 124.7 K=1.00 | 9.602 | 12.000 | -3.961 | 115.225 | 0.034 ✓ |
| T1 | 470 - 451 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -1.854 | 4.971 | 0.373 ✓ |
| T2 | 451 - 431 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -1.186 | 4.971 | 0.239 ✓ |
| T3 | 431 - 411 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -1.127 | 4.971 | 0.227 ✓ |
| T4 | 411 - 391 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -1.571 | 4.971 | 0.316 ✓ |
| T5 | 391 - 371 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -1.958 | 4.971 | 0.394 ✓ |
| T6 | 371 - 351 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -1.778 | 4.971 | 0.358 ✓ |
| T7 | 351 - 331 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -1.480 | 4.971 | 0.298 ✓ |
| T8 | 331 - 311 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -0.659 | 4.971 | 0.133 ✓ |
| T9 | 311 - 291 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -0.939 | 4.971 | 0.189 ✓ |
| T10 | 291 - 271 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -1.715 | 4.971 | 0.345 ✓ |
| T11 | 271 - 251 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -2.611 | 4.971 | 0.525 ✓ |
| T12 | 251 - 231 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -2.303 | 4.971 | 0.463 ✓ |
| T13 | 231 - 211 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -1.804 | 4.971 | 0.363 ✓ |
| T14 | 211 - 191 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -1.302 | 4.971 | 0.262 ✓ |
| T15 | 191 - 171 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -0.628 | 4.971 | 0.126 ✓ |
| T16 | 171 - 151 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -2.376 | 4.971 | 0.478 ✓ |
| T17 | 151 - 131 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -4.132 | 4.971 | 0.831 ✓ |
| T18 | 131 - 111 | 1 | 4.000 | 4.000 | 153.6 K=0.80 | 6.329 | 0.785 | -2.777 | 4.971 | 0.559 ✓ |

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| T19 | 111 - 91 | 1 | 4.000 | 4.000 | 153.6<br>K=0.80 | 6.329 | 0.785 | -2.002 | 4.971 | 0.403 ✓ |
| T20 | 91 - 71 | 1 | 4.000 | 4.000 | 153.6<br>K=0.80 | 6.329 | 0.785 | -1.059 | 4.971 | 0.213 ✓ |
| T21 | 71 - 51 | 1 | 4.000 | 4.000 | 153.6<br>K=0.80 | 6.329 | 0.785 | -0.123 | 4.971 | 0.025 ✓ |
| T22 | 51 - 31 | 1 | 4.000 | 4.000 | 153.6<br>K=0.80 | 6.329 | 0.785 | -0.967 | 4.971 | 0.195 ✓ |

## Mid Girt Design Data (Compression)

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| L1 | 528 - 512.205 | 7/8 | 3.000 | 3.000 | 105.3<br>K=0.64 | 13.449 | 0.601 | -0.034 | 8.087 | 0.004 ✓ |
| L2 | 512.205 - 496.41 | 7/8 | 3.000 | 3.000 | 105.3<br>K=0.64 | 13.449 | 0.601 | -0.088 | 8.087 | 0.011 ✓ |
| L3 | 496.41 - 480.615 | 7/8 | 3.000 | 3.000 | 105.3<br>K=0.64 | 13.449 | 0.601 | -0.188 | 8.087 | 0.023 ✓ |
| L4 | 480.615 - 470 | 7/8 | 3.000 | 3.000 | 131.7<br>K=0.80 | 8.615 | 0.601 | -0.272 | 5.180 | 0.053 ✓ |

## Top Guy Pull-Off Design Data (Compression)

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| T12 | 251 - 231 | 1 1/4 | 4.000 | 4.000 | 153.6<br>K=1.00 | 6.329 | 1.227 | -4.055 | 7.767 | 0.522 ✓ |

## Bottom Guy Pull-Off Design Data (Compression)

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| T12 | 251 - 231 | 1 1/4 | 4.000 | 4.000 | 153.6<br>K=1.00 | 6.329 | 1.227 | -6.445 | 7.767 | 0.830 ✓ |

## Torque-Arm Bottom Design Data

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| T12 | 251 - 231 (1976) | L4x4x1/2 | 7.236 | 7.236 | 111.0 K=1.00 | 11.531 | 3.750 | -15.047 | 43.243 | 0.348 ✓ |
| T12 | 251 - 231 (1977) | L4x4x1/2 | 7.236 | 7.236 | 111.0 K=1.00 | 11.531 | 3.750 | -16.850 | 43.243 | 0.390 ✓ |
| T12 | 251 - 231 (1984) | L4x4x1/2 | 7.236 | 7.236 | 111.0 K=1.00 | 11.531 | 3.750 | -8.162 | 43.243 | 0.189 ✓ |
| T12 | 251 - 231 (1985) | L4x4x1/2 | 7.236 | 7.236 | 111.0 K=1.00 | 11.531 | 3.750 | -18.132 | 43.243 | 0.419 ✓ |
| T12 | 251 - 231 (1990) | L4x4x1/2 | 7.236 | 7.236 | 111.0 K=1.00 | 11.531 | 3.750 | -14.695 | 43.243 | 0.340 ✓ |
| T12 | 251 - 231 (1991) | L4x4x1/2 | 7.236 | 7.236 | 111.0 K=1.00 | 11.531 | 3.750 | -17.052 | 43.243 | 0.394 ✓ |

## Tension Checks

## Leg Design Data (Tension)

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| L1 | 528 - 512.205 | 2 | 15.795 | 1.755 | 42.1 | 30.000 | 3.142 | 6.257 | 94.248 | 0.066 ✓ |
| L2 | 512.205 - 496.41 | 2 | 15.795 | 1.755 | 42.1 | 30.000 | 3.142 | 21.375 | 94.248 | 0.227 ✓ |
| L3 | 496.41 - 480.615 | 2 | 15.795 | 1.755 | 42.1 | 30.000 | 3.142 | 45.405 | 94.248 | 0.482 ✓ |
| L4 | 480.615 - 470 | 2 | 10.615 | 1.769 | 42.5 | 30.000 | 3.142 | 65.856 | 94.248 | 0.699 ✓ |
| T1 | 470 - 451 | 2 1/2 | 19.000 | 2.833 | 54.4 | 30.000 | 4.909 | 48.786 | 147.262 | 0.331 ✓ |
| T5 | 391 - 371 | 2 1/2 | 20.000 | 2.833 | 54.4 | 30.000 | 4.909 | 10.324 | 147.262 | 0.070 ✓ |
| T6 | 371 - 351 | 2 1/2 | 20.000 | 2.833 | 54.4 | 30.000 | 4.909 | 17.666 | 147.262 | 0.120 ✓ |
| T12 | 251 - 231 | 2 1/2 | 20.000 | 2.833 | 54.4 | 30.000 | 4.909 | 4.462 | 147.262 | 0.030 ✓ |
| T15 | 191 - 171 | 2 1/2 | 20.000 | 2.833 | 54.4 | 30.000 | 4.909 | 9.113 | 147.262 | 0.062 ✓ |
| T16 | 171 - 151 | 2 1/2 | 20.000 | 2.833 | 54.4 | 30.000 | 4.909 | 6.636 | 147.262 | 0.045 ✓ |
| T18 | 131 - 111 | 2 1/2 | 20.000 | 2.833 | 54.4 | 30.000 | 4.909 | 3.806 | 147.262 | 0.026 ✓ |

## Diagonal Design Data (Tension)

| Section No. | Elevation | Size | L | $L_u$ | Kl/r | $F_a$ | A | Actual P | Allow. $P_a$ | Ratio P / $P_a$ |
|---|---|---|---|---|---|---|---|---|---|---|
| | ft | | ft | ft | | ksi | $in^2$ | K | K | |
| | | | | | | | | | | ✓ |

## K-Brace Design Data (Tension)

| Section No. | Elevation | Size | L | $L_u$ | Kl/r | $F_a$ | A | Actual P | Allow. $P_a$ | Ratio P / $P_a$ |
|---|---|---|---|---|---|---|---|---|---|---|
| | ft | | ft | ft | | ksi | $in^2$ | K | K | |
| L1 | 528 - 512.205 | 3/4 | 1.697 | 1.697 | 108.6 | 30.000 | 0.442 | 0.975 | 13.254 | 0.074 ✓ |
| L2 | 512.205 - 496.41 | 3/4 | 1.697 | 1.697 | 108.6 | 30.000 | 0.442 | 2.019 | 13.254 | 0.152 ✓ |
| L3 | 496.41 - 480.615 | 3/4 | 1.697 | 1.697 | 108.6 | 30.000 | 0.442 | 3.031 | 13.254 | 0.229 ✓ |
| L4 | 480.615 - 470 | 3/4 | 1.701 | 1.701 | 108.8 | 30.000 | 0.442 | 3.602 | 13.254 | 0.272 ✓ |
| T1 | 470 - 451 | 3/4 | 2.200 | 2.200 | 140.8 | 30.000 | 0.442 | 2.655 | 13.254 | 0.200 ✓ |
| T2 | 451 - 431 | 3/4 | 2.451 | 2.451 | 156.9 | 30.000 | 0.442 | 2.377 | 13.254 | 0.179 ✓ |
| T3 | 431 - 411 | 3/4 | 2.451 | 2.451 | 156.9 | 30.000 | 0.442 | 1.474 | 13.254 | 0.111 ✓ |
| T4 | 411 - 391 | 3/4 | 2.451 | 2.451 | 156.9 | 30.000 | 0.442 | 1.944 | 13.254 | 0.147 ✓ |
| T5 | 391 - 371 | 3/4 | 2.451 | 2.451 | 156.9 | 30.000 | 0.442 | 2.420 | 13.254 | 0.183 ✓ |
| T6 | 371 - 351 | 7/8 | 2.451 | 2.451 | 134.5 | 30.000 | 0.601 | 2.563 | 18.040 | 0.142 ✓ |
| T7 | 351 - 331 | 3/4 | 2.451 | 2.451 | 156.9 | 30.000 | 0.442 | 2.088 | 13.254 | 0.158 ✓ |
| T8 | 331 - 311 | 3/4 | 2.451 | 2.451 | 156.9 | 30.000 | 0.442 | 1.772 | 13.254 | 0.134 ✓ |
| T9 | 311 - 291 | 3/4 | 2.451 | 2.451 | 156.9 | 30.000 | 0.442 | 1.165 | 13.254 | 0.088 ✓ |
| T10 | 291 - 271 | 3/4 | 2.451 | 2.451 | 156.9 | 30.000 | 0.442 | 2.124 | 13.254 | 0.160 ✓ |
| T11 | 271 - 251 | 3/4 | 2.451 | 2.451 | 156.9 | 30.000 | 0.442 | 3.229 | 13.254 | 0.244 ✓ |
| T12 | 251 - 231 | 3/4 | 2.451 | 2.451 | 156.9 | 30.000 | 0.442 | 3.289 | 13.254 | 0.248 ✓ |
| T13 | 231 - 211 | 3/4 | 2.451 | 2.451 | 156.9 | 30.000 | 0.442 | 2.685 | 13.254 | 0.203 ✓ |
| T14 | 211 - 191 | 3/4 | 2.451 | 2.451 | 156.9 | 30.000 | 0.442 | 2.259 | 13.254 | 0.170 ✓ |
| T15 | 191 - 171 | 3/4 | 2.451 | 2.451 | 156.9 | 30.000 | 0.442 | 1.700 | 13.254 | 0.128 ✓ |
| T16 | 171 - 151 | 3/4 | 2.451 | 2.451 | 156.9 | 30.000 | 0.442 | 2.928 | 13.254 | 0.221 ✓ |
| T17 | 151 - 131 | 7/8 | 2.451 | 2.451 | 134.5 | 30.000 | 0.601 | 5.095 | 18.040 | 0.282 ✓ |
| T18 | 131 - 111 | 7/8 | 2.451 | 2.451 | 134.5 | 30.000 | 0.601 | 5.149 | 18.040 | 0.285 ✓ |

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio P / $P_a$ |
|---|---|---|---|---|---|---|---|---|---|---|
| T19 | 111 - 91 | 7/8 | 2.451 | 2.451 | 134.5 | 30.000 | 0.601 | 3.302 | 18.040 | 0.183 ✓ |
| T20 | 91 - 71 | 7/8 | 2.451 | 2.451 | 134.5 | 30.000 | 0.601 | 2.428 | 18.040 | 0.135 ✓ |
| T21 | 71 - 51 | 7/8 | 2.451 | 2.451 | 134.5 | 30.000 | 0.601 | 1.347 | 18.040 | 0.075 ✓ |
| T22 | 51 - 31 | 7/8 | 2.451 | 2.451 | 134.5 | 30.000 | 0.601 | 1.340 | 18.040 | 0.074 ✓ |
| T23 | 31 - 11 | 7/8 | 2.451 | 2.451 | 134.5 | 30.000 | 0.601 | 2.249 | 18.040 | 0.125 ✓ |

## Horizontal Design Data (Tension)

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio P / $P_a$ |
|---|---|---|---|---|---|---|---|---|---|---|
| T1 | 470 - 451 | 3/4 | 4.000 | 4.000 | 256.0 | 30.000 | 0.442 | 0.858 | 13.254 | 0.065 ✓ |
| T2 | 451 - 431 | 3/4 | 4.000 | 4.000 | 256.0 | 30.000 | 0.442 | 0.625 | 13.254 | 0.047 ✓ |
| T3 | 431 - 411 | 3/4 | 4.000 | 4.000 | 256.0 | 30.000 | 0.442 | 0.697 | 13.254 | 0.053 ✓ |
| T4 | 411 - 391 | 3/4 | 4.000 | 4.000 | 256.0 | 30.000 | 0.442 | 0.673 | 13.254 | 0.051 ✓ |
| T5 | 391 - 371 | 3/4 | 4.000 | 4.000 | 256.0 | 30.000 | 0.442 | 0.917 | 13.254 | 0.069 ✓ |
| T6 | 371 - 351 | 3/4 | 4.000 | 4.000 | 256.0 | 30.000 | 0.442 | 1.473 | 13.254 | 0.111 ✓ |
| T7 | 351 - 331 | 3/4 | 4.000 | 4.000 | 256.0 | 30.000 | 0.442 | 1.099 | 13.254 | 0.083 ✓ |
| T8 | 331 - 311 | 3/4 | 4.000 | 4.000 | 256.0 | 30.000 | 0.442 | 1.036 | 13.254 | 0.078 ✓ |
| T9 | 311 - 291 | 3/4 | 4.000 | 4.000 | 256.0 | 30.000 | 0.442 | 1.064 | 13.254 | 0.080 ✓ |
| T10 | 291 - 271 | 3/4 | 4.000 | 4.000 | 256.0 | 30.000 | 0.442 | 1.097 | 13.254 | 0.083 ✓ |
| T11 | 271 - 251 | 3/4 | 4.000 | 4.000 | 256.0 | 30.000 | 0.442 | 1.368 | 13.254 | 0.103 ✓ |
| T12 | 251 - 231 | 3/4 | 4.000 | 4.000 | 256.0 | 30.000 | 0.442 | 1.716 | 13.254 | 0.129 ✓ |
| T13 | 231 - 211 | 3/4 | 4.000 | 4.000 | 256.0 | 30.000 | 0.442 | 1.505 | 13.254 | 0.114 ✓ |
| T14 | 211 - 191 | 3/4 | 4.000 | 4.000 | 256.0 | 30.000 | 0.442 | 1.833 | 13.254 | 0.138 ✓ |
| T15 | 191 - 171 | 3/4 | 4.000 | 4.000 | 256.0 | 30.000 | 0.442 | 2.176 | 13.254 | 0.164 ✓ |
| T16 | 171 - 151 | 3/4 | 4.000 | 4.000 | 256.0 | 30.000 | 0.442 | 2.191 | 13.254 | 0.165 ✓ |
| T17 | 151 - 131 | 3/4 | 4.000 | 4.000 | 256.0 | 30.000 | 0.442 | 2.205 | 13.254 | 0.166 ✓ |

