September 26, 2017

SunModo Corp.
14800 NE 65th St
Vancouver, WA 98682
Attn: Tony Liu

**RE:** ***HR250 & HR150 - EZ, EZr, & EZ Metal Rail Based PV Panel Mounting Systems Evaluation***

To whom it may concern:

Per your request, Moment Engineering + Design has performed a comprehensive structural analysis of the SunModo EZ, EZr, and EZ Metal Rail Based Roof PV Panel Mounting Systems for typical installations in the State of North Carolina. When installed per the conditions and design criteria described herein, the EZ Roof and EZ Metal Roof PV Mounting Systems are compliant with the sections of the design reference documents noted below.

**Design Reference Documents**

- *2012 North Carolina State Building Code*
- *2012 North Carolina State Residential Code*
- ASCE/SEI 7-05 – *Minimum Design Loads for Buildings and Other Structures*
- *2010 Aluminum Design* Manual, by the Aluminum Association
- Section and materials data provided by SunModo Corp.
  - Rail section properties appear in the appendix to this report

**Overview**

The EZ Roof and EZ Metal Roof PV-panel roof mounting systems consists of extruded aluminum support rails spanning between points of attachment on an existing roof structure. This analysis is limited to capacity of the Helio Echo Rail (HR150) and Helio Standard Rail (HR250) only when used with the EZ, EZr, & EZ Metal roof attachment solutions. Attachment of the Helio Echo Rail and Helio Standard Rail to the existing roof structure shall be the responsibility of the installer, and should be analyzed by a registered design professional where required by the local authority having jurisdiction.

**Methods & Design Parameters**

Applicable combinations of dead, wind, snow, and seismic loads were evaluated in accordance with current code requirements to determine allowable rail span lengths, based on assumptions of single-span conditions and allowable deflection of L/60.

Design wind pressures were determined using Components and Cladding calculations in Chapter 6 of ASCE 7-05, using the loading parameters listed below. Configurations not conforming to these parameters will require additional analysis. Calculation of applicable roof snow load should be

based upon ground snow load maps and equations and factors of ASCE 7-05, Chapter 7 and applicable sections of the 2012 NCSBC. For designated Case Study areas noted in the 2012 North Carolina State Building Code, refer to local jurisdiction requirements for snow and wind load determination. Seismic criteria were considered per provisions of ASCE 7-05 Chapter 13 with parameters specified below. While seismic effects did not appear to govern the capacity of this system, applicable seismic detailing requirements should be satisfied when installed per the manufacturer instructions and additional installation notes specified herein.

**Loading Parameters:**

- Ground snow load: Varies
- Design 3-second gust wind speed (V): 85-150 mph
- Building roof mean height: 30 ft. or less
- Roof wind pressure region: Zone 1 - Zone 3
- Structural occupancy category: II
- Wind exposure: B, C, D
- Seismic site class: D
- Seismic design category: A through E
- 0.2s $MCE_R$ ground motion parameter ($S_S$): Not to exceed 2.000
- 1s $MCE_R$ ground motion parameter ($S_1$): Not to exceed 1.250
- Component importance factor ($I_p$): 1.0
- Component acceleration factor, ($a_p$): 1.0
- Component response modification factor ($R_p$): 1.5
- Panel orientation: Portrait or Landscape
- Panel installation angle: Flush with roof slope
- Roof slope ($\theta$): 0-7°, >7-27°, >27-45°, >45°-55°

**Design Results**

The allowable span lengths of the system are principally controlled by applicable wind and snow loads to the structure. Refer to the Helio Echo & Helio Standard span tables in the appendix to this document for recommended rail configurations based on combinations of these loading parameters. Note that reaction loads provided in the attached tables are only applicable when used with the corresponding span length recommendations provided therein. These reactions may be scaled linearly when shorter spans are used.

**Installation Notes**

The following guidelines apply to all installations using the EZ, EZr & EZ Metal Rail Based product line:

- Tables assume two independent support rails per row with either panel orientation.
- Maximum end cantilever of aluminum support rail shall not exceed one-third (1/3) of allowable span in the roof wind pressure zone of the cantilever.

- Rails shall be continuous (not spliced) over a minimum of two supports unless using an approved SunModo Solar structural splice.
- Installation over roof overhangs or within 10" of any roof edge is not advised.
- Observe all local jurisdictional requirements regarding roof setback requirements.
- Ensure that actual span length does not exceed capacity of roof attachment.

**Summary**

This assessment has provided design validation for code-compliant installations of the EZ Roof and EZ Metal Roof PV Mounting Systems in the State of North Carolina. For the configurations and design loadings noted previously, the attached span tables represent maximum span lengths based on allowable stresses and deflection criteria. For all other configurations, refer to SunModo for engineering support.

This report does not provide analysis of roof attachment hardware, nor of any existing structures, as may be required by the local authority having jurisdiction.

We appreciate the opportunity to have assisted you with this project. Should you have any further questions regarding this analysis, please feel free to contact us by phone or email.

Best Regards,

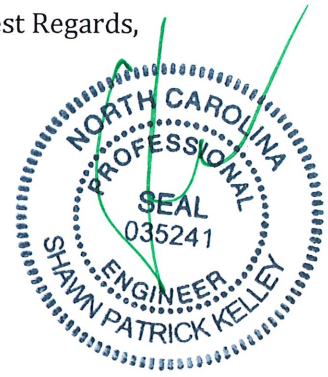


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**Table 2.1: Maximum Span Length (in.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS 0° TO 7°** | **85** | HR250 | 112 | 103 | 93 | 80 | 70 | 63 | 58 | 54 | 110 | 103 | 93 | 80 | 70 | 63 | 58 | 54 | 90 | 90 | 90 | 80 | 70 | 63 | 58 | 54 |
| | | HR150 | 103 | 95 | 80 | 68 | 60 | 54 | 49 | 46 | 97 | 95 | 80 | 68 | 60 | 54 | 49 | 46 | 79 | 79 | 79 | 68 | 60 | 54 | 49 | 46 |
| | **90** | HR250 | 112 | 103 | 93 | 80 | 70 | 63 | 58 | 54 | 105 | 103 | 93 | 80 | 70 | 63 | 58 | 54 | 84 | 84 | 84 | 80 | 70 | 63 | 58 | 54 |
| | | HR150 | 103 | 95 | 80 | 68 | 60 | 54 | 49 | 46 | 92 | 92 | 80 | 68 | 60 | 54 | 49 | 46 | 74 | 74 | 74 | 68 | 60 | 54 | 49 | 46 |
| | **100** | HR250 | 112 | 103 | 93 | 80 | 70 | 63 | 58 | 54 | 94 | 94 | 93 | 80 | 70 | 63 | 58 | 54 | 76 | 76 | 76 | 76 | 70 | 63 | 58 | 54 |
| | | HR150 | 103 | 95 | 80 | 68 | 60 | 54 | 49 | 46 | 82 | 82 | 80 | 68 | 60 | 54 | 49 | 46 | 67 | 67 | 67 | 67 | 60 | 54 | 49 | 46 |
| | **105** | HR250 | 112 | 103 | 93 | 80 | 70 | 63 | 58 | 54 | 89 | 89 | 89 | 80 | 70 | 63 | 58 | 54 | 72 | 72 | 72 | 72 | 70 | 63 | 58 | 54 |
| | | HR150 | 102 | 95 | 80 | 68 | 60 | 54 | 49 | 46 | 78 | 78 | 78 | 68 | 60 | 54 | 49 | 46 | 63 | 63 | 63 | 63 | 60 | 54 | 49 | 46 |
| | **110** | HR250 | 110 | 103 | 93 | 80 | 70 | 63 | 58 | 54 | 85 | 85 | 85 | 80 | 70 | 63 | 58 | 54 | 69 | 69 | 69 | 69 | 69 | 63 | 58 | 54 |
| | | HR150 | 97 | 95 | 80 | 68 | 60 | 54 | 49 | 46 | 74 | 74 | 74 | 68 | 60 | 54 | 49 | 46 | 60 | 60 | 60 | 60 | 60 | 54 | 49 | 46 |
| | **115** | HR250 | 106 | 103 | 93 | 80 | 70 | 63 | 58 | 54 | 81 | 81 | 81 | 80 | 70 | 63 | 58 | 54 | 66 | 66 | 66 | 66 | 66 | 63 | 58 | 54 |
| | | HR150 | 93 | 93 | 80 | 68 | 60 | 54 | 49 | 46 | 71 | 71 | 71 | 68 | 60 | 54 | 49 | 46 | 58 | 58 | 58 | 58 | 58 | 54 | 49 | 46 |
| | **120** | HR250 | 102 | 102 | 93 | 80 | 70 | 63 | 58 | 54 | 77 | 77 | 77 | 77 | 70 | 63 | 58 | 54 | 63 | 63 | 63 | 63 | 63 | 63 | 58 | 54 |
| | | HR150 | 89 | 89 | 80 | 68 | 60 | 54 | 49 | 46 | 68 | 68 | 68 | 68 | 60 | 54 | 49 | 46 | 55 | 55 | 55 | 55 | 55 | 54 | 49 | 46 |
| | **130** | HR250 | 93 | 93 | 91 | 80 | 70 | 63 | 58 | 54 | 71 | 71 | 71 | 71 | 70 | 63 | 58 | 54 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 54 |
| | | HR150 | 82 | 82 | 78 | 68 | 60 | 54 | 49 | 46 | 63 | 63 | 63 | 63 | 60 | 54 | 49 | 46 | 51 | 51 | 51 | 51 | 51 | 51 | 49 | 46 |
| | **140** | HR250 | 86 | 86 | 86 | 78 | 70 | 63 | 58 | 54 | 66 | 66 | 66 | 66 | 66 | 63 | 58 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 |
| | | HR150 | 76 | 76 | 76 | 67 | 60 | 54 | 49 | 46 | 58 | 58 | 58 | 58 | 58 | 54 | 49 | 46 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 46 |
| | **150** | HR250 | 80 | 80 | 80 | 77 | 70 | 63 | 58 | 54 | 62 | 62 | 62 | 62 | 62 | 62 | 58 | 54 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| | | HR150 | 71 | 71 | 71 | 66 | 60 | 54 | 49 | 46 | 54 | 54 | 54 | 54 | 54 | 54 | 49 | 46 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 |

**Table 2.2: Maximum Uplift (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS 0° TO 7°** | **85** | HR250 | -292 | -269 | -243 | -208 | -182 | -164 | -150 | -140 | -510 | -478 | -432 | -370 | -324 | -291 | -267 | -248 | -641 | -641 | -641 | -572 | -500 | -450 | -413 | -384 |
| | | HR150 | -269 | -247 | -208 | -177 | -155 | -139 | -128 | -119 | -450 | -440 | -370 | -314 | -275 | -248 | -227 | -211 | -562 | -562 | -562 | -486 | -426 | -383 | -351 | -326 |
| | **90** | HR250 | -333 | -307 | -277 | -237 | -208 | -187 | -172 | -159 | -547 | -540 | -488 | -417 | -365 | -329 | -302 | -280 | -682 | -682 | -682 | -645 | -565 | -508 | -466 | -433 |
| | | HR150 | -306 | -282 | -238 | -202 | -177 | -159 | -146 | -136 | -479 | -479 | -418 | -355 | -311 | -280 | -257 | -238 | -598 | -598 | -598 | -549 | -480 | -432 | -397 | -368 |
| | **100** | HR250 | -421 | -388 | -350 | -300 | -262 | -236 | -217 | -201 | -613 | -613 | -612 | -524 | -459 | -413 | -379 | -352 | -761 | -761 | -761 | -761 | -703 | -633 | -580 | -539 |
| | | HR150 | -387 | -357 | -300 | -255 | -223 | -201 | -184 | -171 | -538 | -538 | -525 | -446 | -390 | -351 | -322 | -299 | -668 | -668 | -668 | -668 | -598 | -538 | -494 | -458 |
| | **105** | HR250 | -467 | -431 | -389 | -333 | -291 | -262 | -241 | -223 | -646 | -646 | -646 | -581 | -508 | -458 | -420 | -390 | -801 | -801 | -801 | -801 | -778 | -701 | -643 | -597 |
| | | HR150 | -426 | -396 | -334 | -283 | -248 | -223 | -205 | -190 | -567 | -567 | -567 | -494 | -432 | -389 | -357 | -332 | -703 | -703 | -703 | -703 | -662 | -596 | -547 | -508 |
| | **110** | HR250 | -510 | -478 | -432 | -370 | -324 | -291 | -267 | -248 | -679 | -679 | -679 | -639 | -560 | -504 | -462 | -429 | -841 | -841 | -841 | -841 | -841 | -772 | -708 | -657 |
| | | HR150 | -450 | -440 | -370 | -314 | -275 | -248 | -227 | -211 | -595 | -595 | -595 | -544 | -476 | -429 | -393 | -365 | -738 | -738 | -738 | -738 | -729 | -657 | -602 | -559 |
| | **115** | HR250 | -539 | -526 | -475 | -406 | -356 | -320 | -294 | -273 | -711 | -711 | -711 | -702 | -614 | -553 | -507 | -471 | -881 | -881 | -881 | -881 | -881 | -846 | -775 | -720 |
| | | HR150 | -473 | -473 | -407 | -346 | -303 | -272 | -250 | -232 | -624 | -624 | -624 | -597 | -523 | -471 | -432 | -401 | -773 | -773 | -773 | -773 | -773 | -719 | -660 | -613 |
| | **120** | HR250 | -565 | -565 | -517 | -445 | -389 | -351 | -322 | -299 | -744 | -744 | -744 | -744 | -672 | -605 | -555 | -516 | -920 | -920 | -920 | -920 | -920 | -920 | -846 | -786 |
| | | HR150 | -495 | -495 | -443 | -378 | -331 | -298 | -273 | -254 | -653 | -653 | -653 | -653 | -572 | -515 | -472 | -439 | -808 | -808 | -808 | -808 | -808 | -785 | -719 | -668 |
| | **130** | HR250 | -616 | -616 | -598 | -526 | -462 | -416 | -381 | -354 | -809 | -809 | -809 | -809 | -793 | -714 | -655 | -608 | -999 | -999 | -999 | -999 | -999 | -999 | -997 | -926 |
| | | HR150 | -540 | -540 | -514 | -449 | -393 | -354 | -324 | -301 | -710 | -710 | -710 | -710 | -674 | -607 | -557 | -517 | -878 | -878 | -878 | -878 | -878 | -878 | -848 | -788 |
| | **140** | HR250 | -667 | -667 | -667 | -605 | -541 | -487 | -446 | -414 | -874 | -874 | -874 | -874 | -874 | -833 | -763 | -709 | -1078 | -1078 | -1078 | -1078 | -1078 | -1078 | -1078 | -1076 |
| | | HR150 | -585 | -585 | -585 | -519 | -460 | -414 | -380 | -353 | -767 | -767 | -767 | -767 | -767 | -708 | -649 | -603 | -947 | -947 | -947 | -947 | -947 | -947 | -947 | -916 |
| | **150** | HR250 | -717 | -717 | -717 | -685 | -622 | -562 | -515 | -479 | -938 | -938 | -938 | -938 | -938 | -938 | -879 | -816 | -1157 | -1157 | -1157 | -1157 | -1157 | -1157 | -1157 | -1157 |
| | | HR150 | -629 | -629 | -629 | -588 | -531 | -478 | -438 | -407 | -824 | -824 | -824 | -824 | -824 | -815 | -748 | -694 | -1016 | -1016 | -1016 | -1016 | -1016 | -1016 | -1016 | -1016 |

**Table 2.3: Maximum Downforce (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS 0° TO 7°** | **85** | HR250 | 330 | 422 | 541 | 600 | 684 | 760 | 829 | 893 | 324 | 422 | 541 | 600 | 684 | 760 | 829 | 893 | 264 | 366 | 519 | 600 | 684 | 760 | 829 | 893 |
| | | HR150 | 303 | 388 | 464 | 510 | 582 | 647 | 705 | 759 | 286 | 388 | 464 | 510 | 582 | 647 | 705 | 759 | 231 | 321 | 455 | 510 | 582 | 647 | 705 | 759 |
| | **90** | HR250 | 330 | 422 | 541 | 600 | 684 | 760 | 829 | 893 | 308 | 422 | 541 | 600 | 684 | 760 | 829 | 893 | 248 | 344 | 489 | 600 | 684 | 760 | 829 | 893 |
| | | HR150 | 303 | 388 | 464 | 510 | 582 | 647 | 705 | 759 | 270 | 374 | 464 | 510 | 582 | 647 | 705 | 759 | 218 | 302 | 429 | 510 | 582 | 647 | 705 | 759 |
| | **100** | HR250 | 330 | 422 | 541 | 600 | 684 | 760 | 829 | 893 | 275 | 382 | 541 | 600 | 684 | 760 | 829 | 893 | 223 | 309 | 439 | 569 | 684 | 760 | 829 | 893 |
| | | HR150 | 303 | 388 | 464 | 510 | 582 | 647 | 705 | 759 | 241 | 335 | 464 | 510 | 582 | 647 | 705 | 759 | 195 | 271 | 385 | 499 | 582 | 647 | 705 | 759 |
| | **105** | HR250 | 330 | 422 | 541 | 600 | 684 | 760 | 829 | 893 | 261 | 363 | 515 | 600 | 684 | 760 | 829 | 893 | 212 | 294 | 417 | 541 | 684 | 760 | 829 | 893 |
| | | HR150 | 301 | 388 | 464 | 510 | 582 | 647 | 705 | 759 | 229 | 318 | 452 | 510 | 582 | 647 | 705 | 759 | 186 | 258 | 366 | 475 | 582 | 647 | 705 | 759 |
| | **110** | HR250 | 324 | 422 | 541 | 600 | 684 | 760 | 829 | 893 | 249 | 346 | 491 | 600 | 684 | 760 | 829 | 893 | 202 | 280 | 398 | 515 | 672 | 760 | 829 | 893 |
| | | HR150 | 286 | 388 | 464 | 510 | 582 | 647 | 705 | 759 | 219 | 303 | 431 | 510 | 582 | 647 | 705 | 759 | 177 | 246 | 349 | 452 | 582 | 647 | 705 | 759 |
| | **115** | HR250 | 312 | 422 | 541 | 600 | 684 | 760 | 829 | 893 | 238 | 330 | 469 | 600 | 684 | 760 | 829 | 893 | 193 | 268 | 380 | 492 | 642 | 760 | 829 | 893 |
| | | HR150 | 273 | 379 | 464 | 510 | 582 | 647 | 705 | 759 | 209 | 290 | 412 | 510 | 582 | 647 | 705 | 759 | 169 | 235 | 334 | 432 | 563 | 647 | 705 | 759 |
| | **120** | HR250 | 310 | 423 | 546 | 607 | 684 | 760 | 829 | 893 | 237 | 323 | 455 | 588 | 684 | 760 | 829 | 893 | 192 | 262 | 369 | 477 | 615 | 758 | 829 | 893 |
| | | HR150 | 272 | 370 | 468 | 516 | 582 | 647 | 705 | 759 | 208 | 283 | 400 | 516 | 582 | 647 | 705 | 759 | 169 | 230 | 324 | 419 | 540 | 647 | 705 | 759 |
| | **130** | HR250 | 326 | 419 | 562 | 631 | 684 | 760 | 829 | 893 | 249 | 321 | 443 | 565 | 684 | 760 | 829 | 893 | 202 | 260 | 359 | 459 | 566 | 699 | 829 | 893 |
| | | HR150 | 286 | 367 | 483 | 538 | 582 | 647 | 705 | 759 | 219 | 281 | 389 | 496 | 582 | 647 | 705 | 759 | 177 | 228 | 316 | 403 | 497 | 614 | 705 | 759 |
| | **140** | HR250 | 339 | 416 | 564 | 646 | 697 | 760 | 829 | 893 | 260 | 319 | 432 | 545 | 659 | 760 | 829 | 893 | 211 | 259 | 351 | 443 | 535 | 648 | 771 | 893 |
| | | HR150 | 297 | 365 | 495 | 554 | 593 | 647 | 705 | 759 | 228 | 280 | 379 | 479 | 578 | 647 | 705 | 759 | 185 | 227 | 308 | 389 | 470 | 569 | 677 | 759 |
| | **150** | HR250 | 356 | 418 | 556 | 662 | 721 | 760 | 829 | 893 | 273 | 320 | 426 | 532 | 637 | 744 | 829 | 893 | 222 | 260 | 346 | 432 | 518 | 604 | 719 | 833 |
| | | HR150 | 313 | 367 | 487 | 569 | 615 | 647 | 705 | 759 | 240 | 281 | 374 | 467 | 560 | 647 | 705 | 759 | 195 | 229 | 304 | 379 | 455 | 531 | 631 | 732 |

**Table 2.4: Maximum Shear (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS 0° TO 7°** | **85** | HR250 | 8 | 32 | 51 | 63 | 72 | 80 | 87 | 94 | 7 | 32 | 51 | 63 | 72 | 80 | 87 | 94 | 6 | 28 | 49 | 63 | 72 | 80 | 87 | 94 |
| | | HR150 | 7 | 29 | 44 | 54 | 61 | 68 | 74 | 80 | 7 | 29 | 44 | 54 | 61 | 68 | 74 | 80 | 5 | 24 | 43 | 54 | 61 | 68 | 74 | 80 |
| | **90** | HR250 | 8 | 32 | 51 | 63 | 72 | 80 | 87 | 94 | 7 | 32 | 51 | 63 | 72 | 80 | 87 | 94 | 6 | 26 | 46 | 63 | 72 | 80 | 87 | 94 |
| | | HR150 | 7 | 29 | 44 | 54 | 61 | 68 | 74 | 80 | 6 | 28 | 44 | 54 | 61 | 68 | 74 | 80 | 5 | 23 | 41 | 54 | 61 | 68 | 74 | 80 |
| | **100** | HR250 | 8 | 32 | 51 | 63 | 72 | 80 | 87 | 94 | 6 | 29 | 51 | 63 | 72 | 80 | 87 | 94 | 5 | 23 | 42 | 60 | 72 | 80 | 87 | 94 |
| | | HR150 | 7 | 29 | 44 | 54 | 61 | 68 | 74 | 80 | 6 | 25 | 44 | 54 | 61 | 68 | 74 | 80 | 4 | 20 | 36 | 52 | 61 | 68 | 74 | 80 |
| | **105** | HR250 | 8 | 32 | 51 | 63 | 72 | 80 | 87 | 94 | 6 | 27 | 49 | 63 | 72 | 80 | 87 | 94 | 5 | 22 | 39 | 57 | 72 | 80 | 87 | 94 |
| | | HR150 | 7 | 29 | 44 | 54 | 61 | 68 | 74 | 80 | 5 | 24 | 43 | 54 | 61 | 68 | 74 | 80 | 4 | 19 | 35 | 50 | 61 | 68 | 74 | 80 |
| | **110** | HR250 | 7 | 32 | 51 | 63 | 72 | 80 | 87 | 94 | 6 | 26 | 46 | 63 | 72 | 80 | 87 | 94 | 5 | 21 | 38 | 54 | 71 | 80 | 87 | 94 |
| | | HR150 | 7 | 29 | 44 | 54 | 61 | 68 | 74 | 80 | 5 | 23 | 41 | 54 | 61 | 68 | 74 | 80 | 4 | 19 | 33 | 47 | 61 | 68 | 74 | 80 |
| | **115** | HR250 | 7 | 32 | 51 | 63 | 72 | 80 | 87 | 94 | 5 | 25 | 44 | 63 | 72 | 80 | 87 | 94 | 4 | 20 | 36 | 52 | 67 | 80 | 87 | 94 |
| | | HR150 | 6 | 29 | 44 | 54 | 61 | 68 | 74 | 80 | 5 | 22 | 39 | 54 | 61 | 68 | 74 | 80 | 4 | 18 | 32 | 45 | 59 | 68 | 74 | 80 |
| | **120** | HR250 | 7 | 31 | 51 | 63 | 72 | 80 | 87 | 94 | 5 | 24 | 42 | 61 | 72 | 80 | 87 | 94 | 4 | 19 | 34 | 50 | 65 | 80 | 87 | 94 |
| | | HR150 | 6 | 27 | 44 | 54 | 61 | 68 | 74 | 80 | 5 | 21 | 37 | 54 | 61 | 68 | 74 | 80 | 4 | 17 | 30 | 43 | 57 | 68 | 74 | 80 |
| | **130** | HR250 | 6 | 29 | 50 | 63 | 72 | 80 | 87 | 94 | 5 | 22 | 39 | 56 | 72 | 80 | 87 | 94 | 4 | 18 | 32 | 46 | 60 | 73 | 87 | 94 |
| | | HR150 | 6 | 25 | 43 | 54 | 61 | 68 | 74 | 80 | 4 | 19 | 34 | 49 | 61 | 68 | 74 | 80 | 3 | 16 | 28 | 40 | 52 | 64 | 74 | 80 |
| | **140** | HR250 | 6 | 27 | 47 | 62 | 72 | 80 | 87 | 94 | 4 | 20 | 36 | 52 | 68 | 80 | 87 | 94 | 4 | 17 | 29 | 42 | 55 | 68 | 81 | 94 |
| | | HR150 | 5 | 23 | 41 | 53 | 61 | 68 | 74 | 80 | 4 | 18 | 32 | 46 | 60 | 68 | 74 | 80 | 3 | 15 | 26 | 37 | 49 | 60 | 71 | 80 |
| | **150** | HR250 | 5 | 25 | 44 | 60 | 72 | 80 | 87 | 94 | 4 | 19 | 34 | 49 | 63 | 78 | 87 | 94 | 3 | 15 | 27 | 39 | 51 | 64 | 76 | 88 |
| | | HR150 | 5 | 22 | 39 | 52 | 61 | 68 | 74 | 80 | 4 | 17 | 30 | 43 | 56 | 68 | 74 | 80 | 3 | 14 | 24 | 35 | 45 | 56 | 66 | 77 |

**Table 2.5: Maximum Span Length (in.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **C** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS 0° TO 7°** | **85** | HR250 | 112 | 103 | 93 | 80 | 70 | 63 | 58 | 54 | 93 | 93 | 93 | 80 | 70 | 63 | 58 | 54 | 75 | 75 | 75 | 75 | 70 | 63 | 58 | 54 |
| | | HR150 | 103 | 95 | 80 | 68 | 60 | 54 | 49 | 46 | 82 | 82 | 80 | 68 | 60 | 54 | 49 | 46 | 66 | 66 | 66 | 66 | 60 | 54 | 49 | 46 |
| | **90** | HR250 | 112 | 103 | 93 | 80 | 70 | 63 | 58 | 54 | 88 | 88 | 88 | 80 | 70 | 63 | 58 | 54 | 71 | 71 | 71 | 71 | 70 | 63 | 58 | 54 |
| | | HR150 | 101 | 95 | 80 | 68 | 60 | 54 | 49 | 46 | 77 | 77 | 77 | 68 | 60 | 54 | 49 | 46 | 62 | 62 | 62 | 62 | 60 | 54 | 49 | 46 |
| | **100** | HR250 | 103 | 103 | 93 | 80 | 70 | 63 | 58 | 54 | 79 | 79 | 79 | 79 | 70 | 63 | 58 | 54 | 64 | 64 | 64 | 64 | 64 | 63 | 58 | 54 |
| | | HR150 | 90 | 90 | 80 | 68 | 60 | 54 | 49 | 46 | 69 | 69 | 69 | 68 | 60 | 54 | 49 | 46 | 56 | 56 | 56 | 56 | 56 | 54 | 49 | 46 |
| | **105** | HR250 | 98 | 98 | 92 | 80 | 70 | 63 | 58 | 54 | 75 | 75 | 75 | 75 | 70 | 63 | 58 | 54 | 61 | 61 | 61 | 61 | 61 | 61 | 58 | 54 |
| | | HR150 | 86 | 86 | 79 | 68 | 60 | 54 | 49 | 46 | 66 | 66 | 66 | 66 | 60 | 54 | 49 | 46 | 53 | 53 | 53 | 53 | 53 | 53 | 49 | 46 |
| | **110** | HR250 | 93 | 93 | 91 | 80 | 70 | 63 | 58 | 54 | 71 | 71 | 71 | 71 | 70 | 63 | 58 | 54 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 54 |
| | | HR150 | 82 | 82 | 78 | 68 | 60 | 54 | 49 | 46 | 63 | 63 | 63 | 63 | 60 | 54 | 49 | 46 | 51 | 51 | 51 | 51 | 51 | 51 | 49 | 46 |
| | **115** | HR250 | 89 | 89 | 89 | 79 | 70 | 63 | 58 | 54 | 68 | 68 | 68 | 68 | 68 | 63 | 58 | 54 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 54 |
| | | HR150 | 78 | 78 | 77 | 68 | 60 | 54 | 49 | 46 | 60 | 60 | 60 | 60 | 60 | 54 | 49 | 46 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 46 |
| | **120** | HR250 | 85 | 85 | 85 | 78 | 70 | 63 | 58 | 54 | 65 | 65 | 65 | 65 | 65 | 63 | 58 | 54 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 |
| | | HR150 | 75 | 75 | 75 | 67 | 60 | 54 | 49 | 46 | 57 | 57 | 57 | 57 | 57 | 54 | 49 | 46 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 46 |
| | **130** | HR250 | 78 | 78 | 78 | 76 | 69 | 63 | 58 | 54 | 60 | 60 | 60 | 60 | 60 | 60 | 58 | 54 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 |
| | | HR150 | 69 | 69 | 69 | 65 | 59 | 54 | 49 | 46 | 53 | 53 | 53 | 53 | 53 | 53 | 49 | 46 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 |
| | **140** | HR250 | 73 | 73 | 73 | 73 | 68 | 63 | 58 | 54 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 54 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 |
| | | HR150 | 64 | 64 | 64 | 64 | 58 | 54 | 49 | 46 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 46 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| | **150** | HR250 | 68 | 68 | 68 | 68 | 67 | 62 | 58 | 54 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 |
| | | HR150 | 59 | 59 | 59 | 59 | 57 | 53 | 49 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 |

**Table 2.6: Maximum Uplift (lb.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **C** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS 0° TO 7°** | **85** | HR250 | -426 | -392 | -355 | -303 | -266 | -239 | -219 | -204 | -617 | -617 | -617 | -530 | -464 | -417 | -383 | -356 | -766 | -766 | -766 | -766 | -711 | -640 | -587 | -545 |
| | | HR150 | -392 | -361 | -304 | -258 | -226 | -203 | -187 | -173 | -541 | -541 | -531 | -451 | -394 | -355 | -326 | -302 | -672 | -672 | -672 | -672 | -605 | -545 | -499 | -464 |
| | **90** | HR250 | -484 | -446 | -403 | -345 | -302 | -272 | -249 | -231 | -655 | -655 | -655 | -597 | -522 | -470 | -431 | -400 | -813 | -813 | -813 | -813 | -801 | -721 | -662 | -614 |
| | | HR150 | -434 | -410 | -345 | -293 | -257 | -231 | -212 | -197 | -575 | -575 | -575 | -507 | -444 | -400 | -367 | -341 | -714 | -714 | -714 | -714 | -682 | -614 | -563 | -523 |
| | **100** | HR250 | -556 | -556 | -503 | -432 | -378 | -340 | -312 | -290 | -733 | -733 | -733 | -733 | -653 | -588 | -539 | -501 | -907 | -907 | -907 | -907 | -907 | -896 | -821 | -763 |
| | | HR150 | -488 | -488 | -432 | -367 | -322 | -290 | -266 | -247 | -643 | -643 | -643 | -634 | -555 | -500 | -458 | -426 | -796 | -796 | -796 | -796 | -796 | -762 | -699 | -649 |
| | **105** | HR250 | -586 | -586 | -550 | -478 | -419 | -377 | -346 | -321 | -772 | -772 | -772 | -772 | -723 | -651 | -596 | -554 | -954 | -954 | -954 | -954 | -954 | -954 | -909 | -844 |
| | | HR150 | -514 | -514 | -472 | -407 | -356 | -321 | -294 | -273 | -677 | -677 | -677 | -677 | -615 | -553 | -507 | -471 | -838 | -838 | -838 | -838 | -838 | -838 | -773 | -718 |
| | **110** | HR250 | -617 | -617 | -600 | -528 | -464 | -417 | -383 | -356 | -810 | -810 | -810 | -810 | -795 | -715 | -656 | -609 | -1001 | -1001 | -1001 | -1001 | -1001 | -1001 | -1000 | -929 |
| | | HR150 | -541 | -541 | -516 | -451 | -394 | -355 | -326 | -302 | -711 | -711 | -711 | -711 | -676 | -608 | -558 | -518 | -879 | -879 | -879 | -879 | -879 | -879 | -850 | -790 |
| | **115** | HR250 | -647 | -647 | -647 | -573 | -509 | -458 | -420 | -390 | -848 | -848 | -848 | -848 | -848 | -784 | -719 | -668 | -1047 | -1047 | -1047 | -1047 | -1047 | -1047 | -1047 | -1017 |
| | | HR150 | -567 | -567 | -558 | -491 | -433 | -390 | -357 | -332 | -744 | -744 | -744 | -744 | -741 | -667 | -612 | -568 | -920 | -920 | -920 | -920 | -920 | -920 | -920 | -865 |
| | **120** | HR250 | -676 | -676 | -676 | -620 | -556 | -501 | -459 | -426 | -887 | -887 | -887 | -887 | -887 | -857 | -786 | -730 | -1094 | -1094 | -1094 | -1094 | -1094 | -1094 | -1094 | -1094 |
| | | HR150 | -593 | -593 | -593 | -532 | -473 | -426 | -390 | -363 | -779 | -779 | -779 | -779 | -779 | -729 | -669 | -621 | -961 | -961 | -961 | -961 | -961 | -961 | -961 | -942 |
| | **130** | HR250 | -736 | -736 | -736 | -716 | -651 | -592 | -543 | -504 | -963 | -963 | -963 | -963 | -963 | -963 | -925 | -859 | -1187 | -1187 | -1187 | -1187 | -1187 | -1187 | -1187 | -1187 |
| | | HR150 | -646 | -646 | -646 | -615 | -558 | -503 | -462 | -429 | -845 | -845 | -845 | -845 | -845 | -845 | -787 | -731 | -1043 | -1043 | -1043 | -1043 | -1043 | -1043 | -1043 | -1043 |
| | **140** | HR250 | -796 | -796 | -796 | -796 | -747 | -691 | -634 | -589 | -1039 | -1039 | -1039 | -1039 | -1039 | -1039 | -1039 | -1001 | -1280 | -1280 | -1280 | -1280 | -1280 | -1280 | -1280 | -1280 |
| | | HR150 | -698 | -698 | -698 | -698 | -641 | -588 | -539 | -501 | -913 | -913 | -913 | -913 | -913 | -913 | -913 | -851 | -1124 | -1124 | -1124 | -1124 | -1124 | -1124 | -1124 | -1124 |
| | **150** | HR250 | -855 | -855 | -855 | -855 | -843 | -783 | -730 | -678 | -1115 | -1115 | -1115 | -1115 | -1115 | -1115 | -1115 | -1115 | -1373 | -1373 | -1373 | -1373 | -1373 | -1373 | -1373 | -1373 |
| | | HR150 | -750 | -750 | -750 | -750 | -724 | -672 | -621 | -577 | -979 | -979 | -979 | -979 | -979 | -979 | -979 | -979 | -1206 | -1206 | -1206 | -1206 | -1206 | -1206 | -1206 | -1206 |

**Table 2.7: Maximum Downforce (lb.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **C** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS 0° TO 7°** | **85** | HR250 | 330 | 422 | 541 | 600 | 684 | 760 | 829 | 893 | 274 | 380 | 539 | 600 | 684 | 760 | 829 | 893 | 221 | 307 | 436 | 565 | 684 | 760 | 829 | 893 |
| | | HR150 | 303 | 388 | 464 | 510 | 582 | 647 | 705 | 759 | 240 | 333 | 464 | 510 | 582 | 647 | 705 | 759 | 194 | 270 | 383 | 496 | 582 | 647 | 705 | 759 |
| | **90** | HR250 | 330 | 422 | 541 | 600 | 684 | 760 | 829 | 893 | 258 | 358 | 508 | 600 | 684 | 760 | 829 | 893 | 209 | 290 | 411 | 533 | 684 | 760 | 829 | 893 |
| | | HR150 | 296 | 388 | 464 | 510 | 582 | 647 | 705 | 759 | 226 | 314 | 446 | 510 | 582 | 647 | 705 | 759 | 183 | 254 | 361 | 468 | 582 | 647 | 705 | 759 |
| | **100** | HR250 | 308 | 424 | 543 | 603 | 684 | 760 | 829 | 893 | 235 | 324 | 458 | 593 | 684 | 760 | 829 | 893 | 191 | 262 | 372 | 481 | 624 | 760 | 829 | 893 |
| | | HR150 | 270 | 371 | 466 | 513 | 582 | 647 | 705 | 759 | 206 | 284 | 402 | 513 | 582 | 647 | 705 | 759 | 167 | 230 | 326 | 422 | 548 | 647 | 705 | 759 |
| | **105** | HR250 | 318 | 422 | 553 | 618 | 684 | 760 | 829 | 893 | 243 | 322 | 450 | 578 | 684 | 760 | 829 | 893 | 197 | 261 | 365 | 469 | 593 | 732 | 829 | 893 |
| | | HR150 | 279 | 370 | 475 | 526 | 582 | 647 | 705 | 759 | 213 | 283 | 395 | 508 | 582 | 647 | 705 | 759 | 173 | 229 | 321 | 412 | 521 | 642 | 705 | 759 |
| | **110** | HR250 | 326 | 419 | 563 | 632 | 684 | 760 | 829 | 893 | 250 | 321 | 443 | 565 | 684 | 760 | 829 | 893 | 203 | 260 | 359 | 459 | 566 | 698 | 829 | 893 |
| | | HR150 | 286 | 368 | 484 | 539 | 582 | 647 | 705 | 759 | 219 | 282 | 389 | 496 | 582 | 647 | 705 | 759 | 178 | 229 | 316 | 403 | 497 | 613 | 705 | 759 |
| | **115** | HR250 | 335 | 418 | 570 | 640 | 688 | 760 | 829 | 893 | 256 | 320 | 437 | 553 | 670 | 760 | 829 | 893 | 208 | 260 | 354 | 449 | 544 | 667 | 793 | 893 |
| | | HR150 | 293 | 366 | 492 | 549 | 585 | 647 | 705 | 759 | 225 | 281 | 383 | 486 | 585 | 647 | 705 | 759 | 183 | 228 | 311 | 394 | 478 | 586 | 697 | 759 |
| | **120** | HR250 | 342 | 416 | 562 | 649 | 702 | 760 | 829 | 893 | 262 | 319 | 430 | 542 | 654 | 760 | 829 | 893 | 213 | 259 | 350 | 440 | 531 | 639 | 760 | 881 |
| | | HR150 | 300 | 365 | 493 | 557 | 597 | 647 | 705 | 759 | 230 | 280 | 378 | 476 | 574 | 647 | 705 | 759 | 187 | 227 | 307 | 387 | 466 | 561 | 667 | 759 |
| | **130** | HR250 | 363 | 419 | 553 | 669 | 727 | 769 | 829 | 893 | 278 | 321 | 424 | 527 | 630 | 733 | 829 | 893 | 226 | 261 | 345 | 428 | 512 | 596 | 701 | 812 |
| | | HR150 | 318 | 368 | 485 | 574 | 623 | 654 | 705 | 759 | 244 | 282 | 373 | 463 | 553 | 644 | 705 | 759 | 199 | 229 | 303 | 376 | 450 | 523 | 615 | 713 |
| | **140** | HR250 | 380 | 421 | 545 | 670 | 745 | 798 | 830 | 893 | 292 | 323 | 419 | 514 | 610 | 705 | 801 | 893 | 237 | 263 | 341 | 418 | 496 | 574 | 651 | 754 |
| | | HR150 | 334 | 370 | 479 | 588 | 639 | 678 | 706 | 759 | 256 | 284 | 368 | 452 | 535 | 619 | 703 | 759 | 209 | 231 | 299 | 367 | 436 | 504 | 572 | 662 |
| | **150** | HR250 | 402 | 428 | 544 | 660 | 765 | 817 | 861 | 893 | 309 | 329 | 418 | 507 | 596 | 685 | 774 | 864 | 251 | 268 | 340 | 413 | 485 | 557 | 630 | 703 |
| | | HR150 | 353 | 376 | 478 | 579 | 657 | 701 | 732 | 759 | 271 | 289 | 367 | 446 | 524 | 602 | 680 | 759 | 221 | 235 | 299 | 362 | 426 | 490 | 553 | 618 |

**Table 2.8: Maximum Shear (lb.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **C** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS 0° TO 7°** | **85** | HR250 | 8 | 32 | 51 | 63 | 72 | 80 | 87 | 94 | 6 | 29 | 51 | 63 | 72 | 80 | 87 | 94 | 5 | 23 | 41 | 59 | 72 | 80 | 87 | 94 |
| | | HR150 | 7 | 29 | 44 | 54 | 61 | 68 | 74 | 80 | 6 | 25 | 44 | 54 | 61 | 68 | 74 | 80 | 4 | 20 | 36 | 52 | 61 | 68 | 74 | 80 |
| | **90** | HR250 | 8 | 32 | 51 | 63 | 72 | 80 | 87 | 94 | 6 | 27 | 48 | 63 | 72 | 80 | 87 | 94 | 5 | 22 | 39 | 56 | 72 | 80 | 87 | 94 |
| | | HR150 | 7 | 29 | 44 | 54 | 61 | 68 | 74 | 80 | 5 | 24 | 42 | 54 | 61 | 68 | 74 | 80 | 4 | 19 | 34 | 49 | 61 | 68 | 74 | 80 |
| | **100** | HR250 | 7 | 32 | 51 | 63 | 72 | 80 | 87 | 94 | 5 | 24 | 43 | 62 | 72 | 80 | 87 | 94 | 4 | 20 | 35 | 50 | 66 | 80 | 87 | 94 |
| | | HR150 | 6 | 28 | 44 | 54 | 61 | 68 | 74 | 80 | 5 | 21 | 38 | 54 | 61 | 68 | 74 | 80 | 4 | 17 | 31 | 44 | 58 | 68 | 74 | 80 |
| | **105** | HR250 | 7 | 30 | 50 | 63 | 72 | 80 | 87 | 94 | 5 | 23 | 41 | 59 | 72 | 80 | 87 | 94 | 4 | 19 | 33 | 48 | 62 | 77 | 87 | 94 |
| | | HR150 | 6 | 26 | 43 | 54 | 61 | 68 | 74 | 80 | 4 | 20 | 36 | 52 | 61 | 68 | 74 | 80 | 4 | 16 | 29 | 42 | 55 | 68 | 74 | 80 |
| | **110** | HR250 | 6 | 29 | 50 | 63 | 72 | 80 | 87 | 94 | 5 | 22 | 39 | 56 | 72 | 80 | 87 | 94 | 4 | 18 | 32 | 46 | 59 | 73 | 87 | 94 |
| | | HR150 | 6 | 25 | 43 | 54 | 61 | 68 | 74 | 80 | 4 | 19 | 34 | 49 | 61 | 68 | 74 | 80 | 3 | 16 | 28 | 40 | 52 | 64 | 74 | 80 |
| | **115** | HR250 | 6 | 27 | 49 | 62 | 72 | 80 | 87 | 94 | 5 | 21 | 37 | 54 | 70 | 80 | 87 | 94 | 4 | 17 | 30 | 44 | 57 | 70 | 83 | 94 |
| | | HR150 | 5 | 24 | 42 | 53 | 61 | 68 | 74 | 80 | 4 | 18 | 33 | 47 | 61 | 68 | 74 | 80 | 3 | 15 | 27 | 38 | 50 | 62 | 73 | 80 |
| | **120** | HR250 | 6 | 26 | 47 | 61 | 72 | 80 | 87 | 94 | 4 | 20 | 36 | 51 | 67 | 80 | 87 | 94 | 4 | 16 | 29 | 42 | 54 | 67 | 80 | 93 |
| | | HR150 | 5 | 23 | 41 | 53 | 61 | 68 | 74 | 80 | 4 | 18 | 31 | 45 | 59 | 68 | 74 | 80 | 3 | 14 | 25 | 37 | 48 | 59 | 70 | 80 |
| | **130** | HR250 | 5 | 24 | 43 | 60 | 71 | 80 | 87 | 94 | 4 | 18 | 33 | 47 | 62 | 76 | 87 | 94 | 3 | 15 | 27 | 38 | 50 | 62 | 74 | 85 |
| | | HR150 | 5 | 21 | 38 | 52 | 61 | 68 | 74 | 80 | 4 | 16 | 29 | 42 | 54 | 67 | 74 | 80 | 3 | 13 | 23 | 34 | 44 | 54 | 65 | 75 |
| | **140** | HR250 | 5 | 22 | 40 | 57 | 70 | 80 | 87 | 94 | 4 | 17 | 31 | 44 | 57 | 71 | 84 | 94 | 3 | 14 | 25 | 36 | 47 | 57 | 68 | 79 |
| | | HR150 | 4 | 20 | 35 | 50 | 60 | 68 | 74 | 80 | 3 | 15 | 27 | 39 | 50 | 62 | 74 | 80 | 3 | 12 | 22 | 31 | 41 | 50 | 60 | 70 |
| | **150** | HR250 | 5 | 21 | 37 | 53 | 69 | 79 | 87 | 94 | 4 | 16 | 28 | 41 | 53 | 66 | 78 | 91 | 3 | 13 | 23 | 33 | 43 | 54 | 64 | 74 |
| | | HR150 | 4 | 18 | 33 | 47 | 59 | 67 | 74 | 80 | 3 | 14 | 25 | 36 | 47 | 58 | 69 | 80 | 3 | 11 | 20 | 29 | 38 | 47 | 56 | 65 |

**Table 2.9: Maximum Span Length (in.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 111 | 103 | 93 | 80 | 70 | 63 | 58 | 54 | 85 | 85 | 85 | 80 | 70 | 63 | 58 | 54 | 69 | 69 | 69 | 69 | 69 | 63 | 58 | 54 |
| | | HR150 | 98 | 95 | 80 | 68 | 60 | 54 | 49 | 46 | 75 | 75 | 75 | 68 | 60 | 54 | 49 | 46 | 61 | 61 | 61 | 61 | 60 | 54 | 49 | 46 |
| | 90 | HR250 | 105 | 103 | 93 | 80 | 70 | 63 | 58 | 54 | 80 | 80 | 80 | 80 | 70 | 63 | 58 | 54 | 65 | 65 | 65 | 65 | 65 | 63 | 58 | 54 |
| | | HR150 | 92 | 92 | 80 | 68 | 60 | 54 | 49 | 46 | 71 | 71 | 71 | 68 | 60 | 54 | 49 | 46 | 57 | 57 | 57 | 57 | 57 | 54 | 49 | 46 |
| | 100 | HR250 | 94 | 94 | 91 | 80 | 70 | 63 | 58 | 54 | 72 | 72 | 72 | 72 | 70 | 63 | 58 | 54 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 54 |
| | | HR150 | 83 | 83 | 78 | 68 | 60 | 54 | 49 | 46 | 63 | 63 | 63 | 63 | 60 | 54 | 49 | 46 | 51 | 51 | 51 | 51 | 51 | 51 | 49 | 46 |
| | 105 | HR250 | 90 | 90 | 90 | 79 | 70 | 63 | 58 | 54 | 69 | 69 | 69 | 69 | 69 | 63 | 58 | 54 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 54 |
| | | HR150 | 79 | 79 | 77 | 68 | 60 | 54 | 49 | 46 | 60 | 60 | 60 | 60 | 60 | 54 | 49 | 46 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 46 |
| | 110 | HR250 | 85 | 85 | 85 | 78 | 70 | 63 | 58 | 54 | 65 | 65 | 65 | 65 | 65 | 63 | 58 | 54 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 |
| | | HR150 | 75 | 75 | 75 | 67 | 60 | 54 | 49 | 46 | 57 | 57 | 57 | 57 | 57 | 54 | 49 | 46 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 46 |
| | 115 | HR250 | 81 | 81 | 81 | 77 | 70 | 63 | 58 | 54 | 62 | 62 | 62 | 62 | 62 | 62 | 58 | 54 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 |
| | | HR150 | 71 | 71 | 71 | 66 | 60 | 54 | 49 | 46 | 55 | 55 | 55 | 55 | 55 | 54 | 49 | 46 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 |
| | 120 | HR250 | 78 | 78 | 78 | 76 | 69 | 63 | 58 | 54 | 60 | 60 | 60 | 60 | 60 | 60 | 58 | 54 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 |
| | | HR150 | 68 | 68 | 68 | 65 | 59 | 54 | 49 | 46 | 52 | 52 | 52 | 52 | 52 | 52 | 49 | 46 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 |
| | 130 | HR250 | 72 | 72 | 72 | 72 | 68 | 63 | 58 | 54 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 54 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 |
| | | HR150 | 63 | 63 | 63 | 63 | 58 | 54 | 49 | 46 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 46 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 |
| | 140 | HR250 | 66 | 66 | 66 | 66 | 66 | 62 | 58 | 54 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 |
| | | HR150 | 58 | 58 | 58 | 58 | 57 | 53 | 49 | 46 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 |
| | 150 | HR250 | 62 | 62 | 62 | 62 | 62 | 60 | 57 | 54 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 |
| | | HR150 | 54 | 54 | 54 | 54 | 54 | 52 | 49 | 46 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 |

ROOFS 0° TO 7°

**Table 2.10: Maximum Uplift (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | -507 | -473 | -427 | -366 | -320 | -288 | -264 | -245 | -675 | -675 | -675 | -634 | -555 | -500 | -458 | -425 | -837 | -837 | -837 | -837 | -837 | -764 | -700 | -651 |
| | | HR150 | -448 | -435 | -366 | -311 | -272 | -245 | -225 | -209 | -593 | -593 | -593 | -539 | -472 | -425 | -390 | -362 | -735 | -735 | -735 | -735 | -722 | -650 | -596 | -553 |
| | 90 | HR250 | -545 | -536 | -484 | -414 | -363 | -327 | -299 | -278 | -717 | -717 | -717 | -713 | -624 | -562 | -515 | -479 | -888 | -888 | -888 | -888 | -888 | -860 | -789 | -732 |
| | | HR150 | -477 | -477 | -415 | -352 | -308 | -278 | -255 | -237 | -629 | -629 | -629 | -606 | -531 | -478 | -438 | -407 | -780 | -780 | -780 | -780 | -780 | -731 | -671 | -623 |
| | 100 | HR250 | -610 | -610 | -589 | -518 | -453 | -408 | -374 | -348 | -802 | -802 | -802 | -802 | -779 | -701 | -643 | -597 | -990 | -990 | -990 | -990 | -990 | -990 | -978 | -908 |
| | | HR150 | -535 | -535 | -506 | -441 | -386 | -347 | -318 | -296 | -704 | -704 | -704 | -704 | -663 | -597 | -547 | -508 | -869 | -869 | -869 | -869 | -869 | -869 | -832 | -773 |
| | 105 | HR250 | -642 | -642 | -641 | -565 | -501 | -451 | -414 | -385 | -843 | -843 | -843 | -843 | -843 | -776 | -711 | -661 | -1041 | -1041 | -1041 | -1041 | -1041 | -1041 | -1041 | -1005 |
| | | HR150 | -563 | -563 | -551 | -485 | -427 | -384 | -352 | -327 | -740 | -740 | -740 | -740 | -733 | -660 | -605 | -562 | -914 | -914 | -914 | -914 | -914 | -914 | -914 | -854 |
| | 110 | HR250 | -675 | -675 | -675 | -618 | -555 | -500 | -458 | -425 | -884 | -884 | -884 | -884 | -884 | -853 | -782 | -726 | -1092 | -1092 | -1092 | -1092 | -1092 | -1092 | -1092 | -1092 |
| | | HR150 | -593 | -593 | -593 | -530 | -472 | -425 | -390 | -362 | -777 | -777 | -777 | -777 | -777 | -725 | -665 | -618 | -959 | -959 | -959 | -959 | -959 | -959 | -959 | -940 |
| | 115 | HR250 | -708 | -708 | -708 | -670 | -608 | -548 | -502 | -466 | -926 | -926 | -926 | -926 | -926 | -926 | -857 | -796 | -1143 | -1143 | -1143 | -1143 | -1143 | -1143 | -1143 | -1143 |
| | | HR150 | -621 | -621 | -621 | -575 | -517 | -466 | -427 | -397 | -813 | -813 | -813 | -813 | -813 | -795 | -729 | -677 | -1004 | -1004 | -1004 | -1004 | -1004 | -1004 | -1004 | -1004 |
| | 120 | HR250 | -740 | -740 | -740 | -723 | -658 | -598 | -548 | -509 | -968 | -968 | -968 | -968 | -968 | -968 | -936 | -869 | -1193 | -1193 | -1193 | -1193 | -1193 | -1193 | -1193 | -1193 |
| | | HR150 | -649 | -649 | -649 | -621 | -564 | -509 | -466 | -433 | -850 | -850 | -850 | -850 | -850 | -850 | -796 | -740 | -1048 | -1048 | -1048 | -1048 | -1048 | -1048 | -1048 | -1048 |
| | 130 | HR250 | -804 | -804 | -804 | -804 | -760 | -704 | -648 | -601 | -1051 | -1051 | -1051 | -1051 | -1051 | -1051 | -1051 | -1023 | -1295 | -1295 | -1295 | -1295 | -1295 | -1295 | -1295 | -1295 |
| | | HR150 | -706 | -706 | -706 | -706 | -652 | -601 | -551 | -512 | -923 | -923 | -923 | -923 | -923 | -923 | -923 | -870 | -1137 | -1137 | -1137 | -1137 | -1137 | -1137 | -1137 | -1137 |
| | 140 | HR250 | -869 | -869 | -869 | -869 | -868 | -807 | -755 | -702 | -1134 | -1134 | -1134 | -1134 | -1134 | -1134 | -1134 | -1134 | -1395 | -1395 | -1395 | -1395 | -1395 | -1395 | -1395 | -1395 |
| | | HR150 | -763 | -763 | -763 | -763 | -746 | -692 | -643 | -597 | -996 | -996 | -996 | -996 | -996 | -996 | -996 | -996 | -1226 | -1226 | -1226 | -1226 | -1226 | -1226 | -1226 | -1226 |
| | 150 | HR250 | -933 | -933 | -933 | -933 | -933 | -911 | -856 | -808 | -1216 | -1216 | -1216 | -1216 | -1216 | -1216 | -1216 | -1216 | -1496 | -1496 | -1496 | -1496 | -1496 | -1496 | -1496 | -1496 |
| | | HR150 | -819 | -819 | -819 | -819 | -819 | -782 | -735 | -687 | -1068 | -1068 | -1068 | -1068 | -1068 | -1068 | -1068 | -1068 | -1315 | -1315 | -1315 | -1315 | -1315 | -1315 | -1315 | -1315 |

ROOFS 0° TO 7°

**Table 2.11: Maximum Downforce (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 326 | 422 | 541 | 600 | 684 | 760 | 829 | 893 | 250 | 347 | 493 | 600 | 684 | 760 | 829 | 893 | 203 | 281 | 400 | 518 | 675 | 760 | 829 | 893 |
| | | HR150 | 288 | 388 | 464 | 510 | 582 | 647 | 705 | 759 | 220 | 305 | 433 | 510 | 582 | 647 | 705 | 759 | 178 | 247 | 351 | 455 | 582 | 647 | 705 | 759 |
| | 90 | HR250 | 309 | 422 | 541 | 600 | 684 | 760 | 829 | 893 | 236 | 328 | 465 | 600 | 684 | 760 | 829 | 893 | 191 | 265 | 377 | 488 | 636 | 760 | 829 | 893 |
| | | HR150 | 271 | 376 | 464 | 510 | 582 | 647 | 705 | 759 | 207 | 288 | 408 | 510 | 582 | 647 | 705 | 759 | 168 | 233 | 331 | 429 | 559 | 647 | 705 | 759 |
| | 100 | HR250 | 322 | 418 | 560 | 629 | 684 | 760 | 829 | 893 | 247 | 320 | 443 | 567 | 684 | 760 | 829 | 893 | 200 | 260 | 360 | 460 | 572 | 705 | 829 | 893 |
| | | HR150 | 283 | 367 | 481 | 535 | 582 | 647 | 705 | 759 | 217 | 281 | 389 | 497 | 582 | 647 | 705 | 759 | 176 | 228 | 316 | 404 | 502 | 619 | 705 | 759 |
| | 105 | HR250 | 334 | 418 | 572 | 639 | 687 | 760 | 829 | 893 | 256 | 320 | 437 | 555 | 672 | 760 | 829 | 893 | 207 | 260 | 355 | 450 | 546 | 671 | 798 | 893 |
| | | HR150 | 293 | 367 | 491 | 548 | 584 | 647 | 705 | 759 | 224 | 281 | 384 | 487 | 584 | 647 | 705 | 759 | 182 | 228 | 312 | 396 | 479 | 589 | 701 | 759 |
| ROOFS 0° TO 7° | 110 | HR250 | 344 | 418 | 564 | 649 | 703 | 760 | 829 | 893 | 264 | 320 | 432 | 544 | 656 | 760 | 829 | 893 | 214 | 260 | 351 | 442 | 533 | 640 | 761 | 882 |
| | | HR150 | 302 | 366 | 494 | 557 | 598 | 647 | 705 | 759 | 232 | 281 | 379 | 478 | 576 | 647 | 705 | 759 | 188 | 228 | 308 | 388 | 468 | 562 | 668 | 759 |
| | 115 | HR250 | 353 | 418 | 557 | 659 | 719 | 760 | 829 | 893 | 271 | 320 | 427 | 534 | 641 | 753 | 829 | 893 | 220 | 260 | 347 | 434 | 521 | 612 | 728 | 843 |
| | | HR150 | 310 | 366 | 489 | 566 | 611 | 647 | 705 | 759 | 238 | 281 | 375 | 469 | 563 | 647 | 705 | 759 | 193 | 228 | 305 | 381 | 457 | 537 | 639 | 741 |
| | 120 | HR250 | 362 | 418 | 551 | 669 | 728 | 769 | 829 | 893 | 278 | 320 | 423 | 525 | 627 | 730 | 829 | 893 | 226 | 260 | 344 | 427 | 510 | 593 | 697 | 808 |
| | | HR150 | 318 | 366 | 484 | 575 | 624 | 654 | 705 | 759 | 244 | 281 | 371 | 461 | 551 | 641 | 705 | 759 | 198 | 229 | 302 | 375 | 448 | 521 | 612 | 710 |
| | 130 | HR250 | 385 | 424 | 547 | 669 | 749 | 802 | 836 | 893 | 296 | 325 | 420 | 514 | 609 | 703 | 797 | 893 | 241 | 264 | 341 | 418 | 495 | 571 | 648 | 745 |
| | | HR150 | 338 | 372 | 480 | 588 | 643 | 684 | 711 | 759 | 260 | 286 | 369 | 452 | 534 | 617 | 700 | 759 | 211 | 232 | 300 | 367 | 434 | 502 | 569 | 655 |
| | 140 | HR250 | 405 | 428 | 542 | 656 | 769 | 821 | 867 | 898 | 311 | 329 | 417 | 504 | 592 | 680 | 767 | 855 | 253 | 268 | 339 | 410 | 482 | 553 | 624 | 695 |
| | | HR150 | 356 | 376 | 476 | 576 | 661 | 704 | 738 | 763 | 274 | 289 | 366 | 443 | 520 | 597 | 674 | 751 | 223 | 235 | 298 | 361 | 423 | 486 | 548 | 611 |
| | 150 | HR250 | 430 | 438 | 545 | 651 | 757 | 842 | 890 | 931 | 331 | 337 | 419 | 501 | 582 | 664 | 746 | 827 | 269 | 274 | 341 | 407 | 474 | 540 | 607 | 673 |
| | | HR150 | 377 | 385 | 478 | 571 | 665 | 723 | 763 | 792 | 290 | 296 | 368 | 440 | 511 | 583 | 655 | 727 | 236 | 241 | 299 | 358 | 416 | 475 | 533 | 591 |

**Table 2.12: Maximum Shear (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 7 | 32 | 51 | 63 | 72 | 80 | 87 | 94 | 6 | 26 | 47 | 63 | 72 | 80 | 87 | 94 | 5 | 21 | 38 | 54 | 71 | 80 | 87 | 94 |
| | | HR150 | 7 | 29 | 44 | 54 | 61 | 68 | 74 | 80 | 5 | 23 | 41 | 54 | 61 | 68 | 74 | 80 | 4 | 19 | 33 | 48 | 61 | 68 | 74 | 80 |
| | 90 | HR250 | 7 | 32 | 51 | 63 | 72 | 80 | 87 | 94 | 5 | 25 | 44 | 63 | 72 | 80 | 87 | 94 | 4 | 20 | 36 | 51 | 67 | 80 | 87 | 94 |
| | | HR150 | 6 | 28 | 44 | 54 | 61 | 68 | 74 | 80 | 5 | 22 | 39 | 54 | 61 | 68 | 74 | 80 | 4 | 18 | 31 | 45 | 59 | 68 | 74 | 80 |
| | 100 | HR250 | 6 | 29 | 50 | 63 | 72 | 80 | 87 | 94 | 5 | 22 | 39 | 57 | 72 | 80 | 87 | 94 | 4 | 18 | 32 | 46 | 60 | 74 | 87 | 94 |
| | | HR150 | 6 | 25 | 43 | 54 | 61 | 68 | 74 | 80 | 4 | 19 | 35 | 50 | 61 | 68 | 74 | 80 | 3 | 16 | 28 | 40 | 53 | 65 | 74 | 80 |
| | 105 | HR250 | 6 | 28 | 49 | 62 | 72 | 80 | 87 | 94 | 5 | 21 | 38 | 54 | 70 | 80 | 87 | 94 | 4 | 17 | 30 | 44 | 57 | 71 | 84 | 94 |
| | | HR150 | 5 | 24 | 42 | 53 | 61 | 68 | 74 | 80 | 4 | 18 | 33 | 47 | 61 | 68 | 74 | 80 | 3 | 15 | 27 | 38 | 50 | 62 | 74 | 80 |
| | 110 | HR250 | 6 | 26 | 47 | 61 | 72 | 80 | 87 | 94 | 4 | 20 | 36 | 51 | 67 | 80 | 87 | 94 | 4 | 16 | 29 | 42 | 55 | 67 | 80 | 93 |
| | | HR150 | 5 | 23 | 41 | 53 | 61 | 68 | 74 | 80 | 4 | 18 | 31 | 45 | 59 | 68 | 74 | 80 | 3 | 14 | 26 | 37 | 48 | 59 | 70 | 80 |
| | 115 | HR250 | 5 | 25 | 45 | 61 | 72 | 80 | 87 | 94 | 4 | 19 | 34 | 49 | 64 | 79 | 87 | 94 | 3 | 16 | 28 | 40 | 52 | 64 | 76 | 89 |
| | | HR150 | 5 | 22 | 39 | 52 | 61 | 68 | 74 | 80 | 4 | 17 | 30 | 43 | 56 | 68 | 74 | 80 | 3 | 14 | 24 | 35 | 46 | 56 | 67 | 78 |
| | 120 | HR250 | 5 | 24 | 43 | 60 | 71 | 80 | 87 | 94 | 4 | 18 | 33 | 47 | 61 | 76 | 87 | 94 | 3 | 15 | 27 | 38 | 50 | 62 | 73 | 85 |
| | | HR150 | 5 | 21 | 37 | 52 | 61 | 68 | 74 | 80 | 4 | 16 | 29 | 41 | 54 | 67 | 74 | 80 | 3 | 13 | 23 | 34 | 44 | 54 | 64 | 75 |
| | 130 | HR250 | 5 | 22 | 39 | 57 | 70 | 80 | 87 | 94 | 4 | 17 | 30 | 43 | 57 | 70 | 83 | 94 | 3 | 14 | 25 | 35 | 46 | 57 | 68 | 78 |
| | | HR150 | 4 | 19 | 35 | 50 | 60 | 68 | 74 | 80 | 3 | 15 | 27 | 38 | 50 | 61 | 73 | 80 | 3 | 12 | 22 | 31 | 40 | 50 | 59 | 69 |
| | 140 | HR250 | 4 | 20 | 36 | 52 | 68 | 78 | 87 | 94 | 3 | 16 | 28 | 40 | 53 | 65 | 77 | 89 | 3 | 13 | 23 | 33 | 43 | 53 | 63 | 73 |
| | | HR150 | 4 | 18 | 32 | 46 | 59 | 67 | 74 | 80 | 3 | 14 | 25 | 35 | 46 | 57 | 68 | 78 | 2 | 11 | 20 | 29 | 38 | 46 | 55 | 64 |
| | 150 | HR250 | 4 | 19 | 34 | 49 | 64 | 77 | 86 | 94 | 3 | 15 | 26 | 38 | 49 | 60 | 72 | 83 | 3 | 12 | 21 | 31 | 40 | 49 | 58 | 68 |
| | | HR150 | 4 | 17 | 30 | 43 | 56 | 66 | 74 | 80 | 3 | 13 | 23 | 33 | 43 | 53 | 63 | 73 | 2 | 10 | 19 | 27 | 35 | 43 | 51 | 60 |

ROOFS 0° TO 7°

**Table 2.13: Maximum Span Length (in.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >7° TO 27° | **85** | HR250 | 113 | 99 | 79 | 66 | 58 | 52 | 48 | 44 | 111 | 99 | 79 | 66 | 58 | 52 | 48 | 44 | 91 | 91 | 79 | 66 | 58 | 52 | 48 | 44 |
| | | HR150 | 104 | 82 | 64 | 53 | 47 | 42 | 39 | 36 | 96 | 82 | 64 | 53 | 47 | 42 | 39 | 36 | 79 | 79 | 64 | 53 | 47 | 42 | 39 | 36 |
| | **90** | HR250 | 113 | 99 | 79 | 66 | 58 | 52 | 48 | 44 | 105 | 99 | 79 | 66 | 58 | 52 | 48 | 44 | 86 | 86 | 79 | 66 | 58 | 52 | 48 | 44 |
| | | HR150 | 104 | 82 | 64 | 53 | 47 | 42 | 39 | 36 | 91 | 82 | 64 | 53 | 47 | 42 | 39 | 36 | 75 | 75 | 64 | 53 | 47 | 42 | 39 | 36 |
| | **100** | HR250 | 112 | 99 | 79 | 66 | 58 | 52 | 48 | 44 | 94 | 94 | 79 | 66 | 58 | 52 | 48 | 44 | 77 | 77 | 77 | 66 | 58 | 52 | 48 | 44 |
| | | HR150 | 103 | 82 | 64 | 53 | 47 | 42 | 39 | 36 | 82 | 82 | 64 | 53 | 47 | 42 | 39 | 36 | 68 | 68 | 64 | 53 | 47 | 42 | 39 | 36 |
| | **105** | HR250 | 110 | 97 | 79 | 66 | 58 | 52 | 48 | 44 | 90 | 90 | 79 | 66 | 58 | 52 | 48 | 44 | 74 | 74 | 74 | 66 | 58 | 52 | 48 | 44 |
| | | HR150 | 101 | 81 | 64 | 53 | 47 | 42 | 39 | 36 | 78 | 78 | 64 | 53 | 47 | 42 | 39 | 36 | 64 | 64 | 64 | 53 | 47 | 42 | 39 | 36 |
| | **110** | HR250 | 108 | 96 | 79 | 66 | 58 | 52 | 48 | 44 | 86 | 86 | 79 | 66 | 58 | 52 | 48 | 44 | 70 | 70 | 70 | 66 | 58 | 52 | 48 | 44 |
| | | HR150 | 98 | 79 | 64 | 53 | 47 | 42 | 39 | 36 | 75 | 75 | 64 | 53 | 47 | 42 | 39 | 36 | 61 | 61 | 61 | 53 | 47 | 42 | 39 | 36 |
| | **115** | HR250 | 106 | 94 | 78 | 66 | 58 | 52 | 48 | 44 | 82 | 82 | 78 | 66 | 58 | 52 | 48 | 44 | 67 | 67 | 67 | 66 | 58 | 52 | 48 | 44 |
| | | HR150 | 94 | 78 | 64 | 53 | 47 | 42 | 39 | 36 | 71 | 71 | 64 | 53 | 47 | 42 | 39 | 36 | 59 | 59 | 59 | 53 | 47 | 42 | 39 | 36 |
| | **120** | HR250 | 104 | 93 | 77 | 66 | 58 | 52 | 48 | 44 | 78 | 78 | 77 | 66 | 58 | 52 | 48 | 44 | 64 | 64 | 64 | 64 | 58 | 52 | 48 | 44 |
| | | HR150 | 90 | 77 | 63 | 53 | 47 | 42 | 39 | 36 | 68 | 68 | 63 | 53 | 47 | 42 | 39 | 36 | 56 | 56 | 56 | 53 | 47 | 42 | 39 | 36 |
| | **130** | HR250 | 96 | 90 | 75 | 66 | 58 | 52 | 48 | 44 | 72 | 72 | 72 | 66 | 58 | 52 | 48 | 44 | 60 | 60 | 60 | 60 | 58 | 52 | 48 | 44 |
| | | HR150 | 83 | 75 | 62 | 53 | 47 | 42 | 39 | 36 | 63 | 63 | 62 | 53 | 47 | 42 | 39 | 36 | 52 | 52 | 52 | 52 | 47 | 42 | 39 | 36 |
| | **140** | HR250 | 89 | 87 | 74 | 65 | 58 | 52 | 48 | 44 | 67 | 67 | 67 | 65 | 58 | 52 | 48 | 44 | 55 | 55 | 55 | 55 | 55 | 52 | 48 | 44 |
| | | HR150 | 77 | 73 | 61 | 53 | 47 | 42 | 39 | 36 | 59 | 59 | 59 | 53 | 47 | 42 | 39 | 36 | 48 | 48 | 48 | 48 | 47 | 42 | 39 | 36 |
| | **150** | HR250 | 83 | 83 | 72 | 64 | 58 | 52 | 48 | 44 | 63 | 63 | 63 | 63 | 58 | 52 | 48 | 44 | 52 | 52 | 52 | 52 | 52 | 52 | 48 | 44 |
| | | HR150 | 72 | 71 | 60 | 53 | 47 | 42 | 39 | 36 | 55 | 55 | 55 | 53 | 47 | 42 | 39 | 36 | 45 | 45 | 45 | 45 | 45 | 42 | 39 | 36 |

**Table 2.14: Maximum Uplift (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS >7° TO 27°** | **85** | HR250 | -269 | -236 | -189 | -157 | -138 | -124 | -114 | -106 | -488 | -437 | -349 | -291 | -255 | -229 | -210 | -195 | -608 | -608 | -529 | -441 | -386 | -348 | -319 | -296 |
| | | HR150 | -247 | -195 | -152 | -127 | -111 | -100 | -92 | -85 | -423 | -361 | -282 | -235 | -206 | -185 | -170 | -158 | -530 | -530 | -427 | -356 | -312 | -281 | -257 | -239 |
| | **90** | HR250 | -305 | -268 | -214 | -179 | -156 | -141 | -129 | -120 | -521 | -494 | -395 | -329 | -288 | -259 | -238 | -221 | -647 | -647 | -597 | -497 | -436 | -392 | -360 | -334 |
| | | HR150 | -281 | -222 | -173 | -144 | -126 | -114 | -104 | -97 | -452 | -408 | -318 | -265 | -232 | -209 | -192 | -178 | -565 | -565 | -481 | -401 | -351 | -316 | -290 | -269 |
| | **100** | HR250 | -385 | -339 | -273 | -227 | -199 | -179 | -164 | -153 | -587 | -587 | -495 | -412 | -361 | -325 | -298 | -277 | -726 | -726 | -726 | -620 | -543 | -489 | -448 | -416 |
| | | HR150 | -354 | -280 | -220 | -183 | -160 | -144 | -132 | -123 | -511 | -509 | -399 | -333 | -291 | -262 | -240 | -223 | -634 | -634 | -600 | -500 | -438 | -394 | -362 | -336 |
| | **105** | HR250 | -421 | -372 | -304 | -253 | -222 | -199 | -183 | -170 | -619 | -619 | -547 | -456 | -400 | -360 | -330 | -306 | -765 | -765 | -765 | -686 | -600 | -540 | -496 | -460 |
| | | HR150 | -387 | -308 | -245 | -204 | -179 | -161 | -148 | -137 | -539 | -539 | -442 | -368 | -322 | -290 | -266 | -247 | -668 | -668 | -663 | -553 | -484 | -436 | -400 | -371 |
| | **110** | HR250 | -455 | -404 | -332 | -279 | -244 | -220 | -202 | -187 | -652 | -652 | -600 | -504 | -441 | -397 | -364 | -338 | -804 | -804 | -804 | -756 | -661 | -596 | -546 | -507 |
| | | HR150 | -413 | -335 | -270 | -225 | -197 | -177 | -163 | -151 | -568 | -568 | -487 | -406 | -356 | -320 | -294 | -273 | -703 | -703 | -703 | -609 | -534 | -480 | -440 | -409 |
| | **115** | HR250 | -492 | -439 | -363 | -308 | -269 | -243 | -222 | -207 | -684 | -684 | -651 | -552 | -483 | -435 | -399 | -371 | -842 | -842 | -842 | -827 | -724 | -652 | -598 | -555 |
| | | HR150 | -436 | -365 | -298 | -248 | -217 | -196 | -179 | -167 | -596 | -596 | -534 | -445 | -390 | -351 | -322 | -299 | -736 | -736 | -736 | -667 | -584 | -526 | -482 | -448 |
| | **120** | HR250 | -527 | -473 | -392 | -337 | -295 | -265 | -243 | -226 | -716 | -716 | -704 | -604 | -529 | -476 | -436 | -405 | -881 | -881 | -881 | -881 | -790 | -712 | -652 | -606 |
| | | HR150 | -458 | -393 | -323 | -271 | -238 | -214 | -196 | -182 | -625 | -625 | -580 | -487 | -426 | -384 | -352 | -327 | -771 | -771 | -771 | -728 | -637 | -574 | -526 | -489 |
| | **130** | HR250 | -577 | -542 | -455 | -399 | -349 | -314 | -288 | -268 | -779 | -779 | -779 | -711 | -623 | -561 | -514 | -478 | -958 | -958 | -958 | -958 | -931 | -838 | -769 | -714 |
| | | HR150 | -502 | -453 | -376 | -322 | -282 | -254 | -232 | -216 | -681 | -681 | -670 | -574 | -502 | -452 | -415 | -385 | -838 | -838 | -838 | -838 | -751 | -676 | -620 | -576 |
| | **140** | HR250 | -627 | -615 | -520 | -459 | -409 | -368 | -338 | -314 | -843 | -843 | -843 | -816 | -727 | -654 | -600 | -557 | -1035 | -1035 | -1035 | -1035 | -1035 | -976 | -895 | -831 |
| | | HR150 | -546 | -515 | -431 | -377 | -330 | -297 | -272 | -253 | -738 | -738 | -738 | -669 | -586 | -528 | -484 | -449 | -906 | -906 | -906 | -906 | -874 | -787 | -722 | -670 |
| | **150** | HR250 | -675 | -675 | -586 | -520 | -471 | -424 | -389 | -361 | -907 | -907 | -907 | -907 | -837 | -753 | -691 | -642 | -1111 | -1111 | -1111 | -1111 | -1111 | -1111 | -1030 | -957 |
| | | HR150 | -589 | -576 | -487 | -429 | -380 | -342 | -314 | -292 | -794 | -794 | -794 | -761 | -675 | -608 | -557 | -518 | -974 | -974 | -974 | -974 | -974 | -906 | -831 | -772 |

**Table 2.15: Maximum Downforce (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >7° TO 27° | 85 | HR250 | 325 | 384 | 430 | 462 | 516 | 573 | 624 | 672 | 319 | 384 | 430 | 462 | 516 | 573 | 624 | 672 | 262 | 352 | 430 | 462 | 516 | 573 | 624 | 672 |
| | | HR150 | 299 | 317 | 347 | 373 | 416 | 462 | 504 | 542 | 277 | 317 | 347 | 373 | 416 | 462 | 504 | 542 | 229 | 307 | 347 | 373 | 416 | 462 | 504 | 542 |
| | 90 | HR250 | 325 | 384 | 430 | 462 | 516 | 573 | 624 | 672 | 302 | 384 | 430 | 462 | 516 | 573 | 624 | 672 | 248 | 333 | 430 | 462 | 516 | 573 | 624 | 672 |
| | | HR150 | 299 | 317 | 347 | 373 | 416 | 462 | 504 | 542 | 262 | 317 | 347 | 373 | 416 | 462 | 504 | 542 | 216 | 290 | 347 | 373 | 416 | 462 | 504 | 542 |
| | 100 | HR250 | 333 | 388 | 436 | 467 | 516 | 573 | 624 | 672 | 280 | 370 | 436 | 467 | 516 | 573 | 624 | 672 | 230 | 305 | 425 | 467 | 516 | 573 | 624 | 672 |
| | | HR150 | 306 | 321 | 352 | 376 | 416 | 462 | 504 | 542 | 243 | 321 | 352 | 376 | 416 | 462 | 504 | 542 | 201 | 266 | 352 | 376 | 416 | 462 | 504 | 542 |
| | 105 | HR250 | 352 | 400 | 449 | 478 | 516 | 573 | 624 | 672 | 287 | 368 | 449 | 478 | 516 | 573 | 624 | 672 | 236 | 303 | 418 | 478 | 516 | 573 | 624 | 672 |
| | | HR150 | 324 | 331 | 363 | 386 | 416 | 462 | 504 | 542 | 250 | 321 | 363 | 386 | 416 | 462 | 504 | 542 | 206 | 265 | 363 | 386 | 416 | 462 | 504 | 542 |
| | 110 | HR250 | 372 | 412 | 461 | 490 | 520 | 573 | 624 | 672 | 296 | 368 | 461 | 490 | 520 | 573 | 624 | 672 | 243 | 302 | 412 | 490 | 520 | 573 | 624 | 672 |
| | | HR150 | 339 | 341 | 375 | 396 | 419 | 462 | 504 | 542 | 258 | 321 | 375 | 396 | 419 | 462 | 504 | 542 | 212 | 264 | 360 | 396 | 419 | 462 | 504 | 542 |
| | 115 | HR250 | 395 | 425 | 473 | 504 | 532 | 573 | 624 | 672 | 305 | 369 | 473 | 504 | 532 | 573 | 624 | 672 | 251 | 303 | 408 | 504 | 532 | 573 | 624 | 672 |
| | | HR150 | 350 | 353 | 388 | 407 | 429 | 462 | 504 | 542 | 266 | 322 | 388 | 407 | 429 | 462 | 504 | 542 | 220 | 265 | 357 | 407 | 429 | 462 | 504 | 542 |
| | 120 | HR250 | 415 | 437 | 483 | 518 | 544 | 573 | 624 | 672 | 314 | 369 | 483 | 518 | 544 | 573 | 624 | 672 | 258 | 304 | 404 | 505 | 544 | 573 | 624 | 672 |
| | | HR150 | 360 | 364 | 398 | 418 | 439 | 462 | 504 | 542 | 274 | 322 | 398 | 418 | 439 | 462 | 504 | 542 | 226 | 266 | 354 | 418 | 439 | 462 | 504 | 542 |
| | 130 | HR250 | 440 | 464 | 507 | 547 | 570 | 594 | 624 | 672 | 333 | 374 | 487 | 547 | 570 | 594 | 624 | 672 | 274 | 307 | 400 | 493 | 570 | 594 | 624 | 672 |
| | | HR150 | 383 | 387 | 418 | 442 | 459 | 479 | 504 | 542 | 291 | 326 | 418 | 442 | 459 | 479 | 504 | 542 | 240 | 269 | 350 | 432 | 459 | 479 | 504 | 542 |
| | 140 | HR250 | 465 | 491 | 531 | 570 | 597 | 619 | 642 | 672 | 352 | 379 | 484 | 570 | 597 | 619 | 642 | 672 | 290 | 312 | 398 | 484 | 570 | 619 | 642 | 672 |
| | | HR150 | 405 | 411 | 439 | 467 | 482 | 499 | 518 | 542 | 308 | 332 | 423 | 467 | 482 | 499 | 518 | 542 | 254 | 273 | 349 | 424 | 482 | 499 | 518 | 542 |
| | 150 | HR250 | 492 | 510 | 555 | 592 | 627 | 646 | 667 | 689 | 372 | 386 | 484 | 582 | 627 | 646 | 667 | 689 | 306 | 317 | 398 | 478 | 559 | 639 | 667 | 689 |
| | | HR150 | 429 | 436 | 461 | 489 | 506 | 521 | 538 | 556 | 326 | 338 | 424 | 489 | 506 | 521 | 538 | 556 | 268 | 278 | 349 | 419 | 490 | 521 | 538 | 556 |

**Table 2.16: Maximum Shear (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >7° TO 27° | **85** | HR250 | 31 | 123 | 175 | 210 | 240 | 267 | 291 | 314 | 30 | 123 | 175 | 210 | 240 | 267 | 291 | 314 | 25 | 113 | 175 | 210 | 240 | 267 | 291 | 314 |
| | | HR150 | 28 | 102 | 142 | 170 | 194 | 215 | 235 | 253 | 26 | 102 | 142 | 170 | 194 | 215 | 235 | 253 | 22 | 99 | 142 | 170 | 194 | 215 | 235 | 253 |
| | **90** | HR250 | 31 | 123 | 175 | 210 | 240 | 267 | 291 | 314 | 29 | 123 | 175 | 210 | 240 | 267 | 291 | 314 | 23 | 107 | 175 | 210 | 240 | 267 | 291 | 314 |
| | | HR150 | 28 | 102 | 142 | 170 | 194 | 215 | 235 | 253 | 25 | 102 | 142 | 170 | 194 | 215 | 235 | 253 | 20 | 93 | 142 | 170 | 194 | 215 | 235 | 253 |
| | **100** | HR250 | 31 | 123 | 175 | 210 | 240 | 267 | 291 | 314 | 26 | 117 | 175 | 210 | 240 | 267 | 291 | 314 | 21 | 96 | 171 | 210 | 240 | 267 | 291 | 314 |
| | | HR150 | 28 | 101 | 142 | 170 | 194 | 215 | 235 | 253 | 22 | 101 | 142 | 170 | 194 | 215 | 235 | 253 | 18 | 84 | 142 | 170 | 194 | 215 | 235 | 253 |
| | **105** | HR250 | 30 | 121 | 175 | 210 | 240 | 267 | 291 | 314 | 24 | 111 | 175 | 210 | 240 | 267 | 291 | 314 | 20 | 92 | 163 | 210 | 240 | 267 | 291 | 314 |
| | | HR150 | 28 | 100 | 142 | 170 | 194 | 215 | 235 | 253 | 21 | 97 | 142 | 170 | 194 | 215 | 235 | 253 | 18 | 80 | 142 | 170 | 194 | 215 | 235 | 253 |
| | **110** | HR250 | 29 | 119 | 174 | 210 | 240 | 267 | 291 | 314 | 23 | 106 | 174 | 210 | 240 | 267 | 291 | 314 | 19 | 87 | 156 | 210 | 240 | 267 | 291 | 314 |
| | | HR150 | 27 | 99 | 142 | 170 | 194 | 215 | 235 | 253 | 20 | 93 | 142 | 170 | 194 | 215 | 235 | 253 | 17 | 76 | 136 | 170 | 194 | 215 | 235 | 253 |
| | **115** | HR250 | 29 | 117 | 172 | 210 | 240 | 267 | 291 | 314 | 22 | 102 | 172 | 210 | 240 | 267 | 291 | 314 | 18 | 84 | 149 | 210 | 240 | 267 | 291 | 314 |
| | | HR150 | 26 | 97 | 142 | 170 | 194 | 215 | 235 | 253 | 19 | 89 | 142 | 170 | 194 | 215 | 235 | 253 | 16 | 73 | 130 | 170 | 194 | 215 | 235 | 253 |
| | **120** | HR250 | 28 | 115 | 171 | 210 | 240 | 267 | 291 | 314 | 21 | 97 | 171 | 210 | 240 | 267 | 291 | 314 | 18 | 80 | 143 | 205 | 240 | 267 | 291 | 314 |
| | | HR150 | 25 | 96 | 141 | 170 | 194 | 215 | 235 | 253 | 19 | 85 | 141 | 170 | 194 | 215 | 235 | 253 | 15 | 70 | 125 | 170 | 194 | 215 | 235 | 253 |
| | **130** | HR250 | 26 | 112 | 167 | 210 | 240 | 267 | 291 | 314 | 20 | 90 | 160 | 210 | 240 | 267 | 291 | 314 | 16 | 74 | 132 | 189 | 240 | 267 | 291 | 314 |
| | | HR150 | 23 | 93 | 138 | 170 | 194 | 215 | 235 | 253 | 17 | 79 | 138 | 170 | 194 | 215 | 235 | 253 | 14 | 65 | 115 | 166 | 194 | 215 | 235 | 253 |
| | **140** | HR250 | 24 | 108 | 163 | 207 | 240 | 267 | 291 | 314 | 18 | 84 | 149 | 207 | 240 | 267 | 291 | 314 | 15 | 69 | 122 | 176 | 229 | 267 | 291 | 314 |
| | | HR150 | 21 | 91 | 135 | 170 | 194 | 215 | 235 | 253 | 16 | 73 | 130 | 170 | 194 | 215 | 235 | 253 | 13 | 60 | 107 | 154 | 194 | 215 | 235 | 253 |
| | **150** | HR250 | 23 | 103 | 159 | 203 | 240 | 267 | 291 | 314 | 17 | 78 | 139 | 200 | 240 | 267 | 291 | 314 | 14 | 64 | 114 | 164 | 214 | 264 | 291 | 314 |
| | | HR150 | 20 | 88 | 132 | 168 | 194 | 215 | 235 | 253 | 15 | 68 | 121 | 168 | 194 | 215 | 235 | 253 | 12 | 56 | 100 | 144 | 188 | 215 | 235 | 253 |

**Table 2.17: Maximum Span Length (in.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **C** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS >7° TO 27°** | **85** | HR250 | 112 | 99 | 79 | 66 | 58 | 52 | 48 | 44 | 94 | 94 | 79 | 66 | 58 | 52 | 48 | 44 | 77 | 77 | 77 | 66 | 58 | 52 | 48 | 44 |
| | | HR150 | 103 | 81 | 64 | 53 | 47 | 42 | 39 | 36 | 81 | 81 | 64 | 53 | 47 | 42 | 39 | 36 | 67 | 67 | 64 | 53 | 47 | 42 | 39 | 36 |
| | **90** | HR250 | 109 | 97 | 79 | 66 | 58 | 52 | 48 | 44 | 88 | 88 | 79 | 66 | 58 | 52 | 48 | 44 | 73 | 73 | 73 | 66 | 58 | 52 | 48 | 44 |
| | | HR150 | 100 | 80 | 64 | 53 | 47 | 42 | 39 | 36 | 77 | 77 | 64 | 53 | 47 | 42 | 39 | 36 | 64 | 64 | 64 | 53 | 47 | 42 | 39 | 36 |
| | **100** | HR250 | 104 | 93 | 77 | 66 | 58 | 52 | 48 | 44 | 79 | 79 | 77 | 66 | 58 | 52 | 48 | 44 | 65 | 65 | 65 | 65 | 58 | 52 | 48 | 44 |
| | | HR150 | 91 | 78 | 64 | 53 | 47 | 42 | 39 | 36 | 69 | 69 | 64 | 53 | 47 | 42 | 39 | 36 | 57 | 57 | 57 | 53 | 47 | 42 | 39 | 36 |
| | **105** | HR250 | 100 | 92 | 76 | 66 | 58 | 52 | 48 | 44 | 76 | 76 | 76 | 66 | 58 | 52 | 48 | 44 | 62 | 62 | 62 | 62 | 58 | 52 | 48 | 44 |
| | | HR150 | 87 | 76 | 63 | 53 | 47 | 42 | 39 | 36 | 66 | 66 | 63 | 53 | 47 | 42 | 39 | 36 | 55 | 55 | 55 | 53 | 47 | 42 | 39 | 36 |
| | **110** | HR250 | 95 | 90 | 75 | 66 | 58 | 52 | 48 | 44 | 72 | 72 | 72 | 66 | 58 | 52 | 48 | 44 | 59 | 59 | 59 | 59 | 58 | 52 | 48 | 44 |
| | | HR150 | 83 | 75 | 62 | 53 | 47 | 42 | 39 | 36 | 63 | 63 | 62 | 53 | 47 | 42 | 39 | 36 | 52 | 52 | 52 | 52 | 47 | 42 | 39 | 36 |
| | **115** | HR250 | 91 | 88 | 74 | 65 | 58 | 52 | 48 | 44 | 69 | 69 | 69 | 65 | 58 | 52 | 48 | 44 | 57 | 57 | 57 | 57 | 57 | 52 | 48 | 44 |
| | | HR150 | 79 | 74 | 61 | 53 | 47 | 42 | 39 | 36 | 60 | 60 | 60 | 53 | 47 | 42 | 39 | 36 | 50 | 50 | 50 | 50 | 47 | 42 | 39 | 36 |
| | **120** | HR250 | 87 | 86 | 73 | 65 | 58 | 52 | 48 | 44 | 66 | 66 | 66 | 65 | 58 | 52 | 48 | 44 | 54 | 54 | 54 | 54 | 54 | 52 | 48 | 44 |
| | | HR150 | 76 | 72 | 61 | 53 | 47 | 42 | 39 | 36 | 58 | 58 | 58 | 53 | 47 | 42 | 39 | 36 | 48 | 48 | 48 | 48 | 47 | 42 | 39 | 36 |
| | **130** | HR250 | 81 | 81 | 71 | 63 | 58 | 52 | 48 | 44 | 61 | 61 | 61 | 61 | 58 | 52 | 48 | 44 | 50 | 50 | 50 | 50 | 50 | 50 | 48 | 44 |
| | | HR150 | 70 | 70 | 59 | 52 | 47 | 42 | 39 | 36 | 54 | 54 | 54 | 52 | 47 | 42 | 39 | 36 | 44 | 44 | 44 | 44 | 44 | 42 | 39 | 36 |
| | **140** | HR250 | 75 | 75 | 69 | 62 | 57 | 52 | 48 | 44 | 57 | 57 | 57 | 57 | 57 | 52 | 48 | 44 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 44 |
| | | HR150 | 65 | 65 | 58 | 51 | 47 | 42 | 39 | 36 | 50 | 50 | 50 | 50 | 47 | 42 | 39 | 36 | 41 | 41 | 41 | 41 | 41 | 41 | 39 | 36 |
| | **150** | HR250 | 70 | 70 | 67 | 61 | 55 | 51 | 48 | 44 | 53 | 53 | 53 | 53 | 53 | 51 | 48 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 |
| | | HR150 | 61 | 61 | 56 | 50 | 46 | 42 | 39 | 36 | 46 | 46 | 46 | 46 | 46 | 42 | 39 | 36 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 36 |