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| T18 | 131 - 111 | 3/4 | 4.000 | 4.000 | 256.0 | 30.000 | 0.442 | 2.829 | 13.254 | 0.213 ✓ |
| T19 | 111 - 91 | 3/4 | 4.000 | 4.000 | 256.0 | 30.000 | 0.442 | 2.557 | 13.254 | 0.193 ✓ |
| T20 | 91 - 71 | 3/4 | 4.000 | 4.000 | 256.0 | 30.000 | 0.442 | 2.873 | 13.254 | 0.217 ✓ |
| T21 | 71 - 51 | 3/4 | 4.000 | 4.000 | 256.0 | 30.000 | 0.442 | 2.580 | 13.254 | 0.195 ✓ |
| T22 | 51 - 31 | 3/4 | 4.000 | 4.000 | 256.0 | 30.000 | 0.442 | 2.589 | 13.254 | 0.195 ✓ |
| T23 | 31 - 11 | 3/4 | 4.000 | 4.000 | 256.0 | 30.000 | 0.442 | 2.457 | 13.254 | 0.185 ✓ |
| T24 | 11 - 1 | 1 1/8 | 1.607 | 1.607 | 68.6 | 30.000 | 0.994 | 1.917 | 29.821 | 0.064 ✓ |

## Secondary Horizontal Design Data (Tension)

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| T1 | 470 - 451 | 5/8 | 2.000 | 2.000 | 153.6 | 21.600 | 0.307 | 0.000 | 6.627 | 0.000 ✓ |
| T2 | 451 - 431 | 5/8 | 2.000 | 2.000 | 153.6 | 21.600 | 0.307 | 0.000 | 6.627 | 0.000 ✓ |
| T3 | 431 - 411 | 5/8 | 2.000 | 2.000 | 153.6 | 21.600 | 0.307 | 0.000 | 6.627 | 0.000 ✓ |
| T4 | 411 - 391 | 5/8 | 2.000 | 2.000 | 153.6 | 21.600 | 0.307 | 0.000 | 6.627 | 0.000 ✓ |
| T5 | 391 - 371 | 5/8 | 2.000 | 2.000 | 153.6 | 21.600 | 0.307 | 0.000 | 6.627 | 0.000 ✓ |
| T6 | 371 - 351 | 5/8 | 2.000 | 2.000 | 153.6 | 21.600 | 0.307 | 0.000 | 6.627 | 0.000 ✓ |
| T7 | 351 - 331 | 5/8 | 2.000 | 2.000 | 153.6 | 21.600 | 0.307 | 0.000 | 6.627 | 0.000 ✓ |
| T8 | 331 - 311 | 5/8 | 2.000 | 2.000 | 153.6 | 21.600 | 0.307 | 0.000 | 6.627 | 0.000 ✓ |
| T9 | 311 - 291 | 5/8 | 2.000 | 2.000 | 153.6 | 21.600 | 0.307 | 0.000 | 6.627 | 0.000 ✓ |
| T10 | 291 - 271 | 5/8 | 2.000 | 2.000 | 153.6 | 21.600 | 0.307 | 0.000 | 6.627 | 0.000 ✓ |
| T11 | 271 - 251 | 5/8 | 2.000 | 2.000 | 153.6 | 21.600 | 0.307 | 0.000 | 6.627 | 0.000 ✓ |
| T12 | 251 - 231 | 5/8 | 2.000 | 2.000 | 153.6 | 21.600 | 0.307 | 0.000 | 6.627 | 0.000 ✓ |
| T13 | 231 - 211 | 5/8 | 2.000 | 2.000 | 153.6 | 21.600 | 0.307 | 0.000 | 6.627 | 0.000 ✓ |
| T14 | 211 - 191 | 5/8 | 2.000 | 2.000 | 153.6 | 21.600 | 0.307 | 0.000 | 6.627 | 0.000 ✓ |
| T15 | 191 - 171 | 5/8 | 2.000 | 2.000 | 153.6 | 21.600 | 0.307 | 0.000 | 6.627 | 0.000 ✓ |

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| T16 | 171 - 151 | 5/8 | 2.000 | 2.000 | 153.6 | 21.600 | 0.307 | 0.000 | 6.627 | 0.000 |
| T17 | 151 - 131 | 5/8 | 2.000 | 2.000 | 153.6 | 21.600 | 0.307 | 0.000 | 6.627 | 0.000 |
| T18 | 131 - 111 | 5/8 | 2.000 | 2.000 | 153.6 | 21.600 | 0.307 | 0.000 | 6.627 | 0.000 |
| T19 | 111 - 91 | 5/8 | 2.000 | 2.000 | 153.6 | 21.600 | 0.307 | 0.000 | 6.627 | 0.000 |
| T20 | 91 - 71 | 5/8 | 2.000 | 2.000 | 153.6 | 21.600 | 0.307 | 0.000 | 6.627 | 0.000 |
| T21 | 71 - 51 | 5/8 | 2.000 | 2.000 | 153.6 | 21.600 | 0.307 | 0.000 | 6.627 | 0.000 |
| T22 | 51 - 31 | 5/8 | 2.000 | 2.000 | 153.6 | 21.600 | 0.307 | 0.000 | 6.627 | 0.000 |
| T23 | 31 - 11 | 5/8 | 2.000 | 2.000 | 153.6 | 21.600 | 0.307 | 0.000 | 6.627 | 0.000 |

## Top Girt Design Data (Tension)

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| L1 | 528 - 512.205 | 1 1/2x1/2 | 3.000 | 3.000 | 249.4 | 21.600 | 0.750 | 0.196 | 16.200 | 0.012 |
| L2 | 512.205 - 496.41 | 1 1/2x1/2 | 3.000 | 3.000 | 249.4 | 21.600 | 0.750 | 0.926 | 16.200 | 0.057 |
| L3 | 496.41 - 480.615 | 1 1/2x1/2 | 3.000 | 3.000 | 249.4 | 21.600 | 0.750 | 1.886 | 16.200 | 0.116 |
| L4 | 480.615 - 470 | 7/8 | 3.000 | 3.000 | 164.6 | 30.000 | 0.601 | 2.809 | 18.040 | 0.156 |
| T1 | 470 - 451 | 12x1 | 4.000 | 4.000 | 166.3 | 30.000 | 12.000 | 9.824 | 360.000 | 0.027 |
| T2 | 451 - 431 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 1.947 | 23.562 | 0.083 |
| T3 | 431 - 411 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 1.239 | 23.562 | 0.053 |
| T4 | 411 - 391 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 1.152 | 23.562 | 0.049 |
| T5 | 391 - 371 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 1.629 | 23.562 | 0.069 |
| T6 | 371 - 351 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 2.108 | 23.562 | 0.089 |
| T7 | 351 - 331 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 1.773 | 23.562 | 0.075 |
| T8 | 331 - 311 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 1.498 | 23.562 | 0.064 |
| T9 | 311 - 291 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 0.696 | 23.562 | 0.030 |
| T10 | 291 - 271 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 1.016 | 23.562 | 0.043 |

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| T11 | 271 - 251 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 1.858 | 23.562 | 0.079 ✓ |
| T12 | 251 - 231 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 2.706 | 23.562 | 0.115 ✓ |
| T13 | 231 - 211 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 2.355 | 23.562 | 0.100 ✓ |
| T14 | 211 - 191 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 1.970 | 23.562 | 0.084 ✓ |
| T15 | 191 - 171 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 1.506 | 23.562 | 0.064 ✓ |
| T16 | 171 - 151 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 0.650 | 23.562 | 0.028 ✓ |
| T17 | 151 - 131 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 2.461 | 23.562 | 0.104 ✓ |
| T18 | 131 - 111 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 4.227 | 23.562 | 0.179 ✓ |
| T19 | 111 - 91 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 2.795 | 23.562 | 0.119 ✓ |
| T20 | 91 - 71 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 2.047 | 23.562 | 0.087 ✓ |
| T21 | 71 - 51 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 1.188 | 23.562 | 0.050 ✓ |
| T22 | 51 - 31 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 0.415 | 23.562 | 0.018 ✓ |
| T23 | 31 - 11 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 1.082 | 23.562 | 0.046 ✓ |
| T24 | 11 - 1 | 1 1/4 | 3.967 | 3.967 | 152.3 | 30.000 | 1.227 | 7.203 | 36.816 | 0.196 ✓ |

## Bottom Girt Design Data (Tension)

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| L1 | 528 - 512.205 | 1 1/2x1/2 | 3.000 | 3.000 | 249.4 | 21.600 | 0.750 | 0.867 | 16.200 | 0.054 ✓ |
| L2 | 512.205 - 496.41 | 1 1/2x1/2 | 3.000 | 3.000 | 249.4 | 21.600 | 0.750 | 1.820 | 16.200 | 0.112 ✓ |
| L3 | 496.41 - 480.615 | 7/8 | 3.000 | 3.000 | 164.6 | 30.000 | 0.601 | 2.742 | 18.040 | 0.152 ✓ |
| L4 | 480.615 - 470 | 12x1 | 3.000 | 3.000 | 124.7 | 30.000 | 12.000 | 3.386 | 360.000 | 0.009 ✓ |
| T1 | 470 - 451 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 1.995 | 23.562 | 0.085 ✓ |
| T2 | 451 - 431 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 1.287 | 23.562 | 0.055 ✓ |
| T3 | 431 - 411 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 1.132 | 23.562 | 0.048 ✓ |
| T4 | 411 - 391 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 1.578 | 23.562 | 0.067 ✓ |

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio P / $P_a$ |
|---|---|---|---|---|---|---|---|---|---|---|
| T5 | 391 - 371 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 1.966 | 23.562 | 0.083 ✓ |
| T6 | 371 - 351 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 1.893 | 23.562 | 0.080 ✓ |
| T7 | 351 - 331 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 1.532 | 23.562 | 0.065 ✓ |
| T8 | 331 - 311 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 0.721 | 23.562 | 0.031 ✓ |
| T9 | 311 - 291 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 0.971 | 23.562 | 0.041 ✓ |
| T10 | 291 - 271 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 1.806 | 23.562 | 0.077 ✓ |
| T11 | 271 - 251 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 2.634 | 23.562 | 0.112 ✓ |
| T12 | 251 - 231 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 2.204 | 23.562 | 0.094 ✓ |
| T13 | 231 - 211 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 1.867 | 23.562 | 0.079 ✓ |
| T14 | 211 - 191 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 1.360 | 23.562 | 0.058 ✓ |
| T15 | 191 - 171 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 0.670 | 23.562 | 0.028 ✓ |
| T16 | 171 - 151 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 2.381 | 23.562 | 0.101 ✓ |
| T17 | 151 - 131 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 4.156 | 23.562 | 0.176 ✓ |
| T18 | 131 - 111 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 2.795 | 23.562 | 0.119 ✓ |
| T19 | 111 - 91 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 2.048 | 23.562 | 0.087 ✓ |
| T20 | 91 - 71 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 1.200 | 23.562 | 0.051 ✓ |
| T21 | 71 - 51 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 0.405 | 23.562 | 0.017 ✓ |
| T22 | 51 - 31 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 1.194 | 23.562 | 0.051 ✓ |
| T23 | 31 - 11 | 1 | 4.000 | 4.000 | 192.0 | 30.000 | 0.785 | 6.071 | 23.562 | 0.258 ✓ |

## Mid Girt Design Data (Tension)

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio P / $P_a$ |
|---|---|---|---|---|---|---|---|---|---|---|
| L1 | 528 - 512.205 | 7/8 | 3.000 | 3.000 | 164.6 | 30.000 | 0.601 | 0.037 | 18.040 | 0.002 ✓ |
| L2 | 512.205 - 496.41 | 7/8 | 3.000 | 3.000 | 164.6 | 30.000 | 0.601 | 0.098 | 18.040 | 0.005 ✓ |
| L3 | 496.41 - | 7/8 | 3.000 | 3.000 | 164.6 | 30.000 | 0.601 | 0.197 | 18.040 | 0.011 |

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| | 480.615 | | | | | | | | | ✓ |
| L4 | 480.615 - 470 | 7/8 | 3.000 | 3.000 | 164.6 | 30.000 | 0.601 | 0.266 | 18.040 | 0.015 ✓ |

## Top Guy Pull-Off Design Data (Tension)

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| T6 | 371 - 351 | 1 1/4 | 4.000 | 4.000 | 153.6 | 30.000 | 1.227 | 7.236 | 36.816 | 0.197 ✓ |
| T12 | 251 - 231 | 1 1/4 | 4.000 | 4.000 | 153.6 | 30.000 | 1.227 | 9.838 | 36.816 | 0.267 ✓ |
| T18 | 131 - 111 | 1 1/4 | 4.000 | 4.000 | 153.6 | 30.000 | 1.227 | 13.702 | 36.816 | 0.372 ✓ |

## Bottom Guy Pull-Off Design Data (Tension)

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| T12 | 251 - 231 | 1 1/4 | 4.000 | 4.000 | 153.6 | 30.000 | 1.227 | 6.350 | 36.816 | 0.172 ✓ |

## Torque-Arm Top Design Data

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| T12 | 251 - 231 (1972) | L4x4x1/2 | 7.236 | 7.236 | 71.2 | 21.600 | 3.750 | 13.935 | 81.000 | 0.172 ✓ |
| T12 | 251 - 231 (1973) | L4x4x1/2 | 7.236 | 7.236 | 71.2 | 21.600 | 3.750 | 13.622 | 81.000 | 0.168 ✓ |
| T12 | 251 - 231 (1982) | L4x4x1/2 | 7.236 | 7.236 | 71.2 | 21.600 | 3.750 | 12.834 | 81.000 | 0.158 ✓ |
| T12 | 251 - 231 (1983) | L4x4x1/2 | 7.236 | 7.236 | 71.2 | 21.600 | 3.750 | 12.652 | 81.000 | 0.156 ✓ |
| T12 | 251 - 231 (1988) | L4x4x1/2 | 7.236 | 7.236 | 71.2 | 21.600 | 3.750 | 14.365 | 81.000 | 0.177 ✓ |
| T12 | 251 - 231 (1989) | L4x4x1/2 | 7.236 | 7.236 | 71.2 | 21.600 | 3.750 | 9.779 | 81.000 | 0.121 ✓ |