**Table 2.18: Maximum Uplift (lb.) - Wind Exposure C Condition**

| Exposure C | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >7° TO 27° | 85 | HR250 | -388 | -342 | -275 | -230 | -201 | -181 | -166 | -154 | -590 | -590 | -500 | -417 | -365 | -328 | -301 | -280 | -730 | -730 | -730 | -627 | -549 | -494 | -453 | -421 |
| | | HR150 | -357 | -283 | -222 | -185 | -162 | -146 | -134 | -124 | -514 | -513 | -403 | -336 | -294 | -265 | -243 | -226 | -638 | -638 | -607 | -506 | -443 | -399 | -366 | -340 |
| | 90 | HR250 | -429 | -380 | -311 | -259 | -227 | -205 | -188 | -174 | -628 | -628 | -564 | -470 | -411 | -370 | -340 | -315 | -776 | -776 | -776 | -706 | -618 | -556 | -510 | -474 |
| | | HR150 | -394 | -315 | -251 | -209 | -183 | -165 | -151 | -140 | -548 | -548 | -455 | -379 | -332 | -299 | -274 | -254 | -678 | -678 | -678 | -569 | -498 | -449 | -411 | -382 |
| | 100 | HR250 | -517 | -462 | -383 | -327 | -287 | -258 | -237 | -220 | -705 | -705 | -686 | -587 | -514 | -462 | -424 | -394 | -868 | -868 | -868 | -868 | -769 | -692 | -634 | -589 |
| | | HR150 | -451 | -384 | -315 | -264 | -231 | -208 | -191 | -177 | -616 | -616 | -565 | -473 | -414 | -373 | -342 | -318 | -760 | -760 | -760 | -708 | -620 | -558 | -512 | -475 |
| | 105 | HR250 | -549 | -504 | -420 | -364 | -318 | -287 | -263 | -244 | -743 | -743 | -743 | -648 | -568 | -511 | -469 | -435 | -913 | -913 | -913 | -913 | -849 | -764 | -701 | -651 |
| | | HR150 | -478 | -420 | -346 | -293 | -257 | -231 | -212 | -197 | -649 | -649 | -618 | -523 | -458 | -412 | -378 | -351 | -799 | -799 | -799 | -782 | -684 | -616 | -565 | -525 |
| | 110 | HR250 | -577 | -544 | -456 | -400 | -350 | -315 | -289 | -268 | -781 | -781 | -781 | -714 | -625 | -563 | -516 | -479 | -959 | -959 | -959 | -959 | -934 | -841 | -771 | -716 |
| | | HR150 | -503 | -454 | -376 | -322 | -282 | -254 | -233 | -216 | -682 | -682 | -673 | -576 | -504 | -454 | -416 | -387 | -840 | -840 | -840 | -840 | -753 | -678 | -622 | -578 |
| | 115 | HR250 | -607 | -587 | -495 | -436 | -385 | -347 | -318 | -295 | -818 | -818 | -818 | -775 | -685 | -617 | -565 | -525 | -1004 | -1004 | -1004 | -1004 | -1004 | -920 | -843 | -783 |
| | | HR150 | -529 | -491 | -409 | -355 | -311 | -280 | -257 | -238 | -715 | -715 | -715 | -631 | -552 | -497 | -456 | -424 | -879 | -879 | -879 | -879 | -824 | -742 | -680 | -632 |
| | 120 | HR250 | -636 | -629 | -533 | -471 | -421 | -379 | -347 | -323 | -856 | -856 | -856 | -837 | -748 | -674 | -618 | -574 | -1049 | -1049 | -1049 | -1049 | -1049 | -1003 | -920 | -855 |
| | | HR150 | -554 | -527 | -442 | -388 | -339 | -305 | -280 | -260 | -749 | -749 | -749 | -689 | -603 | -543 | -498 | -463 | -919 | -919 | -919 | -919 | -899 | -809 | -742 | -689 |
| | 130 | HR250 | -693 | -693 | -612 | -544 | -495 | -447 | -410 | -381 | -930 | -930 | -930 | -930 | -876 | -792 | -727 | -675 | -1140 | -1140 | -1140 | -1140 | -1140 | -1140 | -1083 | -1006 |
| | | HR150 | -605 | -601 | -509 | -449 | -401 | -361 | -331 | -307 | -815 | -815 | -815 | -796 | -710 | -639 | -586 | -544 | -999 | -999 | -999 | -999 | -999 | -953 | -874 | -811 |
| | 140 | HR250 | -752 | -752 | -695 | -621 | -567 | -523 | -479 | -445 | -1006 | -1006 | -1006 | -1006 | -1001 | -923 | -846 | -786 | -1231 | -1231 | -1231 | -1231 | -1231 | -1231 | -1231 | -1170 |
| | | HR150 | -657 | -657 | -579 | -515 | -467 | -422 | -387 | -359 | -881 | -881 | -881 | -881 | -825 | -745 | -683 | -634 | -1079 | -1079 | -1079 | -1079 | -1079 | -1079 | -1016 | -944 |
| | 150 | HR250 | -808 | -808 | -777 | -699 | -640 | -594 | -552 | -512 | -1080 | -1080 | -1080 | -1080 | -1080 | -1049 | -974 | -905 | -1321 | -1321 | -1321 | -1321 | -1321 | -1321 | -1321 | -1321 |
| | | HR150 | -706 | -706 | -649 | -580 | -529 | -485 | -445 | -413 | -947 | -947 | -947 | -947 | -934 | -857 | -786 | -730 | -1159 | -1159 | -1159 | -1159 | -1159 | -1159 | -1159 | -1085 |

**Table 2.19: Maximum Downforce (lb.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **C** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS >7° TO 27°** | **85** | HR250 | 335 | 390 | 437 | 468 | 516 | 573 | 624 | 672 | 280 | 370 | 437 | 468 | 516 | 573 | 624 | 672 | 231 | 304 | 424 | 468 | 516 | 573 | 624 | 672 |
| | | HR150 | 308 | 322 | 353 | 377 | 416 | 462 | 504 | 542 | 244 | 322 | 353 | 377 | 416 | 462 | 504 | 542 | 201 | 266 | 353 | 377 | 416 | 462 | 504 | 542 |
| | **90** | HR250 | 359 | 404 | 454 | 482 | 516 | 573 | 624 | 672 | 290 | 369 | 454 | 482 | 516 | 573 | 624 | 672 | 239 | 303 | 417 | 482 | 516 | 573 | 624 | 672 |
| | | HR150 | 330 | 334 | 367 | 389 | 416 | 462 | 504 | 542 | 253 | 321 | 367 | 389 | 416 | 462 | 504 | 542 | 209 | 265 | 364 | 389 | 416 | 462 | 504 | 542 |
| | **100** | HR250 | 410 | 434 | 480 | 514 | 540 | 573 | 624 | 672 | 312 | 370 | 480 | 514 | 540 | 573 | 624 | 672 | 257 | 304 | 406 | 508 | 540 | 573 | 624 | 672 |
| | | HR150 | 358 | 361 | 396 | 415 | 436 | 462 | 504 | 542 | 273 | 323 | 396 | 415 | 436 | 462 | 504 | 542 | 225 | 266 | 355 | 415 | 436 | 462 | 504 | 542 |
| | **105** | HR250 | 424 | 448 | 493 | 530 | 554 | 580 | 624 | 672 | 322 | 371 | 489 | 530 | 554 | 580 | 624 | 672 | 265 | 305 | 402 | 499 | 554 | 580 | 624 | 672 |
| | | HR150 | 369 | 374 | 407 | 427 | 447 | 468 | 504 | 542 | 281 | 324 | 407 | 427 | 447 | 468 | 504 | 542 | 232 | 267 | 352 | 427 | 447 | 468 | 504 | 542 |
| | **110** | HR250 | 440 | 464 | 507 | 547 | 570 | 594 | 624 | 672 | 333 | 373 | 486 | 547 | 570 | 594 | 624 | 672 | 274 | 307 | 399 | 492 | 570 | 594 | 624 | 672 |
| | | HR150 | 383 | 387 | 418 | 442 | 459 | 479 | 504 | 542 | 291 | 326 | 418 | 442 | 459 | 479 | 504 | 542 | 239 | 268 | 350 | 431 | 459 | 479 | 504 | 542 |
| | **115** | HR250 | 455 | 480 | 521 | 561 | 586 | 609 | 633 | 672 | 345 | 377 | 485 | 561 | 586 | 609 | 633 | 672 | 284 | 310 | 399 | 487 | 576 | 609 | 633 | 672 |
| | | HR150 | 396 | 402 | 431 | 457 | 473 | 491 | 511 | 542 | 302 | 329 | 424 | 457 | 473 | 491 | 511 | 542 | 249 | 271 | 349 | 427 | 473 | 491 | 511 | 542 |
| | **120** | HR250 | 470 | 496 | 535 | 574 | 603 | 624 | 647 | 672 | 356 | 380 | 483 | 574 | 603 | 624 | 647 | 672 | 293 | 313 | 398 | 483 | 568 | 624 | 647 | 672 |
| | | HR150 | 410 | 416 | 443 | 472 | 486 | 504 | 522 | 542 | 311 | 332 | 423 | 472 | 486 | 504 | 522 | 542 | 257 | 274 | 348 | 423 | 486 | 504 | 522 | 542 |
| | **130** | HR250 | 502 | 514 | 565 | 601 | 636 | 657 | 677 | 698 | 380 | 389 | 485 | 580 | 636 | 657 | 677 | 698 | 312 | 320 | 399 | 477 | 556 | 634 | 677 | 698 |
| | | HR150 | 438 | 445 | 470 | 496 | 516 | 530 | 546 | 563 | 333 | 341 | 424 | 496 | 516 | 530 | 546 | 563 | 274 | 281 | 349 | 418 | 487 | 530 | 546 | 563 |
| | **140** | HR250 | 533 | 533 | 596 | 629 | 663 | 692 | 709 | 728 | 404 | 404 | 488 | 577 | 663 | 692 | 709 | 728 | 332 | 332 | 401 | 474 | 547 | 620 | 693 | 728 |
| | | HR150 | 465 | 465 | 497 | 521 | 546 | 558 | 572 | 587 | 354 | 354 | 428 | 505 | 546 | 558 | 572 | 587 | 291 | 291 | 352 | 416 | 480 | 544 | 572 | 587 |
| | **150** | HR250 | 565 | 565 | 628 | 659 | 690 | 721 | 744 | 760 | 428 | 428 | 494 | 577 | 659 | 721 | 744 | 760 | 352 | 352 | 406 | 474 | 542 | 610 | 678 | 746 |
| | | HR150 | 494 | 494 | 525 | 547 | 570 | 589 | 600 | 613 | 375 | 375 | 433 | 505 | 570 | 589 | 600 | 613 | 309 | 309 | 356 | 416 | 476 | 535 | 595 | 613 |

**Table 2.20: Maximum Shear (lb.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **C** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS >7° TO 27°** | **85** | HR250 | 30 | 122 | 175 | 210 | 240 | 267 | 291 | 314 | 26 | 116 | 175 | 210 | 240 | 267 | 291 | 314 | 21 | 96 | 170 | 210 | 240 | 267 | 291 | 314 |
| | | HR150 | 28 | 101 | 142 | 170 | 194 | 215 | 235 | 253 | 22 | 101 | 142 | 170 | 194 | 215 | 235 | 253 | 18 | 84 | 142 | 170 | 194 | 215 | 235 | 253 |
| | **90** | HR250 | 30 | 120 | 175 | 210 | 240 | 267 | 291 | 314 | 24 | 110 | 175 | 210 | 240 | 267 | 291 | 314 | 20 | 90 | 161 | 210 | 240 | 267 | 291 | 314 |
| | | HR150 | 27 | 100 | 142 | 170 | 194 | 215 | 235 | 253 | 21 | 96 | 142 | 170 | 194 | 215 | 235 | 253 | 17 | 79 | 141 | 170 | 194 | 215 | 235 | 253 |
| | **100** | HR250 | 28 | 116 | 171 | 210 | 240 | 267 | 291 | 314 | 22 | 99 | 171 | 210 | 240 | 267 | 291 | 314 | 18 | 81 | 145 | 208 | 240 | 267 | 291 | 314 |
| | | HR150 | 25 | 96 | 141 | 170 | 194 | 215 | 235 | 253 | 19 | 86 | 141 | 170 | 194 | 215 | 235 | 253 | 16 | 71 | 127 | 170 | 194 | 215 | 235 | 253 |
| | **105** | HR250 | 27 | 114 | 169 | 210 | 240 | 267 | 291 | 314 | 21 | 94 | 168 | 210 | 240 | 267 | 291 | 314 | 17 | 77 | 138 | 198 | 240 | 267 | 291 | 314 |
| | | HR150 | 24 | 95 | 139 | 170 | 194 | 215 | 235 | 253 | 18 | 82 | 139 | 170 | 194 | 215 | 235 | 253 | 15 | 68 | 121 | 170 | 194 | 215 | 235 | 253 |
| | **110** | HR250 | 26 | 112 | 167 | 210 | 240 | 267 | 291 | 314 | 20 | 90 | 160 | 210 | 240 | 267 | 291 | 314 | 16 | 74 | 132 | 189 | 240 | 267 | 291 | 314 |
| | | HR150 | 23 | 93 | 138 | 170 | 194 | 215 | 235 | 253 | 17 | 79 | 138 | 170 | 194 | 215 | 235 | 253 | 14 | 65 | 115 | 166 | 194 | 215 | 235 | 253 |
| | **115** | HR250 | 25 | 110 | 165 | 208 | 240 | 267 | 291 | 314 | 19 | 86 | 153 | 208 | 240 | 267 | 291 | 314 | 16 | 71 | 126 | 181 | 236 | 267 | 291 | 314 |
| | | HR150 | 22 | 92 | 136 | 170 | 194 | 215 | 235 | 253 | 16 | 75 | 134 | 170 | 194 | 215 | 235 | 253 | 14 | 62 | 110 | 159 | 194 | 215 | 235 | 253 |
| | **120** | HR250 | 24 | 108 | 162 | 206 | 240 | 267 | 291 | 314 | 18 | 82 | 147 | 206 | 240 | 267 | 291 | 314 | 15 | 68 | 121 | 173 | 226 | 267 | 291 | 314 |
| | | HR150 | 21 | 90 | 134 | 170 | 194 | 215 | 235 | 253 | 16 | 72 | 128 | 170 | 194 | 215 | 235 | 253 | 13 | 59 | 106 | 152 | 194 | 215 | 235 | 253 |
| | **130** | HR250 | 22 | 100 | 158 | 202 | 239 | 267 | 291 | 314 | 17 | 76 | 135 | 195 | 239 | 267 | 291 | 314 | 14 | 63 | 111 | 160 | 209 | 258 | 291 | 314 |
| | | HR150 | 19 | 87 | 131 | 167 | 194 | 215 | 235 | 253 | 15 | 67 | 119 | 167 | 194 | 215 | 235 | 253 | 12 | 55 | 98 | 140 | 183 | 215 | 235 | 253 |
| | **140** | HR250 | 20 | 93 | 153 | 197 | 235 | 267 | 291 | 314 | 15 | 71 | 126 | 181 | 235 | 267 | 291 | 314 | 13 | 58 | 103 | 149 | 194 | 239 | 285 | 314 |
| | | HR150 | 18 | 81 | 128 | 163 | 194 | 215 | 235 | 253 | 14 | 62 | 110 | 158 | 194 | 215 | 235 | 253 | 11 | 51 | 91 | 130 | 170 | 210 | 235 | 253 |
| | **150** | HR250 | 19 | 87 | 149 | 193 | 230 | 264 | 291 | 314 | 14 | 66 | 117 | 169 | 220 | 264 | 291 | 314 | 12 | 54 | 96 | 139 | 181 | 223 | 266 | 308 |
| | | HR150 | 17 | 76 | 125 | 160 | 190 | 215 | 235 | 253 | 13 | 58 | 103 | 148 | 190 | 215 | 235 | 253 | 10 | 47 | 85 | 122 | 159 | 196 | 233 | 253 |

**Table 2.21: Maximum Span Length (in.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 108 | 96 | 79 | 66 | 58 | 52 | 48 | 44 | 86 | 86 | 79 | 66 | 58 | 52 | 48 | 44 | 71 | 71 | 71 | 66 | 58 | 52 | 48 | 44 |
| | | HR150 | 98 | 79 | 64 | 53 | 47 | 42 | 39 | 36 | 75 | 75 | 64 | 53 | 47 | 42 | 39 | 36 | 62 | 62 | 62 | 53 | 47 | 42 | 39 | 36 |
| | 90 | HR250 | 105 | 94 | 78 | 66 | 58 | 52 | 48 | 44 | 81 | 81 | 78 | 66 | 58 | 52 | 48 | 44 | 67 | 67 | 67 | 66 | 58 | 52 | 48 | 44 |
| | | HR150 | 93 | 78 | 64 | 53 | 47 | 42 | 39 | 36 | 71 | 71 | 64 | 53 | 47 | 42 | 39 | 36 | 58 | 58 | 58 | 53 | 47 | 42 | 39 | 36 |
| | 100 | HR250 | 96 | 90 | 76 | 66 | 58 | 52 | 48 | 44 | 73 | 73 | 73 | 66 | 58 | 52 | 48 | 44 | 60 | 60 | 60 | 60 | 58 | 52 | 48 | 44 |
| | | HR150 | 84 | 75 | 62 | 53 | 47 | 42 | 39 | 36 | 64 | 64 | 62 | 53 | 47 | 42 | 39 | 36 | 53 | 53 | 53 | 53 | 47 | 42 | 39 | 36 |
| | 105 | HR250 | 92 | 88 | 74 | 66 | 58 | 52 | 48 | 44 | 70 | 70 | 70 | 66 | 58 | 52 | 48 | 44 | 57 | 57 | 57 | 57 | 57 | 52 | 48 | 44 |
| | | HR150 | 80 | 74 | 62 | 53 | 47 | 42 | 39 | 36 | 61 | 61 | 61 | 53 | 47 | 42 | 39 | 36 | 50 | 50 | 50 | 50 | 47 | 42 | 39 | 36 |
| | 110 | HR250 | 88 | 87 | 73 | 65 | 58 | 52 | 48 | 44 | 66 | 66 | 66 | 65 | 58 | 52 | 48 | 44 | 55 | 55 | 55 | 55 | 55 | 52 | 48 | 44 |
| | | HR150 | 76 | 73 | 61 | 53 | 47 | 42 | 39 | 36 | 58 | 58 | 58 | 53 | 47 | 42 | 39 | 36 | 48 | 48 | 48 | 48 | 47 | 42 | 39 | 36 |
| | 115 | HR250 | 84 | 84 | 72 | 64 | 58 | 52 | 48 | 44 | 63 | 63 | 63 | 63 | 58 | 52 | 48 | 44 | 52 | 52 | 52 | 52 | 52 | 52 | 48 | 44 |
| | | HR150 | 73 | 71 | 60 | 53 | 47 | 42 | 39 | 36 | 56 | 56 | 56 | 53 | 47 | 42 | 39 | 36 | 46 | 46 | 46 | 46 | 46 | 42 | 39 | 36 |
| | 120 | HR250 | 80 | 80 | 71 | 63 | 58 | 52 | 48 | 44 | 61 | 61 | 61 | 61 | 58 | 52 | 48 | 44 | 50 | 50 | 50 | 50 | 50 | 50 | 48 | 44 |
| | | HR150 | 70 | 70 | 59 | 52 | 47 | 42 | 39 | 36 | 53 | 53 | 53 | 52 | 47 | 42 | 39 | 36 | 44 | 44 | 44 | 44 | 44 | 42 | 39 | 36 |
| | 130 | HR250 | 74 | 74 | 69 | 62 | 56 | 52 | 48 | 44 | 56 | 56 | 56 | 56 | 56 | 52 | 48 | 44 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 44 |
| | | HR150 | 65 | 65 | 58 | 51 | 46 | 42 | 39 | 36 | 49 | 49 | 49 | 49 | 46 | 42 | 39 | 36 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 36 |
| | 140 | HR250 | 69 | 69 | 67 | 60 | 55 | 51 | 48 | 44 | 52 | 52 | 52 | 52 | 52 | 51 | 48 | 44 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 |
| | | HR150 | 60 | 60 | 56 | 50 | 46 | 42 | 39 | 36 | 46 | 46 | 46 | 46 | 46 | 42 | 39 | 36 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 36 |
| | 150 | HR250 | 64 | 64 | 64 | 59 | 54 | 50 | 47 | 44 | 49 | 49 | 49 | 49 | 49 | 49 | 47 | 44 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| | | HR150 | 56 | 56 | 54 | 49 | 45 | 42 | 39 | 36 | 43 | 43 | 43 | 43 | 43 | 42 | 39 | 36 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |

ROOFS >7° TO 27°

**Table 2.22: Maximum Uplift (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **D** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS >7° TO 27°** | **85** | HR250 | -452 | -401 | -330 | -277 | -242 | -218 | -200 | -186 | -648 | -648 | -594 | -498 | -436 | -393 | -360 | -335 | -800 | -800 | -800 | -748 | -655 | -589 | -541 | -502 |
| | | HR150 | -412 | -333 | -268 | -223 | -195 | -176 | -161 | -150 | -565 | -565 | -482 | -402 | -352 | -317 | -291 | -270 | -699 | -699 | -699 | -603 | -528 | -475 | -436 | -405 |
| | **90** | HR250 | -497 | -444 | -367 | -312 | -273 | -246 | -225 | -209 | -689 | -689 | -660 | -561 | -491 | -443 | -406 | -377 | -849 | -849 | -849 | -841 | -736 | -663 | -608 | -565 |
| | | HR150 | -440 | -369 | -302 | -252 | -220 | -198 | -182 | -169 | -602 | -602 | -543 | -453 | -396 | -357 | -327 | -304 | -743 | -743 | -743 | -678 | -594 | -535 | -490 | -455 |
| | **100** | HR250 | -572 | -535 | -449 | -393 | -344 | -309 | -284 | -264 | -773 | -773 | -773 | -700 | -613 | -552 | -506 | -470 | -949 | -949 | -949 | -949 | -915 | -824 | -755 | -702 |
| | | HR150 | -498 | -447 | -370 | -317 | -277 | -250 | -229 | -213 | -675 | -675 | -660 | -565 | -494 | -445 | -408 | -379 | -831 | -831 | -831 | -831 | -738 | -665 | -609 | -566 |
| | **105** | HR250 | -604 | -582 | -491 | -432 | -381 | -343 | -315 | -292 | -813 | -813 | -813 | -767 | -677 | -609 | -559 | -519 | -998 | -998 | -998 | -998 | -998 | -909 | -834 | -774 |
| | | HR150 | -526 | -487 | -406 | -351 | -307 | -277 | -254 | -236 | -711 | -711 | -711 | -624 | -546 | -491 | -451 | -419 | -874 | -874 | -874 | -874 | -815 | -733 | -672 | -625 |
| | **110** | HR250 | -634 | -627 | -531 | -469 | -419 | -377 | -346 | -321 | -855 | -855 | -855 | -835 | -745 | -671 | -615 | -571 | -1048 | -1048 | -1048 | -1048 | -1048 | -1001 | -917 | -852 |
| | | HR150 | -553 | -525 | -440 | -386 | -338 | -304 | -279 | -259 | -747 | -747 | -747 | -687 | -601 | -541 | -496 | -461 | -918 | -918 | -918 | -918 | -896 | -807 | -740 | -687 |
| | **115** | HR250 | -667 | -667 | -575 | -510 | -461 | -415 | -380 | -353 | -895 | -895 | -895 | -895 | -816 | -734 | -673 | -625 | -1096 | -1096 | -1096 | -1096 | -1096 | -1094 | -1003 | -932 |
| | | HR150 | -581 | -566 | -477 | -420 | -372 | -335 | -307 | -285 | -783 | -783 | -783 | -745 | -658 | -592 | -543 | -505 | -961 | -961 | -961 | -961 | -961 | -882 | -809 | -751 |
| | **120** | HR250 | -697 | -697 | -618 | -549 | -500 | -452 | -415 | -385 | -936 | -936 | -936 | -936 | -886 | -802 | -735 | -683 | -1146 | -1146 | -1146 | -1146 | -1146 | -1146 | -1094 | -1016 |
| | | HR150 | -609 | -606 | -514 | -454 | -405 | -365 | -335 | -311 | -820 | -820 | -820 | -804 | -718 | -647 | -593 | -551 | -1004 | -1004 | -1004 | -1004 | -1004 | -962 | -883 | -820 |
| | **130** | HR250 | -760 | -760 | -707 | -632 | -577 | -534 | -490 | -455 | -1017 | -1017 | -1017 | -1017 | -1017 | -943 | -865 | -803 | -1244 | -1244 | -1244 | -1244 | -1244 | -1244 | -1244 | -1196 |
| | | HR150 | -664 | -664 | -589 | -524 | -476 | -431 | -395 | -367 | -891 | -891 | -891 | -891 | -841 | -761 | -697 | -648 | -1091 | -1091 | -1091 | -1091 | -1091 | -1091 | -1038 | -964 |
| | **140** | HR250 | -823 | -823 | -799 | -720 | -660 | -613 | -571 | -531 | -1099 | -1099 | -1099 | -1099 | -1099 | -1080 | -1007 | -935 | -1343 | -1343 | -1343 | -1343 | -1343 | -1343 | -1343 | -1343 |
| | | HR150 | -719 | -719 | -669 | -598 | -545 | -503 | -461 | -428 | -963 | -963 | -963 | -963 | -961 | -886 | -812 | -754 | -1178 | -1178 | -1178 | -1178 | -1178 | -1178 | -1178 | -1121 |
| | **150** | HR250 | -884 | -884 | -884 | -806 | -742 | -691 | -650 | -610 | -1179 | -1179 | -1179 | -1179 | -1179 | -1179 | -1145 | -1075 | -1441 | -1441 | -1441 | -1441 | -1441 | -1441 | -1441 | -1441 |
| | | HR150 | -773 | -773 | -747 | -671 | -615 | -571 | -530 | -492 | -1034 | -1034 | -1034 | -1034 | -1034 | -1006 | -934 | -867 | -1264 | -1264 | -1264 | -1264 | -1264 | -1264 | -1264 | -1264 |

**Table 2.23: Maximum Downforce (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 372 | 411 | 461 | 490 | 519 | 573 | 624 | 672 | 296 | 369 | 461 | 490 | 519 | 573 | 624 | 672 | 243 | 303 | 413 | 490 | 519 | 573 | 624 | 672 |
| | | HR150 | 339 | 341 | 374 | 395 | 419 | 462 | 504 | 542 | 258 | 321 | 374 | 395 | 419 | 462 | 504 | 542 | 213 | 265 | 361 | 395 | 419 | 462 | 504 | 542 |
| | 90 | HR250 | 399 | 427 | 475 | 507 | 534 | 573 | 624 | 672 | 307 | 369 | 475 | 507 | 534 | 573 | 624 | 672 | 253 | 303 | 408 | 507 | 534 | 573 | 624 | 672 |
| | | HR150 | 353 | 355 | 391 | 409 | 431 | 462 | 504 | 542 | 268 | 322 | 391 | 409 | 431 | 462 | 504 | 542 | 221 | 265 | 357 | 409 | 431 | 462 | 504 | 542 |
| | 100 | HR250 | 438 | 461 | 504 | 545 | 567 | 592 | 624 | 672 | 332 | 374 | 487 | 545 | 567 | 592 | 624 | 672 | 273 | 307 | 401 | 495 | 567 | 592 | 624 | 672 |
| | | HR150 | 381 | 385 | 417 | 439 | 458 | 478 | 504 | 542 | 290 | 326 | 417 | 439 | 458 | 478 | 504 | 542 | 239 | 269 | 351 | 433 | 458 | 478 | 504 | 542 |
| | 105 | HR250 | 452 | 478 | 519 | 559 | 584 | 607 | 631 | 672 | 343 | 376 | 484 | 559 | 584 | 607 | 631 | 672 | 282 | 309 | 398 | 488 | 577 | 607 | 631 | 672 |
| | | HR150 | 394 | 399 | 429 | 455 | 471 | 490 | 509 | 542 | 300 | 329 | 424 | 455 | 471 | 490 | 509 | 542 | 247 | 271 | 349 | 427 | 471 | 490 | 509 | 542 |
| | 110 | HR250 | 469 | 495 | 534 | 573 | 602 | 623 | 646 | 672 | 355 | 380 | 483 | 573 | 602 | 623 | 646 | 672 | 292 | 312 | 397 | 482 | 568 | 623 | 646 | 672 |
| | | HR150 | 409 | 415 | 443 | 471 | 486 | 503 | 521 | 542 | 311 | 332 | 423 | 471 | 486 | 503 | 521 | 542 | 256 | 273 | 348 | 423 | 486 | 503 | 521 | 542 |
| | 115 | HR250 | 486 | 508 | 551 | 588 | 622 | 641 | 662 | 685 | 369 | 385 | 484 | 583 | 622 | 641 | 662 | 685 | 303 | 317 | 398 | 480 | 561 | 641 | 662 | 685 |
| | | HR150 | 424 | 431 | 457 | 485 | 502 | 517 | 534 | 552 | 323 | 337 | 424 | 485 | 502 | 517 | 534 | 552 | 266 | 277 | 349 | 420 | 492 | 517 | 534 | 552 |
| | 120 | HR250 | 503 | 514 | 567 | 603 | 638 | 659 | 679 | 700 | 381 | 390 | 485 | 579 | 638 | 659 | 679 | 700 | 313 | 320 | 399 | 477 | 555 | 633 | 679 | 700 |
| | | HR150 | 439 | 447 | 471 | 498 | 518 | 532 | 548 | 564 | 334 | 341 | 424 | 498 | 518 | 532 | 548 | 564 | 275 | 281 | 349 | 418 | 486 | 532 | 548 | 564 |
| | 130 | HR250 | 538 | 538 | 601 | 634 | 667 | 698 | 714 | 733 | 408 | 408 | 489 | 577 | 665 | 698 | 714 | 733 | 335 | 335 | 402 | 474 | 546 | 618 | 691 | 733 |
| | | HR150 | 470 | 470 | 501 | 525 | 550 | 563 | 576 | 591 | 357 | 357 | 429 | 505 | 550 | 563 | 576 | 591 | 294 | 294 | 353 | 416 | 479 | 542 | 576 | 591 |
| | 140 | HR250 | 572 | 572 | 635 | 666 | 697 | 727 | 753 | 768 | 434 | 434 | 496 | 577 | 659 | 727 | 753 | 768 | 357 | 357 | 408 | 475 | 541 | 608 | 675 | 742 |
| | | HR150 | 501 | 501 | 532 | 553 | 576 | 596 | 607 | 620 | 380 | 380 | 434 | 506 | 576 | 596 | 607 | 620 | 313 | 313 | 358 | 416 | 475 | 534 | 592 | 620 |
| | 150 | HR250 | 608 | 608 | 666 | 699 | 728 | 757 | 785 | 806 | 461 | 461 | 504 | 580 | 656 | 732 | 785 | 806 | 379 | 379 | 415 | 477 | 540 | 602 | 665 | 727 |
| | | HR150 | 532 | 532 | 563 | 582 | 603 | 625 | 640 | 650 | 404 | 404 | 442 | 509 | 575 | 625 | 640 | 650 | 332 | 332 | 364 | 419 | 474 | 528 | 583 | 638 |

ROOFS >7° TO 27°

**Table 2.24: Maximum Shear (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 29 | 119 | 174 | 210 | 240 | 267 | 291 | 314 | 23 | 107 | 174 | 210 | 240 | 267 | 291 | 314 | 19 | 88 | 156 | 210 | 240 | 267 | 291 | 314 |
| | | HR150 | 27 | 99 | 142 | 170 | 194 | 215 | 235 | 253 | 20 | 93 | 142 | 170 | 194 | 215 | 235 | 253 | 17 | 77 | 137 | 170 | 194 | 215 | 235 | 253 |
| | 90 | HR250 | 29 | 117 | 172 | 210 | 240 | 267 | 291 | 314 | 22 | 101 | 172 | 210 | 240 | 267 | 291 | 314 | 18 | 83 | 148 | 210 | 240 | 267 | 291 | 314 |
| | | HR150 | 25 | 97 | 142 | 170 | 194 | 215 | 235 | 253 | 19 | 88 | 142 | 170 | 194 | 215 | 235 | 253 | 16 | 73 | 129 | 170 | 194 | 215 | 235 | 253 |
| | 100 | HR250 | 26 | 112 | 167 | 210 | 240 | 267 | 291 | 314 | 20 | 91 | 162 | 210 | 240 | 267 | 291 | 314 | 16 | 75 | 133 | 191 | 240 | 267 | 291 | 314 |
| | | HR150 | 23 | 94 | 138 | 170 | 194 | 215 | 235 | 253 | 17 | 79 | 138 | 170 | 194 | 215 | 235 | 253 | 14 | 65 | 116 | 167 | 194 | 215 | 235 | 253 |
| | 105 | HR250 | 25 | 110 | 165 | 209 | 240 | 267 | 291 | 314 | 19 | 86 | 154 | 209 | 240 | 267 | 291 | 314 | 16 | 71 | 127 | 182 | 238 | 267 | 291 | 314 |
| | | HR150 | 22 | 92 | 136 | 170 | 194 | 215 | 235 | 253 | 17 | 76 | 135 | 170 | 194 | 215 | 235 | 253 | 14 | 62 | 111 | 159 | 194 | 215 | 235 | 253 |
| | 110 | HR250 | 24 | 108 | 162 | 206 | 240 | 267 | 291 | 314 | 18 | 82 | 147 | 206 | 240 | 267 | 291 | 314 | 15 | 68 | 121 | 174 | 227 | 267 | 291 | 314 |
| | | HR150 | 21 | 90 | 135 | 170 | 194 | 215 | 235 | 253 | 16 | 72 | 128 | 170 | 194 | 215 | 235 | 253 | 13 | 59 | 106 | 152 | 194 | 215 | 235 | 253 |
| | 115 | HR250 | 23 | 104 | 160 | 204 | 240 | 267 | 291 | 314 | 17 | 79 | 141 | 202 | 240 | 267 | 291 | 314 | 14 | 65 | 116 | 166 | 217 | 267 | 291 | 314 |
| | | HR150 | 20 | 88 | 133 | 168 | 194 | 215 | 235 | 253 | 15 | 69 | 123 | 168 | 194 | 215 | 235 | 253 | 12 | 57 | 101 | 146 | 190 | 215 | 235 | 253 |
| | 120 | HR250 | 22 | 100 | 158 | 201 | 239 | 267 | 291 | 314 | 17 | 76 | 135 | 194 | 239 | 267 | 291 | 314 | 14 | 62 | 111 | 159 | 208 | 256 | 291 | 314 |
| | | HR150 | 19 | 87 | 131 | 166 | 194 | 215 | 235 | 253 | 15 | 66 | 118 | 166 | 194 | 215 | 235 | 253 | 12 | 55 | 97 | 140 | 182 | 215 | 235 | 253 |
| | 130 | HR250 | 20 | 92 | 153 | 197 | 234 | 267 | 291 | 314 | 15 | 70 | 124 | 179 | 233 | 267 | 291 | 314 | 13 | 57 | 102 | 147 | 192 | 237 | 281 | 314 |
| | | HR150 | 18 | 81 | 127 | 163 | 193 | 215 | 235 | 253 | 13 | 61 | 109 | 157 | 193 | 215 | 235 | 253 | 11 | 50 | 90 | 129 | 168 | 208 | 235 | 253 |
| | 140 | HR250 | 19 | 86 | 148 | 192 | 229 | 263 | 291 | 314 | 14 | 65 | 115 | 166 | 217 | 263 | 291 | 314 | 12 | 53 | 95 | 136 | 178 | 220 | 261 | 303 |
| | | HR150 | 16 | 75 | 124 | 159 | 189 | 215 | 235 | 253 | 12 | 57 | 101 | 145 | 189 | 215 | 235 | 253 | 10 | 47 | 83 | 120 | 156 | 193 | 229 | 253 |
| | 150 | HR250 | 18 | 80 | 142 | 187 | 224 | 258 | 288 | 314 | 13 | 60 | 108 | 155 | 202 | 249 | 288 | 314 | 11 | 50 | 89 | 127 | 166 | 205 | 244 | 283 |
| | | HR150 | 15 | 70 | 120 | 155 | 186 | 213 | 235 | 253 | 12 | 53 | 94 | 136 | 177 | 213 | 235 | 253 | 10 | 44 | 78 | 112 | 146 | 180 | 214 | 248 |

ROOFS >7° TO 27°

**Table 2.25: Maximum Span Length (in.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >27° TO 45° | **85** | HR250 | 109 | 93 | 75 | 62 | 55 | 49 | 45 | 42 | 109 | 93 | 75 | 62 | 55 | 49 | 45 | 42 | 109 | 93 | 75 | 62 | 55 | 49 | 45 | 42 |
| | | HR150 | 101 | 76 | 59 | 49 | 43 | 39 | 36 | 33 | 101 | 76 | 59 | 49 | 43 | 39 | 36 | 33 | 101 | 76 | 59 | 49 | 43 | 39 | 36 | 33 |
| | **90** | HR250 | 107 | 91 | 75 | 62 | 55 | 49 | 45 | 42 | 107 | 91 | 75 | 62 | 55 | 49 | 45 | 42 | 107 | 91 | 75 | 62 | 55 | 49 | 45 | 42 |
| | | HR150 | 98 | 75 | 59 | 49 | 43 | 39 | 36 | 33 | 98 | 75 | 59 | 49 | 43 | 39 | 36 | 33 | 98 | 75 | 59 | 49 | 43 | 39 | 36 | 33 |
| | **100** | HR250 | 104 | 89 | 73 | 62 | 55 | 49 | 45 | 42 | 104 | 89 | 73 | 62 | 55 | 49 | 45 | 42 | 104 | 89 | 73 | 62 | 55 | 49 | 45 | 42 |
| | | HR150 | 94 | 73 | 59 | 49 | 43 | 39 | 36 | 33 | 94 | 73 | 59 | 49 | 43 | 39 | 36 | 33 | 94 | 73 | 59 | 49 | 43 | 39 | 36 | 33 |
| | **105** | HR250 | 100 | 86 | 72 | 62 | 55 | 49 | 45 | 42 | 100 | 86 | 72 | 62 | 55 | 49 | 45 | 42 | 100 | 86 | 72 | 62 | 55 | 49 | 45 | 42 |
| | | HR150 | 88 | 71 | 59 | 49 | 43 | 39 | 36 | 33 | 88 | 71 | 59 | 49 | 43 | 39 | 36 | 33 | 88 | 71 | 59 | 49 | 43 | 39 | 36 | 33 |
| | **110** | HR250 | 98 | 85 | 71 | 62 | 55 | 49 | 45 | 42 | 98 | 85 | 71 | 62 | 55 | 49 | 45 | 42 | 98 | 85 | 71 | 62 | 55 | 49 | 45 | 42 |
| | | HR150 | 86 | 70 | 58 | 49 | 43 | 39 | 36 | 33 | 85 | 70 | 58 | 49 | 43 | 39 | 36 | 33 | 85 | 70 | 58 | 49 | 43 | 39 | 36 | 33 |
| | **115** | HR250 | 96 | 83 | 70 | 62 | 55 | 49 | 45 | 42 | 94 | 83 | 70 | 62 | 55 | 49 | 45 | 42 | 94 | 83 | 70 | 62 | 55 | 49 | 45 | 42 |
| | | HR150 | 83 | 69 | 57 | 49 | 43 | 39 | 36 | 33 | 82 | 69 | 57 | 49 | 43 | 39 | 36 | 33 | 82 | 69 | 57 | 49 | 43 | 39 | 36 | 33 |
| | **120** | HR250 | 93 | 81 | 69 | 61 | 55 | 49 | 45 | 42 | 91 | 81 | 69 | 61 | 55 | 49 | 45 | 42 | 91 | 81 | 69 | 61 | 55 | 49 | 45 | 42 |
| | | HR150 | 80 | 68 | 57 | 49 | 43 | 39 | 36 | 33 | 79 | 68 | 57 | 49 | 43 | 39 | 36 | 33 | 79 | 68 | 57 | 49 | 43 | 39 | 36 | 33 |
| | **130** | HR250 | 87 | 78 | 67 | 60 | 54 | 49 | 45 | 42 | 84 | 78 | 67 | 60 | 54 | 49 | 45 | 42 | 84 | 78 | 67 | 60 | 54 | 49 | 45 | 42 |
| | | HR150 | 75 | 65 | 55 | 49 | 43 | 39 | 36 | 33 | 73 | 65 | 55 | 49 | 43 | 39 | 36 | 33 | 73 | 65 | 55 | 49 | 43 | 39 | 36 | 33 |
| | **140** | HR250 | 82 | 75 | 65 | 58 | 53 | 49 | 45 | 42 | 78 | 75 | 65 | 58 | 53 | 49 | 45 | 42 | 78 | 75 | 65 | 58 | 53 | 49 | 45 | 42 |
| | | HR150 | 71 | 63 | 54 | 48 | 43 | 39 | 36 | 33 | 68 | 63 | 54 | 48 | 43 | 39 | 36 | 33 | 68 | 63 | 54 | 48 | 43 | 39 | 36 | 33 |
| | **150** | HR250 | 77 | 72 | 63 | 57 | 52 | 48 | 45 | 42 | 73 | 72 | 63 | 57 | 52 | 48 | 45 | 42 | 73 | 72 | 63 | 57 | 52 | 48 | 45 | 42 |
| | | HR150 | 67 | 61 | 52 | 47 | 43 | 39 | 36 | 33 | 63 | 61 | 52 | 47 | 43 | 39 | 36 | 33 | 63 | 61 | 52 | 47 | 43 | 39 | 36 | 33 |

**Table 2.26: Maximum Uplift (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >27° TO 45° | **85** | HR250 | -292 | -248 | -199 | -166 | -146 | -131 | -120 | -112 | -347 | -295 | -237 | -198 | -173 | -156 | -143 | -133 | -347 | -295 | -237 | -198 | -173 | -156 | -143 | -133 |
| | | HR150 | -268 | -202 | -158 | -132 | -116 | -104 | -95 | -89 | -319 | -241 | -188 | -157 | -137 | -124 | -113 | -105 | -319 | -241 | -188 | -157 | -137 | -124 | -113 | -105 |
| | **90** | HR250 | -324 | -277 | -227 | -189 | -166 | -149 | -137 | -127 | -383 | -327 | -268 | -224 | -196 | -176 | -162 | -150 | -383 | -327 | -268 | -224 | -196 | -176 | -162 | -150 |
| | | HR150 | -298 | -227 | -180 | -150 | -131 | -118 | -109 | -101 | -352 | -268 | -213 | -177 | -155 | -140 | -128 | -119 | -352 | -268 | -213 | -177 | -155 | -140 | -128 | -119 |
| | **100** | HR250 | -395 | -339 | -280 | -238 | -208 | -187 | -172 | -160 | -466 | -401 | -331 | -281 | -246 | -221 | -203 | -189 | -466 | -401 | -331 | -281 | -246 | -221 | -203 | -189 |
| | | HR150 | -358 | -279 | -226 | -189 | -165 | -149 | -136 | -127 | -422 | -329 | -267 | -223 | -195 | -176 | -161 | -150 | -422 | -329 | -267 | -223 | -195 | -176 | -161 | -150 |
| | **105** | HR250 | -422 | -364 | -304 | -264 | -231 | -208 | -191 | -177 | -500 | -432 | -360 | -312 | -273 | -246 | -226 | -210 | -500 | -432 | -360 | -312 | -273 | -246 | -226 | -210 |
| | | HR150 | -374 | -301 | -248 | -209 | -183 | -165 | -151 | -140 | -443 | -356 | -293 | -248 | -217 | -195 | -179 | -166 | -443 | -356 | -293 | -248 | -217 | -195 | -179 | -166 |
| | **110** | HR250 | -459 | -397 | -333 | -292 | -256 | -230 | -211 | -196 | -542 | -468 | -393 | -345 | -302 | -272 | -250 | -232 | -542 | -468 | -393 | -345 | -302 | -272 | -250 | -232 |
| | | HR150 | -401 | -328 | -272 | -232 | -203 | -183 | -168 | -156 | -473 | -387 | -321 | -274 | -240 | -216 | -198 | -184 | -473 | -387 | -321 | -274 | -240 | -216 | -198 | -184 |
| | **115** | HR250 | -493 | -427 | -360 | -317 | -281 | -253 | -232 | -215 | -573 | -503 | -424 | -374 | -331 | -298 | -273 | -254 | -573 | -503 | -424 | -374 | -331 | -298 | -273 | -254 |
| | | HR150 | -426 | -354 | -295 | -255 | -223 | -201 | -184 | -171 | -497 | -417 | -347 | -300 | -263 | -237 | -217 | -201 | -497 | -417 | -347 | -300 | -263 | -237 | -217 | -201 |
| | **120** | HR250 | -524 | -458 | -389 | -343 | -307 | -277 | -254 | -236 | -601 | -540 | -458 | -405 | -362 | -326 | -299 | -278 | -601 | -540 | -458 | -405 | -362 | -326 | -299 | -278 |
| | | HR150 | -451 | -380 | -318 | -279 | -244 | -220 | -201 | -187 | -522 | -449 | -376 | -329 | -288 | -259 | -237 | -221 | -522 | -449 | -376 | -329 | -288 | -259 | -237 | -221 |
| | **130** | HR250 | -581 | -522 | -447 | -398 | -362 | -327 | -300 | -279 | -657 | -615 | -527 | -469 | -426 | -386 | -354 | -329 | -657 | -615 | -527 | -469 | -426 | -386 | -354 | -329 |
| | | HR150 | -501 | -435 | -368 | -325 | -289 | -260 | -238 | -221 | -572 | -513 | -434 | -383 | -340 | -306 | -281 | -261 | -572 | -513 | -434 | -383 | -340 | -306 | -281 | -261 |
| | **140** | HR250 | -637 | -586 | -508 | -454 | -415 | -383 | -351 | -326 | -712 | -688 | -596 | -533 | -487 | -449 | -412 | -383 | -712 | -688 | -596 | -533 | -487 | -449 | -412 | -383 |
| | | HR150 | -551 | -491 | -419 | -372 | -337 | -304 | -279 | -259 | -620 | -576 | -492 | -436 | -396 | -357 | -327 | -304 | -620 | -576 | -492 | -436 | -396 | -357 | -327 | -304 |
| | **150** | HR250 | -693 | -651 | -569 | -512 | -469 | -435 | -405 | -376 | -767 | -764 | -668 | -601 | -550 | -511 | -475 | -441 | -767 | -764 | -668 | -601 | -550 | -511 | -475 | -441 |
| | | HR150 | -600 | -547 | -471 | -420 | -383 | -350 | -321 | -298 | -669 | -642 | -553 | -493 | -450 | -411 | -377 | -350 | -669 | -642 | -553 | -493 | -450 | -411 | -377 | -350 |

**Table 2.27: Maximum Downforce (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >27° TO 45° | **85** | HR250 | 357 | 370 | 404 | 424 | 449 | 488 | 532 | 573 | 357 | 370 | 404 | 424 | 449 | 488 | 532 | 573 | 357 | 370 | 404 | 424 | 449 | 488 | 532 | 573 |
| | | HR150 | 328 | 302 | 320 | 337 | 356 | 387 | 422 | 455 | 328 | 302 | 320 | 337 | 356 | 387 | 422 | 455 | 328 | 302 | 320 | 337 | 356 | 387 | 422 | 455 |
| | **90** | HR250 | 383 | 386 | 421 | 440 | 462 | 488 | 532 | 573 | 383 | 386 | 421 | 440 | 462 | 488 | 532 | 573 | 383 | 386 | 421 | 440 | 462 | 488 | 532 | 573 |
| | | HR150 | 352 | 316 | 335 | 349 | 367 | 387 | 422 | 455 | 352 | 316 | 335 | 349 | 367 | 387 | 422 | 455 | 352 | 316 | 335 | 349 | 367 | 387 | 422 | 455 |
| | **100** | HR250 | 421 | 408 | 441 | 462 | 481 | 503 | 532 | 573 | 421 | 408 | 441 | 462 | 481 | 503 | 532 | 573 | 421 | 408 | 441 | 462 | 481 | 503 | 532 | 573 |
| | | HR150 | 381 | 335 | 356 | 367 | 382 | 399 | 422 | 455 | 380 | 335 | 356 | 367 | 382 | 399 | 422 | 455 | 380 | 335 | 356 | 367 | 382 | 399 | 422 | 455 |
| | **105** | HR250 | 470 | 437 | 466 | 492 | 508 | 527 | 546 | 573 | 470 | 437 | 466 | 492 | 508 | 527 | 546 | 573 | 470 | 437 | 466 | 492 | 508 | 527 | 546 | 573 |
| | | HR150 | 416 | 360 | 380 | 391 | 403 | 418 | 434 | 455 | 416 | 360 | 380 | 391 | 403 | 418 | 434 | 455 | 416 | 360 | 380 | 391 | 403 | 418 | 434 | 455 |
| | **110** | HR250 | 499 | 454 | 481 | 510 | 524 | 541 | 560 | 579 | 499 | 454 | 481 | 510 | 524 | 541 | 560 | 579 | 499 | 454 | 481 | 510 | 524 | 541 | 560 | 579 |
| | | HR150 | 436 | 375 | 393 | 405 | 416 | 429 | 444 | 459 | 435 | 375 | 393 | 405 | 416 | 429 | 444 | 459 | 435 | 375 | 393 | 405 | 416 | 429 | 444 | 459 |
| | **115** | HR250 | 530 | 472 | 497 | 525 | 542 | 557 | 574 | 592 | 523 | 472 | 497 | 525 | 542 | 557 | 574 | 592 | 523 | 472 | 497 | 525 | 542 | 557 | 574 | 592 |
| | | HR150 | 457 | 391 | 407 | 421 | 430 | 442 | 456 | 470 | 454 | 391 | 407 | 421 | 430 | 442 | 456 | 470 | 454 | 391 | 407 | 421 | 430 | 442 | 456 | 470 |
| | **120** | HR250 | 555 | 490 | 513 | 539 | 559 | 573 | 589 | 606 | 541 | 490 | 513 | 539 | 559 | 573 | 589 | 606 | 541 | 490 | 513 | 539 | 559 | 573 | 589 | 606 |
| | | HR150 | 478 | 407 | 420 | 437 | 444 | 455 | 468 | 481 | 470 | 407 | 420 | 437 | 444 | 455 | 468 | 481 | 470 | 407 | 420 | 437 | 444 | 455 | 468 | 481 |
| | **130** | HR250 | 602 | 541 | 546 | 570 | 595 | 608 | 621 | 636 | 578 | 541 | 546 | 570 | 595 | 608 | 621 | 636 | 578 | 541 | 546 | 570 | 595 | 608 | 621 | 636 |
| | | HR150 | 520 | 451 | 449 | 465 | 475 | 482 | 493 | 505 | 503 | 451 | 449 | 465 | 475 | 482 | 493 | 505 | 503 | 451 | 449 | 465 | 475 | 482 | 493 | 505 |
| | **140** | HR250 | 650 | 598 | 581 | 602 | 625 | 646 | 656 | 668 | 619 | 598 | 581 | 602 | 625 | 646 | 656 | 668 | 619 | 598 | 581 | 602 | 625 | 646 | 656 | 668 |
| | | HR150 | 562 | 500 | 479 | 493 | 508 | 513 | 520 | 530 | 539 | 500 | 479 | 493 | 508 | 513 | 520 | 530 | 539 | 500 | 479 | 493 | 508 | 513 | 520 | 530 |
| | **150** | HR250 | 696 | 654 | 616 | 634 | 655 | 676 | 692 | 702 | 656 | 654 | 616 | 634 | 655 | 676 | 692 | 702 | 656 | 654 | 616 | 634 | 655 | 676 | 692 | 702 |
| | | HR150 | 603 | 549 | 510 | 521 | 535 | 544 | 549 | 557 | 572 | 549 | 510 | 521 | 535 | 544 | 549 | 557 | 572 | 549 | 510 | 521 | 535 | 544 | 549 | 557 |

**Table 2.28: Maximum Shear (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| B | 85 | HR250 | 40 | 157 | 225 | 269 | 308 | 342 | 373 | 401 | 40 | 157 | 225 | 269 | 308 | 342 | 373 | 401 | 40 | 157 | 225 | 269 | 308 | 342 | 373 | 401 |
| | | HR150 | 37 | 128 | 178 | 214 | 244 | 271 | 296 | 318 | 37 | 128 | 178 | 214 | 244 | 271 | 296 | 318 | 37 | 128 | 178 | 214 | 244 | 271 | 296 | 318 |
| | 90 | HR250 | 40 | 154 | 224 | 269 | 308 | 342 | 373 | 401 | 40 | 154 | 224 | 269 | 308 | 342 | 373 | 401 | 40 | 154 | 224 | 269 | 308 | 342 | 373 | 401 |
| | | HR150 | 36 | 126 | 178 | 214 | 244 | 271 | 296 | 318 | 36 | 126 | 178 | 214 | 244 | 271 | 296 | 318 | 36 | 126 | 178 | 214 | 244 | 271 | 296 | 318 |
| | 100 | HR250 | 38 | 150 | 221 | 269 | 308 | 342 | 373 | 401 | 38 | 150 | 221 | 269 | 308 | 342 | 373 | 401 | 38 | 150 | 221 | 269 | 308 | 342 | 373 | 401 |
| | | HR150 | 35 | 123 | 178 | 214 | 244 | 271 | 296 | 318 | 35 | 123 | 178 | 214 | 244 | 271 | 296 | 318 | 35 | 123 | 178 | 214 | 244 | 271 | 296 | 318 |
| | 105 | HR250 | 37 | 145 | 216 | 269 | 308 | 342 | 373 | 401 | 37 | 145 | 216 | 269 | 308 | 342 | 373 | 401 | 37 | 145 | 216 | 269 | 308 | 342 | 373 | 401 |
| | | HR150 | 33 | 120 | 176 | 214 | 244 | 271 | 296 | 318 | 33 | 120 | 176 | 214 | 244 | 271 | 296 | 318 | 33 | 120 | 176 | 214 | 244 | 271 | 296 | 318 |
| | 110 | HR250 | 36 | 143 | 213 | 269 | 308 | 342 | 373 | 401 | 36 | 143 | 213 | 269 | 308 | 342 | 373 | 401 | 36 | 143 | 213 | 269 | 308 | 342 | 373 | 401 |
| | | HR150 | 32 | 118 | 174 | 214 | 244 | 271 | 296 | 318 | 32 | 118 | 174 | 214 | 244 | 271 | 296 | 318 | 32 | 118 | 174 | 214 | 244 | 271 | 296 | 318 |
| | 115 | HR250 | 35 | 140 | 210 | 266 | 308 | 342 | 373 | 401 | 35 | 140 | 210 | 266 | 308 | 342 | 373 | 401 | 35 | 140 | 210 | 266 | 308 | 342 | 373 | 401 |
| | | HR150 | 31 | 116 | 172 | 214 | 244 | 271 | 296 | 318 | 30 | 116 | 172 | 214 | 244 | 271 | 296 | 318 | 30 | 116 | 172 | 214 | 244 | 271 | 296 | 318 |
| | 120 | HR250 | 34 | 137 | 207 | 264 | 308 | 342 | 373 | 401 | 33 | 137 | 207 | 264 | 308 | 342 | 373 | 401 | 33 | 137 | 207 | 264 | 308 | 342 | 373 | 401 |
| | | HR150 | 30 | 114 | 170 | 214 | 244 | 271 | 296 | 318 | 29 | 114 | 170 | 214 | 244 | 271 | 296 | 318 | 29 | 114 | 170 | 214 | 244 | 271 | 296 | 318 |
| | 130 | HR250 | 32 | 132 | 202 | 258 | 306 | 342 | 373 | 401 | 31 | 132 | 202 | 258 | 306 | 342 | 373 | 401 | 31 | 132 | 202 | 258 | 306 | 342 | 373 | 401 |
| | | HR150 | 28 | 110 | 166 | 210 | 244 | 271 | 296 | 318 | 27 | 110 | 166 | 210 | 244 | 271 | 296 | 318 | 27 | 110 | 166 | 210 | 244 | 271 | 296 | 318 |
| | 140 | HR250 | 30 | 127 | 196 | 252 | 300 | 342 | 373 | 401 | 29 | 127 | 196 | 252 | 300 | 342 | 373 | 401 | 29 | 127 | 196 | 252 | 300 | 342 | 373 | 401 |
| | | HR150 | 26 | 106 | 162 | 206 | 244 | 271 | 296 | 318 | 25 | 106 | 162 | 206 | 244 | 271 | 296 | 318 | 25 | 106 | 162 | 206 | 244 | 271 | 296 | 318 |
| | 150 | HR250 | 29 | 122 | 190 | 246 | 294 | 337 | 373 | 401 | 27 | 122 | 190 | 246 | 294 | 337 | 373 | 401 | 27 | 122 | 190 | 246 | 294 | 337 | 373 | 401 |
| | | HR150 | 25 | 103 | 158 | 202 | 240 | 271 | 296 | 318 | 23 | 103 | 158 | 202 | 240 | 271 | 296 | 318 | 23 | 103 | 158 | 202 | 240 | 271 | 296 | 318 |

ROOFS >27° TO 45°

**Table 2.29: Maximum Span Length (in.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **C** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS >27° TO 45°** | **85** | HR250 | 102 | 88 | 73 | 62 | 55 | 49 | 45 | 42 | 102 | 88 | 73 | 62 | 55 | 49 | 45 | 42 | 102 | 88 | 73 | 62 | 55 | 49 | 45 | 42 |
| | | HR150 | 91 | 72 | 59 | 49 | 43 | 39 | 36 | 33 | 91 | 72 | 59 | 49 | 43 | 39 | 36 | 33 | 91 | 72 | 59 | 49 | 43 | 39 | 36 | 33 |
| | **90** | HR250 | 99 | 86 | 72 | 62 | 55 | 49 | 45 | 42 | 99 | 86 | 72 | 62 | 55 | 49 | 45 | 42 | 99 | 86 | 72 | 62 | 55 | 49 | 45 | 42 |
| | | HR150 | 88 | 71 | 58 | 49 | 43 | 39 | 36 | 33 | 88 | 71 | 58 | 49 | 43 | 39 | 36 | 33 | 88 | 71 | 58 | 49 | 43 | 39 | 36 | 33 |
| | **100** | HR250 | 96 | 83 | 70 | 62 | 55 | 49 | 45 | 42 | 92 | 83 | 70 | 62 | 55 | 49 | 45 | 42 | 92 | 83 | 70 | 62 | 55 | 49 | 45 | 42 |
| | | HR150 | 83 | 69 | 57 | 49 | 43 | 39 | 36 | 33 | 80 | 69 | 57 | 49 | 43 | 39 | 36 | 33 | 80 | 69 | 57 | 49 | 43 | 39 | 36 | 33 |
| | **105** | HR250 | 90 | 80 | 68 | 60 | 55 | 49 | 45 | 42 | 88 | 80 | 68 | 60 | 55 | 49 | 45 | 42 | 88 | 80 | 68 | 60 | 55 | 49 | 45 | 42 |
| | | HR150 | 78 | 67 | 56 | 49 | 43 | 39 | 36 | 33 | 76 | 67 | 56 | 49 | 43 | 39 | 36 | 33 | 76 | 67 | 56 | 49 | 43 | 39 | 36 | 33 |
| | **110** | HR250 | 87 | 78 | 67 | 60 | 54 | 49 | 45 | 42 | 84 | 78 | 67 | 60 | 54 | 49 | 45 | 42 | 84 | 78 | 67 | 60 | 54 | 49 | 45 | 42 |
| | | HR150 | 75 | 65 | 55 | 49 | 43 | 39 | 36 | 33 | 73 | 65 | 55 | 49 | 43 | 39 | 36 | 33 | 73 | 65 | 55 | 49 | 43 | 39 | 36 | 33 |
| | **115** | HR250 | 84 | 76 | 66 | 59 | 54 | 49 | 45 | 42 | 80 | 76 | 66 | 59 | 54 | 49 | 45 | 42 | 80 | 76 | 66 | 59 | 54 | 49 | 45 | 42 |
| | | HR150 | 72 | 64 | 54 | 48 | 43 | 39 | 36 | 33 | 70 | 64 | 54 | 48 | 43 | 39 | 36 | 33 | 70 | 64 | 54 | 48 | 43 | 39 | 36 | 33 |
| | **120** | HR250 | 81 | 75 | 65 | 58 | 53 | 49 | 45 | 42 | 77 | 75 | 65 | 58 | 53 | 49 | 45 | 42 | 77 | 75 | 65 | 58 | 53 | 49 | 45 | 42 |
| | | HR150 | 70 | 63 | 54 | 48 | 43 | 39 | 36 | 33 | 67 | 63 | 54 | 48 | 43 | 39 | 36 | 33 | 67 | 63 | 54 | 48 | 43 | 39 | 36 | 33 |
| | **130** | HR250 | 75 | 71 | 63 | 56 | 52 | 48 | 45 | 42 | 71 | 71 | 63 | 56 | 52 | 48 | 45 | 42 | 71 | 71 | 63 | 56 | 52 | 48 | 45 | 42 |
| | | HR150 | 65 | 60 | 52 | 46 | 42 | 39 | 36 | 33 | 62 | 60 | 52 | 46 | 42 | 39 | 36 | 33 | 62 | 60 | 52 | 46 | 42 | 39 | 36 | 33 |
| | **140** | HR250 | 71 | 68 | 60 | 55 | 51 | 47 | 44 | 42 | 66 | 66 | 60 | 55 | 51 | 47 | 44 | 42 | 66 | 66 | 60 | 55 | 51 | 47 | 44 | 42 |
| | | HR150 | 61 | 58 | 50 | 45 | 41 | 38 | 36 | 33 | 58 | 58 | 50 | 45 | 41 | 38 | 36 | 33 | 58 | 58 | 50 | 45 | 41 | 38 | 36 | 33 |
| | **150** | HR250 | 66 | 65 | 58 | 53 | 49 | 46 | 43 | 41 | 62 | 62 | 58 | 53 | 49 | 46 | 43 | 41 | 62 | 62 | 58 | 53 | 49 | 46 | 43 | 41 |
| | | HR150 | 58 | 55 | 49 | 44 | 41 | 38 | 35 | 33 | 54 | 54 | 49 | 44 | 41 | 38 | 35 | 33 | 54 | 54 | 49 | 44 | 41 | 38 | 35 | 33 |

**Table 2.30: Maximum Uplift (lb.) - Wind Exposure C Condition**

| Exposure C | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >27° TO 45° | 85 | HR250 | -393 | -338 | -281 | -241 | -211 | -190 | -174 | -162 | -465 | -400 | -332 | -285 | -249 | -225 | -206 | -191 | -465 | -400 | -332 | -285 | -249 | -225 | -206 | -191 |
| | | HR150 | -352 | -279 | -229 | -191 | -167 | -151 | -138 | -128 | -417 | -330 | -270 | -226 | -198 | -178 | -163 | -152 | -417 | -330 | -270 | -226 | -198 | -178 | -163 | -152 |
| | 90 | HR250 | -435 | -375 | -314 | -273 | -239 | -215 | -197 | -183 | -511 | -441 | -369 | -321 | -281 | -253 | -232 | -215 | -511 | -441 | -369 | -321 | -281 | -253 | -232 | -215 |
| | | HR150 | -384 | -310 | -256 | -217 | -190 | -171 | -157 | -145 | -451 | -364 | -301 | -255 | -223 | -201 | -184 | -171 | -451 | -364 | -301 | -255 | -223 | -201 | -184 | -171 |
| | 100 | HR250 | -525 | -455 | -383 | -338 | -298 | -269 | -246 | -229 | -591 | -535 | -451 | -397 | -351 | -316 | -290 | -269 | -591 | -535 | -451 | -397 | -351 | -316 | -290 | -269 |
| | | HR150 | -454 | -377 | -314 | -271 | -237 | -213 | -196 | -182 | -513 | -443 | -369 | -318 | -279 | -251 | -230 | -214 | -513 | -443 | -369 | -318 | -279 | -251 | -230 | -214 |
| | 105 | HR250 | -546 | -484 | -412 | -365 | -330 | -297 | -272 | -253 | -625 | -571 | -487 | -431 | -390 | -351 | -322 | -299 | -625 | -571 | -487 | -431 | -390 | -351 | -322 | -299 |
| | | HR150 | -471 | -402 | -338 | -298 | -262 | -236 | -216 | -201 | -543 | -475 | -400 | -352 | -309 | -279 | -255 | -237 | -543 | -475 | -400 | -352 | -309 | -279 | -255 | -237 |
| | 110 | HR250 | -582 | -524 | -449 | -399 | -363 | -329 | -301 | -280 | -658 | -617 | -529 | -470 | -427 | -387 | -355 | -330 | -658 | -617 | -529 | -470 | -427 | -387 | -355 | -330 |
| | | HR150 | -503 | -436 | -369 | -326 | -290 | -261 | -239 | -222 | -573 | -514 | -435 | -384 | -341 | -307 | -282 | -262 | -573 | -514 | -435 | -384 | -341 | -307 | -282 | -262 |
| | 115 | HR250 | -614 | -560 | -484 | -432 | -393 | -360 | -330 | -307 | -690 | -659 | -568 | -507 | -462 | -424 | -388 | -361 | -690 | -659 | -568 | -507 | -462 | -424 | -388 | -361 |
| | | HR150 | -531 | -468 | -399 | -353 | -318 | -286 | -262 | -244 | -601 | -550 | -468 | -415 | -373 | -336 | -308 | -286 | -601 | -550 | -468 | -415 | -373 | -336 | -308 | -286 |
| | 120 | HR250 | -648 | -598 | -519 | -465 | -425 | -393 | -361 | -335 | -723 | -704 | -611 | -547 | -500 | -463 | -425 | -394 | -723 | -704 | -611 | -547 | -500 | -463 | -425 | -394 |
| | | HR150 | -560 | -501 | -429 | -381 | -346 | -312 | -286 | -266 | -630 | -590 | -505 | -448 | -407 | -368 | -337 | -313 | -630 | -590 | -505 | -448 | -407 | -368 | -337 | -313 |
| | 130 | HR250 | -713 | -675 | -592 | -534 | -490 | -455 | -426 | -396 | -789 | -789 | -697 | -628 | -576 | -536 | -501 | -466 | -789 | -789 | -697 | -628 | -576 | -536 | -501 | -466 |
| | | HR150 | -618 | -568 | -491 | -439 | -400 | -369 | -338 | -314 | -688 | -668 | -578 | -516 | -471 | -434 | -398 | -370 | -688 | -668 | -578 | -516 | -471 | -434 | -398 | -370 |
| | 140 | HR250 | -779 | -753 | -667 | -605 | -558 | -520 | -489 | -462 | -852 | -852 | -782 | -709 | -654 | -609 | -573 | -541 | -852 | -852 | -782 | -709 | -654 | -609 | -573 | -541 |
| | | HR150 | -676 | -635 | -555 | -499 | -457 | -425 | -394 | -366 | -744 | -744 | -650 | -585 | -536 | -498 | -462 | -429 | -744 | -744 | -650 | -585 | -536 | -498 | -462 | -429 |
| | 150 | HR250 | -844 | -830 | -742 | -677 | -627 | -586 | -553 | -524 | -917 | -917 | -870 | -794 | -735 | -687 | -648 | -614 | -917 | -917 | -870 | -794 | -735 | -687 | -648 | -614 |
| | | HR150 | -734 | -703 | -620 | -561 | -516 | -480 | -451 | -422 | -801 | -801 | -726 | -657 | -604 | -563 | -528 | -495 | -801 | -801 | -726 | -657 | -604 | -563 | -528 | -495 |

**Table 2.31: Maximum Downforce (lb.) - Wind Exposure C Condition**

| Exposure C | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >27° TO 45° | 85 | HR250 | 443 | 421 | 452 | 476 | 493 | 513 | 534 | 573 | 443 | 421 | 452 | 476 | 493 | 513 | 534 | 573 | 443 | 421 | 452 | 476 | 493 | 513 | 534 | 573 |
| | | HR150 | 397 | 347 | 368 | 377 | 392 | 408 | 424 | 455 | 397 | 347 | 368 | 377 | 392 | 408 | 424 | 455 | 397 | 347 | 368 | 377 | 392 | 408 | 424 | 455 |
| | 90 | HR250 | 477 | 441 | 470 | 497 | 512 | 530 | 550 | 573 | 477 | 441 | 470 | 497 | 512 | 530 | 550 | 573 | 477 | 441 | 470 | 497 | 512 | 530 | 550 | 573 |
| | | HR150 | 421 | 364 | 383 | 394 | 406 | 421 | 436 | 455 | 421 | 364 | 383 | 394 | 406 | 421 | 436 | 455 | 421 | 364 | 383 | 394 | 406 | 421 | 436 | 455 |
| | 100 | HR250 | 526 | 470 | 495 | 523 | 539 | 555 | 572 | 591 | 504 | 470 | 495 | 523 | 539 | 555 | 572 | 591 | 504 | 470 | 495 | 523 | 539 | 555 | 572 | 591 |
| | | HR150 | 455 | 389 | 405 | 419 | 428 | 440 | 454 | 469 | 437 | 389 | 405 | 419 | 428 | 440 | 454 | 469 | 437 | 389 | 405 | 419 | 428 | 440 | 454 | 469 |
| | 105 | HR250 | 576 | 510 | 528 | 553 | 576 | 588 | 603 | 619 | 558 | 510 | 528 | 553 | 576 | 588 | 603 | 619 | 558 | 510 | 528 | 553 | 576 | 588 | 603 | 619 |
| | | HR150 | 496 | 424 | 433 | 450 | 457 | 467 | 478 | 491 | 485 | 424 | 433 | 450 | 457 | 467 | 478 | 491 | 485 | 424 | 433 | 450 | 457 | 467 | 478 | 491 |
| | 110 | HR250 | 603 | 542 | 547 | 570 | 595 | 608 | 621 | 636 | 579 | 542 | 547 | 570 | 595 | 608 | 621 | 636 | 579 | 542 | 547 | 570 | 595 | 608 | 621 | 636 |
| | | HR150 | 520 | 452 | 450 | 465 | 475 | 483 | 493 | 505 | 503 | 452 | 450 | 465 | 475 | 483 | 493 | 505 | 503 | 452 | 450 | 465 | 475 | 483 | 493 | 505 |
| | 115 | HR250 | 631 | 576 | 567 | 589 | 613 | 631 | 642 | 655 | 603 | 576 | 567 | 589 | 613 | 631 | 642 | 655 | 603 | 576 | 567 | 589 | 613 | 631 | 642 | 655 |
| | | HR150 | 545 | 481 | 468 | 482 | 495 | 501 | 510 | 520 | 525 | 481 | 468 | 482 | 495 | 501 | 510 | 520 | 525 | 481 | 468 | 482 | 495 | 501 | 510 | 520 |
| | 120 | HR250 | 659 | 609 | 588 | 608 | 630 | 653 | 663 | 674 | 625 | 609 | 588 | 608 | 630 | 653 | 663 | 674 | 625 | 609 | 588 | 608 | 630 | 653 | 663 | 674 |
| | | HR150 | 570 | 510 | 485 | 498 | 514 | 519 | 526 | 535 | 545 | 510 | 485 | 498 | 514 | 519 | 526 | 535 | 545 | 510 | 485 | 498 | 514 | 519 | 526 | 535 |
| | 130 | HR250 | 714 | 676 | 630 | 647 | 667 | 688 | 707 | 716 | 671 | 671 | 630 | 647 | 667 | 688 | 707 | 716 | 671 | 671 | 630 | 647 | 667 | 688 | 707 | 716 |
| | | HR150 | 619 | 568 | 522 | 532 | 545 | 557 | 561 | 568 | 585 | 568 | 522 | 532 | 545 | 557 | 561 | 568 | 585 | 568 | 522 | 532 | 545 | 557 | 561 | 568 |
| | 140 | HR250 | 771 | 745 | 673 | 688 | 706 | 724 | 744 | 761 | 720 | 720 | 673 | 688 | 706 | 724 | 744 | 761 | 720 | 720 | 673 | 688 | 706 | 724 | 744 | 761 |
| | | HR150 | 669 | 628 | 560 | 568 | 579 | 592 | 600 | 604 | 628 | 628 | 560 | 568 | 579 | 592 | 600 | 604 | 628 | 628 | 560 | 568 | 579 | 592 | 600 | 604 |
| | 150 | HR250 | 825 | 812 | 726 | 729 | 745 | 762 | 779 | 797 | 765 | 765 | 726 | 729 | 745 | 762 | 779 | 797 | 765 | 765 | 726 | 729 | 745 | 762 | 779 | 797 |
| | | HR150 | 718 | 687 | 606 | 604 | 613 | 624 | 636 | 642 | 669 | 669 | 606 | 604 | 613 | 624 | 636 | 642 | 669 | 669 | 606 | 604 | 613 | 624 | 636 | 642 |

**Table 2.32: Maximum Shear (lb.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| C | 85 | HR250 | 38 | 148 | 218 | 269 | 308 | 342 | 373 | 401 | 38 | 148 | 218 | 269 | 308 | 342 | 373 | 401 | 38 | 148 | 218 | 269 | 308 | 342 | 373 | 401 |
| | | HR150 | 34 | 122 | 178 | 214 | 244 | 271 | 296 | 318 | 34 | 122 | 178 | 214 | 244 | 271 | 296 | 318 | 34 | 122 | 178 | 214 | 244 | 271 | 296 | 318 |
| | 90 | HR250 | 37 | 145 | 215 | 269 | 308 | 342 | 373 | 401 | 37 | 145 | 215 | 269 | 308 | 342 | 373 | 401 | 37 | 145 | 215 | 269 | 308 | 342 | 373 | 401 |
| | | HR150 | 32 | 119 | 175 | 214 | 244 | 271 | 296 | 318 | 32 | 119 | 175 | 214 | 244 | 271 | 296 | 318 | 32 | 119 | 175 | 214 | 244 | 271 | 296 | 318 |
| | 100 | HR250 | 36 | 140 | 211 | 267 | 308 | 342 | 373 | 401 | 34 | 140 | 211 | 267 | 308 | 342 | 373 | 401 | 34 | 140 | 211 | 267 | 308 | 342 | 373 | 401 |
| | | HR150 | 31 | 116 | 172 | 214 | 244 | 271 | 296 | 318 | 30 | 116 | 172 | 214 | 244 | 271 | 296 | 318 | 30 | 116 | 172 | 214 | 244 | 271 | 296 | 318 |
| | 105 | HR250 | 33 | 135 | 205 | 261 | 308 | 342 | 373 | 401 | 32 | 135 | 205 | 261 | 308 | 342 | 373 | 401 | 32 | 135 | 205 | 261 | 308 | 342 | 373 | 401 |
| | | HR150 | 29 | 112 | 168 | 213 | 244 | 271 | 296 | 318 | 28 | 112 | 168 | 213 | 244 | 271 | 296 | 318 | 28 | 112 | 168 | 213 | 244 | 271 | 296 | 318 |
| | 110 | HR250 | 32 | 132 | 202 | 258 | 306 | 342 | 373 | 401 | 31 | 132 | 202 | 258 | 306 | 342 | 373 | 401 | 31 | 132 | 202 | 258 | 306 | 342 | 373 | 401 |
| | | HR150 | 28 | 110 | 166 | 210 | 244 | 271 | 296 | 318 | 27 | 110 | 166 | 210 | 244 | 271 | 296 | 318 | 27 | 110 | 166 | 210 | 244 | 271 | 296 | 318 |
| | 115 | HR250 | 31 | 129 | 198 | 254 | 302 | 342 | 373 | 401 | 30 | 129 | 198 | 254 | 302 | 342 | 373 | 401 | 30 | 129 | 198 | 254 | 302 | 342 | 373 | 401 |
| | | HR150 | 27 | 108 | 163 | 208 | 244 | 271 | 296 | 318 | 26 | 108 | 163 | 208 | 244 | 271 | 296 | 318 | 26 | 108 | 163 | 208 | 244 | 271 | 296 | 318 |
| | 120 | HR250 | 30 | 126 | 195 | 251 | 299 | 342 | 373 | 401 | 28 | 126 | 195 | 251 | 299 | 342 | 373 | 401 | 28 | 126 | 195 | 251 | 299 | 342 | 373 | 401 |
| | | HR150 | 26 | 106 | 161 | 205 | 244 | 271 | 296 | 318 | 25 | 106 | 161 | 205 | 244 | 271 | 296 | 318 | 25 | 106 | 161 | 205 | 244 | 271 | 296 | 318 |
| | 130 | HR250 | 28 | 120 | 188 | 244 | 292 | 335 | 373 | 401 | 26 | 120 | 188 | 244 | 292 | 335 | 373 | 401 | 26 | 120 | 188 | 244 | 292 | 335 | 373 | 401 |
| | | HR150 | 24 | 101 | 156 | 201 | 239 | 271 | 296 | 318 | 23 | 101 | 156 | 201 | 239 | 271 | 296 | 318 | 23 | 101 | 156 | 201 | 239 | 271 | 296 | 318 |
| | 140 | HR250 | 26 | 115 | 182 | 237 | 285 | 328 | 367 | 401 | 24 | 111 | 182 | 237 | 285 | 328 | 367 | 401 | 24 | 111 | 182 | 237 | 285 | 328 | 367 | 401 |
| | | HR150 | 23 | 97 | 151 | 196 | 234 | 268 | 296 | 318 | 21 | 97 | 151 | 196 | 234 | 268 | 296 | 318 | 21 | 97 | 151 | 196 | 234 | 268 | 296 | 318 |
| | 150 | HR250 | 25 | 110 | 175 | 230 | 278 | 321 | 360 | 396 | 23 | 104 | 175 | 230 | 278 | 321 | 360 | 396 | 23 | 104 | 175 | 230 | 278 | 321 | 360 | 396 |
| | | HR150 | 21 | 93 | 147 | 191 | 229 | 263 | 294 | 318 | 20 | 91 | 147 | 191 | 229 | 263 | 294 | 318 | 20 | 91 | 147 | 191 | 229 | 263 | 294 | 318 |

ROOFS >27° TO 45°

**Table 2.33: Maximum Span Length (in.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 98 | 85 | 71 | 62 | 55 | 49 | 45 | 42 | 98 | 85 | 71 | 62 | 55 | 49 | 45 | 42 | 98 | 85 | 71 | 62 | 55 | 49 | 45 | 42 |
| | | HR150 | 86 | 70 | 58 | 49 | 43 | 39 | 36 | 33 | 86 | 70 | 58 | 49 | 43 | 39 | 36 | 33 | 86 | 70 | 58 | 49 | 43 | 39 | 36 | 33 |
| | 90 | HR250 | 96 | 83 | 70 | 62 | 55 | 49 | 45 | 42 | 94 | 83 | 70 | 62 | 55 | 49 | 45 | 42 | 94 | 83 | 70 | 62 | 55 | 49 | 45 | 42 |
| | | HR150 | 82 | 69 | 57 | 49 | 43 | 39 | 36 | 33 | 81 | 69 | 57 | 49 | 43 | 39 | 36 | 33 | 81 | 69 | 57 | 49 | 43 | 39 | 36 | 33 |
| | 100 | HR250 | 90 | 80 | 68 | 60 | 55 | 49 | 45 | 42 | 85 | 80 | 68 | 60 | 55 | 49 | 45 | 42 | 85 | 80 | 68 | 60 | 55 | 49 | 45 | 42 |
| | | HR150 | 78 | 66 | 56 | 49 | 43 | 39 | 36 | 33 | 74 | 66 | 56 | 49 | 43 | 39 | 36 | 33 | 74 | 66 | 56 | 49 | 43 | 39 | 36 | 33 |
| | 105 | HR250 | 84 | 77 | 66 | 59 | 54 | 49 | 45 | 42 | 80 | 77 | 66 | 59 | 54 | 49 | 45 | 42 | 80 | 77 | 66 | 59 | 54 | 49 | 45 | 42 |
| | | HR150 | 73 | 64 | 54 | 48 | 43 | 39 | 36 | 33 | 70 | 64 | 54 | 48 | 43 | 39 | 36 | 33 | 70 | 64 | 54 | 48 | 43 | 39 | 36 | 33 |
| | 110 | HR250 | 81 | 75 | 65 | 58 | 53 | 49 | 45 | 42 | 77 | 75 | 65 | 58 | 53 | 49 | 45 | 42 | 77 | 75 | 65 | 58 | 53 | 49 | 45 | 42 |
| | | HR150 | 70 | 63 | 54 | 48 | 43 | 39 | 36 | 33 | 67 | 63 | 54 | 48 | 43 | 39 | 36 | 33 | 67 | 63 | 54 | 48 | 43 | 39 | 36 | 33 |
| | 115 | HR250 | 78 | 73 | 64 | 57 | 52 | 49 | 45 | 42 | 74 | 73 | 64 | 57 | 52 | 49 | 45 | 42 | 74 | 73 | 64 | 57 | 52 | 49 | 45 | 42 |
| | | HR150 | 67 | 61 | 53 | 47 | 43 | 39 | 36 | 33 | 64 | 61 | 53 | 47 | 43 | 39 | 36 | 33 | 64 | 61 | 53 | 47 | 43 | 39 | 36 | 33 |
| | 120 | HR250 | 75 | 71 | 62 | 56 | 52 | 48 | 45 | 42 | 71 | 71 | 62 | 56 | 52 | 48 | 45 | 42 | 71 | 71 | 62 | 56 | 52 | 48 | 45 | 42 |
| | | HR150 | 65 | 60 | 52 | 46 | 42 | 39 | 36 | 33 | 62 | 60 | 52 | 46 | 42 | 39 | 36 | 33 | 62 | 60 | 52 | 46 | 42 | 39 | 36 | 33 |
| | 130 | HR250 | 70 | 68 | 60 | 55 | 50 | 47 | 44 | 42 | 65 | 65 | 60 | 55 | 50 | 47 | 44 | 42 | 65 | 65 | 60 | 55 | 50 | 47 | 44 | 42 |
| | | HR150 | 61 | 57 | 50 | 45 | 41 | 38 | 36 | 33 | 57 | 57 | 50 | 45 | 41 | 38 | 36 | 33 | 57 | 57 | 50 | 45 | 41 | 38 | 36 | 33 |
| | 140 | HR250 | 65 | 65 | 58 | 53 | 49 | 46 | 43 | 41 | 61 | 61 | 58 | 53 | 49 | 46 | 43 | 41 | 61 | 61 | 58 | 53 | 49 | 46 | 43 | 41 |
| | | HR150 | 57 | 55 | 48 | 44 | 40 | 38 | 35 | 33 | 53 | 53 | 48 | 44 | 40 | 38 | 35 | 33 | 53 | 53 | 48 | 44 | 40 | 38 | 35 | 33 |
| | 150 | HR250 | 61 | 61 | 56 | 51 | 48 | 45 | 42 | 40 | 57 | 57 | 56 | 51 | 48 | 45 | 42 | 40 | 57 | 57 | 56 | 51 | 48 | 45 | 42 | 40 |
| | | HR150 | 53 | 52 | 47 | 43 | 39 | 37 | 35 | 33 | 50 | 50 | 47 | 43 | 39 | 37 | 35 | 33 | 50 | 50 | 47 | 43 | 39 | 37 | 35 | 33 |

ROOFS >27° TO 45°

**Table 2.34: Maximum Uplift (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| D | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >27° TO 45° | 85 | HR250 | -454 | -393 | -329 | -289 | -253 | -228 | -209 | -194 | -537 | -464 | -389 | -341 | -299 | -269 | -247 | -229 | -537 | -464 | -389 | -341 | -299 | -269 | -247 | -229 |
| | | HR150 | -398 | -325 | -269 | -229 | -201 | -181 | -166 | -154 | -470 | -383 | -318 | -271 | -237 | -214 | -196 | -182 | -470 | -383 | -318 | -271 | -237 | -214 | -196 | -182 |
| | 90 | HR250 | -502 | -434 | -366 | -323 | -286 | -258 | -236 | -220 | -578 | -510 | -430 | -379 | -336 | -303 | -278 | -258 | -578 | -510 | -430 | -379 | -336 | -303 | -278 | -258 |
| | | HR150 | -432 | -360 | -300 | -260 | -227 | -205 | -188 | -174 | -501 | -422 | -352 | -305 | -267 | -240 | -220 | -205 | -501 | -422 | -352 | -305 | -267 | -240 | -220 | -205 |
| | 100 | HR250 | -590 | -523 | -446 | -395 | -357 | -322 | -295 | -274 | -650 | -614 | -524 | -464 | -420 | -378 | -346 | -322 | -650 | -614 | -524 | -464 | -420 | -378 | -346 | -322 |
| | | HR150 | -509 | -435 | -366 | -322 | -283 | -255 | -234 | -217 | -565 | -511 | -430 | -378 | -333 | -300 | -275 | -255 | -565 | -511 | -430 | -378 | -333 | -300 | -275 | -255 |
| | 105 | HR250 | -608 | -554 | -478 | -426 | -388 | -355 | -326 | -303 | -686 | -653 | -563 | -502 | -458 | -419 | -384 | -357 | -686 | -653 | -563 | -502 | -458 | -419 | -384 | -357 |
| | | HR150 | -525 | -463 | -394 | -348 | -313 | -282 | -259 | -240 | -598 | -546 | -464 | -411 | -369 | -333 | -305 | -283 | -598 | -546 | -464 | -411 | -369 | -333 | -305 | -283 |
| | 110 | HR250 | -647 | -598 | -519 | -464 | -424 | -393 | -360 | -334 | -722 | -703 | -610 | -546 | -499 | -462 | -424 | -393 | -722 | -703 | -610 | -546 | -499 | -462 | -424 | -393 |
| | | HR150 | -560 | -501 | -428 | -380 | -346 | -312 | -286 | -265 | -629 | -589 | -504 | -447 | -407 | -367 | -336 | -312 | -629 | -589 | -504 | -447 | -407 | -367 | -336 | -312 |
| | 115 | HR250 | -682 | -639 | -557 | -501 | -459 | -426 | -394 | -366 | -757 | -750 | -654 | -588 | -538 | -500 | -463 | -430 | -757 | -750 | -654 | -588 | -538 | -500 | -463 | -430 |
| | | HR150 | -590 | -536 | -461 | -411 | -374 | -341 | -313 | -291 | -660 | -629 | -541 | -483 | -439 | -401 | -368 | -341 | -660 | -629 | -541 | -483 | -439 | -401 | -368 | -341 |
| | 120 | HR250 | -718 | -680 | -597 | -538 | -494 | -459 | -430 | -400 | -793 | -793 | -702 | -633 | -581 | -540 | -506 | -470 | -793 | -793 | -702 | -633 | -581 | -540 | -506 | -470 |
| | | HR150 | -622 | -572 | -495 | -443 | -404 | -373 | -342 | -317 | -692 | -672 | -582 | -520 | -475 | -438 | -402 | -373 | -692 | -672 | -582 | -520 | -475 | -438 | -402 | -373 |
| | 130 | HR250 | -789 | -764 | -678 | -616 | -568 | -530 | -498 | -472 | -863 | -863 | -797 | -724 | -668 | -623 | -586 | -555 | -863 | -863 | -797 | -724 | -668 | -623 | -586 | -555 |
| | | HR150 | -685 | -645 | -565 | -508 | -466 | -433 | -403 | -374 | -754 | -754 | -664 | -598 | -548 | -509 | -474 | -440 | -754 | -754 | -664 | -598 | -548 | -509 | -474 | -440 |
| | 140 | HR250 | -860 | -849 | -761 | -695 | -644 | -603 | -569 | -540 | -933 | -933 | -891 | -814 | -754 | -706 | -666 | -632 | -933 | -933 | -891 | -814 | -754 | -706 | -666 | -632 |
| | | HR150 | -748 | -719 | -636 | -576 | -530 | -494 | -464 | -436 | -815 | -815 | -745 | -674 | -621 | -579 | -544 | -511 | -815 | -815 | -745 | -674 | -621 | -579 | -544 | -511 |
| | 150 | HR250 | -924 | -924 | -843 | -775 | -722 | -678 | -641 | -609 | -1002 | -1002 | -988 | -908 | -845 | -794 | -751 | -714 | -1002 | -1002 | -988 | -908 | -845 | -794 | -751 | -714 |
| | | HR150 | -808 | -793 | -707 | -644 | -596 | -557 | -525 | -497 | -877 | -877 | -829 | -755 | -698 | -652 | -615 | -583 | -877 | -877 | -829 | -755 | -698 | -652 | -615 | -583 |

**Table 2.35: Maximum Downforce (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 496 | 452 | 480 | 509 | 522 | 540 | 558 | 578 | 496 | 452 | 480 | 509 | 522 | 540 | 558 | 578 | 496 | 452 | 480 | 509 | 522 | 540 | 558 | 578 |
| | | HR150 | 434 | 374 | 391 | 404 | 415 | 428 | 443 | 459 | 434 | 374 | 391 | 404 | 415 | 428 | 443 | 459 | 434 | 374 | 391 | 404 | 415 | 428 | 443 | 459 |
| | 90 | HR250 | 535 | 475 | 499 | 527 | 544 | 559 | 576 | 594 | 525 | 475 | 499 | 527 | 544 | 559 | 576 | 594 | 525 | 475 | 499 | 527 | 544 | 559 | 576 | 594 |
| | | HR150 | 461 | 393 | 409 | 424 | 432 | 444 | 458 | 472 | 455 | 393 | 409 | 424 | 432 | 444 | 458 | 472 | 455 | 393 | 409 | 424 | 432 | 444 | 458 | 472 |
| | 100 | HR250 | 577 | 511 | 528 | 553 | 577 | 589 | 603 | 620 | 541 | 511 | 528 | 553 | 577 | 589 | 603 | 620 | 541 | 511 | 528 | 553 | 577 | 589 | 603 | 620 |
| | | HR150 | 497 | 425 | 434 | 451 | 458 | 467 | 479 | 492 | 470 | 425 | 434 | 451 | 458 | 467 | 479 | 492 | 470 | 425 | 434 | 451 | 458 | 467 | 479 | 492 |
| | 105 | HR250 | 628 | 572 | 565 | 587 | 611 | 628 | 640 | 653 | 601 | 572 | 565 | 587 | 611 | 628 | 640 | 653 | 601 | 572 | 565 | 587 | 611 | 628 | 640 | 653 |
| | | HR150 | 543 | 478 | 466 | 480 | 493 | 499 | 508 | 518 | 523 | 478 | 466 | 480 | 493 | 499 | 508 | 518 | 523 | 478 | 466 | 480 | 493 | 499 | 508 | 518 |
| | 110 | HR250 | 657 | 607 | 587 | 607 | 629 | 652 | 661 | 673 | 623 | 607 | 587 | 607 | 629 | 652 | 661 | 673 | 623 | 607 | 587 | 607 | 629 | 652 | 661 | 673 |
| | | HR150 | 568 | 508 | 484 | 497 | 513 | 518 | 525 | 534 | 543 | 508 | 484 | 497 | 513 | 518 | 525 | 534 | 543 | 508 | 484 | 497 | 513 | 518 | 525 | 534 |
| | 115 | HR250 | 688 | 645 | 610 | 629 | 650 | 671 | 686 | 696 | 651 | 645 | 610 | 629 | 650 | 671 | 686 | 696 | 651 | 645 | 610 | 629 | 650 | 671 | 686 | 696 |
| | | HR150 | 596 | 541 | 505 | 516 | 530 | 539 | 544 | 553 | 567 | 541 | 505 | 516 | 530 | 539 | 544 | 553 | 567 | 541 | 505 | 516 | 530 | 539 | 544 | 553 |
| | 120 | HR250 | 718 | 681 | 633 | 650 | 670 | 690 | 710 | 719 | 675 | 675 | 633 | 650 | 670 | 690 | 710 | 719 | 675 | 675 | 633 | 650 | 670 | 690 | 710 | 719 |
| | | HR150 | 622 | 572 | 525 | 534 | 547 | 560 | 564 | 571 | 589 | 572 | 525 | 534 | 547 | 560 | 564 | 571 | 589 | 572 | 525 | 534 | 547 | 560 | 564 | 571 |
| | 130 | HR250 | 779 | 754 | 680 | 694 | 711 | 730 | 749 | 768 | 725 | 725 | 680 | 694 | 711 | 730 | 749 | 768 | 725 | 725 | 680 | 694 | 711 | 730 | 749 | 768 |
| | | HR150 | 676 | 637 | 566 | 573 | 584 | 596 | 606 | 609 | 633 | 633 | 566 | 573 | 584 | 596 | 606 | 609 | 633 | 633 | 566 | 573 | 584 | 596 | 606 | 609 |
| | 140 | HR250 | 840 | 830 | 743 | 740 | 755 | 772 | 789 | 807 | 778 | 778 | 743 | 740 | 755 | 772 | 789 | 807 | 778 | 778 | 743 | 740 | 755 | 772 | 789 | 807 |
| | | HR150 | 731 | 703 | 621 | 613 | 622 | 632 | 644 | 652 | 680 | 680 | 621 | 613 | 622 | 632 | 644 | 652 | 680 | 680 | 621 | 613 | 622 | 632 | 644 | 652 |
| | 150 | HR250 | 894 | 894 | 816 | 786 | 799 | 814 | 829 | 846 | 828 | 828 | 816 | 786 | 799 | 814 | 829 | 846 | 828 | 828 | 816 | 786 | 799 | 814 | 829 | 846 |
| | | HR150 | 782 | 767 | 684 | 654 | 660 | 669 | 679 | 690 | 724 | 724 | 684 | 654 | 660 | 669 | 679 | 690 | 724 | 724 | 684 | 654 | 660 | 669 | 679 | 690 |