## Torque-Arm Bottom Design Data

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| T12 | 251 - 231 (1976) | L4x4x1/2 | 7.236 | 7.236 | 71.2 | 21.600 | 3.750 | 2.888 | 81.000 | 0.036 |
| T12 | 251 - 231 (1977) | L4x4x1/2 | 7.236 | 7.236 | 71.2 | 21.600 | 3.750 | 6.199 | 81.000 | 0.077 |
| T12 | 251 - 231 (1984) | L4x4x1/2 | 7.236 | 7.236 | 71.2 | 21.600 | 3.750 | 5.685 | 81.000 | 0.070 |
| T12 | 251 - 231 (1990) | L4x4x1/2 | 7.236 | 7.236 | 71.2 | 21.600 | 3.750 | 3.077 | 81.000 | 0.038 |
| T12 | 251 - 231 (1991) | L4x4x1/2 | 7.236 | 7.236 | 71.2 | 21.600 | 3.750 | 6.328 | 81.000 | 0.078 |

## Element Map

| Section No. | Section Elevation ft | Component Type | Element List |
|---|---|---|---|
| L1 | 528.000-512.205 | Latticed Pole Leg | 1-3 |
| | | Latticed Pole Diagonal | 28-39,55-78 |
| | | Latticed Pole K-Brace | 5-6,8-9,11-12,14-15,17-18,20-27,41-42,44-45,47-54,80-81,83-84,86-87 |
| | | Latticed Pole Top Girt | 4,7,10 |
| | | Latticed Pole Bottom Girt | 79,82,85 |
| | | Latticed Pole Mid Girt | 13,16,19,40,43,46 |
| L2 | 512.205-496.410 | Latticed Pole Leg | 88-90 |
| | | Latticed Pole Diagonal | 115-126,142-165 |
| | | Latticed Pole K-Brace | 92-93,95-96,98-99,101-102,104-105,107-114,128-129,131-132,134-141,167-168,170-171,173-174 |
| | | Latticed Pole Top Girt | 91,94,97 |
| | | Latticed Pole Bottom Girt | 166,169,172 |
| | | Latticed Pole Mid Girt | 100,103,106,127,130,133 |
| L3 | 496.410-480.615 | Latticed Pole Leg | 175-177 |
| | | Latticed Pole Diagonal | 202-213,229-252 |
| | | Latticed Pole K-Brace | 179-180,182-183,185-186,188-189,191-192,194-201,215-216,218-219,221-228,254-255,257-258,260-261 |
| | | Latticed Pole Top Girt | 178,181,184 |
| | | Latticed Pole Bottom Girt | 253,256,259 |
| | | Latticed Pole Mid Girt | 187,190,193,214,217,220 |

| Section No. | Section Elevation ft | Component Type | Element List |
|---|---|---|---|
| L4 | 480.615-470.000 | Latticed Pole Leg | 262-264 |
| | | Latticed Pole Diagonal | 289-312 |
| | | Latticed Pole K-Brace | 266-267,269-270,272-273,275-276,278-279,281-288,314-315,317-318,320-321 |
| | | Latticed Pole Top Girt | 265,268,271 |
| | | Latticed Pole Bottom Girt | 313,316,319 |
| | | Latticed Pole Mid Girt | 274,277,280 |
| T1 | 470.000-451.000 | Leg | 322-324 |
| | | Diagonal | 338-343,346-351,354-359,362-367,370-375,378-383 |
| | | K-Brace | 331-336,386-391 |
| | | Horizontal | 337,345,353,361,369,377,385 |
| | | Secondary Horizontal | 344,352,360,368,376,384 |
| | | Top Girt | 325-327 |
| | | Bottom Girt | 328-330 |
| | | Guy A | 1964 |
| | | Guy B | 1963 |
| | | Guy C | 1962 |
| | | Index Plate | 1997-1999 |
| T2 | 451.000-431.000 | Leg | 392-394 |
| | | Diagonal | 408-413,416-421,424-429,432-437,440-445,448-453 |
| | | K-Brace | 401-406,456-461 |
| | | Horizontal | 407,415,423,431,439,447,455 |
| | | Secondary Horizontal | 414,422,430,438,446,454 |
| | | Top Girt | 395-397 |
| | | Bottom Girt | 398-400 |
| T3 | 431.000-411.000 | Leg | 462-464 |
| | | Diagonal | 478-483,486-491,494-499,502-507,510-515,518-523 |
| | | K-Brace | 471-476,526-531 |
| | | Horizontal | 477,485,493,501,509,517,525 |
| | | Secondary Horizontal | 484,492,500,508,516,524 |
| | | Top Girt | 465-467 |
| | | Bottom Girt | 468-470 |
| T4 | 411.000-391.000 | Leg | 532-534 |
| | | Diagonal | 548-553,556-561,564-569,572-577,580-585,588-593 |
| | | K-Brace | 541-546,596-601 |
| | | Horizontal | 547,555,563,571,579,587,595 |
| | | Secondary Horizontal | 554,562,570,578,586,594 |
| | | Top Girt | 535-537 |
| | | Bottom Girt | 538-540 |
| T5 | 391.000-371.000 | Leg | 602-604 |
| | | Diagonal | 618-623,626-631,634-639,642-647,650-655,658-663 |
| | | K-Brace | 611-616,666-671 |
| | | Horizontal | 617,625,633,641,649,657,665 |
| | | Secondary Horizontal | 624,632,640,648,656,664 |
| | | Top Girt | 605-607 |
| | | Bottom Girt | 608-610 |

| Section No. | Section Elevation ft | Component Type | Element List |
|---|---|---|---|
| T6 | 371.000-351.000 | Leg | 672-674 |
| | | Diagonal | 688-693,696-701,704-709,712-717,720-725,728-733 |
| | | K-Brace | 681-686,736-741 |
| | | Horizontal | 687,695,703,719,727,735 |
| | | Secondary Horizontal | 694,702,710,718,726,734 |
| | | Top Girt | 675-677 |
| | | Bottom Girt | 678-680 |
| | | Guy A | 1969 |
| | | Guy B | 1968 |
| | | Guy C | 1965 |
| | | Top Guy Pull-Off | 711,1966-1967 |
| T7 | 351.000-331.000 | Leg | 742-744 |
| | | Diagonal | 758-763,766-771,774-779,782-787,790-795,798-803 |
| | | K-Brace | 751-756,806-811 |
| | | Horizontal | 757,765,773,781,789,797,805 |
| | | Secondary Horizontal | 764,772,780,788,796,804 |
| | | Top Girt | 745-747 |
| | | Bottom Girt | 748-750 |
| T8 | 331.000-311.000 | Leg | 812-814 |
| | | Diagonal | 828-833,836-841,844-849,852-857,860-865,868-873 |
| | | K-Brace | 821-826,876-881 |
| | | Horizontal | 827,835,843,851,859,867,875 |
| | | Secondary Horizontal | 834,842,850,858,866,874 |
| | | Top Girt | 815-817 |
| | | Bottom Girt | 818-820 |
| T9 | 311.000-291.000 | Leg | 882-884 |
| | | Diagonal | 898-903,906-911,914-919,922-927,930-935,938-943 |
| | | K-Brace | 891-896,946-951 |
| | | Horizontal | 897,905,913,921,929,937,945 |
| | | Secondary Horizontal | 904,912,920,928,936,944 |
| | | Top Girt | 885-887 |
| | | Bottom Girt | 888-890 |
| T10 | 291.000-271.000 | Leg | 952-954 |
| | | Diagonal | 968-973,976-981,984-989,992-997,1000-1005,1008-1013 |
| | | K-Brace | 961-966,1016-1021 |
| | | Horizontal | 967,975,983,991,999,1007,1015 |
| | | Secondary Horizontal | 974,982,990,998,1006,1014 |
| | | Top Girt | 955-957 |
| | | Bottom Girt | 958-960 |
| T11 | 271.000-251.000 | Leg | 1022-1024 |
| | | Diagonal | 1038-1043,1046-1051,1054-1059,1062-1067,1070-1075,1078-1083 |
| | | K-Brace | 1031-1036,1086-1091 |
| | | Horizontal | 1037,1045,1053,1061,1069,1077,1085 |
| | | Secondary Horizontal | 1044,1052,1060,1068,1076,1084 |
| | | Top Girt | 1025-1027 |
| | | Bottom Girt | 1028-1030 |
| T12 | 251.000-231.000 | Leg | 1092-1094 |
| | | Diagonal | 1108-1113,1116-1121,1124-1129,1132-1137,1140-1145,1148-1153 |

| Section No. | Section Elevation ft | Component Type | Element List |
|---|---|---|---|
| | | K-Brace | 1101-1106,1156-1161 |
| | | Horizontal | 1107,1115,1131,1147,1155 |
| | | Secondary Horizontal | 1114,1122,1130,1138,1146,1154 |
| | | Top Girt | 1095-1097 |
| | | Bottom Girt | 1098-1100 |
| | | Guy A | 1986-1987 |
| | | Guy B | 1980-1981 |
| | | Guy C | 1970-1971 |
| | | Top Guy Pull-Off | 1139,1974-1975 |
| | | Bottom Guy Pull-Off | 1123,1978-1979 |
| | | Torque Arm Top | 1972-1973,1982-1983,1988-1989 |
| | | Torque Arm Bottom | 1976-1977,1984-1985,1990-1991 |
| T13 | 231.000-211.000 | Leg | 1162-1164 |
| | | Diagonal | 1178-1183,1186-1191,1194-1199,1202-1207,1210-1215,1218-1223 |
| | | K-Brace | 1171-1176,1226-1231 |
| | | Horizontal | 1177,1185,1193,1201,1209,1217,1225 |
| | | Secondary Horizontal | 1184,1192,1200,1208,1216,1224 |
| | | Top Girt | 1165-1167 |
| | | Bottom Girt | 1168-1170 |
| T14 | 211.000-191.000 | Leg | 1232-1234 |
| | | Diagonal | 1248-1253,1256-1261,1264-1269,1272-1277,1280-1285,1288-1293 |
| | | K-Brace | 1241-1246,1296-1301 |
| | | Horizontal | 1247,1255,1263,1271,1279,1287,1295 |
| | | Secondary Horizontal | 1254,1262,1270,1278,1286,1294 |
| | | Top Girt | 1235-1237 |
| | | Bottom Girt | 1238-1240 |
| T15 | 191.000-171.000 | Leg | 1302-1304 |
| | | Diagonal | 1318-1323,1326-1331,1334-1339,1342-1347,1350-1355,1358-1363 |
| | | K-Brace | 1311-1316,1366-1371 |
| | | Horizontal | 1317,1325,1333,1341,1349,1357,1365 |
| | | Secondary Horizontal | 1324,1332,1340,1348,1356,1364 |
| | | Top Girt | 1305-1307 |
| | | Bottom Girt | 1308-1310 |
| T16 | 171.000-151.000 | Leg | 1372-1374 |
| | | Diagonal | 1388-1393,1396-1401,1404-1409,1412-1417,1420-1425,1428-1433 |
| | | K-Brace | 1381-1386,1436-1441 |
| | | Horizontal | 1387,1395,1403,1411,1419,1427,1435 |
| | | Secondary Horizontal | 1394,1402,1410,1418,1426,1434 |
| | | Top Girt | 1375-1377 |
| | | Bottom Girt | 1378-1380 |
| T17 | 151.000-131.000 | Leg | 1442-1444 |
| | | Diagonal | 1458-1463,1466-1471,1474-1479,1482-1487,1490-1495,1498-1503 |
| | | K-Brace | 1451-1456,1506-1511 |
| | | Horizontal | 1457,1465,1473,1481,1489,1497,1505 |
| | | Secondary Horizontal | 1464,1472,1480,1488,1496,1504 |
| | | Top Girt | 1445-1447 |
| | | Bottom Girt | 1448-1450 |
| T18 | 131.000- | Leg | 1512-1514 |

| Section No. | Section Elevation ft | Component Type | Element List |
|---|---|---|---|
| | 111.000 | | |
| | | Diagonal | 1528-1533,1536-1541,1544-1549,1552-1557,1560-1565,1568-1573 |
| | | K-Brace | 1521-1526,1576-1581 |
| | | Horizontal | 1527,1535,1543,1559,1567,1575 |
| | | Secondary Horizontal | 1534,1542,1550,1558,1566,1574 |
| | | Top Girt | 1515-1517 |
| | | Bottom Girt | 1518-1520 |
| | | Guy A | 1996 |
| | | Guy B | 1995 |
| | | Guy C | 1992 |
| | | Top Guy Pull-Off | 1551,1993-1994 |
| T19 | 111.000-91.000 | Leg | 1582-1584 |
| | | Diagonal | 1598-1603,1606-1611,1614-1619,1622-1627,1630-1635,1638-1643 |
| | | K-Brace | 1591-1596,1646-1651 |
| | | Horizontal | 1597,1605,1613,1621,1629,1637,1645 |
| | | Secondary Horizontal | 1604,1612,1620,1628,1636,1644 |
| | | Top Girt | 1585-1587 |
| | | Bottom Girt | 1588-1590 |
| T20 | 91.000-71.000 | Leg | 1652-1654 |
| | | Diagonal | 1668-1673,1676-1681,1684-1689,1692-1697,1700-1705,1708-1713 |
| | | K-Brace | 1661-1666,1716-1721 |
| | | Horizontal | 1667,1675,1683,1691,1699,1707,1715 |
| | | Secondary Horizontal | 1674,1682,1690,1698,1706,1714 |
| | | Top Girt | 1655-1657 |
| | | Bottom Girt | 1658-1660 |
| T21 | 71.000-51.000 | Leg | 1722-1724 |
| | | Diagonal | 1738-1743,1746-1751,1754-1759,1762-1767,1770-1775,1778-1783 |
| | | K-Brace | 1731-1736,1786-1791 |
| | | Horizontal | 1737,1745,1753,1761,1769,1777,1785 |
| | | Secondary Horizontal | 1744,1752,1760,1768,1776,1784 |
| | | Top Girt | 1725-1727 |
| | | Bottom Girt | 1728-1730 |
| T22 | 51.000-31.000 | Leg | 1792-1794 |
| | | Diagonal | 1808-1813,1816-1821,1824-1829,1832-1837,1840-1845,1848-1853 |
| | | K-Brace | 1801-1806,1856-1861 |
| | | Horizontal | 1807,1815,1823,1831,1839,1847,1855 |
| | | Secondary Horizontal | 1814,1822,1830,1838,1846,1854 |
| | | Top Girt | 1795-1797 |
| | | Bottom Girt | 1798-1800 |
| T23 | 31.000-11.000 | Leg | 1862-1864 |
| | | Diagonal | 1878-1883,1886-1891,1894-1899,1902-1907,1910-1915,1918-1923 |
| | | K-Brace | 1871-1876,1926-1931 |
| | | Horizontal | 1877,1885,1893,1901,1909,1917,1925 |
| | | Secondary Horizontal | 1884,1892,1900,1908,1916,1924 |
| | | Top Girt | 1865-1867 |
| | | Bottom Girt | 1868-1870 |
| T24 | 11.000-1.000 | Leg | 1932-1934 |
| | | Diagonal | 1941-1943,1947-1949,1953-1955,1959-1961 |
| | | Horizontal | 1938-1940,1944-1946,1950-1952,1956-1958 |
| | | Top Girt | 1935-1937 |
| | | Total number of elements: 1999 | |

| ERITowerBeta | Job | Page |
|---|---|---|
| Electronics Research Inc. | Portland, ME 531' Guyed Tower | 82 of 82 |
| 7777 Gardner Road | Project | Date |
| Chandler, IN | 12590 48" Face Run#2 | 11:18:49 10/18/04 |
| Program Version 5.0.0.16 7/12/2004 File J:/mmaurer/Job/12590_PortlandME/12590v2_531_48_80.eri<br>Phone: 812-925-6000<br>FAX: 812-925-4026 | Client<br>SAGA Communications | Designed by<br>M. Maurer |

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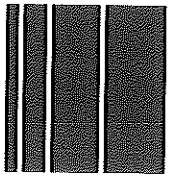

# Report on Subsurface and Foundation Investigation

# Radio Tower
# Presumpscot Street
# Portland, Maine

for

Portland Radio Group
420 Western Avenue
South Portland, ME 04106

May 3, 2004

One Chabot Street, P.O. Box 1339, Westbrook, Maine 04098-1339 Ph. 207-856-0277 Fax 856-2206

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May 3, 2004
03497

Andrew T. Armstrong, Chief Engineer
Portland Radio Group
420 Western Avenue
South Portland, ME 04106

**Report on Subsurface and Foundation Investigation**
**Radio Tower, Presumpscot Street, Portland, Maine**

Dear Mr. Armstrong:

This report presents the results of our subsurface and foundation investigation for the proposed radio tower on Presumpscot Street near the St. Lawrence Cement Terminal in Portland, Maine.