ROOFS >27° TO 45°

**Table 2.36: Maximum Shear (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 36 | 143 | 213 | 269 | 308 | 342 | 373 | 401 | 36 | 143 | 213 | 269 | 308 | 342 | 373 | 401 | 36 | 143 | 213 | 269 | 308 | 342 | 373 | 401 |
| | | HR150 | 32 | 118 | 174 | 214 | 244 | 271 | 296 | 318 | 32 | 118 | 174 | 214 | 244 | 271 | 296 | 318 | 32 | 118 | 174 | 214 | 244 | 271 | 296 | 318 |
| | 90 | HR250 | 35 | 140 | 210 | 266 | 308 | 342 | 373 | 401 | 35 | 140 | 210 | 266 | 308 | 342 | 373 | 401 | 35 | 140 | 210 | 266 | 308 | 342 | 373 | 401 |
| | | HR150 | 30 | 116 | 172 | 214 | 244 | 271 | 296 | 318 | 30 | 116 | 172 | 214 | 244 | 271 | 296 | 318 | 30 | 116 | 172 | 214 | 244 | 271 | 296 | 318 |
| | 100 | HR250 | 33 | 135 | 205 | 261 | 308 | 342 | 373 | 401 | 31 | 135 | 205 | 261 | 308 | 342 | 373 | 401 | 31 | 135 | 205 | 261 | 308 | 342 | 373 | 401 |
| | | HR150 | 29 | 112 | 168 | 213 | 244 | 271 | 296 | 318 | 27 | 112 | 168 | 213 | 244 | 271 | 296 | 318 | 27 | 112 | 168 | 213 | 244 | 271 | 296 | 318 |
| | 105 | HR250 | 31 | 129 | 198 | 255 | 303 | 342 | 373 | 401 | 30 | 129 | 198 | 255 | 303 | 342 | 373 | 401 | 30 | 129 | 198 | 255 | 303 | 342 | 373 | 401 |
| | | HR150 | 27 | 108 | 164 | 208 | 244 | 271 | 296 | 318 | 26 | 108 | 164 | 208 | 244 | 271 | 296 | 318 | 26 | 108 | 164 | 208 | 244 | 271 | 296 | 318 |
| | 110 | HR250 | 30 | 126 | 195 | 251 | 299 | 342 | 373 | 401 | 28 | 126 | 195 | 251 | 299 | 342 | 373 | 401 | 28 | 126 | 195 | 251 | 299 | 342 | 373 | 401 |
| | | HR150 | 26 | 106 | 161 | 206 | 244 | 271 | 296 | 318 | 25 | 106 | 161 | 206 | 244 | 271 | 296 | 318 | 25 | 106 | 161 | 206 | 244 | 271 | 296 | 318 |
| | 115 | HR250 | 29 | 123 | 191 | 247 | 295 | 338 | 373 | 401 | 27 | 123 | 191 | 247 | 295 | 338 | 373 | 401 | 27 | 123 | 191 | 247 | 295 | 338 | 373 | 401 |
| | | HR150 | 25 | 103 | 158 | 203 | 241 | 271 | 296 | 318 | 24 | 103 | 158 | 203 | 241 | 271 | 296 | 318 | 24 | 103 | 158 | 203 | 241 | 271 | 296 | 318 |
| | 120 | HR250 | 28 | 120 | 188 | 243 | 292 | 334 | 373 | 401 | 26 | 119 | 188 | 243 | 292 | 334 | 373 | 401 | 26 | 119 | 188 | 243 | 292 | 334 | 373 | 401 |
| | | HR150 | 24 | 101 | 156 | 200 | 238 | 271 | 296 | 318 | 23 | 101 | 156 | 200 | 238 | 271 | 296 | 318 | 23 | 101 | 156 | 200 | 238 | 271 | 296 | 318 |
| | 130 | HR250 | 26 | 114 | 181 | 236 | 284 | 327 | 366 | 401 | 24 | 110 | 181 | 236 | 284 | 327 | 366 | 401 | 24 | 110 | 181 | 236 | 284 | 327 | 366 | 401 |
| | | HR150 | 22 | 97 | 150 | 195 | 233 | 267 | 296 | 318 | 21 | 96 | 150 | 195 | 233 | 267 | 296 | 318 | 21 | 96 | 150 | 195 | 233 | 267 | 296 | 318 |
| | 140 | HR250 | 24 | 109 | 174 | 229 | 276 | 319 | 358 | 394 | 22 | 102 | 174 | 229 | 276 | 319 | 358 | 394 | 22 | 102 | 174 | 229 | 276 | 319 | 358 | 394 |
| | | HR150 | 21 | 92 | 145 | 189 | 228 | 262 | 292 | 318 | 20 | 89 | 145 | 189 | 228 | 262 | 292 | 318 | 20 | 89 | 145 | 189 | 228 | 262 | 292 | 318 |
| | 150 | HR250 | 23 | 103 | 168 | 222 | 269 | 312 | 351 | 386 | 21 | 95 | 168 | 222 | 269 | 312 | 351 | 386 | 21 | 95 | 168 | 222 | 269 | 312 | 351 | 386 |
| | | HR150 | 20 | 88 | 141 | 184 | 222 | 256 | 287 | 315 | 18 | 84 | 141 | 184 | 222 | 256 | 287 | 315 | 18 | 84 | 141 | 184 | 222 | 256 | 287 | 315 |

ROOFS >27° TO 45°

**Table 2.37: Maximum Span Length (in.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >45° TO 55° | **85** | HR250 | 108 | 88 | 71 | 59 | 52 | 47 | 43 | 40 | 108 | 88 | 71 | 59 | 52 | 47 | 43 | 40 | 108 | 88 | 71 | 59 | 52 | 47 | 43 | 40 |
| | | HR150 | 97 | 71 | 55 | 46 | 40 | 36 | 33 | 31 | 97 | 71 | 55 | 46 | 40 | 36 | 33 | 31 | 97 | 71 | 55 | 46 | 40 | 36 | 33 | 31 |
| | **90** | HR250 | 106 | 87 | 71 | 59 | 52 | 47 | 43 | 40 | 106 | 87 | 71 | 59 | 52 | 47 | 43 | 40 | 106 | 87 | 71 | 59 | 52 | 47 | 43 | 40 |
| | | HR150 | 94 | 70 | 55 | 46 | 40 | 36 | 33 | 31 | 94 | 70 | 55 | 46 | 40 | 36 | 33 | 31 | 94 | 70 | 55 | 46 | 40 | 36 | 33 | 31 |
| | **100** | HR250 | 104 | 86 | 71 | 59 | 52 | 47 | 43 | 40 | 104 | 86 | 71 | 59 | 52 | 47 | 43 | 40 | 104 | 86 | 71 | 59 | 52 | 47 | 43 | 40 |
| | | HR150 | 91 | 69 | 55 | 46 | 40 | 36 | 33 | 31 | 91 | 69 | 55 | 46 | 40 | 36 | 33 | 31 | 91 | 69 | 55 | 46 | 40 | 36 | 33 | 31 |
| | **105** | HR250 | 100 | 83 | 69 | 59 | 52 | 47 | 43 | 40 | 99 | 83 | 69 | 59 | 52 | 47 | 43 | 40 | 99 | 83 | 69 | 59 | 52 | 47 | 43 | 40 |
| | | HR150 | 87 | 68 | 55 | 46 | 40 | 36 | 33 | 31 | 85 | 68 | 55 | 46 | 40 | 36 | 33 | 31 | 85 | 68 | 55 | 46 | 40 | 36 | 33 | 31 |
| | **110** | HR250 | 96 | 81 | 68 | 59 | 52 | 47 | 43 | 40 | 92 | 81 | 68 | 59 | 52 | 47 | 43 | 40 | 92 | 81 | 68 | 59 | 52 | 47 | 43 | 40 |
| | | HR150 | 82 | 66 | 55 | 46 | 40 | 36 | 33 | 31 | 80 | 66 | 55 | 46 | 40 | 36 | 33 | 31 | 80 | 66 | 55 | 46 | 40 | 36 | 33 | 31 |
| | **115** | HR250 | 91 | 79 | 66 | 59 | 52 | 47 | 43 | 40 | 86 | 79 | 66 | 59 | 52 | 47 | 43 | 40 | 86 | 79 | 66 | 59 | 52 | 47 | 43 | 40 |
| | | HR150 | 78 | 64 | 54 | 46 | 40 | 36 | 33 | 31 | 75 | 64 | 54 | 46 | 40 | 36 | 33 | 31 | 75 | 64 | 54 | 46 | 40 | 36 | 33 | 31 |
| | **120** | HR250 | 87 | 76 | 65 | 58 | 52 | 47 | 43 | 40 | 81 | 76 | 65 | 58 | 52 | 47 | 43 | 40 | 81 | 76 | 65 | 58 | 52 | 47 | 43 | 40 |
| | | HR150 | 74 | 63 | 53 | 46 | 40 | 36 | 33 | 31 | 70 | 63 | 53 | 46 | 40 | 36 | 33 | 31 | 70 | 63 | 53 | 46 | 40 | 36 | 33 | 31 |
| | **130** | HR250 | 82 | 74 | 64 | 57 | 51 | 47 | 43 | 40 | 76 | 74 | 64 | 57 | 51 | 47 | 43 | 40 | 76 | 74 | 64 | 57 | 51 | 47 | 43 | 40 |
| | | HR150 | 71 | 61 | 52 | 46 | 40 | 36 | 33 | 31 | 66 | 61 | 52 | 46 | 40 | 36 | 33 | 31 | 66 | 61 | 52 | 46 | 40 | 36 | 33 | 31 |
| | **140** | HR250 | 78 | 72 | 62 | 56 | 51 | 47 | 43 | 40 | 72 | 72 | 62 | 56 | 51 | 47 | 43 | 40 | 72 | 72 | 62 | 56 | 51 | 47 | 43 | 40 |
| | | HR150 | 68 | 60 | 51 | 45 | 40 | 36 | 33 | 31 | 63 | 60 | 51 | 45 | 40 | 36 | 33 | 31 | 63 | 60 | 51 | 45 | 40 | 36 | 33 | 31 |
| | **150** | HR250 | 72 | 68 | 59 | 54 | 49 | 46 | 43 | 40 | 65 | 65 | 59 | 54 | 49 | 46 | 43 | 40 | 65 | 65 | 59 | 54 | 49 | 46 | 43 | 40 |
| | | HR150 | 62 | 57 | 49 | 44 | 40 | 36 | 33 | 31 | 57 | 57 | 49 | 44 | 40 | 36 | 33 | 31 | 57 | 57 | 49 | 44 | 40 | 36 | 33 | 31 |

**Table 2.38: Maximum Uplift (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| B | 85 | HR250 | -325 | -265 | -213 | -178 | -156 | -140 | -128 | -119 | -407 | -332 | -267 | -223 | -195 | -175 | -161 | -149 | -407 | -332 | -267 | -223 | -195 | -175 | -161 | -149 |
| | | HR150 | -290 | -214 | -166 | -139 | -121 | -109 | -100 | -93 | -363 | -267 | -208 | -173 | -152 | -137 | -125 | -116 | -363 | -267 | -208 | -173 | -152 | -137 | -125 | -116 |
| | 90 | HR250 | -351 | -288 | -235 | -196 | -171 | -154 | -141 | -131 | -440 | -361 | -294 | -245 | -215 | -193 | -177 | -165 | -440 | -361 | -294 | -245 | -215 | -193 | -177 | -165 |
| | | HR150 | -311 | -232 | -183 | -153 | -134 | -120 | -110 | -102 | -390 | -291 | -229 | -191 | -167 | -151 | -138 | -128 | -390 | -291 | -229 | -191 | -167 | -151 | -138 | -128 |
| | 100 | HR250 | -377 | -311 | -256 | -214 | -188 | -169 | -155 | -144 | -472 | -389 | -320 | -268 | -235 | -211 | -194 | -180 | -472 | -389 | -320 | -268 | -235 | -211 | -194 | -180 |
| | | HR150 | -331 | -252 | -200 | -167 | -146 | -132 | -121 | -112 | -414 | -315 | -251 | -209 | -183 | -165 | -151 | -140 | -414 | -315 | -251 | -209 | -183 | -165 | -151 | -140 |
| ROOFS >45° TO 55° | 105 | HR250 | -431 | -359 | -297 | -254 | -223 | -201 | -184 | -171 | -529 | -447 | -371 | -317 | -278 | -250 | -229 | -213 | -529 | -447 | -371 | -317 | -278 | -250 | -229 | -213 |
| | | HR150 | -372 | -291 | -238 | -198 | -174 | -156 | -143 | -133 | -456 | -363 | -296 | -247 | -216 | -195 | -179 | -166 | -456 | -363 | -296 | -247 | -216 | -195 | -179 | -166 |
| | 110 | HR250 | -482 | -406 | -340 | -297 | -260 | -234 | -215 | -199 | -576 | -507 | -424 | -370 | -324 | -292 | -268 | -249 | -576 | -507 | -424 | -370 | -324 | -292 | -268 | -249 |
| | | HR150 | -412 | -331 | -273 | -231 | -202 | -182 | -167 | -155 | -498 | -413 | -341 | -289 | -253 | -227 | -209 | -194 | -498 | -413 | -341 | -289 | -253 | -227 | -209 | -194 |
| | 115 | HR250 | -529 | -456 | -385 | -339 | -301 | -271 | -248 | -230 | -623 | -568 | -479 | -422 | -374 | -337 | -309 | -287 | -623 | -568 | -479 | -422 | -374 | -337 | -309 | -287 |
| | | HR150 | -452 | -374 | -311 | -268 | -234 | -211 | -193 | -180 | -539 | -465 | -387 | -333 | -292 | -262 | -241 | -224 | -539 | -465 | -387 | -333 | -292 | -262 | -241 | -224 |
| | 120 | HR250 | -574 | -507 | -432 | -382 | -344 | -310 | -284 | -264 | -669 | -630 | -536 | -475 | -428 | -385 | -353 | -328 | -669 | -630 | -536 | -475 | -428 | -385 | -353 | -328 |
| | | HR150 | -493 | -417 | -349 | -306 | -268 | -241 | -221 | -206 | -580 | -518 | -434 | -381 | -333 | -300 | -275 | -256 | -580 | -518 | -434 | -381 | -333 | -300 | -275 | -256 |
| | 130 | HR250 | -619 | -558 | -478 | -426 | -387 | -351 | -322 | -299 | -714 | -692 | -594 | -528 | -481 | -436 | -400 | -371 | -714 | -692 | -594 | -528 | -481 | -436 | -400 | -371 |
| | | HR150 | -532 | -460 | -389 | -343 | -304 | -273 | -251 | -233 | -621 | -571 | -483 | -425 | -377 | -340 | -311 | -289 | -621 | -571 | -483 | -425 | -377 | -340 | -311 | -289 |
| | 140 | HR250 | -664 | -609 | -526 | -470 | -429 | -395 | -362 | -336 | -760 | -755 | -653 | -584 | -532 | -490 | -449 | -417 | -760 | -755 | -653 | -584 | -532 | -490 | -449 | -417 |
| | | HR150 | -572 | -504 | -429 | -380 | -342 | -308 | -282 | -262 | -661 | -625 | -532 | -471 | -424 | -382 | -350 | -325 | -661 | -625 | -532 | -471 | -424 | -382 | -350 | -325 |
| | 150 | HR250 | -753 | -713 | -625 | -563 | -517 | -481 | -450 | -418 | -851 | -851 | -774 | -698 | -640 | -595 | -557 | -517 | -851 | -851 | -774 | -698 | -640 | -595 | -557 | -517 |
| | | HR150 | -651 | -594 | -513 | -457 | -417 | -382 | -350 | -326 | -742 | -736 | -635 | -567 | -516 | -473 | -434 | -403 | -742 | -736 | -635 | -567 | -516 | -473 | -434 | -403 |

**Table 2.39: Maximum Downforce (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >45° TO 55° | **85** | HR250 | 369 | 333 | 347 | 355 | 368 | 383 | 398 | 427 | 369 | 333 | 347 | 355 | 368 | 383 | 398 | 427 | 369 | 333 | 347 | 355 | 368 | 383 | 398 | 427 |
| | | HR150 | 330 | 268 | 270 | 276 | 287 | 298 | 310 | 333 | 330 | 268 | 270 | 276 | 287 | 298 | 310 | 333 | 330 | 268 | 270 | 276 | 287 | 298 | 310 | 333 |
| | **90** | HR250 | 392 | 347 | 361 | 367 | 378 | 392 | 407 | 427 | 392 | 347 | 361 | 367 | 378 | 392 | 407 | 427 | 392 | 347 | 361 | 367 | 378 | 392 | 407 | 427 |
| | | HR150 | 347 | 280 | 281 | 286 | 295 | 306 | 317 | 333 | 347 | 280 | 281 | 286 | 295 | 306 | 317 | 333 | 347 | 280 | 281 | 286 | 295 | 306 | 317 | 333 |
| | **100** | HR250 | 414 | 360 | 374 | 380 | 390 | 403 | 416 | 431 | 414 | 360 | 374 | 380 | 390 | 403 | 416 | 431 | 414 | 360 | 374 | 380 | 390 | 403 | 416 | 431 |
| | | HR150 | 364 | 292 | 293 | 296 | 304 | 314 | 324 | 336 | 364 | 292 | 293 | 296 | 304 | 314 | 324 | 336 | 364 | 292 | 293 | 296 | 304 | 314 | 324 | 336 |
| | **105** | HR250 | 462 | 389 | 399 | 407 | 414 | 424 | 436 | 449 | 455 | 389 | 399 | 407 | 414 | 424 | 436 | 449 | 455 | 389 | 399 | 407 | 414 | 424 | 436 | 449 |
| | | HR150 | 399 | 316 | 319 | 317 | 322 | 331 | 340 | 350 | 392 | 316 | 319 | 317 | 322 | 331 | 340 | 350 | 392 | 316 | 319 | 317 | 322 | 331 | 340 | 350 |
| | **110** | HR250 | 508 | 428 | 425 | 437 | 440 | 448 | 458 | 469 | 486 | 428 | 425 | 437 | 440 | 448 | 458 | 469 | 486 | 428 | 425 | 437 | 440 | 448 | 458 | 469 |
| | | HR150 | 433 | 349 | 342 | 341 | 343 | 349 | 357 | 366 | 420 | 349 | 342 | 341 | 343 | 349 | 357 | 366 | 420 | 349 | 342 | 341 | 343 | 349 | 357 | 366 |
| | **115** | HR250 | 546 | 472 | 452 | 463 | 468 | 473 | 481 | 491 | 517 | 472 | 452 | 463 | 468 | 473 | 481 | 491 | 517 | 472 | 452 | 463 | 468 | 473 | 481 | 491 |
| | | HR150 | 468 | 386 | 365 | 365 | 365 | 368 | 375 | 382 | 448 | 386 | 365 | 365 | 365 | 368 | 375 | 382 | 448 | 386 | 365 | 365 | 365 | 368 | 375 | 382 |
| | **120** | HR250 | 585 | 517 | 480 | 489 | 498 | 500 | 506 | 514 | 548 | 517 | 480 | 489 | 498 | 500 | 506 | 514 | 548 | 517 | 480 | 489 | 498 | 500 | 506 | 514 |
| | | HR150 | 502 | 425 | 389 | 392 | 388 | 390 | 394 | 400 | 476 | 425 | 389 | 392 | 388 | 390 | 394 | 400 | 476 | 425 | 389 | 392 | 388 | 390 | 394 | 400 |
| | **130** | HR250 | 624 | 562 | 509 | 515 | 526 | 528 | 532 | 538 | 580 | 562 | 509 | 515 | 526 | 528 | 532 | 538 | 580 | 562 | 509 | 515 | 526 | 528 | 532 | 538 |
| | | HR150 | 536 | 464 | 413 | 415 | 413 | 412 | 414 | 419 | 504 | 464 | 413 | 415 | 413 | 412 | 414 | 419 | 504 | 464 | 413 | 415 | 413 | 412 | 414 | 419 |
| | **140** | HR250 | 663 | 608 | 538 | 543 | 551 | 559 | 560 | 564 | 611 | 608 | 538 | 543 | 551 | 559 | 560 | 564 | 611 | 608 | 538 | 543 | 551 | 559 | 560 | 564 |
| | | HR150 | 571 | 503 | 439 | 438 | 439 | 435 | 436 | 439 | 532 | 503 | 439 | 438 | 439 | 435 | 436 | 439 | 532 | 503 | 439 | 438 | 439 | 435 | 436 | 439 |
| | **150** | HR250 | 740 | 701 | 615 | 599 | 604 | 612 | 620 | 620 | 675 | 675 | 615 | 599 | 604 | 612 | 620 | 620 | 675 | 675 | 615 | 599 | 604 | 612 | 620 | 620 |
| | | HR150 | 640 | 584 | 504 | 486 | 487 | 487 | 483 | 483 | 589 | 584 | 504 | 486 | 487 | 487 | 483 | 483 | 589 | 584 | 504 | 486 | 487 | 487 | 483 | 483 |

**Table 2.40: Maximum Shear (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >45° TO 55° | **85** | HR250 | 53 | 199 | 285 | 342 | 390 | 433 | 473 | 509 | 53 | 199 | 285 | 342 | 390 | 433 | 473 | 509 | 53 | 199 | 285 | 342 | 390 | 433 | 473 | 509 |
| | | HR150 | 48 | 160 | 222 | 266 | 304 | 338 | 368 | 397 | 48 | 160 | 222 | 266 | 304 | 338 | 368 | 397 | 48 | 160 | 222 | 266 | 304 | 338 | 368 | 397 |
| | **90** | HR250 | 52 | 196 | 285 | 342 | 390 | 433 | 473 | 509 | 52 | 196 | 285 | 342 | 390 | 433 | 473 | 509 | 52 | 196 | 285 | 342 | 390 | 433 | 473 | 509 |
| | | HR150 | 46 | 158 | 222 | 266 | 304 | 338 | 368 | 397 | 46 | 158 | 222 | 266 | 304 | 338 | 368 | 397 | 46 | 158 | 222 | 266 | 304 | 338 | 368 | 397 |
| | **100** | HR250 | 51 | 193 | 283 | 342 | 390 | 433 | 473 | 509 | 51 | 193 | 283 | 342 | 390 | 433 | 473 | 509 | 51 | 193 | 283 | 342 | 390 | 433 | 473 | 509 |
| | | HR150 | 45 | 157 | 222 | 266 | 304 | 338 | 368 | 397 | 45 | 157 | 222 | 266 | 304 | 338 | 368 | 397 | 45 | 157 | 222 | 266 | 304 | 338 | 368 | 397 |
| | **105** | HR250 | 50 | 188 | 278 | 342 | 390 | 433 | 473 | 509 | 49 | 188 | 278 | 342 | 390 | 433 | 473 | 509 | 49 | 188 | 278 | 342 | 390 | 433 | 473 | 509 |
| | | HR150 | 43 | 153 | 222 | 266 | 304 | 338 | 368 | 397 | 42 | 153 | 222 | 266 | 304 | 338 | 368 | 397 | 42 | 153 | 222 | 266 | 304 | 338 | 368 | 397 |
| | **110** | HR250 | 48 | 183 | 272 | 342 | 390 | 433 | 473 | 509 | 45 | 183 | 272 | 342 | 390 | 433 | 473 | 509 | 45 | 183 | 272 | 342 | 390 | 433 | 473 | 509 |
| | | HR150 | 41 | 149 | 219 | 266 | 304 | 338 | 368 | 397 | 39 | 149 | 219 | 266 | 304 | 338 | 368 | 397 | 39 | 149 | 219 | 266 | 304 | 338 | 368 | 397 |
| | **115** | HR250 | 45 | 177 | 266 | 338 | 390 | 433 | 473 | 509 | 43 | 177 | 266 | 338 | 390 | 433 | 473 | 509 | 43 | 177 | 266 | 338 | 390 | 433 | 473 | 509 |
| | | HR150 | 39 | 145 | 215 | 266 | 304 | 338 | 368 | 397 | 37 | 145 | 215 | 266 | 304 | 338 | 368 | 397 | 37 | 145 | 215 | 266 | 304 | 338 | 368 | 397 |
| | **120** | HR250 | 43 | 172 | 261 | 332 | 390 | 433 | 473 | 509 | 40 | 172 | 261 | 332 | 390 | 433 | 473 | 509 | 40 | 172 | 261 | 332 | 390 | 433 | 473 | 509 |
| | | HR150 | 37 | 141 | 211 | 266 | 304 | 338 | 368 | 397 | 35 | 141 | 211 | 266 | 304 | 338 | 368 | 397 | 35 | 141 | 211 | 266 | 304 | 338 | 368 | 397 |
| | **130** | HR250 | 41 | 167 | 255 | 326 | 387 | 433 | 473 | 509 | 38 | 167 | 255 | 326 | 387 | 433 | 473 | 509 | 38 | 167 | 255 | 326 | 387 | 433 | 473 | 509 |
| | | HR150 | 35 | 138 | 207 | 263 | 304 | 338 | 368 | 397 | 33 | 138 | 207 | 263 | 304 | 338 | 368 | 397 | 33 | 138 | 207 | 263 | 304 | 338 | 368 | 397 |
| | **140** | HR250 | 39 | 162 | 250 | 321 | 382 | 433 | 473 | 509 | 36 | 162 | 250 | 321 | 382 | 433 | 473 | 509 | 36 | 162 | 250 | 321 | 382 | 433 | 473 | 509 |
| | | HR150 | 33 | 134 | 203 | 259 | 304 | 338 | 368 | 397 | 31 | 134 | 203 | 259 | 304 | 338 | 368 | 397 | 31 | 134 | 203 | 259 | 304 | 338 | 368 | 397 |
| | **150** | HR250 | 35 | 153 | 239 | 309 | 370 | 425 | 473 | 509 | 32 | 147 | 239 | 309 | 370 | 425 | 473 | 509 | 32 | 147 | 239 | 309 | 370 | 425 | 473 | 509 |
| | | HR150 | 31 | 127 | 196 | 251 | 299 | 338 | 368 | 397 | 28 | 127 | 196 | 251 | 299 | 338 | 368 | 397 | 28 | 127 | 196 | 251 | 299 | 338 | 368 | 397 |

**Table 2.41: Maximum Span Length (in.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **C** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS >45° TO 55°** | **85** | HR250 | 100 | 83 | 69 | 59 | 52 | 47 | 43 | 40 | 99 | 83 | 69 | 59 | 52 | 47 | 43 | 40 | 99 | 83 | 69 | 59 | 52 | 47 | 43 | 40 |
| | | HR150 | 86 | 68 | 55 | 46 | 40 | 36 | 33 | 31 | 85 | 68 | 55 | 46 | 40 | 36 | 33 | 31 | 85 | 68 | 55 | 46 | 40 | 36 | 33 | 31 |
| | **90** | HR250 | 98 | 82 | 68 | 59 | 52 | 47 | 43 | 40 | 95 | 82 | 68 | 59 | 52 | 47 | 43 | 40 | 95 | 82 | 68 | 59 | 52 | 47 | 43 | 40 |
| | | HR150 | 84 | 67 | 55 | 46 | 40 | 36 | 33 | 31 | 82 | 67 | 55 | 46 | 40 | 36 | 33 | 31 | 82 | 67 | 55 | 46 | 40 | 36 | 33 | 31 |
| | **100** | HR250 | 95 | 81 | 68 | 59 | 52 | 47 | 43 | 40 | 91 | 81 | 68 | 59 | 52 | 47 | 43 | 40 | 91 | 81 | 68 | 59 | 52 | 47 | 43 | 40 |
| | | HR150 | 81 | 66 | 54 | 46 | 40 | 36 | 33 | 31 | 79 | 66 | 54 | 46 | 40 | 36 | 33 | 31 | 79 | 66 | 54 | 46 | 40 | 36 | 33 | 31 |
| | **105** | HR250 | 89 | 78 | 66 | 58 | 52 | 47 | 43 | 40 | 84 | 78 | 66 | 58 | 52 | 47 | 43 | 40 | 84 | 78 | 66 | 58 | 52 | 47 | 43 | 40 |
| | | HR150 | 77 | 64 | 53 | 46 | 40 | 36 | 33 | 31 | 73 | 64 | 53 | 46 | 40 | 36 | 33 | 31 | 73 | 64 | 53 | 46 | 40 | 36 | 33 | 31 |
| | **110** | HR250 | 84 | 75 | 64 | 57 | 52 | 47 | 43 | 40 | 78 | 75 | 64 | 57 | 52 | 47 | 43 | 40 | 78 | 75 | 64 | 57 | 52 | 47 | 43 | 40 |
| | | HR150 | 72 | 62 | 52 | 46 | 40 | 36 | 33 | 31 | 68 | 62 | 52 | 46 | 40 | 36 | 33 | 31 | 68 | 62 | 52 | 46 | 40 | 36 | 33 | 31 |
| | **115** | HR250 | 79 | 72 | 63 | 56 | 51 | 47 | 43 | 40 | 73 | 72 | 63 | 56 | 51 | 47 | 43 | 40 | 73 | 72 | 63 | 56 | 51 | 47 | 43 | 40 |
| | | HR150 | 68 | 60 | 51 | 45 | 40 | 36 | 33 | 31 | 64 | 60 | 51 | 45 | 40 | 36 | 33 | 31 | 64 | 60 | 51 | 45 | 40 | 36 | 33 | 31 |
| | **120** | HR250 | 75 | 70 | 61 | 55 | 50 | 46 | 43 | 40 | 69 | 69 | 61 | 55 | 50 | 46 | 43 | 40 | 69 | 69 | 61 | 55 | 50 | 46 | 43 | 40 |
| | | HR150 | 65 | 58 | 50 | 44 | 40 | 36 | 33 | 31 | 60 | 58 | 50 | 44 | 40 | 36 | 33 | 31 | 60 | 58 | 50 | 44 | 40 | 36 | 33 | 31 |
| | **130** | HR250 | 71 | 68 | 59 | 53 | 49 | 46 | 43 | 40 | 65 | 65 | 59 | 53 | 49 | 46 | 43 | 40 | 65 | 65 | 59 | 53 | 49 | 46 | 43 | 40 |
| | | HR150 | 62 | 56 | 49 | 43 | 40 | 36 | 33 | 31 | 57 | 56 | 49 | 43 | 40 | 36 | 33 | 31 | 57 | 56 | 49 | 43 | 40 | 36 | 33 | 31 |
| | **140** | HR250 | 68 | 65 | 58 | 52 | 48 | 45 | 42 | 40 | 61 | 61 | 58 | 52 | 48 | 45 | 42 | 40 | 61 | 61 | 58 | 52 | 48 | 45 | 42 | 40 |
| | | HR150 | 59 | 55 | 48 | 43 | 39 | 36 | 33 | 31 | 54 | 54 | 48 | 43 | 39 | 36 | 33 | 31 | 54 | 54 | 48 | 43 | 39 | 36 | 33 | 31 |
| | **150** | HR250 | 61 | 61 | 55 | 50 | 46 | 43 | 41 | 39 | 55 | 55 | 55 | 50 | 46 | 43 | 41 | 39 | 55 | 55 | 55 | 50 | 46 | 43 | 41 | 39 |
| | | HR150 | 54 | 51 | 45 | 41 | 38 | 35 | 33 | 31 | 48 | 48 | 45 | 41 | 38 | 35 | 33 | 31 | 48 | 48 | 45 | 41 | 38 | 35 | 33 | 31 |

**Table 2.42: Maximum Uplift (lb.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| C | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >45° TO 55° | 85 | HR250 | -431 | -359 | -298 | -255 | -223 | -201 | -184 | -171 | -530 | -447 | -371 | -318 | -278 | -250 | -230 | -213 | -530 | -447 | -371 | -318 | -278 | -250 | -230 | -213 |
| | | HR150 | -372 | -292 | -238 | -199 | -174 | -156 | -143 | -133 | -457 | -363 | -297 | -247 | -217 | -195 | -179 | -166 | -457 | -363 | -297 | -247 | -217 | -195 | -179 | -166 |
| | 90 | HR250 | -465 | -388 | -323 | -280 | -245 | -221 | -202 | -188 | -558 | -484 | -404 | -350 | -306 | -276 | -253 | -235 | -558 | -484 | -404 | -350 | -306 | -276 | -253 | -235 |
| | | HR150 | -396 | -316 | -260 | -218 | -191 | -172 | -158 | -146 | -482 | -394 | -324 | -272 | -238 | -215 | -197 | -183 | -482 | -394 | -324 | -272 | -238 | -215 | -197 | -183 |
| | 100 | HR250 | -492 | -417 | -349 | -306 | -268 | -241 | -221 | -206 | -585 | -519 | -435 | -382 | -334 | -301 | -276 | -256 | -585 | -519 | -435 | -382 | -334 | -301 | -276 | -256 |
| | | HR150 | -420 | -340 | -281 | -239 | -209 | -188 | -172 | -160 | -506 | -424 | -350 | -297 | -260 | -234 | -215 | -200 | -506 | -424 | -350 | -297 | -260 | -234 | -215 | -200 |
| | 105 | HR250 | -547 | -476 | -403 | -356 | -317 | -285 | -262 | -243 | -640 | -591 | -501 | -442 | -394 | -355 | -325 | -302 | -640 | -591 | -501 | -442 | -394 | -355 | -325 | -302 |
| | | HR150 | -468 | -390 | -326 | -282 | -247 | -222 | -204 | -189 | -555 | -485 | -405 | -351 | -307 | -276 | -253 | -235 | -555 | -485 | -405 | -351 | -307 | -276 | -253 | -235 |
| | 110 | HR250 | -599 | -534 | -457 | -406 | -369 | -332 | -305 | -283 | -694 | -665 | -568 | -505 | -458 | -413 | -379 | -352 | -694 | -665 | -568 | -505 | -458 | -413 | -379 | -352 |
| | | HR150 | -514 | -440 | -371 | -326 | -288 | -259 | -237 | -220 | -603 | -548 | -461 | -406 | -358 | -322 | -295 | -274 | -603 | -548 | -461 | -406 | -358 | -322 | -295 | -274 |
| | 115 | HR250 | -652 | -596 | -514 | -459 | -418 | -384 | -352 | -327 | -749 | -740 | -638 | -570 | -519 | -476 | -437 | -406 | -749 | -740 | -638 | -570 | -519 | -476 | -437 | -406 |
| | | HR150 | -562 | -493 | -419 | -370 | -332 | -299 | -274 | -255 | -651 | -612 | -520 | -460 | -412 | -371 | -340 | -316 | -651 | -612 | -520 | -460 | -412 | -371 | -340 | -316 |
| | 120 | HR250 | -706 | -657 | -572 | -514 | -470 | -436 | -402 | -373 | -803 | -803 | -710 | -637 | -583 | -540 | -499 | -463 | -803 | -803 | -710 | -637 | -583 | -540 | -499 | -463 |
| | | HR150 | -609 | -546 | -468 | -416 | -378 | -342 | -313 | -291 | -699 | -677 | -580 | -516 | -469 | -424 | -388 | -361 | -699 | -677 | -580 | -516 | -469 | -424 | -388 | -361 |
| | 130 | HR250 | -758 | -718 | -631 | -569 | -522 | -485 | -455 | -422 | -856 | -856 | -782 | -705 | -647 | -602 | -564 | -524 | -856 | -856 | -782 | -705 | -647 | -602 | -564 | -524 |
| | | HR150 | -655 | -599 | -517 | -462 | -421 | -387 | -354 | -329 | -746 | -742 | -641 | -572 | -522 | -479 | -439 | -408 | -746 | -742 | -641 | -572 | -522 | -479 | -439 | -408 |
| | 140 | HR250 | -809 | -780 | -690 | -625 | -576 | -536 | -504 | -475 | -909 | -909 | -854 | -774 | -713 | -665 | -625 | -588 | -909 | -909 | -854 | -774 | -713 | -665 | -625 | -588 |
| | | HR150 | -701 | -652 | -568 | -509 | -466 | -432 | -398 | -370 | -793 | -793 | -703 | -631 | -577 | -535 | -493 | -458 | -793 | -793 | -703 | -631 | -577 | -535 | -493 | -458 |
| | 150 | HR250 | -910 | -904 | -811 | -742 | -688 | -644 | -607 | -577 | -1016 | -1016 | -1003 | -917 | -850 | -796 | -751 | -713 | -1016 | -1016 | -1003 | -917 | -850 | -796 | -751 | -713 |
| | | HR150 | -793 | -761 | -671 | -608 | -559 | -521 | -489 | -459 | -888 | -888 | -831 | -752 | -692 | -644 | -605 | -567 | -888 | -888 | -831 | -752 | -692 | -644 | -605 | -567 |

**Table 2.43: Maximum Downforce (lb.) - Wind Exposure C Condition**

| Exposure C | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >45° TO 55° | 85 | HR250 | 463 | 390 | 400 | 408 | 414 | 425 | 437 | 450 | 456 | 390 | 400 | 408 | 414 | 425 | 437 | 450 | 456 | 390 | 400 | 408 | 414 | 425 | 437 | 450 |
| | | HR150 | 399 | 317 | 320 | 318 | 323 | 331 | 340 | 350 | 393 | 317 | 320 | 318 | 323 | 331 | 340 | 350 | 393 | 317 | 320 | 318 | 323 | 331 | 340 | 350 |
| | 90 | HR250 | 492 | 410 | 415 | 425 | 429 | 438 | 449 | 461 | 473 | 410 | 415 | 425 | 429 | 438 | 449 | 461 | 473 | 410 | 415 | 425 | 429 | 438 | 449 | 461 |
| | | HR150 | 419 | 334 | 333 | 331 | 335 | 342 | 350 | 359 | 409 | 334 | 333 | 331 | 335 | 342 | 350 | 359 | 409 | 334 | 333 | 331 | 335 | 342 | 350 | 359 |
| | 100 | HR250 | 515 | 436 | 431 | 443 | 445 | 452 | 462 | 473 | 492 | 436 | 431 | 443 | 445 | 452 | 462 | 473 | 492 | 436 | 431 | 443 | 445 | 452 | 462 | 473 |
| | | HR150 | 440 | 356 | 347 | 345 | 347 | 353 | 360 | 369 | 425 | 356 | 347 | 345 | 347 | 353 | 360 | 369 | 425 | 356 | 347 | 345 | 347 | 353 | 360 | 369 |
| | 105 | HR250 | 561 | 488 | 463 | 473 | 479 | 483 | 490 | 499 | 529 | 488 | 463 | 473 | 479 | 483 | 490 | 499 | 529 | 488 | 463 | 473 | 479 | 483 | 490 | 499 |
| | | HR150 | 481 | 401 | 374 | 375 | 373 | 376 | 382 | 389 | 458 | 401 | 374 | 375 | 373 | 376 | 382 | 389 | 458 | 401 | 374 | 375 | 373 | 376 | 382 | 389 |
| | 110 | HR250 | 607 | 542 | 497 | 504 | 515 | 516 | 520 | 527 | 566 | 542 | 497 | 504 | 515 | 516 | 520 | 527 | 566 | 542 | 497 | 504 | 515 | 516 | 520 | 527 |
| | | HR150 | 522 | 447 | 403 | 405 | 402 | 402 | 406 | 411 | 492 | 447 | 403 | 405 | 402 | 402 | 406 | 411 | 492 | 447 | 403 | 405 | 402 | 402 | 406 | 411 |
| | 115 | HR250 | 653 | 596 | 531 | 536 | 545 | 551 | 553 | 557 | 603 | 596 | 531 | 536 | 545 | 551 | 553 | 557 | 603 | 596 | 531 | 536 | 545 | 551 | 553 | 557 |
| | | HR150 | 562 | 493 | 432 | 432 | 432 | 429 | 431 | 434 | 525 | 493 | 432 | 432 | 432 | 429 | 431 | 434 | 525 | 493 | 432 | 432 | 432 | 429 | 431 | 434 |
| | 120 | HR250 | 699 | 651 | 567 | 569 | 576 | 585 | 587 | 589 | 641 | 641 | 567 | 569 | 576 | 585 | 587 | 589 | 641 | 641 | 567 | 569 | 576 | 585 | 587 | 589 |
| | | HR150 | 603 | 541 | 463 | 460 | 463 | 459 | 458 | 459 | 558 | 541 | 463 | 460 | 463 | 459 | 458 | 459 | 558 | 541 | 463 | 460 | 463 | 459 | 458 | 459 |
| | 130 | HR250 | 744 | 706 | 620 | 602 | 607 | 615 | 624 | 623 | 679 | 679 | 620 | 602 | 607 | 615 | 624 | 623 | 679 | 679 | 620 | 602 | 607 | 615 | 624 | 623 |
| | | HR150 | 644 | 588 | 508 | 489 | 490 | 490 | 486 | 486 | 592 | 588 | 508 | 489 | 490 | 490 | 486 | 486 | 592 | 588 | 508 | 489 | 490 | 490 | 486 | 486 |
| | 140 | HR250 | 790 | 761 | 673 | 637 | 640 | 646 | 654 | 660 | 717 | 717 | 673 | 637 | 640 | 646 | 654 | 660 | 717 | 717 | 673 | 637 | 640 | 646 | 654 | 660 |
| | | HR150 | 684 | 637 | 554 | 519 | 518 | 520 | 516 | 514 | 625 | 625 | 554 | 519 | 518 | 520 | 516 | 514 | 625 | 625 | 554 | 519 | 518 | 520 | 516 | 514 |
| | 150 | HR250 | 878 | 873 | 783 | 716 | 708 | 711 | 716 | 723 | 793 | 793 | 783 | 716 | 708 | 711 | 716 | 723 | 793 | 793 | 783 | 716 | 708 | 711 | 716 | 723 |
| | | HR150 | 765 | 734 | 648 | 587 | 576 | 575 | 577 | 575 | 693 | 693 | 648 | 587 | 576 | 575 | 577 | 575 | 693 | 693 | 648 | 587 | 576 | 575 | 577 | 575 |

**Table 2.44: Maximum Shear (lb.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| C | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >45° TO 55° | 85 | HR250 | 50 | 188 | 277 | 342 | 390 | 433 | 473 | 509 | 49 | 188 | 277 | 342 | 390 | 433 | 473 | 509 | 49 | 188 | 277 | 342 | 390 | 433 | 473 | 509 |
| | | HR150 | 43 | 153 | 222 | 266 | 304 | 338 | 368 | 397 | 42 | 153 | 222 | 266 | 304 | 338 | 368 | 397 | 42 | 153 | 222 | 266 | 304 | 338 | 368 | 397 |
| | 90 | HR250 | 49 | 185 | 274 | 342 | 390 | 433 | 473 | 509 | 47 | 185 | 274 | 342 | 390 | 433 | 473 | 509 | 47 | 185 | 274 | 342 | 390 | 433 | 473 | 509 |
| | | HR150 | 41 | 150 | 220 | 266 | 304 | 338 | 368 | 397 | 40 | 150 | 220 | 266 | 304 | 338 | 368 | 397 | 40 | 150 | 220 | 266 | 304 | 338 | 368 | 397 |
| | 100 | HR250 | 47 | 182 | 271 | 342 | 390 | 433 | 473 | 509 | 45 | 182 | 271 | 342 | 390 | 433 | 473 | 509 | 45 | 182 | 271 | 342 | 390 | 433 | 473 | 509 |
| | | HR150 | 40 | 148 | 218 | 266 | 304 | 338 | 368 | 397 | 39 | 148 | 218 | 266 | 304 | 338 | 368 | 397 | 39 | 148 | 218 | 266 | 304 | 338 | 368 | 397 |
| | 105 | HR250 | 44 | 175 | 264 | 336 | 390 | 433 | 473 | 509 | 42 | 175 | 264 | 336 | 390 | 433 | 473 | 509 | 42 | 175 | 264 | 336 | 390 | 433 | 473 | 509 |
| | | HR150 | 38 | 144 | 214 | 266 | 304 | 338 | 368 | 397 | 36 | 144 | 214 | 266 | 304 | 338 | 368 | 397 | 36 | 144 | 214 | 266 | 304 | 338 | 368 | 397 |
| | 110 | HR250 | 42 | 169 | 258 | 329 | 390 | 433 | 473 | 509 | 39 | 169 | 258 | 329 | 390 | 433 | 473 | 509 | 39 | 169 | 258 | 329 | 390 | 433 | 473 | 509 |
| | | HR150 | 36 | 139 | 209 | 264 | 304 | 338 | 368 | 397 | 34 | 139 | 209 | 264 | 304 | 338 | 368 | 397 | 34 | 139 | 209 | 264 | 304 | 338 | 368 | 397 |
| | 115 | HR250 | 39 | 163 | 251 | 322 | 383 | 433 | 473 | 509 | 36 | 163 | 251 | 322 | 383 | 433 | 473 | 509 | 36 | 163 | 251 | 322 | 383 | 433 | 473 | 509 |
| | | HR150 | 34 | 135 | 204 | 260 | 304 | 338 | 368 | 397 | 32 | 135 | 204 | 260 | 304 | 338 | 368 | 397 | 32 | 135 | 204 | 260 | 304 | 338 | 368 | 397 |
| | 120 | HR250 | 37 | 158 | 244 | 315 | 377 | 431 | 473 | 509 | 34 | 155 | 244 | 315 | 377 | 431 | 473 | 509 | 34 | 155 | 244 | 315 | 377 | 431 | 473 | 509 |
| | | HR150 | 32 | 131 | 200 | 255 | 303 | 338 | 368 | 397 | 30 | 131 | 200 | 255 | 303 | 338 | 368 | 397 | 30 | 131 | 200 | 255 | 303 | 338 | 368 | 397 |
| | 130 | HR250 | 35 | 152 | 238 | 309 | 370 | 424 | 473 | 509 | 32 | 146 | 238 | 309 | 370 | 424 | 473 | 509 | 32 | 146 | 238 | 309 | 370 | 424 | 473 | 509 |
| | | HR150 | 30 | 127 | 195 | 251 | 298 | 338 | 368 | 397 | 28 | 127 | 195 | 251 | 298 | 338 | 368 | 397 | 28 | 127 | 195 | 251 | 298 | 338 | 368 | 397 |
| | 140 | HR250 | 33 | 147 | 232 | 302 | 363 | 417 | 467 | 509 | 30 | 138 | 232 | 302 | 363 | 417 | 467 | 509 | 30 | 138 | 232 | 302 | 363 | 417 | 467 | 509 |
| | | HR150 | 29 | 123 | 191 | 246 | 294 | 336 | 368 | 397 | 26 | 121 | 191 | 246 | 294 | 336 | 368 | 397 | 26 | 121 | 191 | 246 | 294 | 336 | 368 | 397 |
| | 150 | HR250 | 30 | 137 | 220 | 289 | 349 | 404 | 453 | 499 | 27 | 125 | 220 | 289 | 349 | 404 | 453 | 499 | 27 | 125 | 220 | 289 | 349 | 404 | 453 | 499 |
| | | HR150 | 26 | 116 | 182 | 237 | 284 | 327 | 365 | 397 | 24 | 109 | 182 | 237 | 284 | 327 | 365 | 397 | 24 | 109 | 182 | 237 | 284 | 327 | 365 | 397 |