In summary, we recommend that the tower base and guy anchor foundations be supported on steel H-piles or concrete filled steel pipe piles driven to end bearing in the glacial till or on the underlying bedrock. Uplift loads on the guy anchor foundations may be resisted by permanent rock anchors grouted into bedrock installed in permanent casings opposite the piles or, for the guy anchor in water, piles driven into glacial till. Specific recommendations regarding foundation design and construction considerations are presented below.

## Introduction

The site, located near the St. Lawrence Cement Terminal at 189 Presumpscot Street, is the location of a former radio tower that experienced a failure of a guy anchor. Based on readily available plans, we understand that the former tower base was supported on a reinforced concrete footing and pier, and the tower was stabilized with three equally spaced guy anchors with foundations consisting of buried concrete deadmen. Ground surfaces at the site vary from approximately El. 0.0 to El. 20.0. Ground surface elevations in this report are in feet and referenced to North American Vertical Datum 1988 (NAVD).

## Proposed Construction

We understand that the replacement tower will have a height of approximately 525 feet and the base and guy anchor locations will be at approximately the same locations as the original tower. The tower will be stabilized with three pairs of equally spaced guy anchors. Electronics Research, Inc., the tower designer, provided the following loads for the tower and guys:

| | |
|---|---|
| Tower Base: | 250 kips axial (downward)<br>6 kips lateral |
| Guys | |
| Inner (R = 305 ft.) | 33 kips vertical (uplift)<br>63 kips lateral<br>71 kips resultant |
| Outer (R = 325 ft.) | 51 kips vertical (uplift)<br>43 kips lateral<br>67 kips resultant |

Two pairs of guy anchors will be located in the upland portion of the site and one pair will be located in the tidal marsh. We understand that the preferred guy anchor foundation, especially in the tidal marsh, will be a pile supported concrete cap (a "mini dolphin") to permit observation and preventive maintenance of the guy cable connections.

**Subsurface Explorations**

During the period January 12 to January 16, 2004 and January 22 to January 23, 2004, Maine Test Borings, Inc. (MTB) drilled six borings, B101 to B106, at the site at locations shown on Sheet 3, Site Plan. MTB drilled the borings to depths below ground surface varying from 20.8 feet to 59.3 feet. Sebago Technics monitored the borings and prepared the logs included in Appendix A. Results of the borings are summarized on Table I.

Borings B102 and B104 were drilled using 2.5-inch diameter hollow stem augers. Borings B101, B103, B105 and B106 were drilled using 3-inch diameter casing. Standard Penetration Resistance (N) was measured at each sample interval in the overburden soil in accordance with ASTM Test Designation D1586. Samples were taken at 5-foot intervals. Bedrock was cored in borings B101, B103, B105 and B106.

Boring B106 was drilled at the edge of the upper marsh grass, approximately 40 feet from the previous guy anchor location. In our judgment, this was as close to the former anchor location as we could get with conventional drilling equipment. We estimate that to drill at the former guy anchor location would require mobilizing specialized water borne equipment and a permit from the Maine Department of Environmental Protection (MDEP).

Sebago Technics laid out the borings and determined as-drilled locations and ground surface elevations by survey methods.

The boring logs and related information depict subsurface conditions and water levels encountered at the locations and during the times indicated on the logs. Subsurface conditions at other locations may differ from those encountered in the explorations. The passage of time may result in a change in groundwater conditions at the exploration locations.

## Subsurface Conditions

The borings encountered three principal soil units overlying bedrock at the site: fill, marine deposit and glacial till. Encountered thickness and generalized descriptions of the strata encountered are presented below in order of increasing depth below ground surface.

**Fill** - Fill consists of loose, dark brown to brown to yellow brown silty SAND (SM); to poorly-graded SAND with gravel (SP); to sandy SILT (ML); to well-graded SAND with gravel (SW). Encountered thickness varied from 1.5 feet to 10.0 feet.

**Marine Deposit** - The marine deposit consists of sand, silt and clay. Marine sand consists of very loose to dense, olive brown to gray brown silty SAND (SM); to poorly-graded SAND (SP). Encountered thickness of marine sand varied from 3.3 feet to 14.2 feet. Marine silt consists of very soft to hard, olive brown to gray brown SILT (ML), trace shell fragments. Encountered thickness of silt varied from 0.1 foot to 19.5 feet. Marine clay consists of medium stiff to stiff, gray lean CLAY (CL), trace shell fragments, sand and black streaks. Encountered thickness of marine clay in B106 was 13.0 feet.

**Glacial Till** - Glacial till consists of very loose to very dense, brown to gray silty SAND with gravel (SM); to well-graded SAND with gravel (SW). Encountered thickness varied from 0.8 foot to 11.3 feet.

Bedrock was encountered at depths below ground surface varying from 20.8 feet to 48.7 feet. Bedrock consists of medium to moderately hard, fresh, reddish gray, fine to medium grained BIOTITE SCHIST with quartz veins. Joint spacing is very close to moderate to wide, moderately dipping, undulating, mostly fresh and tight with minor silt infilling. Core recovery varied from 93 to 100 percent, and rock quality designation (RQD) varied from 93 to 100 percent at the guy locations to 46 percent at the tower base. The upper 0.2 foot to 0.8 foot of bedrock was weathered.

Water was encountered in the borings at depths below ground surface varying from 7.4 feet to 15.7 feet in borings B101 to B105. B106 was drilled within the tidal zone. However, observations of water were made over a short period of time and do not represent the stabilized groundwater levels. In addition, groundwater levels at the site will vary with season, precipitation, temperature, tidal fluctuations and construction activities in the area. Therefore, water conditions during and following construction will vary from those observed in the borings.

## Recommendations for Foundation Design

### Recommended Foundation Type and Design Criteria

The fill and loose marine soils are not considered suitable for support of the tower base or guy foundations. In our opinion, the tower base and guy anchors may be supported on steel piles driven to refusal in the underlying glacial till or bedrock. We recommend that uplift loads be resisted by permanent rock anchors drilled and grouted into the underlying bedrock for guy anchors on land and steel piles for the guy anchor located in the marsh..

In our opinion, steel H-piles or open-end steel pipe piles are the most appropriate pile type. Steel H-piles should consist of HP 12x53, 50-ksi steel, with design capacity of 100 kips and ultimate capacity of 300 kips. Steel pipe piles should consist of 12.75-inch diameter with 0.25-inch wall thickness, 50-ksi steel with design capacity of 100 kips and ultimate capacity of 300 kips. After driving, the inside of the pipe piles should be cleaned to the top of the bedrock surface and concreted. Piles should be fitted with driving points to protect the tips except for the uplift piles at the guy anchor in the marsh, which should be driven without driving tips. Anticipated pile lengths vary from approximately 20 feet to 55 feet. Piles should be spaced at least 3-feet on center when groups are required. Compression piles in the guy anchors located in the marsh should be considered as unsupported to a depth of 15 feet below mud line.

The bottoms of pile caps in the upland areas should be founded a minimum of 4.5 feet below the lowest surface exposed to freezing. In the marsh, we anticipate that the MDEP will require the bottom of pile cap to be no lower than 1 foot above the highest spring tide (El. 7.0), which would place the bottom of cap at El. 8. Piles for the guy anchor located in the marsh should be epoxy coated to at least 15 feet below mud line to minimize corrosion of the steel in the salt water. To resist lateral loads, piles should be driven at a batter no flatter than 5 horizontal to 12 vertical.

We anticipate that three piles will be required to support the tower at the base and that each upland guy anchor will require two piles in compression and two rock anchors in tension. The guy anchors in the marsh will require two piles in compression and three piles in tension.

The piles should be driven to bearing in the glacial till or bedrock with a hammer delivering a minimum of 25,000 ft. lbs. of energy per blow. A final penetration resistance equal to 10 blows per inch for the final 6 inches of driving should be required. If abrupt refusal is encountered, driving may be terminated when the pile penetration is less than ½-inchg for 10 successive blows.

Prior to installation, one of the piles should be load tested to three times the design capacity. In our opinion, in lieu of a pile load test, the contractor may monitor the installation of a minimum of three production piles at separate locations using the Case-Goble Pile Driving Analyzer (PDA) equipment to verify that the piles achieve three times the design capacity with acceptable driving stresses. Monitoring with PDA in lieu of a load test will require the approval of local building officials.

We recommend that permanent rock anchors resist the uplift loads for guys located in the upland. For the guys located in the marsh, we recommend that the uplift loads for each guy be resisted by three piles. Rock anchors should consist of grouted, high strength continuous upset threaded steel bars with double corrosion protection. Grout should consist of Portland cement or epoxy resin, provided the resin is installed by tremie grouting. We do not recommend the use of epoxy resin installed in the anchor hole using "sausage" containers due to the uncertainty regarding even and complete distribution of resin around the bar and the potential impacts of long-term corrosion if not fully encapsulated. We recommend a working bond strength between grout (both Portland cement and epoxy resin) and rock of 50 lbs. per sq. in. (psi). Cement grout should consist of high strength cement grout having a minimum 28-day compressive strength of 6,000 psi.

We recommend that each anchor have a minimum design capacity of 140 kips and the design capacity be used to resist the ultimate uplift loads. This would require a bar with a minimum diameter of 1.375 in. with yield strength of 150 kips per sq. in. (ksi). Anchors should have a minimum bond length of 26 feet in bedrock.

Rock anchors should be installed to at least 26 feet below the top of rock. The portion of the anchor passing through the overburden soil will serve as the stressing length. Rock anchors will vary in length depending on the top of bedrock at the proposed location. We anticipate rock anchor lengths varying from approximately 46 feet to 80 feet. Additional bar length will be required to penetrate through the foundations and for lock off.

Anchors should be installed in minimum 4-inch diameter holes drilled into the bedrock using air percussion drilling techniques to provide a rough surface. Holes should be drilled at least 6 inches deeper than the depth required to provide for accumulation of drill cuttings and debris that is not removed from the holes. All rock anchors should be proof tested to 150% of design capacity and post-tensioned (locked off) at design capacity. Anchors should be installed with a minimum spacing of 3 feet on center. To resist lateral loads, anchors should be installed at a batter no flatter than 1 horizontal to 4 vertical. The batter direction should be opposite that of the piles. Each guy anchor will then be supported by two piles for compression and lateral resistance, two rock anchors for uplift and lateral resistance, battered in opposite directions.

Rock anchors will require permanent steel casings. Casings should be sized to permit drilling a 4-inch hole in bedrock, seated in bedrock and tremie grouted to the top of casing during anchor grouting.

## Construction Considerations

### General

The primary purpose of this section of the report is to comment on items related to excavation, earthwork, pile driving, rock anchor installation, and related geotechnical aspects of proposed construction. It is written primarily for the engineer having responsibility for preparation of plans and specifications. Since it identifies potential construction problems related to foundations and earthwork, it will also aid personnel who monitor the construction activity.

### Excavation, Lateral Support and Control of Water

We anticipate that foundation excavation can be accomplished with sloped open excavation through the overburden soils provided safe side slopes can be maintained. Some sloughing and raveling should be anticipated in temporary slopes. Temporary excavations should be made in accordance with all OSHA and other applicable regulatory agency requirements.

We anticipate that groundwater may be encountered at proposed subgrade level or bottom of pile caps. If encountered, open pumping from sumps can likely control groundwater. In general, the contractor should control groundwater and water from runoff and other sources by methods which prevent disturbance of bearing surfaces or adjacent soils and allow construction in-the-dry.

Pile Installation

Pile driving may encounter obstructions in the form of railroad ties and timber. Obstructions will likely be near the ground surface and may be removed by excavation.

Construction Monitoring

The foundation recommendations contained herein are based on the known and predictable behavior of a properly engineered and constructed foundation. Monitoring of the foundation construction is required to enable the geotechnical engineer to keep in contact with procedures and techniques used in construction. Therefore, we recommend that a person qualified by training and experience be present to provide monitoring at the site during pile driving and rock anchor installation and testing. Sebago Technics is available to provide these services.

**Limitations of Recommendations**

This report has been prepared for specific application to the subject project in accordance with generally accepted geotechnical engineering practices. In the event that any changes in the nature, design or location of the tower are planned, the conclusions and recommendations contained in this report should not be considered valid unless the changes are reviewed and the conclusions of this report modified or verified in writing.

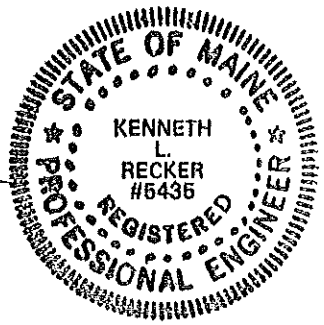
The recommendations presented herein are based in part upon the data obtained from the referenced test borings. The nature and extent of variations from that disclosed by the explorations may not become evident until construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations of this report.

We recommend that we be provided with the opportunity for a general review of final design and specifications in order to determine that our earthwork and foundation recommendations have been interpreted and implemented in the design and specifications as they were intended.

It has been a pleasure to work with you on this project. Please do not hesitate to contact us if you have questions or need more information.

Sincerely,

SEBAGO TECHNICS, INC.