**Table 2.45: Maximum Span Length (in.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| D | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >45° TO 55° | 85 | HR250 | 95 | 81 | 68 | 59 | 52 | 47 | 43 | 40 | 91 | 81 | 68 | 59 | 52 | 47 | 43 | 40 | 91 | 81 | 68 | 59 | 52 | 47 | 43 | 40 |
| | | HR150 | 81 | 66 | 54 | 46 | 40 | 36 | 33 | 31 | 79 | 66 | 54 | 46 | 40 | 36 | 33 | 31 | 79 | 66 | 54 | 46 | 40 | 36 | 33 | 31 |
| | 90 | HR250 | 92 | 79 | 67 | 59 | 52 | 47 | 43 | 40 | 87 | 79 | 67 | 59 | 52 | 47 | 43 | 40 | 87 | 79 | 67 | 59 | 52 | 47 | 43 | 40 |
| | | HR150 | 79 | 65 | 54 | 46 | 40 | 36 | 33 | 31 | 75 | 65 | 54 | 46 | 40 | 36 | 33 | 31 | 75 | 65 | 54 | 46 | 40 | 36 | 33 | 31 |
| | 100 | HR250 | 89 | 78 | 66 | 58 | 52 | 47 | 43 | 40 | 84 | 78 | 66 | 58 | 52 | 47 | 43 | 40 | 84 | 78 | 66 | 58 | 52 | 47 | 43 | 40 |
| | | HR150 | 76 | 64 | 53 | 46 | 40 | 36 | 33 | 31 | 73 | 64 | 53 | 46 | 40 | 36 | 33 | 31 | 73 | 64 | 53 | 46 | 40 | 36 | 33 | 31 |
| | 105 | HR250 | 83 | 75 | 64 | 57 | 52 | 47 | 43 | 40 | 78 | 75 | 64 | 57 | 52 | 47 | 43 | 40 | 78 | 75 | 64 | 57 | 52 | 47 | 43 | 40 |
| | | HR150 | 72 | 62 | 52 | 46 | 40 | 36 | 33 | 31 | 67 | 62 | 52 | 46 | 40 | 36 | 33 | 31 | 67 | 62 | 52 | 46 | 40 | 36 | 33 | 31 |
| | 110 | HR250 | 78 | 72 | 62 | 56 | 51 | 47 | 43 | 40 | 72 | 72 | 62 | 56 | 51 | 47 | 43 | 40 | 72 | 72 | 62 | 56 | 51 | 47 | 43 | 40 |
| | | HR150 | 67 | 60 | 51 | 45 | 40 | 36 | 33 | 31 | 63 | 60 | 51 | 45 | 40 | 36 | 33 | 31 | 63 | 60 | 51 | 45 | 40 | 36 | 33 | 31 |
| | 115 | HR250 | 74 | 69 | 60 | 54 | 50 | 46 | 43 | 40 | 68 | 68 | 60 | 54 | 50 | 46 | 43 | 40 | 68 | 68 | 60 | 54 | 50 | 46 | 43 | 40 |
| | | HR150 | 64 | 58 | 49 | 44 | 40 | 36 | 33 | 31 | 59 | 58 | 49 | 44 | 40 | 36 | 33 | 31 | 59 | 58 | 49 | 44 | 40 | 36 | 33 | 31 |
| | 120 | HR250 | 70 | 67 | 59 | 53 | 49 | 45 | 43 | 40 | 63 | 63 | 59 | 53 | 49 | 45 | 43 | 40 | 63 | 63 | 59 | 53 | 49 | 45 | 43 | 40 |
| | | HR150 | 60 | 56 | 48 | 43 | 39 | 36 | 33 | 31 | 55 | 55 | 48 | 43 | 39 | 36 | 33 | 31 | 55 | 55 | 48 | 43 | 39 | 36 | 33 | 31 |
| | 130 | HR250 | 66 | 64 | 57 | 52 | 48 | 45 | 42 | 40 | 60 | 60 | 57 | 52 | 48 | 45 | 42 | 40 | 60 | 60 | 57 | 52 | 48 | 45 | 42 | 40 |
| | | HR150 | 57 | 54 | 47 | 42 | 39 | 36 | 33 | 31 | 52 | 52 | 47 | 42 | 39 | 36 | 33 | 31 | 52 | 52 | 47 | 42 | 39 | 36 | 33 | 31 |
| | 140 | HR250 | 63 | 62 | 55 | 51 | 47 | 44 | 41 | 39 | 57 | 57 | 55 | 51 | 47 | 44 | 41 | 39 | 57 | 57 | 55 | 51 | 47 | 44 | 41 | 39 |
| | | HR150 | 54 | 52 | 46 | 41 | 38 | 35 | 33 | 31 | 49 | 49 | 46 | 41 | 38 | 35 | 33 | 31 | 49 | 49 | 46 | 41 | 38 | 35 | 33 | 31 |
| | 150 | HR250 | 57 | 57 | 52 | 48 | 45 | 42 | 40 | 38 | 51 | 51 | 51 | 48 | 45 | 42 | 40 | 38 | 51 | 51 | 51 | 48 | 45 | 42 | 40 | 38 |
| | | HR150 | 49 | 49 | 43 | 40 | 37 | 34 | 32 | 31 | 45 | 45 | 43 | 40 | 37 | 34 | 32 | 31 | 45 | 45 | 43 | 40 | 37 | 34 | 32 | 31 |

**Table 2.46: Maximum Uplift (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| D | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >45° TO 55° | 85 | HR250 | -491 | -415 | -348 | -305 | -267 | -240 | -220 | -205 | -584 | -516 | -433 | -379 | -332 | -299 | -274 | -255 | -584 | -516 | -433 | -379 | -332 | -299 | -274 | -255 |
| | | HR150 | -419 | -339 | -280 | -238 | -208 | -187 | -172 | -159 | -505 | -422 | -348 | -296 | -259 | -233 | -214 | -198 | -505 | -422 | -348 | -296 | -259 | -233 | -214 | -198 |
| | 90 | HR250 | -520 | -447 | -377 | -332 | -293 | -264 | -242 | -225 | -614 | -557 | -470 | -414 | -365 | -329 | -302 | -280 | -614 | -557 | -470 | -414 | -365 | -329 | -302 | -280 |
| | | HR150 | -445 | -366 | -304 | -261 | -228 | -206 | -188 | -175 | -532 | -456 | -379 | -325 | -285 | -256 | -235 | -218 | -532 | -456 | -379 | -325 | -285 | -256 | -235 | -218 |
| | 100 | HR250 | -550 | -479 | -406 | -359 | -320 | -288 | -264 | -246 | -644 | -597 | -506 | -446 | -398 | -359 | -329 | -306 | -644 | -597 | -506 | -446 | -398 | -359 | -329 | -306 |
| | | HR150 | -471 | -393 | -328 | -285 | -249 | -225 | -206 | -191 | -558 | -490 | -409 | -355 | -310 | -280 | -256 | -238 | -558 | -490 | -409 | -355 | -310 | -280 | -256 | -238 |
| | 105 | HR250 | -608 | -545 | -467 | -415 | -377 | -341 | -312 | -290 | -703 | -677 | -579 | -515 | -468 | -423 | -388 | -360 | -703 | -677 | -579 | -515 | -468 | -423 | -388 | -360 |
| | | HR150 | -523 | -449 | -379 | -334 | -295 | -265 | -243 | -226 | -611 | -558 | -470 | -414 | -366 | -329 | -302 | -281 | -611 | -558 | -470 | -414 | -366 | -329 | -302 | -281 |
| | 110 | HR250 | -664 | -610 | -527 | -471 | -430 | -396 | -363 | -337 | -762 | -758 | -655 | -586 | -534 | -492 | -451 | -419 | -762 | -758 | -655 | -586 | -534 | -492 | -451 | -419 |
| | | HR150 | -572 | -505 | -430 | -381 | -343 | -309 | -283 | -263 | -663 | -628 | -534 | -473 | -426 | -383 | -352 | -327 | -663 | -628 | -534 | -473 | -426 | -383 | -352 | -327 |
| | 115 | HR250 | -723 | -677 | -591 | -531 | -487 | -452 | -419 | -389 | -820 | -820 | -733 | -659 | -604 | -560 | -520 | -483 | -820 | -820 | -733 | -659 | -604 | -560 | -520 | -483 |
| | | HR150 | -624 | -563 | -484 | -431 | -392 | -356 | -326 | -303 | -715 | -699 | -600 | -534 | -486 | -442 | -405 | -376 | -715 | -699 | -600 | -534 | -486 | -442 | -405 | -376 |
| | 120 | HR250 | -780 | -745 | -656 | -593 | -545 | -507 | -476 | -445 | -879 | -879 | -813 | -735 | -675 | -629 | -590 | -551 | -879 | -879 | -813 | -735 | -675 | -629 | -590 | -551 |
| | | HR150 | -675 | -622 | -539 | -482 | -440 | -407 | -373 | -346 | -767 | -767 | -668 | -597 | -545 | -504 | -462 | -429 | -767 | -767 | -668 | -597 | -545 | -504 | -462 | -429 |
| | 130 | HR250 | -836 | -812 | -721 | -655 | -604 | -564 | -530 | -502 | -937 | -937 | -893 | -811 | -748 | -698 | -657 | -622 | -937 | -937 | -893 | -811 | -748 | -698 | -657 | -622 |
| | | HR150 | -725 | -680 | -594 | -534 | -489 | -454 | -422 | -392 | -818 | -818 | -736 | -662 | -606 | -563 | -522 | -485 | -818 | -818 | -736 | -662 | -606 | -563 | -522 | -485 |
| | 140 | HR250 | -890 | -878 | -786 | -718 | -664 | -622 | -586 | -556 | -995 | -995 | -973 | -888 | -823 | -770 | -726 | -688 | -995 | -995 | -973 | -888 | -823 | -770 | -726 | -688 |
| | | HR150 | -774 | -738 | -650 | -587 | -540 | -502 | -472 | -440 | -869 | -869 | -805 | -727 | -668 | -622 | -584 | -545 | -869 | -869 | -805 | -727 | -668 | -622 | -584 | -545 |
| | 150 | HR250 | -995 | -995 | -919 | -847 | -790 | -742 | -703 | -669 | -1110 | -1110 | -1110 | -1047 | -976 | -918 | -869 | -827 | -1110 | -1110 | -1110 | -1047 | -976 | -918 | -869 | -827 |
| | | HR150 | -869 | -857 | -765 | -698 | -645 | -603 | -569 | -539 | -971 | -971 | -946 | -863 | -798 | -746 | -703 | -667 | -971 | -971 | -946 | -863 | -798 | -746 | -703 | -667 |

**Table 2.47: Maximum Downforce (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| D | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >45° TO 55° | 85 | HR250 | 515 | 435 | 430 | 443 | 445 | 452 | 462 | 473 | 492 | 435 | 430 | 443 | 445 | 452 | 462 | 473 | 492 | 435 | 430 | 443 | 445 | 452 | 462 | 473 |
| | | HR150 | 439 | 355 | 346 | 345 | 347 | 352 | 360 | 369 | 425 | 355 | 346 | 345 | 347 | 352 | 360 | 369 | 425 | 355 | 346 | 345 | 347 | 352 | 360 | 369 |
| | 90 | HR250 | 539 | 463 | 447 | 459 | 463 | 468 | 477 | 487 | 511 | 463 | 447 | 459 | 463 | 468 | 477 | 487 | 511 | 463 | 447 | 459 | 463 | 468 | 477 | 487 |
| | | HR150 | 461 | 379 | 361 | 361 | 360 | 365 | 371 | 379 | 442 | 379 | 361 | 361 | 360 | 365 | 371 | 379 | 442 | 379 | 361 | 361 | 360 | 365 | 371 | 379 |
| | 100 | HR250 | 564 | 492 | 465 | 475 | 481 | 485 | 492 | 501 | 531 | 492 | 465 | 475 | 481 | 485 | 492 | 501 | 531 | 492 | 465 | 475 | 481 | 485 | 492 | 501 |
| | | HR150 | 483 | 404 | 376 | 377 | 375 | 378 | 383 | 390 | 460 | 404 | 376 | 377 | 375 | 378 | 383 | 390 | 460 | 404 | 376 | 377 | 375 | 378 | 383 | 390 |
| | 105 | HR250 | 614 | 550 | 502 | 509 | 519 | 521 | 525 | 532 | 572 | 550 | 502 | 509 | 519 | 521 | 525 | 532 | 572 | 550 | 502 | 509 | 519 | 521 | 525 | 532 |
| | | HR150 | 528 | 454 | 407 | 409 | 406 | 406 | 409 | 414 | 497 | 454 | 407 | 409 | 406 | 406 | 409 | 414 | 497 | 454 | 407 | 409 | 406 | 406 | 409 | 414 |
| | 110 | HR250 | 664 | 610 | 540 | 544 | 552 | 560 | 561 | 565 | 613 | 610 | 540 | 544 | 552 | 560 | 561 | 565 | 613 | 610 | 540 | 544 | 552 | 560 | 561 | 565 |
| | | HR150 | 572 | 505 | 440 | 439 | 440 | 436 | 437 | 440 | 533 | 505 | 440 | 439 | 440 | 436 | 437 | 440 | 533 | 505 | 440 | 439 | 440 | 436 | 437 | 440 |
| | 115 | HR250 | 714 | 669 | 584 | 580 | 586 | 595 | 599 | 601 | 654 | 654 | 584 | 580 | 586 | 595 | 599 | 601 | 654 | 654 | 584 | 580 | 586 | 595 | 599 | 601 |
| | | HR150 | 617 | 557 | 478 | 470 | 472 | 469 | 467 | 468 | 569 | 557 | 478 | 470 | 472 | 469 | 467 | 468 | 569 | 557 | 478 | 470 | 472 | 469 | 467 | 468 |
| | 120 | HR250 | 764 | 730 | 643 | 617 | 621 | 628 | 637 | 639 | 695 | 695 | 643 | 617 | 621 | 628 | 637 | 639 | 695 | 695 | 643 | 617 | 621 | 628 | 637 | 639 |
| | | HR150 | 661 | 609 | 528 | 502 | 502 | 504 | 499 | 498 | 606 | 606 | 528 | 502 | 502 | 504 | 499 | 498 | 606 | 606 | 528 | 502 | 502 | 504 | 499 | 498 |
| | 130 | HR250 | 814 | 790 | 701 | 655 | 657 | 662 | 670 | 678 | 736 | 736 | 701 | 655 | 657 | 662 | 670 | 678 | 736 | 736 | 701 | 655 | 657 | 662 | 670 | 678 |
| | | HR150 | 705 | 662 | 578 | 534 | 532 | 534 | 533 | 529 | 642 | 642 | 578 | 534 | 532 | 534 | 533 | 529 | 642 | 642 | 578 | 534 | 532 | 534 | 533 | 529 |
| | 140 | HR250 | 862 | 850 | 761 | 694 | 694 | 698 | 704 | 711 | 777 | 777 | 761 | 694 | 694 | 698 | 704 | 711 | 777 | 777 | 761 | 694 | 694 | 698 | 704 | 711 |
| | | HR150 | 749 | 715 | 629 | 568 | 564 | 564 | 566 | 562 | 679 | 679 | 629 | 568 | 564 | 564 | 566 | 562 | 679 | 679 | 629 | 568 | 564 | 564 | 566 | 562 |
| | 150 | HR250 | 954 | 954 | 881 | 812 | 771 | 771 | 774 | 779 | 861 | 861 | 861 | 812 | 771 | 771 | 774 | 779 | 861 | 861 | 861 | 812 | 771 | 771 | 774 | 779 |
| | | HR150 | 833 | 821 | 733 | 669 | 630 | 627 | 626 | 628 | 753 | 753 | 733 | 669 | 630 | 627 | 626 | 628 | 753 | 753 | 733 | 669 | 630 | 627 | 626 | 628 |

**Table 2.48: Maximum Shear (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| D | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >45° TO 55° | 85 | HR250 | 47 | 182 | 271 | 342 | 390 | 433 | 473 | 509 | 45 | 182 | 271 | 342 | 390 | 433 | 473 | 509 | 45 | 182 | 271 | 342 | 390 | 433 | 473 | 509 |
| | | HR150 | 40 | 148 | 218 | 266 | 304 | 338 | 368 | 397 | 39 | 148 | 218 | 266 | 304 | 338 | 368 | 397 | 39 | 148 | 218 | 266 | 304 | 338 | 368 | 397 |
| | 90 | HR250 | 45 | 178 | 267 | 339 | 390 | 433 | 473 | 509 | 43 | 178 | 267 | 339 | 390 | 433 | 473 | 509 | 43 | 178 | 267 | 339 | 390 | 433 | 473 | 509 |
| | | HR150 | 39 | 146 | 216 | 266 | 304 | 338 | 368 | 397 | 37 | 146 | 216 | 266 | 304 | 338 | 368 | 397 | 37 | 146 | 216 | 266 | 304 | 338 | 368 | 397 |
| | 100 | HR250 | 44 | 175 | 264 | 335 | 390 | 433 | 473 | 509 | 41 | 175 | 264 | 335 | 390 | 433 | 473 | 509 | 41 | 175 | 264 | 335 | 390 | 433 | 473 | 509 |
| | | HR150 | 38 | 144 | 213 | 266 | 304 | 338 | 368 | 397 | 36 | 144 | 213 | 266 | 304 | 338 | 368 | 397 | 36 | 144 | 213 | 266 | 304 | 338 | 368 | 397 |
| | 105 | HR250 | 41 | 168 | 257 | 328 | 389 | 433 | 473 | 509 | 38 | 168 | 257 | 328 | 389 | 433 | 473 | 509 | 38 | 168 | 257 | 328 | 389 | 433 | 473 | 509 |
| | | HR150 | 35 | 139 | 208 | 264 | 304 | 338 | 368 | 397 | 33 | 139 | 208 | 264 | 304 | 338 | 368 | 397 | 33 | 139 | 208 | 264 | 304 | 338 | 368 | 397 |
| | 110 | HR250 | 39 | 162 | 249 | 321 | 382 | 433 | 473 | 509 | 36 | 162 | 249 | 321 | 382 | 433 | 473 | 509 | 36 | 162 | 249 | 321 | 382 | 433 | 473 | 509 |
| | | HR150 | 33 | 134 | 203 | 259 | 304 | 338 | 368 | 397 | 31 | 134 | 203 | 259 | 304 | 338 | 368 | 397 | 31 | 134 | 203 | 259 | 304 | 338 | 368 | 397 |
| | 115 | HR250 | 36 | 156 | 242 | 313 | 374 | 429 | 473 | 509 | 33 | 152 | 242 | 313 | 374 | 429 | 473 | 509 | 33 | 152 | 242 | 313 | 374 | 429 | 473 | 509 |
| | | HR150 | 31 | 130 | 198 | 254 | 301 | 338 | 368 | 397 | 29 | 130 | 198 | 254 | 301 | 338 | 368 | 397 | 29 | 130 | 198 | 254 | 301 | 338 | 368 | 397 |
| | 120 | HR250 | 34 | 150 | 235 | 306 | 367 | 421 | 470 | 509 | 31 | 143 | 235 | 306 | 367 | 421 | 470 | 509 | 31 | 143 | 235 | 306 | 367 | 421 | 470 | 509 |
| | | HR150 | 30 | 125 | 193 | 249 | 296 | 338 | 368 | 397 | 27 | 125 | 193 | 249 | 296 | 338 | 368 | 397 | 27 | 125 | 193 | 249 | 296 | 338 | 368 | 397 |
| | 130 | HR250 | 33 | 145 | 229 | 299 | 360 | 414 | 463 | 509 | 30 | 135 | 229 | 299 | 360 | 414 | 463 | 509 | 30 | 135 | 229 | 299 | 360 | 414 | 463 | 509 |
| | | HR150 | 28 | 121 | 188 | 244 | 291 | 334 | 368 | 397 | 26 | 118 | 188 | 244 | 291 | 334 | 368 | 397 | 26 | 118 | 188 | 244 | 291 | 334 | 368 | 397 |
| | 140 | HR250 | 31 | 139 | 222 | 291 | 352 | 406 | 456 | 501 | 28 | 127 | 222 | 291 | 352 | 406 | 456 | 501 | 28 | 127 | 222 | 291 | 352 | 406 | 456 | 501 |
| | | HR150 | 27 | 117 | 184 | 239 | 286 | 328 | 367 | 397 | 24 | 111 | 184 | 239 | 286 | 328 | 367 | 397 | 24 | 111 | 184 | 239 | 286 | 328 | 367 | 397 |
| | 150 | HR250 | 28 | 127 | 209 | 278 | 338 | 392 | 441 | 486 | 25 | 115 | 205 | 278 | 338 | 392 | 441 | 486 | 25 | 115 | 205 | 278 | 338 | 392 | 441 | 486 |
| | | HR150 | 24 | 110 | 174 | 229 | 276 | 318 | 357 | 392 | 22 | 100 | 174 | 229 | 276 | 318 | 357 | 392 | 22 | 100 | 174 | 229 | 276 | 318 | 357 | 392 |

**Table 2.1: Maximum Span Length (in.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS 0° TO 7°** | **85** | HR250 | 107 | 99 | 86 | 73 | 64 | 58 | 53 | 49 | 102 | 99 | 86 | 73 | 64 | 58 | 53 | 49 | 82 | 82 | 82 | 73 | 64 | 58 | 53 | 49 |
| | | HR150 | 99 | 89 | 73 | 62 | 55 | 49 | 45 | 42 | 89 | 89 | 73 | 62 | 55 | 49 | 45 | 42 | 72 | 72 | 72 | 62 | 55 | 49 | 45 | 42 |
| | **90** | HR250 | 107 | 99 | 86 | 73 | 64 | 58 | 53 | 49 | 96 | 96 | 86 | 73 | 64 | 58 | 53 | 49 | 77 | 77 | 77 | 73 | 64 | 58 | 53 | 49 |
| | | HR150 | 99 | 89 | 73 | 62 | 55 | 49 | 45 | 42 | 84 | 84 | 73 | 62 | 55 | 49 | 45 | 42 | 68 | 68 | 68 | 62 | 55 | 49 | 45 | 42 |
| | **100** | HR250 | 107 | 99 | 86 | 73 | 64 | 58 | 53 | 49 | 86 | 86 | 86 | 73 | 64 | 58 | 53 | 49 | 69 | 69 | 69 | 69 | 64 | 58 | 53 | 49 |
| | | HR150 | 99 | 89 | 73 | 62 | 55 | 49 | 45 | 42 | 75 | 75 | 73 | 62 | 55 | 49 | 45 | 42 | 61 | 61 | 61 | 61 | 55 | 49 | 45 | 42 |
| | **105** | HR250 | 107 | 99 | 86 | 73 | 64 | 58 | 53 | 49 | 81 | 81 | 81 | 73 | 64 | 58 | 53 | 49 | 66 | 66 | 66 | 66 | 64 | 58 | 53 | 49 |
| | | HR150 | 94 | 89 | 73 | 62 | 55 | 49 | 45 | 42 | 71 | 71 | 71 | 62 | 55 | 49 | 45 | 42 | 58 | 58 | 58 | 58 | 55 | 49 | 45 | 42 |
| | **110** | HR250 | 102 | 99 | 86 | 73 | 64 | 58 | 53 | 49 | 78 | 78 | 78 | 73 | 64 | 58 | 53 | 49 | 63 | 63 | 63 | 63 | 63 | 58 | 53 | 49 |
| | | HR150 | 89 | 89 | 73 | 62 | 55 | 49 | 45 | 42 | 68 | 68 | 68 | 62 | 55 | 49 | 45 | 42 | 55 | 55 | 55 | 55 | 55 | 49 | 45 | 42 |
| | **115** | HR250 | 97 | 97 | 86 | 73 | 64 | 58 | 53 | 49 | 74 | 74 | 74 | 73 | 64 | 58 | 53 | 49 | 60 | 60 | 60 | 60 | 60 | 58 | 53 | 49 |
| | | HR150 | 85 | 85 | 73 | 62 | 55 | 49 | 45 | 42 | 65 | 65 | 65 | 62 | 55 | 49 | 45 | 42 | 53 | 53 | 53 | 53 | 53 | 49 | 45 | 42 |
| | **120** | HR250 | 93 | 93 | 85 | 73 | 64 | 58 | 53 | 49 | 71 | 71 | 71 | 71 | 64 | 58 | 53 | 49 | 58 | 58 | 58 | 58 | 58 | 58 | 53 | 49 |
| | | HR150 | 81 | 81 | 73 | 62 | 55 | 49 | 45 | 42 | 62 | 62 | 62 | 62 | 55 | 49 | 45 | 42 | 51 | 51 | 51 | 51 | 51 | 49 | 45 | 42 |
| | **130** | HR250 | 85 | 85 | 83 | 73 | 64 | 58 | 53 | 49 | 65 | 65 | 65 | 65 | 64 | 58 | 53 | 49 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 49 |
| | | HR150 | 75 | 75 | 71 | 62 | 55 | 49 | 45 | 42 | 57 | 57 | 57 | 57 | 55 | 49 | 45 | 42 | 47 | 47 | 47 | 47 | 47 | 47 | 45 | 42 |
| | **140** | HR250 | 79 | 79 | 79 | 72 | 64 | 58 | 53 | 49 | 61 | 61 | 61 | 61 | 61 | 58 | 53 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 |
| | | HR150 | 69 | 69 | 69 | 62 | 55 | 49 | 45 | 42 | 53 | 53 | 53 | 53 | 53 | 49 | 45 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 42 |
| | **150** | HR250 | 74 | 74 | 74 | 70 | 64 | 58 | 53 | 49 | 56 | 56 | 56 | 56 | 56 | 56 | 53 | 49 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 |
| | | HR150 | 65 | 65 | 65 | 60 | 55 | 49 | 45 | 42 | 50 | 50 | 50 | 50 | 50 | 49 | 45 | 42 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |

**Table 2.2: Maximum Uplift (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS 0° TO 7°** | **85** | HR250 | -335 | -308 | -267 | -228 | -200 | -180 | -165 | -153 | -562 | -547 | -473 | -405 | -354 | -319 | -292 | -272 | -701 | -701 | -701 | -626 | -548 | -493 | -452 | -420 |
| | | HR150 | -308 | -277 | -229 | -194 | -170 | -153 | -140 | -130 | -493 | -492 | -406 | -344 | -301 | -271 | -249 | -231 | -615 | -615 | -615 | -532 | -466 | -419 | -385 | -357 |
| | **90** | HR250 | -382 | -352 | -304 | -260 | -228 | -205 | -188 | -175 | -598 | -598 | -534 | -457 | -400 | -360 | -330 | -307 | -745 | -745 | -745 | -706 | -618 | -556 | -510 | -474 |
| | | HR150 | -351 | -316 | -261 | -221 | -194 | -174 | -160 | -148 | -524 | -524 | -458 | -389 | -340 | -306 | -281 | -261 | -654 | -654 | -654 | -601 | -526 | -473 | -434 | -403 |
| | **100** | HR250 | -482 | -444 | -384 | -328 | -288 | -259 | -237 | -220 | -671 | -671 | -670 | -574 | -502 | -452 | -414 | -385 | -832 | -832 | -832 | -832 | -769 | -692 | -635 | -590 |
| | | HR150 | -442 | -399 | -329 | -279 | -245 | -220 | -202 | -187 | -588 | -588 | -575 | -488 | -427 | -384 | -352 | -327 | -730 | -730 | -730 | -730 | -654 | -589 | -540 | -502 |
| | **105** | HR250 | -533 | -493 | -426 | -365 | -319 | -287 | -263 | -245 | -707 | -707 | -707 | -636 | -556 | -501 | -459 | -427 | -876 | -876 | -876 | -876 | -852 | -767 | -703 | -653 |
| | | HR150 | -467 | -443 | -366 | -310 | -271 | -244 | -224 | -208 | -620 | -620 | -620 | -541 | -473 | -426 | -391 | -363 | -769 | -769 | -769 | -769 | -725 | -652 | -598 | -555 |
| | **110** | HR250 | -562 | -547 | -473 | -405 | -354 | -319 | -292 | -272 | -742 | -742 | -742 | -700 | -613 | -552 | -506 | -470 | -920 | -920 | -920 | -920 | -920 | -844 | -774 | -719 |
| | | HR150 | -493 | -492 | -406 | -344 | -301 | -271 | -249 | -231 | -651 | -651 | -651 | -595 | -521 | -469 | -430 | -400 | -807 | -807 | -807 | -807 | -798 | -718 | -659 | -612 |
| | **115** | HR250 | -590 | -590 | -520 | -445 | -389 | -351 | -321 | -299 | -778 | -778 | -778 | -768 | -673 | -605 | -555 | -516 | -963 | -963 | -963 | -963 | -963 | -925 | -848 | -788 |
| | | HR150 | -517 | -517 | -446 | -378 | -331 | -298 | -273 | -254 | -682 | -682 | -682 | -654 | -572 | -515 | -472 | -439 | -845 | -845 | -845 | -845 | -845 | -787 | -721 | -670 |
| | **120** | HR250 | -618 | -618 | -566 | -487 | -426 | -384 | -352 | -327 | -814 | -814 | -814 | -814 | -736 | -662 | -607 | -564 | -1006 | -1006 | -1006 | -1006 | -1006 | -1006 | -925 | -859 |
| | | HR150 | -541 | -541 | -485 | -414 | -363 | -327 | -299 | -278 | -714 | -714 | -714 | -714 | -626 | -563 | -517 | -480 | -883 | -883 | -883 | -883 | -883 | -858 | -787 | -731 |
| | **130** | HR250 | -673 | -673 | -655 | -576 | -505 | -455 | -417 | -388 | -884 | -884 | -884 | -884 | -868 | -781 | -716 | -665 | -1092 | -1092 | -1092 | -1092 | -1092 | -1092 | -1091 | -1013 |
| | | HR150 | -590 | -590 | -563 | -491 | -430 | -387 | -355 | -330 | -776 | -776 | -776 | -776 | -738 | -664 | -609 | -566 | -959 | -959 | -959 | -959 | -959 | -959 | -928 | -862 |
| | **140** | HR250 | -729 | -729 | -729 | -662 | -592 | -533 | -488 | -454 | -955 | -955 | -955 | -955 | -955 | -911 | -835 | -776 | -1178 | -1178 | -1178 | -1178 | -1178 | -1178 | -1178 | -1177 |
| | | HR150 | -639 | -639 | -639 | -568 | -503 | -453 | -415 | -386 | -839 | -839 | -839 | -839 | -839 | -775 | -710 | -660 | -1035 | -1035 | -1035 | -1035 | -1035 | -1035 | -1035 | -1001 |
| | **150** | HR250 | -784 | -784 | -784 | -750 | -681 | -615 | -564 | -524 | -1025 | -1025 | -1025 | -1025 | -1025 | -1025 | -961 | -893 | -1264 | -1264 | -1264 | -1264 | -1264 | -1264 | -1264 | -1264 |
| | | HR150 | -688 | -688 | -688 | -643 | -581 | -523 | -480 | -445 | -900 | -900 | -900 | -900 | -900 | -892 | -818 | -759 | -1111 | -1111 | -1111 | -1111 | -1111 | -1111 | -1111 | -1111 |

**Table 2.3: Maximum Downforce (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS 0° TO 7°** | **85** | HR250 | 376 | 481 | 591 | 655 | 748 | 830 | 906 | 975 | 355 | 481 | 591 | 655 | 748 | 830 | 906 | 975 | 287 | 398 | 566 | 655 | 748 | 830 | 906 | 975 |
| | | HR150 | 346 | 432 | 507 | 557 | 636 | 706 | 770 | 829 | 311 | 432 | 507 | 557 | 636 | 706 | 770 | 829 | 252 | 349 | 497 | 557 | 636 | 706 | 770 | 829 |
| | **90** | HR250 | 376 | 481 | 591 | 655 | 748 | 830 | 906 | 975 | 335 | 465 | 591 | 655 | 748 | 830 | 906 | 975 | 270 | 375 | 533 | 655 | 748 | 830 | 906 | 975 |
| | | HR150 | 346 | 432 | 507 | 557 | 636 | 706 | 770 | 829 | 293 | 408 | 507 | 557 | 636 | 706 | 770 | 829 | 237 | 329 | 468 | 557 | 636 | 706 | 770 | 829 |
| | **100** | HR250 | 376 | 481 | 591 | 655 | 748 | 830 | 906 | 975 | 299 | 416 | 591 | 655 | 748 | 830 | 906 | 975 | 242 | 337 | 479 | 620 | 748 | 830 | 906 | 975 |
| | | HR150 | 345 | 432 | 507 | 557 | 636 | 706 | 770 | 829 | 263 | 365 | 507 | 557 | 636 | 706 | 770 | 829 | 213 | 295 | 420 | 545 | 636 | 706 | 770 | 829 |
| | **105** | HR250 | 374 | 481 | 591 | 655 | 748 | 830 | 906 | 975 | 285 | 395 | 562 | 655 | 748 | 830 | 906 | 975 | 230 | 320 | 455 | 590 | 748 | 830 | 906 | 975 |
| | | HR150 | 328 | 432 | 507 | 557 | 636 | 706 | 770 | 829 | 250 | 347 | 493 | 557 | 636 | 706 | 770 | 829 | 202 | 281 | 399 | 518 | 636 | 706 | 770 | 829 |
| | **110** | HR250 | 355 | 481 | 591 | 655 | 748 | 830 | 906 | 975 | 271 | 377 | 536 | 655 | 748 | 830 | 906 | 975 | 220 | 305 | 434 | 562 | 733 | 830 | 906 | 975 |
| | | HR150 | 311 | 432 | 507 | 557 | 636 | 706 | 770 | 829 | 238 | 331 | 470 | 557 | 636 | 706 | 770 | 829 | 193 | 268 | 381 | 494 | 636 | 706 | 770 | 829 |
| | **115** | HR250 | 339 | 471 | 591 | 655 | 748 | 830 | 906 | 975 | 259 | 360 | 512 | 655 | 748 | 830 | 906 | 975 | 210 | 292 | 414 | 537 | 700 | 830 | 906 | 975 |
| | | HR150 | 297 | 413 | 507 | 557 | 636 | 706 | 770 | 829 | 227 | 316 | 449 | 557 | 636 | 706 | 770 | 829 | 184 | 256 | 364 | 472 | 615 | 706 | 770 | 829 |
| | **120** | HR250 | 337 | 460 | 596 | 663 | 748 | 830 | 906 | 975 | 257 | 351 | 496 | 642 | 748 | 830 | 906 | 975 | 209 | 285 | 403 | 521 | 671 | 828 | 906 | 975 |
| | | HR150 | 296 | 404 | 511 | 564 | 636 | 706 | 770 | 829 | 226 | 308 | 436 | 563 | 636 | 706 | 770 | 829 | 183 | 250 | 354 | 457 | 589 | 706 | 770 | 829 |
| | **130** | HR250 | 355 | 457 | 614 | 689 | 748 | 830 | 906 | 975 | 271 | 349 | 483 | 617 | 748 | 830 | 906 | 975 | 220 | 283 | 392 | 500 | 618 | 763 | 906 | 975 |
| | | HR150 | 311 | 400 | 528 | 588 | 636 | 706 | 770 | 829 | 238 | 307 | 424 | 541 | 636 | 706 | 770 | 829 | 193 | 249 | 344 | 439 | 543 | 670 | 770 | 829 |
| | **140** | HR250 | 369 | 453 | 615 | 705 | 761 | 830 | 906 | 975 | 283 | 347 | 471 | 595 | 719 | 830 | 906 | 975 | 230 | 282 | 383 | 483 | 584 | 708 | 842 | 975 |
| | | HR150 | 324 | 398 | 539 | 605 | 648 | 706 | 770 | 829 | 248 | 305 | 414 | 522 | 631 | 706 | 770 | 829 | 202 | 248 | 336 | 425 | 513 | 622 | 739 | 829 |
| | **150** | HR250 | 388 | 455 | 606 | 723 | 788 | 830 | 906 | 975 | 298 | 349 | 465 | 580 | 696 | 812 | 906 | 975 | 242 | 284 | 378 | 471 | 565 | 660 | 785 | 910 |
| | | HR150 | 341 | 400 | 532 | 621 | 672 | 706 | 770 | 829 | 262 | 307 | 408 | 510 | 611 | 706 | 770 | 829 | 213 | 249 | 332 | 414 | 497 | 580 | 689 | 799 |

**Table 2.4: Maximum Shear (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS 0° TO 7°** | **85** | HR250 | 9 | 36 | 56 | 69 | 79 | 87 | 95 | 102 | 8 | 36 | 56 | 69 | 79 | 87 | 95 | 102 | 6 | 30 | 54 | 69 | 79 | 87 | 95 | 102 |
| | | HR150 | 8 | 33 | 48 | 58 | 67 | 74 | 81 | 87 | 7 | 33 | 48 | 58 | 67 | 74 | 81 | 87 | 6 | 26 | 47 | 58 | 67 | 74 | 81 | 87 |
| | **90** | HR250 | 9 | 36 | 56 | 69 | 79 | 87 | 95 | 102 | 8 | 35 | 56 | 69 | 79 | 87 | 95 | 102 | 6 | 28 | 50 | 69 | 79 | 87 | 95 | 102 |
| | | HR150 | 8 | 33 | 48 | 58 | 67 | 74 | 81 | 87 | 7 | 31 | 48 | 58 | 67 | 74 | 81 | 87 | 5 | 25 | 44 | 58 | 67 | 74 | 81 | 87 |
| | **100** | HR250 | 9 | 36 | 56 | 69 | 79 | 87 | 95 | 102 | 7 | 31 | 56 | 69 | 79 | 87 | 95 | 102 | 5 | 25 | 45 | 65 | 79 | 87 | 95 | 102 |
| | | HR150 | 8 | 33 | 48 | 58 | 67 | 74 | 81 | 87 | 6 | 27 | 48 | 58 | 67 | 74 | 81 | 87 | 5 | 22 | 40 | 57 | 67 | 74 | 81 | 87 |
| | **105** | HR250 | 8 | 36 | 56 | 69 | 79 | 87 | 95 | 102 | 6 | 30 | 53 | 69 | 79 | 87 | 95 | 102 | 5 | 24 | 43 | 62 | 79 | 87 | 95 | 102 |
| | | HR150 | 7 | 33 | 48 | 58 | 67 | 74 | 81 | 87 | 6 | 26 | 47 | 58 | 67 | 74 | 81 | 87 | 5 | 21 | 38 | 54 | 67 | 74 | 81 | 87 |
| | **110** | HR250 | 8 | 36 | 56 | 69 | 79 | 87 | 95 | 102 | 6 | 28 | 51 | 69 | 79 | 87 | 95 | 102 | 5 | 23 | 41 | 59 | 77 | 87 | 95 | 102 |
| | | HR150 | 7 | 33 | 48 | 58 | 67 | 74 | 81 | 87 | 5 | 25 | 44 | 58 | 67 | 74 | 81 | 87 | 4 | 20 | 36 | 52 | 67 | 74 | 81 | 87 |
| | **115** | HR250 | 8 | 36 | 56 | 69 | 79 | 87 | 95 | 102 | 6 | 27 | 48 | 69 | 79 | 87 | 95 | 102 | 5 | 22 | 39 | 56 | 74 | 87 | 95 | 102 |
| | | HR150 | 7 | 31 | 48 | 58 | 67 | 74 | 81 | 87 | 5 | 24 | 42 | 58 | 67 | 74 | 81 | 87 | 4 | 19 | 34 | 50 | 65 | 74 | 81 | 87 |
| | **120** | HR250 | 7 | 34 | 55 | 69 | 79 | 87 | 95 | 102 | 6 | 26 | 46 | 67 | 79 | 87 | 95 | 102 | 5 | 21 | 38 | 54 | 71 | 87 | 95 | 102 |
| | | HR150 | 6 | 30 | 48 | 58 | 67 | 74 | 81 | 87 | 5 | 23 | 41 | 58 | 67 | 74 | 81 | 87 | 4 | 18 | 33 | 47 | 62 | 74 | 81 | 87 |
| | **130** | HR250 | 7 | 31 | 54 | 69 | 79 | 87 | 95 | 102 | 5 | 24 | 43 | 61 | 79 | 87 | 95 | 102 | 4 | 19 | 35 | 50 | 65 | 80 | 95 | 102 |
| | | HR150 | 6 | 27 | 47 | 58 | 67 | 74 | 81 | 87 | 5 | 21 | 37 | 54 | 67 | 74 | 81 | 87 | 4 | 17 | 30 | 44 | 57 | 70 | 81 | 87 |
| | **140** | HR250 | 6 | 29 | 52 | 67 | 79 | 87 | 95 | 102 | 5 | 22 | 39 | 57 | 74 | 87 | 95 | 102 | 4 | 18 | 32 | 46 | 60 | 74 | 88 | 102 |
| | | HR150 | 5 | 25 | 45 | 58 | 67 | 74 | 81 | 87 | 4 | 19 | 35 | 50 | 65 | 74 | 81 | 87 | 3 | 16 | 28 | 41 | 53 | 65 | 78 | 87 |
| | **150** | HR250 | 6 | 27 | 48 | 66 | 78 | 87 | 95 | 102 | 4 | 21 | 37 | 53 | 69 | 85 | 95 | 102 | 4 | 17 | 30 | 43 | 56 | 69 | 82 | 96 |
| | | HR150 | 5 | 24 | 42 | 57 | 67 | 74 | 81 | 87 | 4 | 18 | 32 | 47 | 61 | 74 | 81 | 87 | 3 | 15 | 26 | 38 | 49 | 61 | 72 | 84 |

**Table 2.5: Maximum Span Length (in.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **C** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS 0° TO 7°** | **85** | HR250 | 107 | 99 | 86 | 73 | 64 | 58 | 53 | 49 | 85 | 85 | 85 | 73 | 64 | 58 | 53 | 49 | 69 | 69 | 69 | 69 | 64 | 58 | 53 | 49 |
| | | HR150 | 98 | 89 | 73 | 62 | 55 | 49 | 45 | 42 | 75 | 75 | 73 | 62 | 55 | 49 | 45 | 42 | 60 | 60 | 60 | 60 | 55 | 49 | 45 | 42 |
| | **90** | HR250 | 105 | 99 | 86 | 73 | 64 | 58 | 53 | 49 | 80 | 80 | 80 | 73 | 64 | 58 | 53 | 49 | 65 | 65 | 65 | 65 | 64 | 58 | 53 | 49 |
| | | HR150 | 92 | 89 | 73 | 62 | 55 | 49 | 45 | 42 | 70 | 70 | 70 | 62 | 55 | 49 | 45 | 42 | 57 | 57 | 57 | 57 | 55 | 49 | 45 | 42 |
| | **100** | HR250 | 94 | 94 | 85 | 73 | 64 | 58 | 53 | 49 | 72 | 72 | 72 | 72 | 64 | 58 | 53 | 49 | 58 | 58 | 58 | 58 | 58 | 58 | 53 | 49 |
| | | HR150 | 83 | 83 | 73 | 62 | 55 | 49 | 45 | 42 | 63 | 63 | 63 | 62 | 55 | 49 | 45 | 42 | 51 | 51 | 51 | 51 | 51 | 49 | 45 | 42 |
| | **105** | HR250 | 90 | 90 | 84 | 73 | 64 | 58 | 53 | 49 | 68 | 68 | 68 | 68 | 64 | 58 | 53 | 49 | 55 | 55 | 55 | 55 | 55 | 55 | 53 | 49 |
| | | HR150 | 79 | 79 | 72 | 62 | 55 | 49 | 45 | 42 | 60 | 60 | 60 | 60 | 55 | 49 | 45 | 42 | 49 | 49 | 49 | 49 | 49 | 49 | 45 | 42 |
| | **110** | HR250 | 85 | 85 | 83 | 73 | 64 | 58 | 53 | 49 | 65 | 65 | 65 | 65 | 64 | 58 | 53 | 49 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 49 |
| | | HR150 | 75 | 75 | 71 | 62 | 55 | 49 | 45 | 42 | 57 | 57 | 57 | 57 | 55 | 49 | 45 | 42 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 42 |
| | **115** | HR250 | 81 | 81 | 81 | 72 | 64 | 58 | 53 | 49 | 62 | 62 | 62 | 62 | 62 | 58 | 53 | 49 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 49 |
| | | HR150 | 71 | 71 | 70 | 62 | 55 | 49 | 45 | 42 | 55 | 55 | 55 | 55 | 55 | 49 | 45 | 42 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 42 |
| | **120** | HR250 | 78 | 78 | 78 | 71 | 64 | 58 | 53 | 49 | 60 | 60 | 60 | 60 | 60 | 58 | 53 | 49 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 |
| | | HR150 | 68 | 68 | 68 | 61 | 55 | 49 | 45 | 42 | 52 | 52 | 52 | 52 | 52 | 49 | 45 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 42 |
| | **130** | HR250 | 72 | 72 | 72 | 70 | 64 | 58 | 53 | 49 | 55 | 55 | 55 | 55 | 55 | 55 | 53 | 49 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 |
| | | HR150 | 63 | 63 | 63 | 60 | 54 | 49 | 45 | 42 | 48 | 48 | 48 | 48 | 48 | 48 | 45 | 42 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 |
| | **140** | HR250 | 66 | 66 | 66 | 66 | 62 | 58 | 53 | 49 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 49 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 |
| | | HR150 | 58 | 58 | 58 | 58 | 53 | 49 | 45 | 42 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 42 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 |
| | **150** | HR250 | 62 | 62 | 62 | 62 | 61 | 57 | 53 | 49 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 |
| | | HR150 | 54 | 54 | 54 | 54 | 52 | 49 | 45 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 |