Kenneth L. Recker
Geotechnical Engineering Manager

KLR:klr/jc
Enclosures:

| | |
|---|---|
| Table I | - Summary of Borings |
| Sheet 1 | - Site and Subsurface Exploration Plan |
| Appendix A | - Logs of Test Borings |

03497

# TABLE I
# SUMMARY OF BORINGS
# PROPOSED RADIO TOWER
# PRESUMPSCOT STREET
# PORTLAND, MAINE

| Boring No. | Depth (Ft.) | Ground Surface El. (Ft.) | Depth to Water (Ft.) | Strata Thickness (Ft.) | | | | | | | | El. Top of Rock (Ft.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Fill | Marine Sand | Marine Silt | Marine Clay | Marine Sand | Glacial Till | Weathered Bedrock | Sound Bedrock | |
| B101 | 34.6 | 8.1 | NE | 8.0 | 7.0 | 10.0 | -- | 4.0 | 0.8 | 0.8 | 4.0* | |
| B102 | 20.8 | 13.1 | 15.7 | 8.5 | 5.5 | -- | -- | 4.0 | 2.8 | -- | 0.0* | |
| B103 | 30.6 | 15.4 | 10.0 | 6.6 | -- | 0.1 | -- | 3.3 | 11.3 | 0.2 | 9.1* | |
| B104 | 33.6 | 17.0 | 8.7 | 4.0 | -- | 12.3 | -- | 12.2 | 5.1 | -- | 0.0* | |
| B105 | 42.2 | 18.5 | 7.4 | 10.0 | -- | 8.0 | -- | 14.2 | -- | -- | 10.0* | |
| B106 | 59.3 | 2.0 | Tidal Zone | 1.5 | -- | 19.5 | 13.0 | 12.3 | 2.4 | 0.6 | 10.0* | |

NOTES:

1. ELEVATIONS REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
2. -- INDICATES STRATUM NOT ENCOUNTERED WITHIN DEPTH OF BORINGS.
3. NE INDICATES GROUNDWATER NOT ENCOUNTERED WITHIN DEPTH OF BORING.
4. * INDICATED DEPTH OF PENETRATION INTO STRATUM.

## Joint Coordinates and Temperatures

| | Label | X [ft] | Y [ft] | Z [ft] | Temp [F] | Detach From Diap... |
|---|---|---|---|---|---|---|
| 1 | N1 | 4.5 | 0 | -2 | 0 | |
| 2 | N2 | 4.5 | 0 | 2 | 0 | |
| 3 | N3 | 14 | 0 | -2 | 0 | |
| 4 | N4 | 14 | 0 | 2 | 0 | |
| 5 | N5 | 18 | 0 | -2 | 0 | |
| 6 | N6 | 18 | 0 | 2 | 0 | |
| 7 | N7 | 22 | 0 | -2 | 0 | |
| 8 | N8 | 22 | 0 | 2 | 0 | |
| 9 | N9 | 11 | 0 | 0 | 0 | |
| 10 | N10 | 14.7 | 0 | 0 | 0 | |
| 11 | N11 | 22 | 0 | 0 | 0 | |
| 12 | N12 | 10 | -18 | -4.5 | 0 | |
| 13 | N13 | 10 | -18 | 4.5 | 0 | |
| 14 | N14 | 8 | -18 | -2 | 0 | |
| 15 | N15 | 8 | -18 | 2 | 0 | |
| 16 | N16 | 23.92 | -18 | -3 | 0 | |
| 17 | N17 | 23.92 | -18 | 3 | 0 | |
| 18 | N18 | 26.9 | -18 | -5.5 | 0 | |
| 19 | N19 | 26.9 | -18 | 5.5 | 0 | |

## Member Primary Data

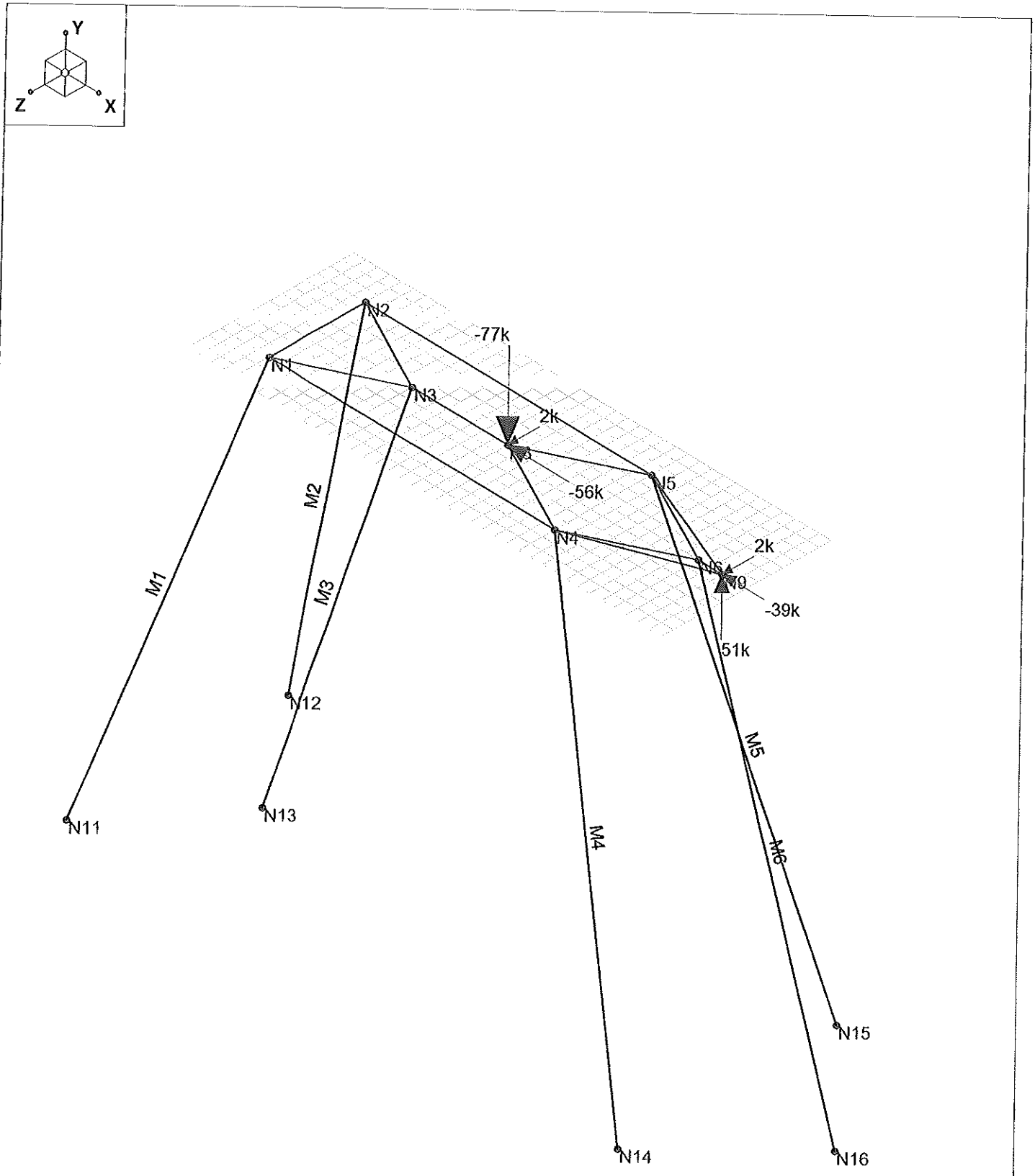
| | Label | I Joint | J Joint | K Joint | Rotate(deg) | Section/Shape | Design List | Type | Material | Design Rules |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | M1 | N1 | N12 | | | HP12X53 | None | Column | A572Grad... | Typical |
| 2 | M2 | N2 | N13 | | | HP12X53 | None | Column | A572Grad... | Typical |
| 3 | M3 | N3 | N14 | | | HP12X53 | None | Column | A572Grad... | Typical |
| 4 | M4 | N4 | N15 | | | HP12X53 | None | Column | A572Grad... | Typical |
| 5 | M5 | N5 | N16 | | | HP12X53 | None | Column | A572Grad... | Typical |
| 6 | M6 | N6 | N17 | | | HP12X53 | None | Column | A572Grad... | Typical |
| 7 | M7 | N7 | N18 | | | HP12X53 | None | Column | A572Grad... | Typical |
| 8 | M8 | N8 | N19 | | | HP12X53 | None | Column | A572Grad... | Typical |

## Joint Loads and Enforced Displacements (BLC 1 : Dead)

| | Joint Label | L,D,M | Direction | Magnitude[k,k-ft in,rad k*s^2/ft] |
|---|---|---|---|---|
| 1 | N9 | L | Y | -122 |
| 2 | N1 | L | Y | -6.8 |
| 3 | N2 | L | Y | -6.8 |
| 4 | N3 | L | Y | -6.8 |
| 5 | N4 | L | Y | -6.8 |
| 6 | N5 | L | Y | -6.8 |
| 7 | N6 | L | Y | -6.8 |
| 8 | N7 | L | Y | -6.8 |
| 9 | N8 | L | Y | -6.8 |

## Joint Loads and Enforced Displacements (BLC 2 : Radial)

| | Joint Label | L,D,M | Direction | Magnitude[k,k-ft in,rad k*s^2/ft] |
|---|---|---|---|---|
| 1 | N10 | L | X | -56 |
| 2 | N11 | L | X | -39 |




Loads: LC 2, D + R + V + T + SW

| | | |
|---|---|---|
| Associated Design Partner... | Anchor 1 & 2 - 040924_0700 | |
| Bob Arledge | | Oct 13, 2004 at 11:22 AM |
| 04053 | | Anchors 1 & 2.r3d |

## Joint Coordinates and Temperatures

| | Label | X [ft] | Y [ft] | Z [ft] | Temp [F] | Detach From Diap... |
|---|---|---|---|---|---|---|
| 1 | N1 | 2 | 0 | 2 | 0 | |
| 2 | N2 | 2 | 0 | -2 | 0 | |
| 3 | N3 | 6 | 0 | 0 | 0 | |
| 4 | N4 | 14 | 0 | 2 | 0 | |
| 5 | N5 | 14 | 0 | -2 | 0 | |
| 6 | N6 | 18 | 0 | 0 | 0 | |
| 7 | N8 | 10 | 0 | 0 | 0 | |
| 8 | N9 | 19 | 0 | 0 | 0 | |
| 9 | N11 | -3.5 | -18 | 4.5 | 0 | |
| 10 | N12 | -3.5 | -18 | -4.5 | 0 | |
| 11 | N13 | 0 | -18 | 0 | 0 | |
| 12 | N14 | 19.5 | -18 | 4.5 | 0 | |
| 13 | N15 | 19.5 | -18 | -4.5 | 0 | |
| 14 | N16 | 24 | -18 | 0 | 0 | |

## Member Primary Data

| | Label | I Joint | J Joint | K Joint | Rotate(deg) | Section/Shape | Design List | Type | Material | Design Rules |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | M1 | N1 | N11 | | | HP12X53 | None | Column | A572Grad... | Typical |
| 2 | M2 | N2 | N12 | | | HP12X53 | None | Column | A572Grad... | Typical |
| 3 | M3 | N3 | N13 | | | HP12X53 | None | Column | A572Grad... | Typical |
| 4 | M4 | N4 | N14 | | | HP12X53 | None | Column | A572Grad... | Typical |
| 5 | M5 | N5 | N15 | | | HP12X53 | None | Column | A572Grad... | Typical |
| 6 | M6 | N6 | N16 | | | HP12X53 | None | Column | A572Grad... | Typical |

## Joint Loads and Enforced Displacements (BLC 1 : Dead)

| | Joint Label | L,D,M | Direction | Magnitude[k,k-ft in,rad k*s^2/ft] |
|---|---|---|---|---|
| 1 | N8 | L | Y | -109 |

## Joint Loads and Enforced Displacements (BLC 2 : Radial)

| | Joint Label | L,D,M | Direction | Magnitude[k,k-ft in,rad k*s^2/ft] |
|---|---|---|---|---|
| 1 | N8 | L | X | -56 |
| 2 | N9 | L | X | -39 |

## Joint Loads and Enforced Displacements (BLC 3 : Tangential)

| | Joint Label | L,D,M | Direction | Magnitude[k,k-ft in,rad k*s^2/ft] |
|---|---|---|---|---|
| 1 | N8 | L | Z | 2 |
| 2 | N9 | L | Z | 2 |

## Joint Loads and Enforced Displacements (BLC 4 : Vertical)

| | Joint Label | L,D,M | Direction | Magnitude[k,k-ft in,rad k*s^2/ft] |
|---|---|---|---|---|
| 1 | N9 | L | Y | 51 |
| 2 | N8 | L | Y | 32 |

## Basic Load Cases

| | BLC Description | Category | X Gravity | Y Gravity | Z Gravity | Joint | Point | Distributed Area (Me... | Surface (... | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Dead | DL | | | | 1 | | | | |
| 2 | Radial | WL | | | | 2 | | | | |
| 3 | Tangential | WL | | | | 2 | | | | |

## Basic Load Cases (Continued)

| | BLC Description | Category | X Gravity | Y Gravity | Z Gravity | Joint | Point | Distributed | Area (Me... | Surface (... |
|---|---|---|---|---|---|---|---|---|---|---|
| 4 | Vertical | WL | | | | 2 | | | | |
| 5 | Pile Selfweight | DL | | -1 | | | | | | |

## Load Combinations

| | Description | Solve | PD... | SRSS | BLC | Factor | BLC | Factor | BLC | Factor | BLC | Factor | BLC | Factor | BLC | Factor | BLC | Factor | BLC | Factor |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | D + R + V + SW | Yes | | | 1 | 1 | 2 | 1 | 4 | 1 | 5 | 1 | | | | | | | | |
| 2 | D + R + V + T +.. | Yes | | | 1 | 1 | 2 | 1 | 3 | 1 | 4 | 1 | 5 | 1 | | | | | | |
| 3 | D + SW | Yes | | | 1 | 1 | 5 | 1 | | | | | | | | | | | | |

## Envelope Member Section Forces

| | Member | Sec | | Axial[k] | lc | y Shear[k] | lc | z Shear[k] | lc | Torque[k-ft] | lc | y-y Momen... | lc | z-z Momen... | lc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | M1 | 1 | max | 55.616 | 1 | .478 | 1 | .321 | 2 | 0 | 1 | .22 | 3 | 6.044 | 1 |
| 2 | | | min | 20.435 | 3 | .106 | 3 | -.012 | 3 | 0 | 1 | -6.09 | 2 | -1.008 | 3 |
| 3 | | 2 | max | 56.565 | 1 | .159 | 1 | .321 | 2 | 0 | 1 | 0 | 1 | 0 | 1 |
| 4 | | | min | 21.384 | 3 | -.212 | 3 | -.012 | 3 | 0 | 1 | 0 | 1 | 0 | 1 |
| 5 | M2 | 1 | max | 69.553 | 2 | .538 | 2 | .234 | 2 | 0 | 1 | .819 | 1 | 7.184 | 2 |
| 6 | | | min | 20.435 | 3 | .106 | 3 | -.043 | 1 | 0 | 1 | -4.451 | 2 | -1.008 | 3 |
| 7 | | 2 | max | 70.502 | 2 | .219 | 2 | .234 | 2 | 0 | 1 | 0 | 1 | 0 | 1 |
| 8 | | | min | 21.384 | 3 | -.212 | 3 | -.043 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| 9 | M3 | 1 | max | 61.512 | 2 | .504 | 2 | .069 | 2 | 0 | 1 | 0 | 3 | 6.565 | 2 |
| 10 | | | min | 18.901 | 3 | .097 | 3 | 0 | 1 | 0 | 1 | -1.316 | 2 | -1.154 | 3 |
| 11 | | 2 | max | 62.461 | 2 | .188 | 2 | .069 | 2 | 0 | 1 | 0 | 1 | 0 | 1 |
| 12 | | | min | 19.851 | 3 | -.219 | 3 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| 13 | M4 | 1 | max | 0 | 3 | .051 | 2 | .369 | 2 | 0 | 1 | 0 | 3 | 0 | 3 |
| 14 | | | min | -72.197 | 1 | -.073 | 1 | 0 | 3 | 0 | 1 | -7.016 | 2 | -4.408 | 1 |
| 15 | | 2 | max | 0 | 3 | 0 | 3 | .369 | 2 | 0 | 1 | 0 | 1 | 0 | 1 |
| 16 | | | min | -71.247 | 1 | -.391 | 1 | 0 | 3 | 0 | 1 | 0 | 1 | 0 | 1 |
| 17 | M5 | 1 | max | 0 | 3 | 0 | 3 | .283 | 2 | 0 | 1 | .819 | 1 | 0 | 3 |
| 18 | | | min | -101.058 | 2 | -.197 | 2 | -.043 | 1 | 0 | 1 | -5.377 | 2 | -6.768 | 2 |
| 19 | | 2 | max | 0 | 3 | 0 | 3 | .283 | 2 | 0 | 1 | 0 | 1 | 0 | 1 |
| 20 | | | min | -100.108 | 2 | -.516 | 2 | -.043 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| 21 | M6 | 1 | max | 56.4 | 3 | .26 | 3 | 0 | 1 | 0 | 1 | 0 | 3 | 1.936 | 3 |
| 22 | | | min | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 1 | 0 | 1 | 0 | 1 |
| 23 | | 2 | max | 57.349 | 3 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| 24 | | | min | 0 | 1 | -.056 | 3 | 0 | 3 | 0 | 1 | 0 | 1 | 0 | 1 |

# Appendix A

## Logs of Test Borings

SEBAGO TECHNICS, INC.