**Table 2.6: Maximum Uplift (lb.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **C** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS 0° TO 7°** | **85** | HR250 | -488 | -450 | -389 | -332 | -291 | -262 | -240 | -223 | -675 | -675 | -675 | -580 | -508 | -457 | -419 | -389 | -837 | -837 | -837 | -837 | -778 | -701 | -642 | -597 |
| | | HR150 | -445 | -404 | -333 | -283 | -248 | -223 | -204 | -190 | -592 | -592 | -581 | -493 | -432 | -389 | -356 | -331 | -735 | -735 | -735 | -735 | -662 | -596 | -546 | -508 |
| | **90** | HR250 | -543 | -510 | -441 | -377 | -330 | -297 | -273 | -253 | -716 | -716 | -716 | -653 | -572 | -515 | -472 | -438 | -889 | -889 | -889 | -889 | -877 | -789 | -724 | -672 |
| | | HR150 | -475 | -458 | -378 | -321 | -281 | -253 | -232 | -215 | -628 | -628 | -628 | -555 | -486 | -438 | -401 | -373 | -780 | -780 | -780 | -780 | -746 | -671 | -616 | -572 |
| | **100** | HR250 | -609 | -609 | -551 | -473 | -414 | -373 | -342 | -317 | -802 | -802 | -802 | -802 | -714 | -643 | -590 | -548 | -991 | -991 | -991 | -991 | -991 | -980 | -898 | -834 |
| | | HR150 | -533 | -533 | -473 | -402 | -352 | -317 | -291 | -270 | -704 | -704 | -704 | -694 | -608 | -547 | -502 | -466 | -870 | -870 | -870 | -870 | -870 | -833 | -764 | -710 |
| | **105** | HR250 | -641 | -641 | -602 | -524 | -458 | -413 | -378 | -351 | -844 | -844 | -844 | -844 | -791 | -712 | -653 | -606 | -1043 | -1043 | -1043 | -1043 | -1043 | -1043 | -994 | -923 |
| | | HR150 | -562 | -562 | -517 | -445 | -390 | -351 | -322 | -299 | -741 | -741 | -741 | -741 | -673 | -605 | -555 | -516 | -916 | -916 | -916 | -916 | -916 | -916 | -845 | -785 |
| | **110** | HR250 | -675 | -675 | -657 | -578 | -508 | -457 | -419 | -389 | -885 | -885 | -885 | -885 | -869 | -783 | -718 | -666 | -1094 | -1094 | -1094 | -1094 | -1094 | -1094 | -1093 | -1016 |
| | | HR150 | -592 | -592 | -565 | -493 | -432 | -389 | -356 | -331 | -777 | -777 | -777 | -777 | -740 | -666 | -610 | -567 | -961 | -961 | -961 | -961 | -961 | -961 | -930 | -864 |
| | **115** | HR250 | -707 | -707 | -707 | -627 | -557 | -501 | -460 | -427 | -927 | -927 | -927 | -927 | -927 | -858 | -787 | -731 | -1145 | -1145 | -1145 | -1145 | -1145 | -1145 | -1145 | -1112 |
| | | HR150 | -620 | -620 | -611 | -538 | -474 | -426 | -391 | -363 | -814 | -814 | -814 | -814 | -811 | -730 | -669 | -621 | -1005 | -1005 | -1005 | -1005 | -1005 | -1005 | -1005 | -946 |
| | **120** | HR250 | -739 | -739 | -739 | -679 | -609 | -548 | -502 | -466 | -969 | -969 | -969 | -969 | -969 | -938 | -860 | -799 | -1195 | -1195 | -1195 | -1195 | -1195 | -1195 | -1195 | -1195 |
| | | HR150 | -649 | -649 | -649 | -582 | -518 | -466 | -427 | -397 | -851 | -851 | -851 | -851 | -851 | -798 | -731 | -679 | -1050 | -1050 | -1050 | -1050 | -1050 | -1050 | -1050 | -1031 |
| | **130** | HR250 | -805 | -805 | -805 | -783 | -713 | -648 | -594 | -551 | -1052 | -1052 | -1052 | -1052 | -1052 | -1052 | -1012 | -940 | -1298 | -1298 | -1298 | -1298 | -1298 | -1298 | -1298 | -1298 |
| | | HR150 | -706 | -706 | -706 | -673 | -611 | -551 | -505 | -469 | -924 | -924 | -924 | -924 | -924 | -924 | -861 | -800 | -1140 | -1140 | -1140 | -1140 | -1140 | -1140 | -1140 | -1140 |
| | **140** | HR250 | -870 | -870 | -870 | -870 | -817 | -756 | -693 | -644 | -1136 | -1136 | -1136 | -1136 | -1136 | -1136 | -1136 | -1095 | -1399 | -1399 | -1399 | -1399 | -1399 | -1399 | -1399 | -1399 |
| | | HR150 | -764 | -764 | -764 | -764 | -701 | -643 | -590 | -548 | -998 | -998 | -998 | -998 | -998 | -998 | -998 | -931 | -1229 | -1229 | -1229 | -1229 | -1229 | -1229 | -1229 | -1229 |
| | **150** | HR250 | -934 | -934 | -934 | -934 | -922 | -856 | -799 | -742 | -1219 | -1219 | -1219 | -1219 | -1219 | -1219 | -1219 | -1219 | -1500 | -1500 | -1500 | -1500 | -1500 | -1500 | -1500 | -1500 |
| | | HR150 | -820 | -820 | -820 | -820 | -792 | -735 | -680 | -631 | -1070 | -1070 | -1070 | -1070 | -1070 | -1070 | -1070 | -1070 | -1318 | -1318 | -1318 | -1318 | -1318 | -1318 | -1318 | -1318 |

**Table 2.7: Maximum Downforce (lb.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **C** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS 0° TO 7°** | **85** | HR250 | 376 | 481 | 591 | 655 | 748 | 830 | 906 | 975 | 298 | 414 | 588 | 655 | 748 | 830 | 906 | 975 | 241 | 335 | 476 | 617 | 748 | 830 | 906 | 975 |
| | | HR150 | 343 | 432 | 507 | 557 | 636 | 706 | 770 | 829 | 261 | 363 | 507 | 557 | 636 | 706 | 770 | 829 | 211 | 294 | 418 | 541 | 636 | 706 | 770 | 829 |
| | **90** | HR250 | 368 | 481 | 591 | 655 | 748 | 830 | 906 | 975 | 281 | 390 | 554 | 655 | 748 | 830 | 906 | 975 | 227 | 316 | 448 | 581 | 748 | 830 | 906 | 975 |
| | | HR150 | 322 | 432 | 507 | 557 | 636 | 706 | 770 | 829 | 246 | 342 | 486 | 557 | 636 | 706 | 770 | 829 | 199 | 277 | 394 | 510 | 636 | 706 | 770 | 829 |
| | **100** | HR250 | 335 | 462 | 593 | 658 | 748 | 830 | 906 | 975 | 256 | 353 | 500 | 647 | 748 | 830 | 906 | 975 | 208 | 286 | 405 | 525 | 681 | 830 | 906 | 975 |
| | | HR150 | 294 | 405 | 509 | 560 | 636 | 706 | 770 | 829 | 224 | 309 | 438 | 560 | 636 | 706 | 770 | 829 | 182 | 251 | 356 | 461 | 598 | 706 | 770 | 829 |
| | **105** | HR250 | 346 | 460 | 604 | 675 | 748 | 830 | 906 | 975 | 264 | 351 | 491 | 631 | 748 | 830 | 906 | 975 | 214 | 285 | 398 | 512 | 647 | 799 | 906 | 975 |
| | | HR150 | 303 | 403 | 518 | 574 | 636 | 706 | 770 | 829 | 232 | 308 | 431 | 554 | 636 | 706 | 770 | 829 | 188 | 250 | 350 | 449 | 568 | 701 | 770 | 829 |
| | **110** | HR250 | 355 | 457 | 615 | 690 | 748 | 830 | 906 | 975 | 272 | 350 | 483 | 617 | 748 | 830 | 906 | 975 | 221 | 284 | 392 | 500 | 617 | 762 | 906 | 975 |
| | | HR150 | 312 | 401 | 528 | 589 | 636 | 706 | 770 | 829 | 239 | 307 | 424 | 541 | 636 | 706 | 770 | 829 | 194 | 249 | 344 | 439 | 542 | 669 | 770 | 829 |
| | **115** | HR250 | 364 | 455 | 622 | 699 | 752 | 830 | 906 | 975 | 279 | 349 | 476 | 604 | 731 | 830 | 906 | 975 | 227 | 283 | 386 | 490 | 593 | 728 | 866 | 975 |
| | | HR150 | 320 | 399 | 538 | 600 | 639 | 706 | 770 | 829 | 245 | 306 | 418 | 530 | 639 | 706 | 770 | 829 | 199 | 248 | 339 | 430 | 521 | 640 | 761 | 829 |
| | **120** | HR250 | 373 | 453 | 613 | 709 | 767 | 830 | 906 | 975 | 285 | 347 | 469 | 591 | 713 | 830 | 906 | 975 | 232 | 282 | 381 | 481 | 580 | 698 | 830 | 962 |
| | | HR150 | 327 | 398 | 538 | 608 | 652 | 706 | 770 | 829 | 251 | 305 | 412 | 519 | 626 | 706 | 770 | 829 | 204 | 248 | 335 | 422 | 509 | 613 | 729 | 829 |
| | **130** | HR250 | 395 | 457 | 603 | 730 | 794 | 840 | 906 | 975 | 303 | 350 | 463 | 575 | 688 | 800 | 906 | 975 | 246 | 285 | 376 | 467 | 559 | 650 | 765 | 887 |
| | | HR150 | 347 | 401 | 529 | 627 | 681 | 714 | 770 | 829 | 266 | 308 | 406 | 505 | 604 | 703 | 770 | 829 | 216 | 250 | 330 | 411 | 491 | 571 | 672 | 779 |
| | **140** | HR250 | 414 | 459 | 595 | 731 | 814 | 871 | 907 | 975 | 318 | 353 | 457 | 561 | 666 | 770 | 874 | 975 | 259 | 287 | 372 | 457 | 541 | 626 | 711 | 823 |
| | | HR150 | 364 | 403 | 522 | 641 | 698 | 741 | 772 | 829 | 280 | 310 | 401 | 493 | 585 | 676 | 768 | 829 | 227 | 252 | 327 | 401 | 476 | 550 | 625 | 723 |
| | **150** | HR250 | 439 | 467 | 594 | 720 | 836 | 892 | 941 | 975 | 337 | 359 | 456 | 554 | 651 | 748 | 846 | 944 | 274 | 292 | 371 | 450 | 529 | 609 | 688 | 768 |
| | | HR150 | 385 | 410 | 521 | 632 | 718 | 765 | 800 | 829 | 296 | 315 | 401 | 486 | 572 | 657 | 743 | 829 | 241 | 257 | 326 | 396 | 465 | 535 | 604 | 674 |

**Table 2.8: Maximum Shear (lb.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **C** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS 0° TO 7°** | **85** | HR250 | 9 | 36 | 56 | 69 | 79 | 87 | 95 | 102 | 7 | 31 | 56 | 69 | 79 | 87 | 95 | 102 | 5 | 25 | 45 | 65 | 79 | 87 | 95 | 102 |
| | | HR150 | 8 | 33 | 48 | 58 | 67 | 74 | 81 | 87 | 6 | 27 | 48 | 58 | 67 | 74 | 81 | 87 | 5 | 22 | 39 | 57 | 67 | 74 | 81 | 87 |
| | **90** | HR250 | 8 | 36 | 56 | 69 | 79 | 87 | 95 | 102 | 6 | 29 | 52 | 69 | 79 | 87 | 95 | 102 | 5 | 24 | 42 | 61 | 79 | 87 | 95 | 102 |
| | | HR150 | 7 | 33 | 48 | 58 | 67 | 74 | 81 | 87 | 6 | 26 | 46 | 58 | 67 | 74 | 81 | 87 | 5 | 21 | 37 | 54 | 67 | 74 | 81 | 87 |
| | **100** | HR250 | 7 | 34 | 56 | 69 | 79 | 87 | 95 | 102 | 6 | 26 | 47 | 68 | 79 | 87 | 95 | 102 | 5 | 21 | 38 | 55 | 72 | 87 | 95 | 102 |
| | | HR150 | 7 | 30 | 48 | 58 | 67 | 74 | 81 | 87 | 5 | 23 | 41 | 58 | 67 | 74 | 81 | 87 | 4 | 19 | 33 | 48 | 63 | 74 | 81 | 87 |
| | **105** | HR250 | 7 | 33 | 55 | 69 | 79 | 87 | 95 | 102 | 5 | 25 | 45 | 64 | 79 | 87 | 95 | 102 | 4 | 20 | 36 | 52 | 68 | 84 | 95 | 102 |
| | | HR150 | 6 | 29 | 47 | 58 | 67 | 74 | 81 | 87 | 5 | 22 | 39 | 56 | 67 | 74 | 81 | 87 | 4 | 18 | 32 | 46 | 60 | 74 | 81 | 87 |
| | **110** | HR250 | 7 | 31 | 54 | 69 | 79 | 87 | 95 | 102 | 5 | 24 | 43 | 61 | 79 | 87 | 95 | 102 | 4 | 19 | 35 | 50 | 65 | 80 | 95 | 102 |
| | | HR150 | 6 | 27 | 47 | 58 | 67 | 74 | 81 | 87 | 5 | 21 | 37 | 54 | 67 | 74 | 81 | 87 | 4 | 17 | 30 | 44 | 57 | 70 | 81 | 87 |
| | **115** | HR250 | 6 | 30 | 53 | 68 | 79 | 87 | 95 | 102 | 5 | 23 | 41 | 59 | 76 | 87 | 95 | 102 | 4 | 19 | 33 | 48 | 62 | 77 | 91 | 102 |
| | | HR150 | 6 | 26 | 46 | 58 | 67 | 74 | 81 | 87 | 4 | 20 | 36 | 51 | 67 | 74 | 81 | 87 | 4 | 16 | 29 | 42 | 54 | 67 | 80 | 87 |
| | **120** | HR250 | 6 | 28 | 51 | 67 | 79 | 87 | 95 | 102 | 5 | 22 | 39 | 56 | 73 | 87 | 95 | 102 | 4 | 18 | 32 | 46 | 59 | 73 | 87 | 101 |
| | | HR150 | 5 | 25 | 45 | 58 | 67 | 74 | 81 | 87 | 4 | 19 | 34 | 49 | 64 | 74 | 81 | 87 | 3 | 16 | 28 | 40 | 52 | 64 | 77 | 87 |
| | **130** | HR250 | 6 | 26 | 47 | 66 | 78 | 87 | 95 | 102 | 4 | 20 | 36 | 52 | 67 | 83 | 95 | 102 | 4 | 16 | 29 | 42 | 55 | 68 | 80 | 93 |
| | | HR150 | 5 | 23 | 41 | 56 | 67 | 74 | 81 | 87 | 4 | 18 | 32 | 45 | 59 | 73 | 81 | 87 | 3 | 14 | 26 | 37 | 48 | 59 | 71 | 82 |
| | **140** | HR250 | 5 | 24 | 43 | 62 | 76 | 87 | 95 | 102 | 4 | 19 | 33 | 48 | 63 | 77 | 92 | 102 | 3 | 15 | 27 | 39 | 51 | 63 | 75 | 87 |
| | | HR150 | 5 | 21 | 38 | 55 | 66 | 74 | 81 | 87 | 4 | 16 | 29 | 42 | 55 | 68 | 81 | 87 | 3 | 13 | 24 | 34 | 45 | 55 | 66 | 76 |
| | **150** | HR250 | 5 | 23 | 40 | 58 | 75 | 86 | 95 | 102 | 4 | 17 | 31 | 45 | 58 | 72 | 86 | 99 | 3 | 14 | 25 | 36 | 47 | 59 | 70 | 81 |
| | | HR150 | 4 | 20 | 35 | 51 | 64 | 74 | 81 | 87 | 3 | 15 | 27 | 39 | 51 | 63 | 75 | 87 | 3 | 12 | 22 | 32 | 42 | 51 | 61 | 71 |

**Table 2.9: Maximum Span Length (in.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **D** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS 0° TO 7°** | **85** | HR250 | 102 | 99 | 86 | 73 | 64 | 58 | 53 | 49 | 78 | 78 | 78 | 73 | 64 | 58 | 53 | 49 | 63 | 63 | 63 | 63 | 63 | 58 | 53 | 49 |
| | | HR150 | 90 | 89 | 73 | 62 | 55 | 49 | 45 | 42 | 68 | 68 | 68 | 62 | 55 | 49 | 45 | 42 | 55 | 55 | 55 | 55 | 55 | 49 | 45 | 42 |
| | **90** | HR250 | 96 | 96 | 86 | 73 | 64 | 58 | 53 | 49 | 74 | 74 | 74 | 73 | 64 | 58 | 53 | 49 | 60 | 60 | 60 | 60 | 60 | 58 | 53 | 49 |
| | | HR150 | 84 | 84 | 73 | 62 | 55 | 49 | 45 | 42 | 65 | 65 | 65 | 62 | 55 | 49 | 45 | 42 | 52 | 52 | 52 | 52 | 52 | 49 | 45 | 42 |
| | **100** | HR250 | 86 | 86 | 83 | 73 | 64 | 58 | 53 | 49 | 66 | 66 | 66 | 66 | 64 | 58 | 53 | 49 | 54 | 54 | 54 | 54 | 54 | 54 | 53 | 49 |
| | | HR150 | 76 | 76 | 72 | 62 | 55 | 49 | 45 | 42 | 58 | 58 | 58 | 58 | 55 | 49 | 45 | 42 | 47 | 47 | 47 | 47 | 47 | 47 | 45 | 42 |
| | **105** | HR250 | 82 | 82 | 82 | 72 | 64 | 58 | 53 | 49 | 63 | 63 | 63 | 63 | 63 | 58 | 53 | 49 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 49 |
| | | HR150 | 72 | 72 | 70 | 62 | 55 | 49 | 45 | 42 | 55 | 55 | 55 | 55 | 55 | 49 | 45 | 42 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 42 |
| | **110** | HR250 | 78 | 78 | 78 | 71 | 64 | 58 | 53 | 49 | 60 | 60 | 60 | 60 | 60 | 58 | 53 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 |
| | | HR150 | 68 | 68 | 68 | 61 | 55 | 49 | 45 | 42 | 53 | 53 | 53 | 53 | 53 | 49 | 45 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 42 |
| | **115** | HR250 | 74 | 74 | 74 | 71 | 64 | 58 | 53 | 49 | 57 | 57 | 57 | 57 | 57 | 57 | 53 | 49 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 |
| | | HR150 | 65 | 65 | 65 | 61 | 55 | 49 | 45 | 42 | 50 | 50 | 50 | 50 | 50 | 49 | 45 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 |
| | **120** | HR250 | 71 | 71 | 71 | 70 | 63 | 58 | 53 | 49 | 55 | 55 | 55 | 55 | 55 | 55 | 53 | 49 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 |
| | | HR150 | 63 | 63 | 63 | 60 | 54 | 49 | 45 | 42 | 48 | 48 | 48 | 48 | 48 | 48 | 45 | 42 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 |
| | **130** | HR250 | 66 | 66 | 66 | 66 | 62 | 58 | 53 | 49 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 |
| | | HR150 | 58 | 58 | 58 | 58 | 53 | 49 | 45 | 42 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 42 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 |
| | **140** | HR250 | 61 | 61 | 61 | 61 | 61 | 57 | 53 | 49 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 |
| | | HR150 | 53 | 53 | 53 | 53 | 52 | 48 | 45 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| | **150** | HR250 | 57 | 57 | 57 | 57 | 57 | 55 | 52 | 49 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
| | | HR150 | 50 | 50 | 50 | 50 | 50 | 48 | 45 | 42 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |

**Table 2.10: Maximum Uplift (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | -559 | -541 | -468 | -400 | -350 | -315 | -289 | -269 | -739 | -739 | -739 | -694 | -607 | -547 | -501 | -466 | -915 | -915 | -915 | -915 | -915 | -836 | -766 | -712 |
| | | HR150 | -490 | -486 | -401 | -341 | -298 | -268 | -246 | -229 | -648 | -648 | -648 | -590 | -517 | -465 | -426 | -396 | -803 | -803 | -803 | -803 | -790 | -711 | -652 | -605 |
| | 90 | HR250 | -596 | -596 | -530 | -454 | -397 | -358 | -328 | -304 | -784 | -784 | -784 | -780 | -683 | -615 | -564 | -524 | -971 | -971 | -971 | -971 | -971 | -941 | -863 | -801 |
| | | HR150 | -522 | -522 | -455 | -386 | -338 | -304 | -279 | -259 | -688 | -688 | -688 | -664 | -581 | -523 | -480 | -445 | -853 | -853 | -853 | -853 | -853 | -800 | -734 | -681 |
| | 100 | HR250 | -667 | -667 | -645 | -567 | -496 | -447 | -410 | -381 | -876 | -876 | -876 | -876 | -852 | -767 | -704 | -653 | -1082 | -1082 | -1082 | -1082 | -1082 | -1082 | -1070 | -993 |
| | | HR150 | -585 | -585 | -554 | -482 | -422 | -380 | -348 | -324 | -769 | -769 | -769 | -769 | -725 | -653 | -598 | -556 | -950 | -950 | -950 | -950 | -950 | -950 | -910 | -845 |
| | 105 | HR250 | -702 | -702 | -702 | -619 | -549 | -494 | -453 | -421 | -922 | -922 | -922 | -922 | -922 | -849 | -778 | -723 | -1138 | -1138 | -1138 | -1138 | -1138 | -1138 | -1138 | -1099 |
| | | HR150 | -616 | -616 | -604 | -531 | -467 | -420 | -385 | -358 | -809 | -809 | -809 | -809 | -802 | -722 | -662 | -615 | -999 | -999 | -999 | -999 | -999 | -999 | -999 | -934 |
| ROOFS 0° TO 7° | 110 | HR250 | -739 | -739 | -739 | -677 | -607 | -547 | -501 | -466 | -967 | -967 | -967 | -967 | -967 | -933 | -855 | -794 | -1194 | -1194 | -1194 | -1194 | -1194 | -1194 | -1194 | -1194 |
| | | HR150 | -648 | -648 | -648 | -581 | -517 | -465 | -426 | -396 | -849 | -849 | -849 | -849 | -849 | -793 | -728 | -676 | -1048 | -1048 | -1048 | -1048 | -1048 | -1048 | -1048 | -1028 |
| | 115 | HR250 | -774 | -774 | -774 | -733 | -666 | -599 | -549 | -510 | -1012 | -1012 | -1012 | -1012 | -1012 | -1012 | -937 | -870 | -1249 | -1249 | -1249 | -1249 | -1249 | -1249 | -1249 | -1249 |
| | | HR150 | -679 | -679 | -679 | -629 | -566 | -510 | -467 | -434 | -889 | -889 | -889 | -889 | -889 | -869 | -797 | -740 | -1097 | -1097 | -1097 | -1097 | -1097 | -1097 | -1097 | -1097 |
| | 120 | HR250 | -809 | -809 | -809 | -791 | -720 | -654 | -600 | -557 | -1058 | -1058 | -1058 | -1058 | -1058 | -1058 | -1024 | -951 | -1304 | -1304 | -1304 | -1304 | -1304 | -1304 | -1304 | -1304 |
| | | HR150 | -710 | -710 | -710 | -680 | -617 | -557 | -510 | -474 | -929 | -929 | -929 | -929 | -929 | -929 | -871 | -809 | -1145 | -1145 | -1145 | -1145 | -1145 | -1145 | -1145 | -1145 |
| | 130 | HR250 | -879 | -879 | -879 | -879 | -832 | -771 | -708 | -658 | -1148 | -1148 | -1148 | -1148 | -1148 | -1148 | -1148 | -1119 | -1415 | -1415 | -1415 | -1415 | -1415 | -1415 | -1415 | -1415 |
| | | HR150 | -772 | -772 | -772 | -772 | -714 | -657 | -603 | -560 | -1009 | -1009 | -1009 | -1009 | -1009 | -1009 | -1009 | -952 | -1243 | -1243 | -1243 | -1243 | -1243 | -1243 | -1243 | -1243 |
| | 140 | HR250 | -950 | -950 | -950 | -950 | -950 | -883 | -826 | -768 | -1239 | -1239 | -1239 | -1239 | -1239 | -1239 | -1239 | -1239 | -1525 | -1525 | -1525 | -1525 | -1525 | -1525 | -1525 | -1525 |
| | | HR150 | -834 | -834 | -834 | -834 | -816 | -757 | -703 | -653 | -1089 | -1089 | -1089 | -1089 | -1089 | -1089 | -1089 | -1089 | -1340 | -1340 | -1340 | -1340 | -1340 | -1340 | -1340 | -1340 |
| | 150 | HR250 | -1020 | -1020 | -1020 | -1020 | -1020 | -996 | -937 | -884 | -1329 | -1329 | -1329 | -1329 | -1329 | -1329 | -1329 | -1329 | -1636 | -1636 | -1636 | -1636 | -1636 | -1636 | -1636 | -1636 |
| | | HR150 | -896 | -896 | -896 | -896 | -896 | -855 | -804 | -752 | -1168 | -1168 | -1168 | -1168 | -1168 | -1168 | -1168 | -1168 | -1437 | -1437 | -1437 | -1437 | -1437 | -1437 | -1437 | -1437 |

**Table 2.11: Maximum Downforce (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 357 | 481 | 591 | 655 | 748 | 830 | 906 | 975 | 272 | 379 | 538 | 655 | 748 | 830 | 906 | 975 | 221 | 307 | 436 | 565 | 737 | 830 | 906 | 975 |
| | | HR150 | 313 | 432 | 507 | 557 | 636 | 706 | 770 | 829 | 239 | 332 | 472 | 557 | 636 | 706 | 770 | 829 | 194 | 269 | 383 | 496 | 636 | 706 | 770 | 829 |
| | 90 | HR250 | 336 | 467 | 591 | 655 | 748 | 830 | 906 | 975 | 257 | 357 | 508 | 655 | 748 | 830 | 906 | 975 | 208 | 289 | 411 | 533 | 695 | 830 | 906 | 975 |
| | | HR150 | 295 | 409 | 507 | 557 | 636 | 706 | 770 | 829 | 226 | 313 | 445 | 557 | 636 | 706 | 770 | 829 | 183 | 254 | 361 | 468 | 610 | 706 | 770 | 829 |
| | 100 | HR250 | 351 | 456 | 612 | 687 | 748 | 830 | 906 | 975 | 269 | 349 | 483 | 618 | 748 | 830 | 906 | 975 | 218 | 283 | 393 | 502 | 624 | 770 | 906 | 975 |
| | | HR150 | 308 | 400 | 525 | 584 | 636 | 706 | 770 | 829 | 236 | 306 | 424 | 543 | 636 | 706 | 770 | 829 | 192 | 249 | 345 | 441 | 548 | 676 | 770 | 829 |
| | 105 | HR250 | 364 | 456 | 624 | 698 | 750 | 830 | 906 | 975 | 278 | 349 | 477 | 605 | 733 | 830 | 906 | 975 | 226 | 283 | 387 | 491 | 596 | 732 | 871 | 975 |
| | | HR150 | 319 | 400 | 536 | 599 | 638 | 706 | 770 | 829 | 244 | 306 | 419 | 531 | 638 | 706 | 770 | 829 | 198 | 249 | 340 | 432 | 523 | 643 | 765 | 829 |
| | 110 | HR250 | 375 | 455 | 615 | 709 | 768 | 830 | 906 | 975 | 287 | 349 | 471 | 594 | 716 | 830 | 906 | 975 | 233 | 283 | 383 | 482 | 581 | 699 | 831 | 963 |
| | | HR150 | 329 | 399 | 539 | 608 | 653 | 706 | 770 | 829 | 252 | 307 | 414 | 521 | 629 | 706 | 770 | 829 | 205 | 249 | 336 | 423 | 511 | 614 | 730 | 829 |
| | 115 | HR250 | 385 | 455 | 608 | 720 | 785 | 830 | 906 | 975 | 295 | 349 | 466 | 583 | 700 | 822 | 906 | 975 | 240 | 284 | 379 | 473 | 568 | 668 | 794 | 921 |
| | | HR150 | 338 | 399 | 533 | 618 | 668 | 706 | 770 | 829 | 259 | 307 | 409 | 512 | 615 | 706 | 770 | 829 | 211 | 249 | 332 | 416 | 499 | 587 | 698 | 809 |
| | 120 | HR250 | 395 | 455 | 601 | 731 | 795 | 841 | 906 | 975 | 303 | 349 | 461 | 573 | 685 | 797 | 906 | 975 | 246 | 284 | 375 | 466 | 557 | 648 | 761 | 882 |
| | | HR150 | 346 | 400 | 528 | 628 | 682 | 715 | 770 | 829 | 266 | 307 | 405 | 503 | 601 | 700 | 770 | 829 | 216 | 249 | 329 | 409 | 489 | 569 | 669 | 775 |
| | 130 | HR250 | 420 | 462 | 596 | 731 | 818 | 876 | 913 | 975 | 323 | 355 | 458 | 561 | 664 | 767 | 871 | 975 | 262 | 288 | 372 | 456 | 540 | 624 | 708 | 814 |
| | | HR150 | 369 | 405 | 523 | 641 | 702 | 747 | 777 | 829 | 283 | 312 | 402 | 493 | 583 | 674 | 765 | 829 | 230 | 253 | 327 | 401 | 474 | 548 | 622 | 715 |
| | 140 | HR250 | 442 | 467 | 592 | 716 | 840 | 897 | 948 | 981 | 340 | 359 | 455 | 551 | 646 | 742 | 838 | 933 | 276 | 292 | 370 | 448 | 526 | 604 | 682 | 759 |
| | | HR150 | 388 | 410 | 520 | 629 | 722 | 769 | 806 | 834 | 298 | 316 | 400 | 484 | 568 | 652 | 736 | 820 | 243 | 257 | 325 | 394 | 462 | 530 | 599 | 667 |
| | 150 | HR250 | 469 | 478 | 594 | 710 | 826 | 920 | 972 | 1017 | 361 | 368 | 457 | 546 | 636 | 725 | 814 | 903 | 293 | 299 | 372 | 445 | 517 | 590 | 662 | 735 |
| | | HR150 | 412 | 420 | 522 | 624 | 726 | 790 | 834 | 865 | 317 | 323 | 402 | 480 | 558 | 637 | 715 | 794 | 258 | 263 | 327 | 391 | 454 | 518 | 582 | 646 |

ROOFS 0° TO 7°

**Table 2.12: Maximum Shear (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 8 | 36 | 56 | 69 | 79 | 87 | 95 | 102 | 6 | 29 | 51 | 69 | 79 | 87 | 95 | 102 | 5 | 23 | 41 | 59 | 77 | 87 | 95 | 102 |
| | | HR150 | 7 | 33 | 48 | 58 | 67 | 74 | 81 | 87 | 5 | 25 | 45 | 58 | 67 | 74 | 81 | 87 | 4 | 20 | 36 | 52 | 67 | 74 | 81 | 87 |
| | 90 | HR250 | 8 | 35 | 56 | 69 | 79 | 87 | 95 | 102 | 6 | 27 | 48 | 69 | 79 | 87 | 95 | 102 | 5 | 22 | 39 | 56 | 73 | 87 | 95 | 102 |
| | | HR150 | 7 | 31 | 48 | 58 | 67 | 74 | 81 | 87 | 5 | 24 | 42 | 58 | 67 | 74 | 81 | 87 | 4 | 19 | 34 | 49 | 64 | 74 | 81 | 87 |
| | 100 | HR250 | 7 | 32 | 54 | 69 | 79 | 87 | 95 | 102 | 5 | 24 | 43 | 62 | 79 | 87 | 95 | 102 | 4 | 20 | 35 | 50 | 66 | 81 | 95 | 102 |
| | | HR150 | 6 | 28 | 47 | 58 | 67 | 74 | 81 | 87 | 5 | 21 | 38 | 54 | 67 | 74 | 81 | 87 | 4 | 17 | 31 | 44 | 58 | 71 | 81 | 87 |
| | 105 | HR250 | 6 | 30 | 53 | 68 | 79 | 87 | 95 | 102 | 5 | 23 | 41 | 59 | 77 | 87 | 95 | 102 | 4 | 19 | 33 | 48 | 62 | 77 | 92 | 102 |
| | | HR150 | 6 | 26 | 46 | 58 | 67 | 74 | 81 | 87 | 4 | 20 | 36 | 52 | 67 | 74 | 81 | 87 | 4 | 16 | 29 | 42 | 55 | 68 | 80 | 87 |
| | 110 | HR250 | 6 | 29 | 51 | 67 | 79 | 87 | 95 | 102 | 5 | 22 | 39 | 56 | 73 | 87 | 95 | 102 | 4 | 18 | 32 | 46 | 60 | 73 | 87 | 101 |
| | | HR150 | 5 | 25 | 45 | 58 | 67 | 74 | 81 | 87 | 4 | 19 | 34 | 49 | 64 | 74 | 81 | 87 | 3 | 16 | 28 | 40 | 52 | 64 | 77 | 87 |
| | 115 | HR250 | 6 | 27 | 49 | 66 | 79 | 87 | 95 | 102 | 5 | 21 | 37 | 54 | 70 | 86 | 95 | 102 | 4 | 17 | 30 | 44 | 57 | 70 | 84 | 97 |
| | | HR150 | 5 | 24 | 43 | 57 | 67 | 74 | 81 | 87 | 4 | 18 | 33 | 47 | 62 | 74 | 81 | 87 | 3 | 15 | 27 | 38 | 50 | 62 | 73 | 85 |
| | 120 | HR250 | 6 | 26 | 47 | 66 | 78 | 87 | 95 | 102 | 4 | 20 | 36 | 51 | 67 | 83 | 95 | 102 | 4 | 16 | 29 | 42 | 55 | 67 | 80 | 93 |
| | | HR150 | 5 | 23 | 41 | 56 | 67 | 74 | 81 | 87 | 4 | 18 | 31 | 45 | 59 | 73 | 81 | 87 | 3 | 14 | 25 | 37 | 48 | 59 | 70 | 81 |
| | 130 | HR250 | 5 | 24 | 43 | 62 | 76 | 87 | 95 | 102 | 4 | 18 | 33 | 47 | 62 | 76 | 91 | 102 | 3 | 15 | 27 | 39 | 50 | 62 | 74 | 86 |
| | | HR150 | 5 | 21 | 38 | 54 | 65 | 74 | 81 | 87 | 4 | 16 | 29 | 42 | 54 | 67 | 80 | 87 | 3 | 13 | 23 | 34 | 44 | 54 | 65 | 75 |
| | 140 | HR250 | 5 | 22 | 40 | 57 | 75 | 85 | 95 | 102 | 4 | 17 | 31 | 44 | 57 | 71 | 84 | 98 | 3 | 14 | 25 | 36 | 47 | 58 | 68 | 79 |
| | | HR150 | 4 | 20 | 35 | 50 | 64 | 73 | 81 | 87 | 3 | 15 | 27 | 39 | 50 | 62 | 74 | 86 | 3 | 12 | 22 | 31 | 41 | 51 | 60 | 70 |
| | 150 | HR250 | 4 | 21 | 37 | 53 | 70 | 84 | 94 | 102 | 3 | 16 | 28 | 41 | 53 | 66 | 79 | 91 | 3 | 13 | 23 | 33 | 44 | 54 | 64 | 74 |
| | | HR150 | 4 | 18 | 32 | 47 | 61 | 72 | 80 | 87 | 3 | 14 | 25 | 36 | 47 | 58 | 69 | 80 | 2 | 11 | 20 | 29 | 38 | 47 | 56 | 65 |

ROOFS 0° TO 7°

**Table 2.13: Maximum Span Length (in.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS >7° TO 27°** | **85** | HR250 | 108 | 91 | 73 | 61 | 53 | 48 | 44 | 41 | 101 | 91 | 73 | 61 | 53 | 48 | 44 | 41 | 83 | 83 | 73 | 61 | 53 | 48 | 44 | 41 |
| | | HR150 | 99 | 75 | 59 | 49 | 43 | 38 | 35 | 33 | 88 | 75 | 59 | 49 | 43 | 38 | 35 | 33 | 73 | 73 | 59 | 49 | 43 | 38 | 35 | 33 |
| | **90** | HR250 | 108 | 91 | 73 | 61 | 53 | 48 | 44 | 41 | 96 | 91 | 73 | 61 | 53 | 48 | 44 | 41 | 79 | 79 | 73 | 61 | 53 | 48 | 44 | 41 |
| | | HR150 | 99 | 75 | 59 | 49 | 43 | 38 | 35 | 33 | 83 | 75 | 59 | 49 | 43 | 38 | 35 | 33 | 69 | 69 | 59 | 49 | 43 | 38 | 35 | 33 |
| | **100** | HR250 | 107 | 90 | 73 | 61 | 53 | 48 | 44 | 41 | 86 | 86 | 73 | 61 | 53 | 48 | 44 | 41 | 71 | 71 | 71 | 61 | 53 | 48 | 44 | 41 |
| | | HR150 | 98 | 75 | 59 | 49 | 43 | 38 | 35 | 33 | 75 | 75 | 59 | 49 | 43 | 38 | 35 | 33 | 62 | 62 | 59 | 49 | 43 | 38 | 35 | 33 |
| | **105** | HR250 | 105 | 89 | 73 | 61 | 53 | 48 | 44 | 41 | 82 | 82 | 73 | 61 | 53 | 48 | 44 | 41 | 67 | 67 | 67 | 61 | 53 | 48 | 44 | 41 |
| | | HR150 | 94 | 74 | 59 | 49 | 43 | 38 | 35 | 33 | 71 | 71 | 59 | 49 | 43 | 38 | 35 | 33 | 59 | 59 | 59 | 49 | 43 | 38 | 35 | 33 |
| | **110** | HR250 | 103 | 88 | 72 | 61 | 53 | 48 | 44 | 41 | 78 | 78 | 72 | 61 | 53 | 48 | 44 | 41 | 64 | 64 | 64 | 61 | 53 | 48 | 44 | 41 |
| | | HR150 | 90 | 73 | 59 | 49 | 43 | 38 | 35 | 33 | 68 | 68 | 59 | 49 | 43 | 38 | 35 | 33 | 56 | 56 | 56 | 49 | 43 | 38 | 35 | 33 |
| | **115** | HR250 | 99 | 86 | 71 | 61 | 53 | 48 | 44 | 41 | 75 | 75 | 71 | 61 | 53 | 48 | 44 | 41 | 62 | 62 | 62 | 61 | 53 | 48 | 44 | 41 |
| | | HR150 | 86 | 72 | 59 | 49 | 43 | 38 | 35 | 33 | 65 | 65 | 59 | 49 | 43 | 38 | 35 | 33 | 54 | 54 | 54 | 49 | 43 | 38 | 35 | 33 |
| | **120** | HR250 | 95 | 85 | 71 | 61 | 53 | 48 | 44 | 41 | 72 | 72 | 71 | 61 | 53 | 48 | 44 | 41 | 59 | 59 | 59 | 59 | 53 | 48 | 44 | 41 |
| | | HR150 | 82 | 71 | 58 | 49 | 43 | 38 | 35 | 33 | 63 | 63 | 58 | 49 | 43 | 38 | 35 | 33 | 52 | 52 | 52 | 49 | 43 | 38 | 35 | 33 |
| | **130** | HR250 | 87 | 82 | 69 | 61 | 53 | 48 | 44 | 41 | 66 | 66 | 66 | 61 | 53 | 48 | 44 | 41 | 54 | 54 | 54 | 54 | 53 | 48 | 44 | 41 |
| | | HR150 | 76 | 69 | 57 | 49 | 43 | 38 | 35 | 33 | 58 | 58 | 57 | 49 | 43 | 38 | 35 | 33 | 48 | 48 | 48 | 48 | 43 | 38 | 35 | 33 |
| | **140** | HR250 | 81 | 80 | 67 | 60 | 53 | 48 | 44 | 41 | 61 | 61 | 61 | 60 | 53 | 48 | 44 | 41 | 51 | 51 | 51 | 51 | 51 | 48 | 44 | 41 |
| | | HR150 | 71 | 67 | 56 | 49 | 43 | 38 | 35 | 33 | 54 | 54 | 54 | 49 | 43 | 38 | 35 | 33 | 44 | 44 | 44 | 44 | 43 | 38 | 35 | 33 |
| | **150** | HR250 | 76 | 76 | 66 | 58 | 53 | 48 | 44 | 41 | 57 | 57 | 57 | 57 | 53 | 48 | 44 | 41 | 47 | 47 | 47 | 47 | 47 | 47 | 44 | 41 |
| | | HR150 | 66 | 65 | 55 | 48 | 43 | 38 | 35 | 33 | 50 | 50 | 50 | 48 | 43 | 38 | 35 | 33 | 41 | 41 | 41 | 41 | 41 | 38 | 35 | 33 |

**Table 2.14: Maximum Uplift (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS >7° TO 27°** | **85** | HR250 | -308 | -260 | -207 | -173 | -151 | -136 | -125 | -116 | -534 | -479 | -382 | -319 | -279 | -251 | -230 | -214 | -665 | -665 | -580 | -483 | -423 | -381 | -349 | -324 |
| | | HR150 | -283 | -214 | -167 | -139 | -122 | -110 | -101 | -93 | -463 | -396 | -308 | -257 | -225 | -203 | -186 | -173 | -580 | -580 | -468 | -390 | -341 | -307 | -282 | -261 |
| | **90** | HR250 | -350 | -294 | -235 | -196 | -171 | -154 | -142 | -131 | -570 | -541 | -432 | -360 | -315 | -284 | -260 | -242 | -708 | -708 | -653 | -545 | -477 | -429 | -393 | -365 |
| | | HR150 | -322 | -243 | -190 | -158 | -138 | -125 | -114 | -106 | -495 | -447 | -349 | -291 | -254 | -229 | -210 | -195 | -618 | -618 | -527 | -439 | -384 | -346 | -317 | -295 |
| | **100** | HR250 | -441 | -372 | -299 | -249 | -218 | -196 | -180 | -167 | -642 | -642 | -542 | -452 | -395 | -356 | -326 | -303 | -794 | -794 | -794 | -679 | -594 | -535 | -491 | -456 |
| | | HR150 | -404 | -308 | -241 | -201 | -176 | -158 | -145 | -135 | -559 | -558 | -437 | -364 | -319 | -287 | -263 | -244 | -694 | -694 | -657 | -548 | -479 | -432 | -396 | -368 |
| | **105** | HR250 | -482 | -408 | -333 | -277 | -243 | -218 | -200 | -186 | -677 | -677 | -600 | -500 | -437 | -394 | -361 | -335 | -836 | -836 | -836 | -750 | -657 | -591 | -542 | -504 |
| | | HR150 | -429 | -338 | -268 | -224 | -196 | -176 | -162 | -150 | -590 | -590 | -484 | -403 | -353 | -318 | -291 | -270 | -731 | -731 | -726 | -605 | -530 | -477 | -437 | -406 |
| | **110** | HR250 | -521 | -443 | -364 | -305 | -267 | -241 | -221 | -205 | -713 | -713 | -657 | -551 | -482 | -434 | -398 | -370 | -879 | -879 | -879 | -827 | -724 | -651 | -597 | -555 |
| | | HR150 | -453 | -368 | -296 | -246 | -216 | -194 | -178 | -165 | -622 | -622 | -533 | -445 | -389 | -350 | -321 | -298 | -768 | -768 | -768 | -667 | -584 | -526 | -482 | -447 |
| | **115** | HR250 | -550 | -481 | -397 | -337 | -295 | -266 | -243 | -226 | -748 | -748 | -712 | -604 | -529 | -476 | -437 | -405 | -921 | -921 | -921 | -905 | -792 | -713 | -654 | -607 |
| | | HR150 | -478 | -400 | -326 | -272 | -238 | -214 | -196 | -182 | -652 | -652 | -585 | -487 | -427 | -384 | -352 | -327 | -805 | -805 | -805 | -730 | -639 | -575 | -527 | -490 |
| | **120** | HR250 | -577 | -518 | -430 | -369 | -323 | -290 | -266 | -247 | -783 | -783 | -771 | -661 | -578 | -521 | -477 | -443 | -963 | -963 | -963 | -963 | -865 | -778 | -714 | -663 |
| | | HR150 | -501 | -431 | -354 | -297 | -260 | -234 | -215 | -199 | -684 | -684 | -635 | -533 | -467 | -420 | -385 | -358 | -843 | -843 | -843 | -797 | -697 | -628 | -576 | -535 |
| | **130** | HR250 | -631 | -594 | -498 | -437 | -382 | -344 | -315 | -293 | -852 | -852 | -852 | -779 | -682 | -614 | -563 | -522 | -1047 | -1047 | -1047 | -1047 | -1019 | -917 | -841 | -781 |
| | | HR150 | -549 | -496 | -411 | -352 | -308 | -278 | -254 | -236 | -745 | -745 | -734 | -628 | -550 | -495 | -454 | -421 | -917 | -917 | -917 | -917 | -822 | -740 | -678 | -630 |
| | **140** | HR250 | -685 | -674 | -570 | -503 | -448 | -403 | -369 | -343 | -922 | -922 | -922 | -893 | -795 | -716 | -656 | -609 | -1131 | -1131 | -1131 | -1131 | -1131 | -1068 | -979 | -909 |
| | | HR150 | -597 | -564 | -472 | -412 | -361 | -325 | -298 | -277 | -807 | -807 | -807 | -733 | -641 | -577 | -529 | -492 | -991 | -991 | -991 | -991 | -956 | -861 | -789 | -733 |
| | **150** | HR250 | -738 | -738 | -642 | -569 | -516 | -464 | -426 | -395 | -991 | -991 | -991 | -991 | -915 | -824 | -756 | -702 | -1215 | -1215 | -1215 | -1215 | -1215 | -1215 | -1126 | -1046 |
| | | HR150 | -644 | -631 | -533 | -470 | -416 | -375 | -343 | -319 | -868 | -868 | -868 | -833 | -738 | -665 | -610 | -566 | -1065 | -1065 | -1065 | -1065 | -1065 | -991 | -908 | -844 |