# TEST BORING REPORT

BORING NO. B101

Page 1 of 2

| | | | |
|---|---|---|---|
| PROJECT | RADIO TOWER | STI JOB NO. | 03497 |
| LOCATION | PRESUMPSCOT STREET, PORTLAND, MAINE | PROJECT MGR. | C. BROWN |
| CLIENT | PORTLAND RADIO GROUP | FIELD REP. | B. ESTES |
| CONTRACTOR | MAINE TEST BORINGS, INC. | DATE STARTED | 1/15/04 |
| DRILLER | T. SCHAEFER | DATE FINISHED | 1/16/04 |

Elevation 8.1 ft | Datum NAVD 88 | Boring Location See Plan

| Item | Casing | Sampler | Core Barrel |
|---|---|---|---|
| Type | NW | SS | NQ |
| Inside Diameter (in.) | 3.0 | 1.375 | 2 |
| Hammer Weight (lb.) | 300 | 140 | |
| Hammer Fall (in.) | 16 | 30 | |

Rig Make & Model: Mobile B-34

☐ Truck ☐ Tripod ☐ Cat-Head
☐ ATV ☐ Geoprobe ☑ Winch
☑ Track ☐ Air Track ☑ Roller Bit
☐ Skid ☐ ☐ Cutting Head

Hammer Type: ☐ Safety ☑ Doughnut ☐ Automatic

Drilling Mud: ☐ Bentonite ☐ Polymer ☑ None

Casing Advance: Type Method Depth — NW/DRIVE/30.6 ft.

Drilling Notes:

| Depth (ft.) | Sampler Blows per 6 in. | Sample No. & Recovery (in.) | Sample Depth (ft.) | Well Diagram | Stratum Change (ft.) | USCS Symbol | Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 7<br>5<br>3<br>2 | S1<br>1 | 1.0<br>3.0 | | | SP | Loose, brown poorly-graded SAND with gravel (SP), mps = 1.4 in., moist, trace organics, frozen to 1.0 ft. | 15 | 10 | 5 | 25 | 40 | 5 | | | | |
| | | | | | | | -FILL- | | | | | | | | | | |
| 5 | WOH<br>WOH<br>7<br>10 | S2<br>3 | 5.0<br>7.0 | | 6.0 | SP | Very loose, brown poorly-graded SAND with gravel (SP), mps = 1.4 in., moist, trace organics | 15 | 10 | 5 | 25 | 40 | 5 | | | | |
| | | | | | | | WOOD, possible voisd below wood | | | | | | | | | | |
| | | | | | 8.0 | | -FILL- | | | | | | | | | | |
| 10 | WOR<br>WOR<br>WOH<br>WOH | S3<br>1 | 10.0<br>12.0 | | | SM | Very loose, black silty SAND (SM), mps = 0.1 in., wet, strong petroleum odor, creosote, trace organics | | | | 10 | 70 | 20 | | | | |
| | | | | | 15.0 | | -MARINE DEPOSIT- | | | | | | | | | | |
| 15 | 3<br>1<br>2<br>3 | S4<br>14 | 15.0<br>17.0 | | | ML | Soft, olive brown SILT with sand (ML), mps = 0.04 in., moist, trace organics | | | | | 20 | 80 | N | L | L | |
| 20 | 1<br>1<br>2<br>4 | S5<br>21 | 20.0<br>22.0 | | | ML | Soft, gray brown SILT (ML), moist to wet, trace organics and roots | | | | | 10 | 90 | N | L | L | |
| | | | | | 25.0 | | -MARINE DEPOSIT- | | | | | | | | | | |
| 25 | 4<br>8<br>8<br>10 | S6<br>4 | 25.0<br>27.0 | | | SM | Medium dense, gray brown silty SAND (SM), wet, freq. silt and clay layers, trace organics | | | | | 60 | 40 | | | | |
| | | | | | 29.0 | | -MARINE DEPOSIT- | | | | | | | | | | |
| | | | | | 29.8 | | Gravelly SAND layer -GLACIAL TILL- | | | | | | | | | | |
| 30 | | | | | | | Weathered BEDROCK<br>Drilled with roller bit to 30.6 ft., begin NQ core at 30.6 ft. | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth in feet to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| 1/16/04 | 1130 | -- | Caved | 8.4 | Dry |
| | | | | | |
| | | | | | |

**Sample ID**

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon Sample
G Geoprobe

**Well Diagram**

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**

| | |
|---|---|
| Overburden (Linear ft.) | 30.6 |
| Rock Cored (Linear ft.) | 4.0 |
| Number of Samples | 6S, 1C |

BORING NO. B101

**Field Tests**

Dilatancy: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Medulm H - High V - Very High

*NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.

NOTE: Soil Identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.

# CORE BORING REPORT

BORING NO. B101

Page 2 of 2

| Depth (ft) | Drilling Rate (min/ft) | Core No. Depth (ft) | Recovery RQD (in) | Recovery RQD (%) | Weathering | Well Diagram | Stratum Change (ft) | Visual Classification and Remarks |
|---|---|---|---|---|---|---|---|---|
| 30 | | | | | | | 30.6 | Begin NQ core boring at 30.6 ft. See Test Boring Report for overburden details. |
| | 6:55<br>6:10<br>5:35<br>5:40 | 30.6<br>C1<br>34.6 | 45<br>22 | 94<br>46 | Fresh | | | Medium to moderately hard, fresh, reddish gray fine to medium grained BIOTITE SCHIST with quartz veins. Joint spacing is very close to moderate with several slightly weathered, highly fractured zones. Joints are moderately dipping, undulating and rough, slightly weathered, open, some filled with gray silt.<br><br>-BEDROCK- |
| 35 | | | | | | | | Bottom of Exploration at 34.6 ft. below ground surface |
| 40 | | | | | | | | |

JOB NO. 03497 | BORING NO. B101

| SEBAGO TECHNICS, INC. | TEST BORING REPORT | BORING NO. B102 |
|---|---|---|
| | | Page 1 of 1 |

| | | | |
|---|---|---|---|
| PROJECT | RADIO TOWER | STI JOB NO. | 03497 |
| LOCATION | PRESUMPSCOT STREET, PORTLAND, MAINE | PROJECT MGR. | C. BROWN |
| CLIENT | PORTLAND RADIO GROUP | FIELD REP. | B. ESTES |
| CONTRACTOR | MAINE TEST BORINGS, INC. | DATE STARTED | 1/13/04 |
| DRILLER | T. SCHAEFER | DATE FINISHED | 1/13/04 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Elevation 13.1 ft. | Datum NAVD 88 | Boring Location See Plan | | | | Hammer Type | Drilling Mud | Casing Advance | |
| Item | Casing | Sampler | Core Barrel | Rig Make & Model | Mobile B-34 | ☐ Safety | ☐ Bentonite | Type Method Depth | |
| Type | HSA | SS | | ☐ Truck ☐ Tripod | ☐ Cat-Head | ☑ Doughnut | ☐ Polymer | | |
| Inside Diameter (in.) | 2.5 | 1.375 | | ☐ ATV ☐ Geoprobe | ☑ Winch | ☐ Automatic | ☑ None | HSA/20.8 ft. | |
| Hammer Weight (lb.) | | 140 | | ☑ Track ☐ Air Track | ☑ Roller Bit | | | | |
| Hammer Fall (in.) | | 30 | | ☐ Skid ☐ | ☐ Cutting Head | Drilling Notes: | | | |

| Depth (ft.) | Sampler Blows per 6 in. | Sample No. & Recovery (in.) | Sample Depth (ft.) | Well Diagram | Stratum Change (ft.) | USCS Symbol | Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 6<br>3<br>3<br>2 | S1<br>4 | 0.0<br>2.0 | | | SM | Loose, dark brown to brown silty SAND with gravel (SM), mps 0.5 in., moist to wet, trace organics, frozen to 0.5 ft. | 5 | 10 | 15 | 20 | 25 | 25 | | | | |
| | | | | | | | -FILL- | | | | | | | | | | |
| 5 | 50/5 in. | S2<br>4 | 5.0<br>5.4 | | | SM | Loose, dark brown to brown silty SAND with gravel (SM), mps 1.4 in., wet, trace organics<br>SPT refusal on wood | 5 | 10 | 15 | 20 | 25 | 25 | | | | |
| | | | | | 8.5 | | -FILL- | | | | | | | | | | |
| 10 | 1<br>1<br>1<br>1 | S3<br>1 | 10.0<br>12.0 | | | SM | Very loose, gray brown silty SAND (SM), mps = 0.2 in., slight anaerobic odor, wet, trace organics | | | 5 | 10 | 65 | 20 | | | | |
| | | | | | 14.0 | | -MARINE DEPOSIT- | | | | | | | | | | |
| 15 | 4<br>12<br>29<br>35 | S4<br>18 | 15.0<br>17.0 | | | SM | Dense, gray silty SAND (SM), mps = 0.1 in., wet, trace organics | | | | | 80 | 20 | | | | |
| | | | | | 18.0 | | -MARINE DEPOSIT- | | | | | | | | | | |
| 20 | 30<br>30/4 in. | S5<br>11 | 20.0<br>20.8 | | 20.8 | SM | -GLACIAL TILL-<br>Very dense, brown silty SAND with gravel (SM), mps = 1.4 in., moist to wet | 15 | 10 | 15 | 20 | 20 | 20 | | | | |
| | | | | | | | Spoon Refusal at 20.8 ft. below ground surface<br>Judged to be BEDROCK | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth in feet to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| 1/13/04 | 1240 | | 15.0 | 15.8 | 15.7 |
| | | | | | |
| | | | | | |

**Sample ID**

| | |
|---|---|
| O | Open End Rod |
| T | Thin Wall Tube |
| U | Undisturbed Sample |
| S | Split Spoon Sample |
| G | Geoprobe |

**Well Diagram**

Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

**Summary**

| | |
|---|---|
| Overburden (Linear ft.) | 20.8 |
| Rock Cored (Linear ft.) | -- |
| Number of Samples | 5S |

BORING NO. B102

**Field Tests**

Dilatancy: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Meduim H - High V - Very High

*NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.

# TEST BORING REPORT

SEBAGO TECHNICS, INC.

BORING NO. B103



| | | | |
|---|---|---|---|
| PROJECT | RADIO TOWER | STI JOB NO. | 03497 |
| LOCATION | PRESUMPSCOT STREET, PORTLAND, MAINE | PROJECT MGR. | C. BROWN |
| CLIENT | PORTLAND RADIO GROUP | FIELD REP. | B. ESTES |
| CONTRACTOR | MAINE TEST BORINGS, INC. | DATE STARTED | 1/12/04 |
| DRILLER | T. SCHAEFER | DATE FINISHED | 1/13/04 |

Elevation 15.4 ft. Datum NAVD 88 Boring Location See Plan

| Item | Casing | Sampler | Core Barrel |
|---|---|---|---|
| Type | NW | SS | NQ |
| Inside Diameter (in.) | 3.0 | 1.375 | 2.0 |
| Hammer Weight (lb.) | 300 | 140 | |
| Hammer Fall (in.) | 16 | 30 | |

Rig Make & Model: Mobile B-34

☐ Truck ☐ Tripod ☐ Cat-Head
☐ ATV ☐ Geoprobe ☑ Winch
☑ Track ☐ Air Track ☑ Roller Bit
☐ Skid ☐ ☐ Cutting Head

Hammer Type: ☐ Safety ☑ Doughnut ☐ Automatic

Drilling Mud: ☐ Bentonite ☐ Polymer ☑ None

Casing Advance: Type Method Depth: NW/DRIVE/21.5 ft.

Drilling Notes:

| Depth (ft.) | Sampler Blows per 6 in. | Sample No. & Recovery (in.) | Sample Depth (ft.) | Well Diagram | Stratum Change (ft.) | USCS Symbol | Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 3<br>3<br>2<br>5 | S1<br>14 | 1.0<br>3.0 | | | SP | Loose, yellow brown poorly-graded SAND (SP), mps = 0.2 in., dry to moist, frozen to 0.6 ft. | | | 5 | 10 | 85 | | | | | |
| | | | | | | | -FILL- | | | | | | | | | | |
| 5 | 2<br>2<br>2<br>1 | S2<br>13 | 5.0<br>7.0 | | 6.6 | SP | Very loose, yellow brown poorly-graded SAND (SP), mps = 0.2 in., moist | | | 5 | 10 | 85 | | | | | |
| | | | | | | | -FILL- | | | | | | | | | | |
| | | | | | 6.7 | ML | Olive brown, SILT (ML), moist | | | | | | 100 | N | L | L | |
| | | | | | | SP | Very loose, yellow brown poorly-graded SAND (SP), mps = 0.2 in., wet | | | | 10 | 30 | 60 | | | | |
| 10 | | | | | 10.0 | | -MARINE DEPOSIT- | | | | | | | | | | |
| | 1<br>WOH<br>WOH<br>3 | S3<br>1 | 10.0<br>12.0 | | | SW | Very loose, gray well-graded SAND with gravel (SW), mps = 1.4 in., wet | 15 | 10 | 20 | 25 | 30 | | | | | |
| | | | | | | | -GLACIAL TILL- | | | | | | | | | | |
| 15 | 2<br>1<br>1<br>3 | S4<br>0 | 15.0<br>17.0 | | | SW | Very loose, gray well-graded SAND with gravel (SW), mps = 1.4 in., wet | 15 | 10 | 20 | 25 | 30 | | | | | |
| | | | | | 19.5 | | | | | | | | | | | | |
| 20 | | | | | | | -GLACIAL TILL- | | | | | | | | | | |
| | 27<br>30/4 in. | S5<br>5 | 20.5<br>21.3 | | 21.3 | SM | Very dense brown silty SAND with gravel (SM), mps = 1.4 in., moist, mottled | 15 | 10 | 15 | 20 | 20 | 20 | | | | |
| | | | | | | | Drove casing to 21.3 ft.<br>Drilled with roller bit to 21.5 ft.<br>Begin NQ core at 21.5 ft., see Core Boring Report | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth in feet to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| 1/13/04 | 0700 | | 15.0 | 17.0 | 6.6 |
| 1/13/04 | 1110 | | 21.3 | 30.6 | 10.0 |

**Sample ID**

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon Sample
G Geoprobe

**Well Diagram**

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**

| | |
|---|---|
| Overburden (Linear ft.) | 21.5 |
| Rock Cored (Linear ft.) | 9.1 |
| Number of Samples | 5S, 2C |
| BORING NO. | B103 |

**Field Tests**

Dilatancy: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Medium H - High V - Very High

*NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.

# CORE BORING REPORT

BORING NO. B103



| Depth (ft) | Drilling Rate (min/ft) | Core No. Depth (ft) | Recovery RQD (In) | Recovery RQD (%) | Weath-ering | Well Diagram | Stratum Change (ft) | Visual Classification and Remarks |
|---|---|---|---|---|---|---|---|---|
| 20 | | | | | | | 21.5 | Begin NQ core boring at 21.5 ft. See Test Boring Report for overburden details. |
| | 4:15 | 21.5 | 56 | 97 | Fresh | | | Medium to moderately hard, fresh, reddish gray fine to medium grained BIOTITE SCHIST with quartz veins. Joint spacing is moderate to wide, moderately dipping, undulating, fresh, tight |
| | 4:10 | | | | | | | |
| | 3:40 | C1 | | | | | | |
| 25 | 3:35 | | | | | | | |
| | 3:40 | 26.3 | 55 | 95 | | | | -BEDROCK- |
| | | 26.3 | 51 | 100 | Fresh | | | Medium to moderately hard, fresh, reddish gray fine to medium grained BIOTITE SCHIST with quartz veins. Joint spacing is moderate to wide, moderately dipping, undulating, fresh, tight |
| | 2:30 | C2 | | | | | | |
| | 2:40 | | | | | | | |
| 30 | 3:05 | | | | | | | |
| | 3:40 | 30.6 | 51 | 100 | | | | -BEDROCK- |
| | | | | | | | | Bottom of Exploration at 30.6 ft. below ground surface. |

| SEBAGO TECHNICS, INC. | TEST BORING REPORT | BORING NO. B104 |
|---|---|---|
| | | Page 1 of 2 |

| | | | |
|---|---|---|---|
| PROJECT | RADIO TOWER | STI JOB NO. | 03497 |
| LOCATION | PRESUMPSCOT STREET, PORTLAND, MAINE | PROJECT MGR. | C. BROWN |
| CLIENT | PORTLAND RADIO GROUP | FIELD REP. | B. ESTES |
| CONTRACTOR | MAINE TEST BORINGS, INC. | DATE STARTED | 1/15/04 |
| DRILLER | T. SCHAEFER | DATE FINISHED | 1/15/04 |

| Elevation | 17.0 ft | Datum | NAVD 88 | Boring Location | See Plan |
|---|---|---|---|---|---|

| Item | Casing | Sampler | Core Barrel |
|---|---|---|---|
| Type | HSA | SS | |
| Inside Diameter (in.) | 2.5 | 1.375 | |
| Hammer Weight (lb.) | | 140 | |
| Hammer Fall (in.) | | 30 | |

Rig Make & Model: Mobile B-34

☐ Truck ☐ Tripod ☐ Cat-Head
☐ ATV ☐ Geoprobe ☑ Winch
☑ Track ☐ Air Track ☑ Roller Bit
☐ Skid ☐ _____ ☐ Cutting Head

Hammer Type: ☐ Safety ☑ Doughnut ☐ Automatic

Drilling Mud: ☐ Bentonite ☐ Polymer ☑ None

Casing Advance: Type Method Depth: HSA/33.6 ft.

Drilling Notes:

| Depth (ft.) | Sampler Blows per 6 in. | Sample No. & Recovery (in.) | Sample Depth (ft.) | Well Diagram | Stratum Change (ft.) | USCS Symbol | Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 8<br>8<br>8<br>11 | S1<br>3 | 1.0<br>3.0 | | | ML | Medium dense, dark brown to brown sandy SILT with gravel (ML), 5 % oversized, mps = 6.0 in., moist to wet | 10 | 15 | 10 | 10 | 15 | 40 | | | | |
| | | | | | 4.0 | | -FILL- | | | | | | | | | | |
| 5 | 8<br>15<br>19<br>27 | S2<br>20 | 5.0<br>7.0 | | | ML | Hard, olive brown SILT (ML), moist, mottled | | | | | 5 | 95 | N | L | L | |
| | | | | | | | -MARINE DEPOSIT- | | | | | | | | | | |
| 10 | 11<br>16<br>22<br>29 | S3<br>24 | 10.0<br>12.0 | | | ML | Hard, olive brown SILT (ML), moist, mottled | | | | | | 100 | N | L | L | |
| | | | | | | | -MARINE DEPOSIT- | | | | | | | | | | |
| 15 | 7<br>11<br>12<br>50/2 in. | S4<br>20 | 15.0<br>16.7 | | | ML | Stiff, olive brown SILT (ML), moist to wet, freq. silty fine sand seams | | | | | 5 | 95 | N | L | L | |
| | | | | | 16.3 | | | | | | | | | | | | |
| 20 | 44<br>9<br>16<br>20 | S5<br>24 | 20.0<br>22.0 | | | SM | Medium dense, olive brown silty SAND (SM), wet, occasional poorly-graded sand layers and silt seams | | | | | 80 | 20 | | | | |
| | | | | | | | -MARINE DEPOSIT- | | | | | | | | | | |
| 25 | WOH<br>1<br>3<br>4 | S6<br>20 | 25.0<br>27.0 | | 25.0 | SP | Very loose, light brown poorly-graded SAND (SP), mps = 0.1 in., wet | | | | 15 | 80 | 5 | | | | |
| | | | | | 28.5 | | -MARINE DEPOSIT- | | | | | | | | | | |
| 30 | | | | | | | -GLACIAL TILL- | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth in feet to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| 1/15/04 | 0945 | | 15 | 15.9 | 15.8 |
| 1/15/04 | 1140 | | Caved | 18.0 | 8.7 |

**Sample ID**

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon Sample
G Geoprobe

**Well Diagram**

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**

| | |
|---|---|
| Overburden (Linear ft.) | 33.6 |
| Rock Cored (Linear ft.) | -- |
| Number of Samples | 7S |

BORING NO. B104

**Field Tests**

Dilatancy: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Medium H - High V - Very High

*NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.

SEBAGO TECHNICS, INC.

# TEST BORING REPORT

BORING NO. B104



| Depth (ft.) | Sampler Blows per 6 in. | Sample No. & Recovery (In.) | Sample Depth (ft.) | Well Diagram | Stratum Change (ft.) | USCS Symbol | Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | 6<br>7<br>25<br>35 | S7<br>24 | 30.0<br>32.0 | | | SM | Dense, gray silty SAND with gravel (SM), mps = 1.25 in., wet, slightly bonded | 10 | 10 | 10 | 20 | 30 | 20 | | | | |
| | | | | | 33.6 | | -GLACIAL TILL- | | | | | | | | | | |
| 35 | | | | | | | Auger Refusal at 33.6 ft. below ground surface<br>Judged to be BEDROCK | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | | | | |
| 55 | | | | | | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | | | | | | |
| 65 | | | | | | | | | | | | | | | | | |
| 70 | | | | | | | | | | | | | | | | | |

NOTES:

FILE NO. 03497

BORING NO. B104

*NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.

NOTE: Soil Identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.

SEBAGO TECHNICS, INC.

# TEST BORING REPORT

BORING NO. **B105**

Page 1 of 3

| | | | |
|---|---|---|---|
| PROJECT | RADIO TOWER | STI JOB NO. | 03497 |
| LOCATION | PRESUMPSCOT STREET, PORTLAND, MAINE | PROJECT MGR. | C. BROWN |
| CLIENT | PORTLAND RADIO GROUP | FIELD REP. | B. ESTES |
| CONTRACTOR | MAINE TEST BORINGS, INC. | DATE STARTED | 1/13/04 |
| DRILLER | T. SCHAEFER | DATE FINISHED | 1/14/04 |

Elevation 18.5 ft | Datum NAVD 88 | Boring Location See Plan

| Item | Casing | Sampler | Core Barrel |
|---|---|---|---|
| Type | NW | SS | NQ |
| Inside Diameter (in.) | 3.0 | 1.375 | 2.0 |
| Hammer Weight (lb.) | 300 | 140 | |
| Hammer Fall (in.) | 16 | 30 | |

Rig Make & Model: Mobile B-34

☐ Truck ☐ Tripod ☐ Cat-Head
☐ ATV ☐ Geoprobe ☑ Winch
☑ Track ☐ Air Track ☑ Roller Bit
☐ Skid ☐ ☐ Cutting Head

Hammer Type: ☐ Safety ☑ Doughnut ☐ Automatic

Drilling Mud: ☐ Bentonite ☐ Polymer ☑ None

Casing Advance: Type Method Depth — NW/DRIVEN/32.2 ft.

Drilling Notes:

| Depth (ft.) | Sampler Blows per 6 in. | Sample No. & Recovery (in.) | Sample Depth (ft.) | Well Diagram | Stratum Change (ft.) | USCS Symbol | Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | SM | Dense, brown silty SAND with gravel (SM), mps = 1.0 in., moist to wet, trace asphalt and brick fragments, frozen to 0.5 ft. | 10 | 10 | 10 | 20 | 30 | 20 | | | | |
| | 15 8 8 8 | S1 5 | 1.0 3.0 | | 1.5 | ML | -FILL- Very stiff, olive brown SILT with sand (ML), mps = 0.1 in., moist | | | | 5 | 10 | 85 | N | L | L | |
| 5 | 2 2 5 5 | S2 6 | 5.0 7.0 | | 5.2 | SW | -FILL- Loose, yellow brown well-graded SAND with gravel (SW), mps = 0.75 in., moist | 5 | 10 | 20 | 30 | 30 | 5 | | | | |
| 10 | 11 14 17 22 | S3 24 | 10.0 12.0 | | 10.0 | ML | -FILL- Hard, olive brown SILT (ML), moist, slightly mottled | | | | | | 100 | N | L | L | |
| 15 | 6 8 10 14 | S4 24 | 15.0 17.0 | | | ML | Very stiff, olive brown SILT (ML), moist to wet, mottled with silty fine sand seams | | | | | 5 | 95 | N | L | L | |
| | | | | | 18.0 | | -MARINE DEPOSIT- | | | | | | | | | | |
| 20 | 17 14 31 37 | S5 13 | 20.0 22.0 | | | SP/ML | Very dense, brown and gray brown interbedded poorly-graded SAND (SP) and SILT (ML), wet, occasional silt seams | | | | | 90 10 | 10 90 | N | L | L | |
| 25 | 7 7 13 22 | S6 12 | 25.0 27.0 | | 26.5 | SP/ML | -MARINE DEPOSIT- Medium dense, brown and gray brown interbedded poorly-graded SAND (SP) and SILT (ML), wet, occasional silt seams | | | | | 90 10 | 10 90 | N | L | L | |
| 30 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth in feet to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| 1/14/04 | 1425 | | Caved | 11.4 | 7.4 |
| | | | | | |
| | | | | | |

**Sample ID**

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon Sample
G Geoprobe

**Well Diagram**

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**

| | |
|---|---|
| Overburden (Linear ft.) | 32.2 |
| Rock Cored (Linear ft.) | 10.0 |
| Number of Samples | 7S, 2C |

BORING NO. B105

**Field Tests**

Dilatancy: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Meduim H - High V - Very High

*NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.

SEBAGO TECHNICS, INC.

# TEST BORING REPORT

BORING NO. B105



| Depth (ft.) | Sampler Blows per 6 in. | Sample No. & Recovery (in.) | Sample Depth (ft.) | Well Diagram | Stratum Change (ft.) | USCS Symbol | Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | | | | | | | | | | | | | | | | | |
| | 1 for 26 in. | S7 | 30.0 | | | SP/SM | Very loose, gray interbedded poorly-graded SAND (SP) and silty SAND (SM), wet, occasional silt seams | | | | | 80 | 20 | | | | |
| | | 22 | 32.2 | | 32.2 | | -MARINE DEPOSIT- | | | | | | | | | | |
| | 25/0 in. | | | | | | Drove casing to 32.2 ft.<br>Drilled with roller bit to 32.2 ft.<br>Begin NQ core at 32.2 ft., see Core Boring Report | | | | | | | | | | |
| 35 | | | | | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | | | | |
| 55 | | | | | | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | | | | | | |
| 65 | | | | | | | | | | | | | | | | | |
| 70 | | | | | | | | | | | | | | | | | |

NOTES:

FILE NO. 03497 BORING NO. B105

*NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.

# CORE BORING REPORT

BORING NO. **B105**



| Depth (ft) | Drilling Rate (min/ft) | Core No. Depth (ft) | Recovery (in) | Recovery RQD (%) | Weath-ering | Well Diagram | Stratum Change (ft) | Visual Classification and Remarks |
|---|---|---|---|---|---|---|---|---|
| 30 | | | | | | | 32.2 | Begin NQ core boring at 32.2 ft. See Test Boring Report for overburden details. |
| | 4:40 | 32.2 | 60 | 100 | Fresh | | | Medium to moderately hard, fresh, reddish gray, fine to medium grained BIOTITE SCHIST with quartz veins and minor pyrite. Joint spacing is generally wide, moderately dipping, undulating, mostly fresh and tight, few with minor silt infilling. |
| | 3:30 | | | | | | | |
| | 3:10 | C1 | | | | | | |
| 35 | 3:35 | | | | | | | |
| | 3:30 | 37.2 | 59 | 98 | | | | -BEDROCK- |
| | 3:25 | 37.2 | 56 | 93 | Fresh | | | Medium to moderately hard, fresh, reddish gray, fine to medium grained BIOTITE SCHIST with quartz veins and minor pyrite. Joint spacing is generally wide, moderately dipping, undulating, mostly fresh and tight, few with minor silt infilling. |
| | 3:05 | | | | | | | |
| 40 | 2:55 | C2 | | | | | | |
| | 4:50 | | | | | | | |
| | 4:55 | 42.2 | 56 | 93 | | | | -BEDROCK- |
| 45 | | | | | | | | Bottom of Exploration at 42.2 ft. below ground surface. |

SEBAGO TECHNICS, INC.

# TEST BORING REPORT

BORING NO. **B106**

Page 1 of 3

| | | | |
|---|---|---|---|
| PROJECT | RADIO TOWER | STI JOB NO. | 03497 |
| LOCATION | PRESUMPSCOT STREET, PORTLAND, MAINE | PROJECT MGR. | C. BROWN |
| CLIENT | PORTLAND RADIO GROUP | FIELD REP. | B. ESTES |
| CONTRACTOR | MAINE TEST BORINGS, INC. | DATE STARTED | 1/22/04 |
| DRILLER | J. RUDNICKI | DATE FINISHED | 1/23/04 |

Elevation 2.0 ft | Datum NAVD 88 | Boring Location See Plan

| Item | Casing | Sampler | Core Barrel |
|---|---|---|---|
| Type | NW | SS | NQ |
| Inside Diameter (in.) | 3.0 | 1.375 | 2.0 |
| Hammer Weight (lb.) | 300 | 140 | |
| Hammer Fall (in.) | 16 | 30 | |

Rig Make & Model: Mobile B-53
☐ Truck ☐ Tripod ☐ Cat-Head
☐ ATV ☐ Geoprobe ☑ Winch
☑ Track ☐ Air Track ☑ Roller Bit
☐ Skid ☐ ☐ Cutting Head

Hammer Type: ☑ Safety ☐ Doughnut ☐ Automatic

Drilling Mud: ☐ Bentonite ☐ Polymer ☑ None

Casing Advance: Type Method Depth — NW/DRIVE/48.7 ft.

Drilling Notes:

| Depth (ft.) | Sampler Blows per 6 in. | Sample No. & Recovery (in.) | Sample Depth (ft.) | Well Diagram | Stratum Change (ft.) | USCS Symbol | Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 4<br>10<br>13<br>3 | S1<br>3 | 0.0<br>2.0 | | 1.5 | ML/OL | Dark brown, sandy SILT with pieces of crushed rock and marsh grass, wet<br>-FILL-<br>Soft, gray to black SILT (ML) and ORGANIC SOIL (OL), mps = 0.04 in., wet, trace grass | | | | 5 | 5 | 90 | N | L | L | |
| | | | | | | | -MARINE DEPOSIT- | | | | | | | | | | |
| 5 | 2<br>1<br>2<br>2 | S2<br>1 | 5.0<br>7.0 | | | ML | Soft, gray SILT (ML), mps = 0.04 in., wet | | | | | 5 | 95 | N | L | L | |
| 10 | WOH<br>WOH<br>WOH<br>WOH | S3<br>22 | 10.0<br>12.0 | | | ML | Very soft, gray SILT (ML), mps = 0.04 in., wet, trace grass, trace shell fragments, anaerobic odor | | | | | 5 | 95 | N | L | L | |
| | | | | | 14.5 | | -MARINE DEPOSIT- | | | | | | | | | | |
| 15 | 1<br>WOH<br>1<br>2 | S4<br>3 | 15.0<br>17.0 | | 17.0 | ML | Very soft, olive brown SILT (ML), mps = 0.04 in., wet, trace shell fragments and organics | | | | | 5 | 95 | N | L | L | |
| | | | | | | | -MARINE DEPOSIT- | | | | | | | | | | |
| 20 | 3<br>4<br>5<br>7 | S5<br>24 | 20.0<br>22.0 | | 21.0 | ML | Soft to stiff, gray SILT (ML), mps = 1.0 in., wet | 5 | | | 5 | 5 | 85 | N | L | L | |
| | | | | | | ML/CL | Stiff, olive brown and gray SILT to lean CLAY (ML to CL), mps = 0.1 in., wet, slightly mottled | | | | | 5 | 95 | N | L | L | |
| 25 | 2<br>3<br>4<br>4 | S6<br>24 | 25.0<br>27.0 | | | ML/CL | Stiff, olive brown and gray SILT to lean CLAY (ML to CL), mps = 0.1 in., wet, slightly mottled, trace shell fragments | | | | | 5 | 95 | N | L | L | |
| 30 | | | | | | | -MARINE DEPOSIT- | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth in feet to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| 1/23/04 | -- | -- | -- | -- | Tidal Zone |
| | | | | | |
| | | | | | |

**Sample ID**

| | |
|---|---|
| O | Open End Rod |
| T | Thin Wall Tube |
| U | Undisturbed Sample |
| S | Split Spoon Sample |
| G | Geoprobe |

**Well Diagram**

Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

**Summary**

| | |
|---|---|
| Overburden (Linear ft.) | 49.3 |
| Rock Cored (Linear ft.) | 10.0 |
| Number of Samples | 10S, 2C |
| BORING NO. | B106 |

**Field Tests**

Dilatancy: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Meduim H - High V - Very High

*NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.

SEBAGO TECHNICS, INC.

# TEST BORING REPORT

BORING NO. B106

Page 2 of 3

| Depth (ft.) | Sampler Blows per 6 in. | Sample No. & Recovery (in.) | Sample Depth (ft.) | Well Diagram | Stratum Change (ft.) | USCS Symbol | Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | | | | | | CL | Medium stiff, gray lean CLAY (CL), wet, freq. silty fine sand seams and black streaks | | | | | 5 | 95 | N | M | M | |
| | 1 | S7 | 30.0 | | | | | | | | | | | | | | |
| | 2 | | | | | | | | | | | | | | | | |
| | 3 | | | | | | | | | | | | | | | | |
| | 3 | 24 | 32.0 | | | | | | | | | | | | | | |
| | | | | | | | -MARINE DEPOSIT- | | | | | | | | | | |
| | | | | | 34.0 | | | | | | | | | | | | |
| 35 | | | | | | SM | Medium dense, gray brown silty SAND (SM), mps = 1.4 in., wet, freq. silt layers and seams | 5 | | | | 75 | 20 | | | | |
| | 4 | S8 | 35.0 | | | | | | | | | | | | | | |
| | 9 | | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | | |
| | 19 | 4 | 37.0 | | | | | | | | | | | | | | |
| | | | | | | | -MARINE DEPOSIT- | | | | | | | | | | |
| | | | | | 38.0 | | | | | | | | | | | | |
| 40 | | | | | | SP | Loose, light brown poorly-graded SAND (SP), mps = 0.08 in., wet | | | 5 | 25 | 70 | | | | | |
| | WOH | S9 | 40.0 | | | | | | | | | | | | | | |
| | 1 | | | | | | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | | | | | |
| | 9 | 24 | 42.0 | | | | | | | | | | | | | | |
| 45 | | | | | | SP | Loose, light brown poorly-graded SAND (SP), mps = 0.04 in., wet | | | 5 | 25 | 70 | | | | | |
| | 2 | S10 | 45.0 | | | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | | |
| | 25 | 17 | 47.0 | | | | | | | | | | | | | | |
| | | | | | 46.3 | | -MARINE DEPOSIT- | | | | | | | | | | |
| | | | | | | SM | Dense, gray silty SAND with gravel (SM), mps = 1.0 in., wet | 5 | 10 | 15 | 20 | 30 | 20 | | | | |
| | | | | | | | -GLACIAL TILL- | | | | | | | | | | |
| | | | | | 48.7 | | | | | | | | | | | | |
| 50 | | | | | | | Drove casing to 48.7 ft. | | | | | | | | | | |
| | | | | | | | Drilled with roller bit to 49.3 ft. | | | | | | | | | | |
| | | | | | | | Begin NQ core at 49.3 ft. See Core Boring Report | | | | | | | | | | |
| 55 | | | | | | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | | | | | | |
| 65 | | | | | | | | | | | | | | | | | |
| 70 | | | | | | | | | | | | | | | | | |

NOTES:

FILE NO. 03497

BORING NO. B106

*NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.

# CORE BORING REPORT

BORING NO. B106



| Depth (ft) | Drilling Rate (min/ft) | Core No. Depth (ft) | Recovery RQD (in) | Recovery RQD (%) | Weathering | Well Diagram | Stratum Change (ft) | Visual Classification and Remarks |
|---|---|---|---|---|---|---|---|---|
| 45 | | | | | | | 49.3 | |
| 50 | | 49.3 C1 54.3 | 60 | 100 | Fresh | | | Medium to moderately hard, fresh, reddish gray fine to medium grained BIOTITE SCHIST with quartz veins. Joint spacing is very close to moderate with several slightly weathered, highly fractured zones. Joints are moderately dipping, undulating and rough, slightly weathered, open, some filled with gray silt. -BEDROCK- |
| 55 | | 54.3 C2 59.3 | 60 | 100 | Fresh | | | Medium to moderately hard, fresh, reddish gray fine to medium grained BIOTITE SCHIST with quartz veins. Joint spacing is very close to moderate with several slightly weathered, highly fractured zones. Joints are moderately dipping, undulating and rough, slightly weathered, open, some filled with gray silt. -BEDROCK- |
| 60 | | | | | | | | Bottom of Exploration at 59.3 ft. below ground surface. |

| Section No. | Elevation ft | Size | L ft | $L_u$ ft | Kl/r | $F_a$ ksi | A $in^2$ | Actual P K | Allow. $P_a$ K | Ratio $\frac{P}{P_a}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| L1 | 528 - 512.205 | 3/4 | 3.476 | 1.738 | 111.2 | 30.000 | 0.442 | 0.853 | 13.254 | 0.064 |
| L2 | 512.205 - 496.41 | 3/4 | 3.476 | 1.738 | 111.2 | 30.000 | 0.442 | 1.886 | 13.254 | 0.142 |
| L3 | 496.41 - 480.615 | 3/4 | 3.476 | 1.738 | 111.2 | 30.000 | 0.442 | 2.947 | 13.254 | 0.222 |
| L4 | 480.615 - 470 | 3/4 | 3.483 | 1.741 | 111.4 | 30.000 | 0.442 | 3.179 | 13.254 | 0.240 |
| T1 | 470 - 451 | 3/4 | 4.902 | 2.451 | 156.9 | 30.000 | 0.442 | 2.746 | 13.254 | 0.207 |
| T2 | 451 - 431 | 3/4 | 4.902 | 2.451 | 156.9 | 30.000 | 0.442 | 2.233 | 13.254 | 0.168 |
| T3 | 431 - 411 | 3/4 | 4.902 | 2.451 | 156.9 | 30.000 | 0.442 | 1.377 | 13.254 | 0.104 |
| T4 | 411 - 391 | 3/4 | 4.902 | 2.451 | 156.9 | 30.000 | 0.442 | 1.488 | 13.254 | 0.112 |
| T5 | 391 - 371 | 3/4 | 4.902 | 2.451 | 156.9 | 30.000 | 0.442 | 1.924 | 13.254 | 0.145 |
| T6 | 371 - 351 | 7/8 | 4.902 | 2.451 | 134.4 | 30.000 | 0.601 | 2.554 | 18.040 | 0.142 |
| T7 | 351 - 331 | 3/4 | 4.902 | 2.451 | 156.9 | 30.000 | 0.442 | 2.010 | 13.254 | 0.152 |
| T8 | 331 - 311 | 3/4 | 4.902 | 2.451 | 156.9 | 30.000 | 0.442 | 1.463 | 13.254 | 0.110 |
| T9 | 311 - 291 | 3/4 | 4.902 | 2.451 | 156.9 | 30.000 | 0.442 | 0.799 | 13.254 | 0.060 |
| T10 | 291 - 271 | 3/4 | 4.902 | 2.451 | 156.9 | 30.000 | 0.442 | 1.963 | 13.254 | 0.148 |
| T11 | 271 - 251 | 3/4 | 4.902 | 2.451 | 156.9 | 30.000 | 0.442 | 2.502 | 13.254 | 0.189 |
| T12 | 251 - 231 | 3/4 | 4.902 | 2.451 | 156.9 | 30.000 | 0.442 | 2.732 | 13.254 | 0.206 |
| T13 | 231 - 211 | 3/4 | 4.902 | 2.451 | 156.9 | 30.000 | 0.442 | 2.512 | 13.254 | 0.190 |
| T14 | 211 - 191 | 3/4 | 4.902 | 2.451 | 156.9 | 30.000 | 0.442 | 2.043 | 13.254 | 0.154 |
| T15 | 191 - 171 | 3/4 | 4.902 | 2.451 | 156.9 | 30.000 | 0.442 | 1.465 | 13.254 | 0.111 |
| T16 | 171 - 151 | 3/4 | 4.902 | 2.451 | 156.9 | 30.000 | 0.442 | 2.380 | 13.254 | 0.180 |
| T17 | 151 - 131 | 7/8 | 4.902 | 2.451 | 134.4 | 30.000 | 0.601 | 4.102 | 18.040 | 0.227 |
| T18 | 131 - 111 | 7/8 | 4.902 | 2.451 | 134.4 | 30.000 | 0.601 | 4.719 | 18.040 | 0.262 |
| T19 | 111 - 91 | 7/8 | 4.902 | 2.451 | 134.4 | 30.000 | 0.601 | 2.915 | 18.040 | 0.162 |
| T20 | 91 - 71 | 7/8 | 4.902 | 2.451 | 134.4 | 30.000 | 0.601 | 1.988 | 18.040 | 0.110 |
| T21 | 71 - 51 | 7/8 | 4.902 | 2.451 | 134.4 | 30.000 | 0.601 | 1.133 | 18.040 | 0.063 |
| T22 | 51 - 31 | 7/8 | 4.902 | 2.451 | 134.4 | 30.000 | 0.601 | 0.978 | 18.040 | 0.054 |
| T23 | 31 - 11 | 7/8 | 4.902 | 2.451 | 134.4 | 30.000 | 0.601 | 2.132 | 18.040 | 0.118 |

# APPLICATION FOR EXEMPTION FROM SITE PLAN REVIEW

Cambro Corp — Applicant

11/10/04 — Application Date

328 W. Commercial St — Applicant's Mailing Address

Project Name/Description

Bob Seegmiller 553-2851 — Consultant/Agent/Phone Number

189 Presumpscot St — Address of Proposed Site

421-B-5-6

CBL: 426-B-1-7

Description of Proposed Development:

to rebuild communications tower that collapsed on 12/11/03 to no higher than the original 540' can rebuild within 1 year

Please Attach Sketch/Plan of Proposal/Development

| Criteria for Exemptions: **See Section 14-523 (4) on back side of form** | Applicant's Assessment (Yes, No, N/A) | **Planning Office Use Only** |
|---|---|---|
| a) Within Existing Structures; No New Buildings, Demolitions or Additions | | ✓ |
| b) Footprint Increase Less Than 500 Sq. Ft. | | ✓ |
| c) No New Curb Cuts, Driveways, Parking Areas | | ✓ |
| d) Curbs and Sidewalks in Sound Condition/Comply with ADA | | ✓ |
| e) No Additional Parking/ No Traffic Increase | | ✓ |
| f) No Stormwater Problems | | ✓ |
| g) Sufficient Property Screening | | ✓ |
| h) Adequate Utilities | | ✓ |

DEPT. OF BUILDING INSPECTION
PORTLAND, ME
RECEIVED
NOV 19 2004

## Planning Division Use Only

Exemption Granted ✓ Partial Exemption _____ Exemption Denied _____

Planner's Signature _____ Date 11/17/04

White - Planning Office Pink - Inspections Yellow - Applicant