**Table 2.15: Maximum Downforce (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS >7° TO 27°** | **85** | HR250 | 370 | 419 | 470 | 505 | 563 | 626 | 682 | 735 | 348 | 419 | 470 | 505 | 563 | 626 | 682 | 735 | 286 | 384 | 470 | 505 | 563 | 626 | 682 | 735 |
| | | HR150 | 341 | 346 | 379 | 407 | 454 | 505 | 550 | 593 | 302 | 346 | 379 | 407 | 454 | 505 | 550 | 593 | 249 | 335 | 379 | 407 | 454 | 505 | 550 | 593 |
| | **90** | HR250 | 370 | 419 | 470 | 505 | 563 | 626 | 682 | 735 | 328 | 419 | 470 | 505 | 563 | 626 | 682 | 735 | 270 | 363 | 470 | 505 | 563 | 626 | 682 | 735 |
| | | HR150 | 341 | 346 | 379 | 407 | 454 | 505 | 550 | 593 | 285 | 346 | 379 | 407 | 454 | 505 | 550 | 593 | 235 | 316 | 379 | 407 | 454 | 505 | 550 | 593 |
| | **100** | HR250 | 379 | 424 | 476 | 510 | 563 | 626 | 682 | 735 | 305 | 404 | 476 | 510 | 563 | 626 | 682 | 735 | 250 | 332 | 464 | 510 | 563 | 626 | 682 | 735 |
| | | HR150 | 348 | 351 | 384 | 411 | 454 | 505 | 550 | 593 | 265 | 351 | 384 | 411 | 454 | 505 | 550 | 593 | 219 | 290 | 384 | 411 | 454 | 505 | 550 | 593 |
| | **105** | HR250 | 401 | 436 | 491 | 522 | 563 | 626 | 682 | 735 | 313 | 402 | 491 | 522 | 563 | 626 | 682 | 735 | 257 | 330 | 456 | 522 | 563 | 626 | 682 | 735 |
| | | HR150 | 357 | 361 | 396 | 421 | 454 | 505 | 550 | 593 | 273 | 350 | 396 | 421 | 454 | 505 | 550 | 593 | 225 | 289 | 396 | 421 | 454 | 505 | 550 | 593 |
| | **110** | HR250 | 425 | 450 | 504 | 536 | 568 | 626 | 682 | 735 | 322 | 401 | 504 | 536 | 568 | 626 | 682 | 735 | 265 | 330 | 450 | 536 | 568 | 626 | 682 | 735 |
| | | HR150 | 369 | 373 | 409 | 432 | 458 | 505 | 550 | 593 | 281 | 350 | 409 | 432 | 458 | 505 | 550 | 593 | 231 | 288 | 393 | 432 | 458 | 505 | 550 | 593 |
| | **115** | HR250 | 439 | 464 | 516 | 551 | 581 | 626 | 682 | 735 | 333 | 402 | 516 | 551 | 581 | 626 | 682 | 735 | 274 | 331 | 445 | 551 | 581 | 626 | 682 | 735 |
| | | HR150 | 381 | 385 | 424 | 444 | 468 | 505 | 550 | 593 | 290 | 351 | 424 | 444 | 468 | 505 | 550 | 593 | 239 | 289 | 390 | 444 | 468 | 505 | 550 | 593 |
| | **120** | HR250 | 452 | 478 | 528 | 566 | 594 | 626 | 682 | 735 | 342 | 403 | 528 | 566 | 594 | 626 | 682 | 735 | 282 | 331 | 441 | 551 | 594 | 626 | 682 | 735 |
| | | HR150 | 393 | 397 | 435 | 456 | 479 | 505 | 550 | 593 | 299 | 352 | 435 | 456 | 479 | 505 | 550 | 593 | 246 | 290 | 386 | 456 | 479 | 505 | 550 | 593 |
| | **130** | HR250 | 480 | 507 | 553 | 598 | 622 | 649 | 682 | 735 | 363 | 407 | 531 | 598 | 622 | 649 | 682 | 735 | 299 | 335 | 436 | 538 | 622 | 649 | 682 | 735 |
| | | HR150 | 418 | 423 | 457 | 482 | 502 | 524 | 550 | 593 | 318 | 356 | 457 | 482 | 502 | 524 | 550 | 593 | 262 | 293 | 382 | 471 | 502 | 524 | 550 | 593 |
| | **140** | HR250 | 507 | 536 | 579 | 622 | 653 | 676 | 702 | 735 | 384 | 413 | 528 | 622 | 653 | 676 | 702 | 735 | 316 | 340 | 434 | 528 | 623 | 676 | 702 | 735 |
| | | HR150 | 442 | 449 | 480 | 510 | 526 | 546 | 566 | 593 | 336 | 362 | 462 | 510 | 526 | 546 | 566 | 593 | 277 | 298 | 380 | 463 | 526 | 546 | 566 | 593 |
| | **150** | HR250 | 536 | 557 | 607 | 647 | 685 | 706 | 729 | 753 | 406 | 421 | 528 | 635 | 685 | 706 | 729 | 753 | 334 | 346 | 434 | 522 | 610 | 698 | 729 | 753 |
| | | HR150 | 468 | 476 | 504 | 534 | 553 | 569 | 588 | 607 | 355 | 369 | 462 | 534 | 553 | 569 | 588 | 607 | 293 | 304 | 381 | 458 | 535 | 569 | 588 | 607 |

**Table 2.16: Maximum Shear (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| B | 85 | HR250 | 35 | 135 | 192 | 230 | 263 | 292 | 318 | 343 | 32 | 135 | 192 | 230 | 263 | 292 | 318 | 343 | 27 | 123 | 192 | 230 | 263 | 292 | 318 | 343 |
| | | HR150 | 32 | 111 | 155 | 185 | 212 | 235 | 257 | 276 | 28 | 111 | 155 | 185 | 212 | 235 | 257 | 276 | 23 | 107 | 155 | 185 | 212 | 235 | 257 | 276 |
| | 90 | HR250 | 35 | 135 | 192 | 230 | 263 | 292 | 318 | 343 | 31 | 135 | 192 | 230 | 263 | 292 | 318 | 343 | 25 | 116 | 192 | 230 | 263 | 292 | 318 | 343 |
| | | HR150 | 32 | 111 | 155 | 185 | 212 | 235 | 257 | 276 | 27 | 111 | 155 | 185 | 212 | 235 | 257 | 276 | 22 | 102 | 155 | 185 | 212 | 235 | 257 | 276 |
| | 100 | HR250 | 34 | 134 | 192 | 230 | 263 | 292 | 318 | 343 | 28 | 127 | 192 | 230 | 263 | 292 | 318 | 343 | 23 | 105 | 187 | 230 | 263 | 292 | 318 | 343 |
| | | HR150 | 31 | 111 | 155 | 185 | 212 | 235 | 257 | 276 | 24 | 111 | 155 | 185 | 212 | 235 | 257 | 276 | 20 | 91 | 155 | 185 | 212 | 235 | 257 | 276 |
| | 105 | HR250 | 34 | 132 | 192 | 230 | 263 | 292 | 318 | 343 | 26 | 121 | 192 | 230 | 263 | 292 | 318 | 343 | 22 | 100 | 178 | 230 | 263 | 292 | 318 | 343 |
| | | HR150 | 30 | 109 | 155 | 185 | 212 | 235 | 257 | 276 | 23 | 106 | 155 | 185 | 212 | 235 | 257 | 276 | 19 | 87 | 155 | 185 | 212 | 235 | 257 | 276 |
| | 110 | HR250 | 33 | 130 | 190 | 230 | 263 | 292 | 318 | 343 | 25 | 116 | 190 | 230 | 263 | 292 | 318 | 343 | 21 | 95 | 170 | 230 | 263 | 292 | 318 | 343 |
| | | HR150 | 29 | 108 | 155 | 185 | 212 | 235 | 257 | 276 | 22 | 101 | 155 | 185 | 212 | 235 | 257 | 276 | 18 | 83 | 148 | 185 | 212 | 235 | 257 | 276 |
| | 115 | HR250 | 32 | 128 | 188 | 230 | 263 | 292 | 318 | 343 | 24 | 111 | 188 | 230 | 263 | 292 | 318 | 343 | 20 | 91 | 162 | 230 | 263 | 292 | 318 | 343 |
| | | HR150 | 27 | 106 | 155 | 185 | 212 | 235 | 257 | 276 | 21 | 97 | 155 | 185 | 212 | 235 | 257 | 276 | 17 | 80 | 142 | 185 | 212 | 235 | 257 | 276 |
| | 120 | HR250 | 30 | 126 | 186 | 230 | 263 | 292 | 318 | 343 | 23 | 106 | 186 | 230 | 263 | 292 | 318 | 343 | 19 | 87 | 156 | 224 | 263 | 292 | 318 | 343 |
| | | HR150 | 26 | 105 | 153 | 185 | 212 | 235 | 257 | 276 | 20 | 93 | 153 | 185 | 212 | 235 | 257 | 276 | 17 | 76 | 136 | 185 | 212 | 235 | 257 | 276 |
| | 130 | HR250 | 28 | 122 | 182 | 230 | 263 | 292 | 318 | 343 | 21 | 98 | 175 | 230 | 263 | 292 | 318 | 343 | 17 | 81 | 144 | 207 | 263 | 292 | 318 | 343 |
| | | HR150 | 24 | 102 | 150 | 185 | 212 | 235 | 257 | 276 | 19 | 86 | 150 | 185 | 212 | 235 | 257 | 276 | 15 | 71 | 126 | 181 | 212 | 235 | 257 | 276 |
| | 140 | HR250 | 26 | 118 | 178 | 226 | 263 | 292 | 318 | 343 | 20 | 91 | 162 | 226 | 263 | 292 | 318 | 343 | 16 | 75 | 133 | 192 | 251 | 292 | 318 | 343 |
| | | HR150 | 23 | 99 | 147 | 185 | 212 | 235 | 257 | 276 | 17 | 80 | 142 | 185 | 212 | 235 | 257 | 276 | 14 | 65 | 117 | 168 | 212 | 235 | 257 | 276 |
| | 150 | HR250 | 24 | 112 | 174 | 222 | 263 | 292 | 318 | 343 | 18 | 85 | 151 | 218 | 263 | 292 | 318 | 343 | 15 | 70 | 124 | 179 | 234 | 288 | 318 | 343 |
| | | HR150 | 21 | 96 | 144 | 183 | 212 | 235 | 257 | 276 | 16 | 74 | 132 | 183 | 212 | 235 | 257 | 276 | 13 | 61 | 109 | 157 | 205 | 235 | 257 | 276 |

ROOFS >7° TO 27°

**Table 2.17: Maximum Span Length (in.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **C** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS >7° TO 27°** | **85** | HR250 | 107 | 90 | 73 | 61 | 53 | 48 | 44 | 41 | 86 | 86 | 73 | 61 | 53 | 48 | 44 | 41 | 70 | 70 | 70 | 61 | 53 | 48 | 44 | 41 |
| | | HR150 | 98 | 75 | 59 | 49 | 43 | 38 | 35 | 33 | 75 | 75 | 59 | 49 | 43 | 38 | 35 | 33 | 62 | 62 | 59 | 49 | 43 | 38 | 35 | 33 |
| | **90** | HR250 | 105 | 89 | 73 | 61 | 53 | 48 | 44 | 41 | 81 | 81 | 73 | 61 | 53 | 48 | 44 | 41 | 67 | 67 | 67 | 61 | 53 | 48 | 44 | 41 |
| | | HR150 | 93 | 73 | 59 | 49 | 43 | 38 | 35 | 33 | 71 | 71 | 59 | 49 | 43 | 38 | 35 | 33 | 58 | 58 | 58 | 49 | 43 | 38 | 35 | 33 |
| | **100** | HR250 | 96 | 85 | 71 | 61 | 53 | 48 | 44 | 41 | 73 | 73 | 71 | 61 | 53 | 48 | 44 | 41 | 60 | 60 | 60 | 60 | 53 | 48 | 44 | 41 |
| | | HR150 | 83 | 71 | 58 | 49 | 43 | 38 | 35 | 33 | 63 | 63 | 58 | 49 | 43 | 38 | 35 | 33 | 52 | 52 | 52 | 49 | 43 | 38 | 35 | 33 |
| | **105** | HR250 | 91 | 84 | 70 | 61 | 53 | 48 | 44 | 41 | 69 | 69 | 69 | 61 | 53 | 48 | 44 | 41 | 57 | 57 | 57 | 57 | 53 | 48 | 44 | 41 |
| | | HR150 | 79 | 70 | 58 | 49 | 43 | 38 | 35 | 33 | 61 | 61 | 58 | 49 | 43 | 38 | 35 | 33 | 50 | 50 | 50 | 49 | 43 | 38 | 35 | 33 |
| | **110** | HR250 | 87 | 82 | 69 | 61 | 53 | 48 | 44 | 41 | 66 | 66 | 66 | 61 | 53 | 48 | 44 | 41 | 54 | 54 | 54 | 54 | 53 | 48 | 44 | 41 |
| | | HR150 | 76 | 69 | 57 | 49 | 43 | 38 | 35 | 33 | 58 | 58 | 57 | 49 | 43 | 38 | 35 | 33 | 48 | 48 | 48 | 48 | 43 | 38 | 35 | 33 |
| | **115** | HR250 | 83 | 81 | 68 | 60 | 53 | 48 | 44 | 41 | 63 | 63 | 63 | 60 | 53 | 48 | 44 | 41 | 52 | 52 | 52 | 52 | 52 | 48 | 44 | 41 |
| | | HR150 | 73 | 68 | 56 | 49 | 43 | 38 | 35 | 33 | 55 | 55 | 55 | 49 | 43 | 38 | 35 | 33 | 46 | 46 | 46 | 46 | 43 | 38 | 35 | 33 |
| | **120** | HR250 | 80 | 79 | 67 | 59 | 53 | 48 | 44 | 41 | 61 | 61 | 61 | 59 | 53 | 48 | 44 | 41 | 50 | 50 | 50 | 50 | 50 | 48 | 44 | 41 |
| | | HR150 | 70 | 66 | 56 | 49 | 43 | 38 | 35 | 33 | 53 | 53 | 53 | 49 | 43 | 38 | 35 | 33 | 44 | 44 | 44 | 44 | 43 | 38 | 35 | 33 |
| | **130** | HR250 | 74 | 74 | 65 | 58 | 53 | 48 | 44 | 41 | 56 | 56 | 56 | 56 | 53 | 48 | 44 | 41 | 46 | 46 | 46 | 46 | 46 | 46 | 44 | 41 |
| | | HR150 | 64 | 64 | 54 | 48 | 43 | 38 | 35 | 33 | 49 | 49 | 49 | 48 | 43 | 38 | 35 | 33 | 40 | 40 | 40 | 40 | 40 | 38 | 35 | 33 |
| | **140** | HR250 | 69 | 69 | 63 | 57 | 52 | 48 | 44 | 41 | 52 | 52 | 52 | 52 | 52 | 48 | 44 | 41 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 41 |
| | | HR150 | 60 | 60 | 53 | 47 | 43 | 38 | 35 | 33 | 45 | 45 | 45 | 45 | 43 | 38 | 35 | 33 | 37 | 37 | 37 | 37 | 37 | 37 | 35 | 33 |
| | **150** | HR250 | 64 | 64 | 62 | 55 | 51 | 47 | 44 | 41 | 48 | 48 | 48 | 48 | 48 | 47 | 44 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| | | HR150 | 56 | 56 | 52 | 46 | 42 | 38 | 35 | 33 | 42 | 42 | 42 | 42 | 42 | 38 | 35 | 33 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 33 |

**Table 2.18: Maximum Uplift (lb.) - Wind Exposure C Condition**

| Exposure C | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >7° TO 27° | 85 | HR250 | -445 | -376 | -302 | -252 | -220 | -198 | -182 | -169 | -646 | -646 | -547 | -456 | -399 | -359 | -330 | -306 | -799 | -799 | -799 | -686 | -601 | -541 | -496 | -461 |
| | | HR150 | -407 | -310 | -244 | -203 | -178 | -160 | -147 | -136 | -562 | -562 | -442 | -368 | -322 | -290 | -266 | -247 | -697 | -697 | -664 | -554 | -485 | -436 | -400 | -371 |
| | 90 | HR250 | -491 | -417 | -341 | -284 | -249 | -224 | -205 | -191 | -687 | -687 | -617 | -514 | -450 | -405 | -372 | -345 | -849 | -849 | -849 | -772 | -676 | -609 | -558 | -518 |
| | | HR150 | -435 | -345 | -275 | -229 | -201 | -181 | -166 | -154 | -599 | -599 | -498 | -415 | -363 | -327 | -300 | -278 | -742 | -742 | -742 | -623 | -545 | -491 | -450 | -418 |
| | 100 | HR250 | -569 | -506 | -420 | -359 | -314 | -283 | -259 | -241 | -772 | -772 | -751 | -642 | -562 | -506 | -464 | -431 | -949 | -949 | -949 | -949 | -841 | -757 | -694 | -645 |
| | | HR150 | -494 | -421 | -345 | -289 | -253 | -228 | -209 | -194 | -674 | -674 | -619 | -518 | -453 | -408 | -374 | -348 | -831 | -831 | -831 | -775 | -678 | -611 | -560 | -520 |
| | 105 | HR250 | -601 | -552 | -460 | -398 | -348 | -314 | -288 | -267 | -812 | -812 | -812 | -710 | -621 | -559 | -513 | -476 | -999 | -999 | -999 | -999 | -928 | -836 | -766 | -712 |
| | | HR150 | -523 | -460 | -379 | -321 | -281 | -253 | -232 | -215 | -710 | -710 | -676 | -572 | -501 | -451 | -414 | -384 | -874 | -874 | -874 | -855 | -749 | -674 | -618 | -574 |
| | 110 | HR250 | -632 | -596 | -499 | -438 | -383 | -345 | -316 | -294 | -854 | -854 | -854 | -782 | -684 | -616 | -565 | -524 | -1049 | -1049 | -1049 | -1049 | -1022 | -920 | -843 | -783 |
| | | HR150 | -550 | -497 | -412 | -353 | -309 | -278 | -255 | -237 | -746 | -746 | -736 | -630 | -552 | -497 | -456 | -423 | -918 | -918 | -918 | -918 | -824 | -742 | -680 | -632 |
| | 115 | HR250 | -664 | -643 | -542 | -477 | -422 | -380 | -348 | -323 | -895 | -895 | -895 | -848 | -749 | -675 | -618 | -574 | -1098 | -1098 | -1098 | -1098 | -1098 | -1006 | -922 | -857 |
| | | HR150 | -579 | -538 | -448 | -389 | -340 | -306 | -281 | -261 | -782 | -782 | -782 | -690 | -604 | -544 | -499 | -463 | -961 | -961 | -961 | -961 | -901 | -811 | -744 | -691 |
| | 120 | HR250 | -696 | -689 | -584 | -515 | -460 | -414 | -380 | -353 | -936 | -936 | -936 | -916 | -818 | -737 | -676 | -627 | -1147 | -1147 | -1147 | -1147 | -1147 | -1098 | -1006 | -935 |
| | | HR150 | -606 | -577 | -484 | -424 | -371 | -334 | -307 | -285 | -819 | -819 | -819 | -754 | -660 | -594 | -545 | -506 | -1005 | -1005 | -1005 | -1005 | -983 | -885 | -812 | -754 |
| | 130 | HR250 | -758 | -758 | -670 | -595 | -541 | -490 | -449 | -417 | -1017 | -1017 | -1017 | -1017 | -958 | -867 | -795 | -738 | -1246 | -1246 | -1246 | -1246 | -1246 | -1246 | -1184 | -1100 |
| | | HR150 | -662 | -658 | -557 | -492 | -439 | -395 | -362 | -336 | -891 | -891 | -891 | -871 | -777 | -699 | -641 | -595 | -1092 | -1092 | -1092 | -1092 | -1092 | -1042 | -955 | -887 |
| | 140 | HR250 | -822 | -822 | -761 | -680 | -621 | -572 | -524 | -487 | -1100 | -1100 | -1100 | -1100 | -1095 | -1010 | -926 | -860 | -1345 | -1345 | -1345 | -1345 | -1345 | -1345 | -1345 | -1279 |
| | | HR150 | -718 | -718 | -634 | -563 | -512 | -461 | -423 | -393 | -963 | -963 | -963 | -963 | -903 | -814 | -747 | -694 | -1180 | -1180 | -1180 | -1180 | -1180 | -1180 | -1111 | -1032 |
| | 150 | HR250 | -883 | -883 | -850 | -764 | -700 | -650 | -603 | -560 | -1181 | -1181 | -1181 | -1181 | -1181 | -1147 | -1065 | -989 | -1444 | -1444 | -1444 | -1444 | -1444 | -1444 | -1444 | -1444 |
| | | HR150 | -772 | -772 | -711 | -635 | -578 | -531 | -487 | -452 | -1035 | -1035 | -1035 | -1035 | -1021 | -937 | -859 | -798 | -1266 | -1266 | -1266 | -1266 | -1266 | -1266 | -1266 | -1187 |

**Table 2.19: Maximum Downforce (lb.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| C | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >7° TO 27° | 85 | HR250 | 381 | 425 | 477 | 511 | 563 | 626 | 682 | 735 | 305 | 403 | 477 | 511 | 563 | 626 | 682 | 735 | 251 | 332 | 463 | 511 | 563 | 626 | 682 | 735 |
| | | HR150 | 349 | 352 | 385 | 412 | 454 | 505 | 550 | 593 | 266 | 351 | 385 | 412 | 454 | 505 | 550 | 593 | 219 | 290 | 385 | 412 | 454 | 505 | 550 | 593 |
| | 90 | HR250 | 409 | 441 | 496 | 526 | 563 | 626 | 682 | 735 | 316 | 402 | 496 | 526 | 563 | 626 | 682 | 735 | 260 | 331 | 455 | 526 | 563 | 626 | 682 | 735 |
| | | HR150 | 362 | 365 | 400 | 425 | 454 | 505 | 550 | 593 | 276 | 350 | 400 | 425 | 454 | 505 | 550 | 593 | 227 | 289 | 397 | 425 | 454 | 505 | 550 | 593 |
| | 100 | HR250 | 449 | 474 | 525 | 561 | 590 | 626 | 682 | 735 | 340 | 403 | 525 | 561 | 590 | 626 | 682 | 735 | 280 | 332 | 443 | 555 | 590 | 626 | 682 | 735 |
| | | HR150 | 390 | 394 | 432 | 453 | 476 | 505 | 550 | 593 | 297 | 352 | 432 | 453 | 476 | 505 | 550 | 593 | 245 | 290 | 388 | 453 | 476 | 505 | 550 | 593 |
| | 105 | HR250 | 463 | 490 | 538 | 579 | 605 | 634 | 682 | 735 | 351 | 404 | 533 | 579 | 605 | 634 | 682 | 735 | 289 | 332 | 439 | 545 | 605 | 634 | 682 | 735 |
| | | HR150 | 402 | 408 | 444 | 467 | 488 | 511 | 550 | 593 | 307 | 353 | 444 | 467 | 488 | 511 | 550 | 593 | 253 | 291 | 384 | 467 | 488 | 511 | 550 | 593 |
| | 110 | HR250 | 479 | 507 | 553 | 598 | 622 | 649 | 682 | 735 | 363 | 407 | 530 | 598 | 622 | 649 | 682 | 735 | 298 | 334 | 436 | 537 | 622 | 649 | 682 | 735 |
| | | HR150 | 417 | 423 | 457 | 482 | 502 | 524 | 550 | 593 | 317 | 355 | 457 | 482 | 502 | 524 | 550 | 593 | 261 | 293 | 382 | 470 | 502 | 524 | 550 | 593 |
| | 115 | HR250 | 496 | 525 | 569 | 613 | 640 | 666 | 692 | 735 | 376 | 411 | 529 | 613 | 640 | 666 | 692 | 735 | 309 | 338 | 435 | 532 | 629 | 666 | 692 | 735 |
| | | HR150 | 432 | 439 | 471 | 499 | 517 | 537 | 558 | 593 | 329 | 359 | 463 | 499 | 517 | 537 | 558 | 593 | 271 | 296 | 381 | 466 | 517 | 537 | 558 | 593 |
| | 120 | HR250 | 513 | 542 | 585 | 627 | 659 | 682 | 707 | 735 | 388 | 415 | 528 | 627 | 659 | 682 | 707 | 735 | 319 | 341 | 434 | 527 | 620 | 682 | 707 | 735 |
| | | HR150 | 447 | 454 | 484 | 516 | 531 | 550 | 570 | 593 | 340 | 363 | 462 | 516 | 531 | 550 | 570 | 593 | 280 | 299 | 380 | 462 | 531 | 550 | 570 | 593 |
| | 130 | HR250 | 547 | 561 | 617 | 657 | 695 | 718 | 740 | 763 | 415 | 425 | 529 | 634 | 695 | 718 | 740 | 763 | 341 | 349 | 435 | 521 | 607 | 692 | 740 | 763 |
| | | HR150 | 478 | 486 | 513 | 542 | 563 | 579 | 597 | 615 | 363 | 372 | 463 | 542 | 563 | 579 | 597 | 615 | 299 | 306 | 381 | 457 | 532 | 579 | 597 | 615 |
| | 140 | HR250 | 581 | 581 | 651 | 688 | 724 | 756 | 775 | 795 | 441 | 441 | 533 | 630 | 724 | 756 | 775 | 795 | 362 | 362 | 438 | 518 | 597 | 677 | 757 | 795 |
| | | HR150 | 508 | 508 | 543 | 569 | 597 | 610 | 625 | 642 | 386 | 386 | 467 | 552 | 597 | 610 | 625 | 642 | 318 | 318 | 384 | 454 | 524 | 594 | 625 | 642 |
| | 150 | HR250 | 617 | 617 | 686 | 720 | 754 | 787 | 813 | 830 | 467 | 467 | 539 | 630 | 720 | 787 | 813 | 830 | 384 | 384 | 443 | 518 | 592 | 666 | 741 | 815 |
| | | HR150 | 539 | 539 | 573 | 597 | 623 | 643 | 655 | 670 | 409 | 409 | 473 | 552 | 623 | 643 | 655 | 670 | 337 | 337 | 389 | 454 | 519 | 585 | 650 | 670 |

**Table 2.20: Maximum Shear (lb.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **C** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS >7° TO 27°** | **85** | HR250 | 34 | 134 | 192 | 230 | 263 | 292 | 318 | 343 | 27 | 127 | 192 | 230 | 263 | 292 | 318 | 343 | 23 | 104 | 186 | 230 | 263 | 292 | 318 | 343 |
| | | HR150 | 31 | 110 | 155 | 185 | 212 | 235 | 257 | 276 | 24 | 110 | 155 | 185 | 212 | 235 | 257 | 276 | 20 | 91 | 155 | 185 | 212 | 235 | 257 | 276 |
| | **90** | HR250 | 33 | 131 | 192 | 230 | 263 | 292 | 318 | 343 | 26 | 120 | 192 | 230 | 263 | 292 | 318 | 343 | 21 | 98 | 175 | 230 | 263 | 292 | 318 | 343 |
| | | HR150 | 30 | 109 | 155 | 185 | 212 | 235 | 257 | 276 | 23 | 104 | 155 | 185 | 212 | 235 | 257 | 276 | 19 | 86 | 153 | 185 | 212 | 235 | 257 | 276 |
| | **100** | HR250 | 31 | 126 | 187 | 230 | 263 | 292 | 318 | 343 | 23 | 108 | 187 | 230 | 263 | 292 | 318 | 343 | 19 | 88 | 158 | 227 | 263 | 292 | 318 | 343 |
| | | HR150 | 27 | 105 | 154 | 185 | 212 | 235 | 257 | 276 | 20 | 94 | 154 | 185 | 212 | 235 | 257 | 276 | 17 | 77 | 138 | 185 | 212 | 235 | 257 | 276 |
| | **105** | HR250 | 29 | 124 | 185 | 230 | 263 | 292 | 318 | 343 | 22 | 102 | 183 | 230 | 263 | 292 | 318 | 343 | 18 | 84 | 150 | 216 | 263 | 292 | 318 | 343 |
| | | HR150 | 25 | 103 | 152 | 185 | 212 | 235 | 257 | 276 | 19 | 90 | 152 | 185 | 212 | 235 | 257 | 276 | 16 | 74 | 132 | 185 | 212 | 235 | 257 | 276 |
| | **110** | HR250 | 28 | 122 | 182 | 230 | 263 | 292 | 318 | 343 | 21 | 98 | 174 | 230 | 263 | 292 | 318 | 343 | 17 | 80 | 143 | 206 | 263 | 292 | 318 | 343 |
| | | HR150 | 24 | 102 | 150 | 185 | 212 | 235 | 257 | 276 | 18 | 85 | 150 | 185 | 212 | 235 | 257 | 276 | 15 | 70 | 126 | 181 | 212 | 235 | 257 | 276 |
| | **115** | HR250 | 27 | 119 | 180 | 228 | 263 | 292 | 318 | 343 | 20 | 94 | 167 | 228 | 263 | 292 | 318 | 343 | 17 | 77 | 137 | 198 | 258 | 292 | 318 | 343 |
| | | HR150 | 23 | 100 | 149 | 185 | 212 | 235 | 257 | 276 | 18 | 82 | 146 | 185 | 212 | 235 | 257 | 276 | 15 | 67 | 120 | 173 | 212 | 235 | 257 | 276 |
| | **120** | HR250 | 26 | 117 | 177 | 225 | 263 | 292 | 318 | 343 | 19 | 90 | 160 | 225 | 263 | 292 | 318 | 343 | 16 | 74 | 132 | 189 | 247 | 292 | 318 | 343 |
| | | HR150 | 22 | 98 | 147 | 185 | 212 | 235 | 257 | 276 | 17 | 78 | 140 | 185 | 212 | 235 | 257 | 276 | 14 | 65 | 115 | 166 | 212 | 235 | 257 | 276 |
| | **130** | HR250 | 24 | 109 | 172 | 220 | 261 | 292 | 318 | 343 | 18 | 83 | 148 | 213 | 261 | 292 | 318 | 343 | 15 | 68 | 121 | 175 | 228 | 281 | 318 | 343 |
| | | HR150 | 21 | 95 | 143 | 182 | 212 | 235 | 257 | 276 | 16 | 72 | 129 | 182 | 212 | 235 | 257 | 276 | 13 | 60 | 106 | 153 | 200 | 235 | 257 | 276 |
| | **140** | HR250 | 22 | 101 | 167 | 215 | 256 | 292 | 318 | 343 | 17 | 77 | 137 | 197 | 256 | 292 | 318 | 343 | 14 | 63 | 113 | 162 | 212 | 261 | 311 | 343 |
| | | HR150 | 19 | 89 | 140 | 178 | 211 | 235 | 257 | 276 | 15 | 67 | 120 | 173 | 211 | 235 | 257 | 276 | 12 | 55 | 99 | 142 | 186 | 229 | 257 | 276 |
| | **150** | HR250 | 20 | 95 | 163 | 210 | 252 | 288 | 318 | 343 | 16 | 72 | 128 | 184 | 240 | 288 | 318 | 343 | 13 | 59 | 105 | 151 | 198 | 244 | 290 | 336 |
| | | HR150 | 18 | 83 | 136 | 175 | 208 | 235 | 257 | 276 | 14 | 63 | 112 | 161 | 208 | 235 | 257 | 276 | 11 | 52 | 92 | 133 | 173 | 214 | 254 | 276 |

**Table 2.21: Maximum Span Length (in.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 103 | 88 | 72 | 61 | 53 | 48 | 44 | 41 | 79 | 79 | 72 | 61 | 53 | 48 | 44 | 41 | 65 | 65 | 65 | 61 | 53 | 48 | 44 | 41 |
| | | HR150 | 90 | 73 | 59 | 49 | 43 | 38 | 35 | 33 | 69 | 69 | 59 | 49 | 43 | 38 | 35 | 33 | 57 | 57 | 57 | 49 | 43 | 38 | 35 | 33 |
| | 90 | HR250 | 98 | 86 | 71 | 61 | 53 | 48 | 44 | 41 | 74 | 74 | 71 | 61 | 53 | 48 | 44 | 41 | 61 | 61 | 61 | 61 | 53 | 48 | 44 | 41 |
| | | HR150 | 85 | 72 | 59 | 49 | 43 | 38 | 35 | 33 | 65 | 65 | 59 | 49 | 43 | 38 | 35 | 33 | 53 | 53 | 53 | 49 | 43 | 38 | 35 | 33 |
| | 100 | HR250 | 88 | 83 | 69 | 61 | 53 | 48 | 44 | 41 | 67 | 67 | 67 | 61 | 53 | 48 | 44 | 41 | 55 | 55 | 55 | 55 | 53 | 48 | 44 | 41 |
| | | HR150 | 77 | 69 | 57 | 49 | 43 | 38 | 35 | 33 | 58 | 58 | 57 | 49 | 43 | 38 | 35 | 33 | 48 | 48 | 48 | 48 | 43 | 38 | 35 | 33 |
| | 105 | HR250 | 84 | 81 | 68 | 60 | 53 | 48 | 44 | 41 | 64 | 64 | 64 | 60 | 53 | 48 | 44 | 41 | 52 | 52 | 52 | 52 | 52 | 48 | 44 | 41 |
| | | HR150 | 73 | 68 | 56 | 49 | 43 | 38 | 35 | 33 | 56 | 56 | 56 | 49 | 43 | 38 | 35 | 33 | 46 | 46 | 46 | 46 | 43 | 38 | 35 | 33 |
| | 110 | HR250 | 80 | 79 | 67 | 59 | 53 | 48 | 44 | 41 | 61 | 61 | 61 | 59 | 53 | 48 | 44 | 41 | 50 | 50 | 50 | 50 | 50 | 48 | 44 | 41 |
| | | HR150 | 70 | 66 | 56 | 49 | 43 | 38 | 35 | 33 | 53 | 53 | 53 | 49 | 43 | 38 | 35 | 33 | 44 | 44 | 44 | 44 | 43 | 38 | 35 | 33 |
| | 115 | HR250 | 77 | 77 | 66 | 59 | 53 | 48 | 44 | 41 | 58 | 58 | 58 | 58 | 53 | 48 | 44 | 41 | 48 | 48 | 48 | 48 | 48 | 48 | 44 | 41 |
| | | HR150 | 67 | 65 | 55 | 48 | 43 | 38 | 35 | 33 | 51 | 51 | 51 | 48 | 43 | 38 | 35 | 33 | 42 | 42 | 42 | 42 | 42 | 38 | 35 | 33 |
| | 120 | HR250 | 73 | 73 | 65 | 58 | 53 | 48 | 44 | 41 | 56 | 56 | 56 | 56 | 53 | 48 | 44 | 41 | 46 | 46 | 46 | 46 | 46 | 46 | 44 | 41 |
| | | HR150 | 64 | 64 | 54 | 48 | 43 | 38 | 35 | 33 | 49 | 49 | 49 | 48 | 43 | 38 | 35 | 33 | 40 | 40 | 40 | 40 | 40 | 38 | 35 | 33 |
| | 130 | HR250 | 68 | 68 | 63 | 57 | 52 | 48 | 44 | 41 | 51 | 51 | 51 | 51 | 51 | 48 | 44 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 |
| | | HR150 | 59 | 59 | 53 | 47 | 43 | 38 | 35 | 33 | 45 | 45 | 45 | 45 | 43 | 38 | 35 | 33 | 37 | 37 | 37 | 37 | 37 | 37 | 35 | 33 |
| | 140 | HR250 | 63 | 63 | 61 | 55 | 50 | 47 | 44 | 41 | 48 | 48 | 48 | 48 | 48 | 47 | 44 | 41 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 |
| | | HR150 | 55 | 55 | 51 | 46 | 42 | 38 | 35 | 33 | 42 | 42 | 42 | 42 | 42 | 38 | 35 | 33 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 33 |
| | 150 | HR250 | 59 | 59 | 59 | 54 | 49 | 46 | 43 | 41 | 45 | 45 | 45 | 45 | 45 | 45 | 43 | 41 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 |
| | | HR150 | 51 | 51 | 50 | 45 | 41 | 38 | 35 | 33 | 39 | 39 | 39 | 39 | 39 | 38 | 35 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |

ROOFS >7° TO 27°

**Table 2.22: Maximum Uplift (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | -517 | -440 | -361 | -303 | -265 | -239 | -219 | -203 | -709 | -709 | -651 | -546 | -478 | -430 | -394 | -366 | -874 | -874 | -874 | -818 | -716 | -645 | -591 | -549 |
| | | HR150 | -451 | -365 | -293 | -244 | -214 | -193 | -177 | -164 | -618 | -618 | -528 | -440 | -385 | -347 | -318 | -295 | -764 | -764 | -764 | -660 | -578 | -520 | -477 | -443 |
| | 90 | HR250 | -554 | -486 | -402 | -342 | -299 | -269 | -247 | -229 | -754 | -754 | -723 | -614 | -538 | -484 | -444 | -412 | -929 | -929 | -929 | -920 | -806 | -725 | -665 | -618 |
| | | HR150 | -481 | -404 | -331 | -276 | -241 | -217 | -199 | -185 | -658 | -658 | -595 | -496 | -434 | -391 | -358 | -333 | -812 | -812 | -812 | -742 | -650 | -585 | -536 | -498 |
| | 100 | HR250 | -626 | -587 | -491 | -430 | -376 | -339 | -311 | -288 | -845 | -845 | -845 | -766 | -671 | -604 | -553 | -514 | -1038 | -1038 | -1038 | -1038 | -1001 | -901 | -826 | -767 |
| | | HR150 | -545 | -490 | -406 | -347 | -303 | -273 | -250 | -233 | -739 | -739 | -723 | -618 | -541 | -487 | -446 | -415 | -909 | -909 | -909 | -909 | -807 | -727 | -666 | -619 |
| | 105 | HR250 | -661 | -638 | -537 | -473 | -417 | -376 | -344 | -320 | -889 | -889 | -889 | -839 | -740 | -667 | -611 | -568 | -1091 | -1091 | -1091 | -1091 | -1091 | -995 | -912 | -847 |
| | | HR150 | -575 | -533 | -444 | -385 | -337 | -303 | -278 | -258 | -778 | -778 | -778 | -682 | -597 | -538 | -493 | -458 | -956 | -956 | -956 | -956 | -891 | -802 | -736 | -683 |
| | 110 | HR250 | -694 | -686 | -581 | -513 | -458 | -413 | -378 | -351 | -934 | -934 | -934 | -913 | -815 | -734 | -673 | -625 | -1146 | -1146 | -1146 | -1146 | -1146 | -1094 | -1003 | -932 |
| | | HR150 | -605 | -575 | -482 | -422 | -370 | -333 | -305 | -283 | -817 | -817 | -817 | -751 | -658 | -592 | -543 | -504 | -1004 | -1004 | -1004 | -1004 | -981 | -883 | -809 | -752 |
| | 115 | HR250 | -729 | -729 | -630 | -558 | -504 | -454 | -416 | -386 | -979 | -979 | -979 | -979 | -892 | -803 | -737 | -684 | -1199 | -1199 | -1199 | -1199 | -1199 | -1196 | -1097 | -1019 |
| | | HR150 | -636 | -620 | -523 | -460 | -407 | -366 | -336 | -312 | -856 | -856 | -856 | -815 | -720 | -648 | -594 | -552 | -1051 | -1051 | -1051 | -1051 | -1051 | -965 | -885 | -822 |
| | 120 | HR250 | -763 | -763 | -676 | -601 | -547 | -495 | -454 | -422 | -1024 | -1024 | -1024 | -1024 | -969 | -877 | -804 | -747 | -1253 | -1253 | -1253 | -1253 | -1253 | -1253 | -1197 | -1111 |
| | | HR150 | -666 | -664 | -562 | -497 | -444 | -399 | -366 | -340 | -896 | -896 | -896 | -880 | -786 | -708 | -649 | -603 | -1098 | -1098 | -1098 | -1098 | -1098 | -1053 | -965 | -896 |
| | 130 | HR250 | -831 | -831 | -773 | -692 | -632 | -584 | -536 | -497 | -1112 | -1112 | -1112 | -1112 | -1112 | -1031 | -946 | -878 | -1360 | -1360 | -1360 | -1360 | -1360 | -1360 | -1360 | -1307 |
| | | HR150 | -726 | -726 | -645 | -573 | -521 | -471 | -432 | -401 | -974 | -974 | -974 | -974 | -920 | -832 | -763 | -708 | -1193 | -1193 | -1193 | -1193 | -1193 | -1193 | -1135 | -1055 |
| | 140 | HR250 | -900 | -900 | -875 | -787 | -722 | -670 | -625 | -581 | -1201 | -1201 | -1201 | -1201 | -1201 | -1181 | -1101 | -1023 | -1468 | -1468 | -1468 | -1468 | -1468 | -1468 | -1468 | -1468 |
| | | HR150 | -787 | -787 | -732 | -654 | -597 | -550 | -504 | -468 | -1052 | -1052 | -1052 | -1052 | -1051 | -969 | -888 | -825 | -1288 | -1288 | -1288 | -1288 | -1288 | -1288 | -1288 | -1226 |
| | 150 | HR250 | -966 | -966 | -966 | -882 | -812 | -756 | -711 | -668 | -1289 | -1289 | -1289 | -1289 | -1289 | -1289 | -1252 | -1176 | -1575 | -1575 | -1575 | -1575 | -1575 | -1575 | -1575 | -1575 |
| | | HR150 | -846 | -846 | -817 | -735 | -673 | -625 | -580 | -538 | -1130 | -1130 | -1130 | -1130 | -1130 | -1100 | -1021 | -949 | -1382 | -1382 | -1382 | -1382 | -1382 | -1382 | -1382 | -1382 |

ROOFS >7° TO 27°

**Table 2.23: Maximum Downforce (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 424 | 449 | 503 | 535 | 567 | 626 | 682 | 735 | 322 | 402 | 503 | 535 | 567 | 626 | 682 | 735 | 265 | 331 | 451 | 535 | 567 | 626 | 682 | 735 |
| | | HR150 | 369 | 372 | 409 | 432 | 457 | 505 | 550 | 593 | 281 | 351 | 409 | 432 | 457 | 505 | 550 | 593 | 232 | 289 | 394 | 432 | 457 | 505 | 550 | 593 |
| | 90 | HR250 | 443 | 467 | 519 | 554 | 583 | 626 | 682 | 735 | 335 | 402 | 519 | 554 | 583 | 626 | 682 | 735 | 275 | 331 | 445 | 554 | 583 | 626 | 682 | 735 |
| | | HR150 | 384 | 388 | 427 | 447 | 471 | 505 | 550 | 593 | 292 | 351 | 427 | 447 | 471 | 505 | 550 | 593 | 241 | 289 | 389 | 447 | 471 | 505 | 550 | 593 |
| | 100 | HR250 | 478 | 504 | 551 | 595 | 620 | 647 | 682 | 735 | 362 | 407 | 532 | 595 | 620 | 647 | 682 | 735 | 298 | 335 | 438 | 540 | 620 | 647 | 682 | 735 |
| | | HR150 | 416 | 421 | 455 | 480 | 500 | 522 | 550 | 593 | 316 | 356 | 455 | 480 | 500 | 522 | 550 | 593 | 261 | 293 | 383 | 473 | 500 | 522 | 550 | 593 |
| | 105 | HR250 | 493 | 522 | 567 | 611 | 638 | 663 | 689 | 735 | 374 | 410 | 529 | 611 | 638 | 663 | 689 | 735 | 308 | 337 | 435 | 532 | 630 | 663 | 689 | 735 |
| | | HR150 | 429 | 436 | 469 | 497 | 514 | 535 | 556 | 593 | 327 | 358 | 462 | 497 | 514 | 535 | 556 | 593 | 269 | 295 | 381 | 466 | 514 | 535 | 556 | 593 |
| | 110 | HR250 | 512 | 541 | 584 | 626 | 658 | 681 | 706 | 735 | 387 | 414 | 527 | 626 | 658 | 681 | 706 | 735 | 318 | 340 | 434 | 527 | 620 | 681 | 706 | 735 |
| | | HR150 | 446 | 453 | 484 | 515 | 530 | 549 | 569 | 593 | 339 | 362 | 461 | 515 | 530 | 549 | 569 | 593 | 279 | 298 | 380 | 461 | 530 | 549 | 569 | 593 |
| | 115 | HR250 | 531 | 554 | 602 | 642 | 679 | 700 | 724 | 748 | 402 | 420 | 528 | 637 | 679 | 700 | 724 | 748 | 331 | 345 | 434 | 524 | 613 | 700 | 724 | 748 |
| | | HR150 | 463 | 471 | 499 | 530 | 548 | 565 | 584 | 603 | 352 | 368 | 462 | 530 | 548 | 565 | 584 | 603 | 290 | 303 | 381 | 459 | 537 | 565 | 584 | 603 |
| | 120 | HR250 | 549 | 561 | 619 | 659 | 697 | 720 | 742 | 765 | 416 | 425 | 529 | 633 | 697 | 720 | 742 | 765 | 342 | 350 | 435 | 520 | 606 | 691 | 742 | 765 |
| | | HR150 | 479 | 488 | 515 | 544 | 565 | 581 | 598 | 617 | 364 | 372 | 463 | 544 | 565 | 581 | 598 | 617 | 300 | 307 | 381 | 456 | 531 | 581 | 598 | 617 |
| | 130 | HR250 | 587 | 587 | 656 | 692 | 728 | 762 | 781 | 801 | 445 | 445 | 534 | 630 | 726 | 762 | 781 | 801 | 366 | 366 | 439 | 518 | 597 | 675 | 754 | 801 |
| | | HR150 | 513 | 513 | 547 | 574 | 601 | 615 | 630 | 646 | 390 | 390 | 468 | 552 | 601 | 615 | 630 | 646 | 321 | 321 | 385 | 454 | 523 | 592 | 630 | 646 |
| | 140 | HR250 | 625 | 625 | 694 | 728 | 761 | 794 | 822 | 839 | 474 | 474 | 541 | 630 | 719 | 794 | 822 | 839 | 389 | 389 | 445 | 518 | 591 | 664 | 738 | 811 |
| | | HR150 | 546 | 546 | 581 | 604 | 629 | 652 | 663 | 677 | 415 | 415 | 474 | 552 | 629 | 652 | 663 | 677 | 342 | 342 | 390 | 455 | 519 | 583 | 647 | 677 |
| | 150 | HR250 | 664 | 664 | 727 | 764 | 795 | 827 | 858 | 881 | 503 | 503 | 551 | 634 | 717 | 800 | 858 | 881 | 413 | 413 | 453 | 521 | 589 | 658 | 726 | 794 |
| | | HR150 | 581 | 581 | 615 | 636 | 659 | 683 | 699 | 711 | 441 | 441 | 483 | 556 | 628 | 683 | 699 | 711 | 363 | 363 | 397 | 457 | 517 | 577 | 637 | 697 |

ROOFS >7° TO 27°

**Table 2.24: Maximum Shear (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 33 | 130 | 190 | 230 | 263 | 292 | 318 | 343 | 25 | 116 | 190 | 230 | 263 | 292 | 318 | 343 | 21 | 96 | 171 | 230 | 263 | 292 | 318 | 343 |
| | | HR150 | 29 | 108 | 155 | 185 | 212 | 235 | 257 | 276 | 22 | 101 | 155 | 185 | 212 | 235 | 257 | 276 | 18 | 84 | 149 | 185 | 212 | 235 | 257 | 276 |
| | 90 | HR250 | 31 | 127 | 188 | 230 | 263 | 292 | 318 | 343 | 24 | 110 | 188 | 230 | 263 | 292 | 318 | 343 | 20 | 90 | 161 | 230 | 263 | 292 | 318 | 343 |
| | | HR150 | 27 | 106 | 155 | 185 | 212 | 235 | 257 | 276 | 21 | 96 | 155 | 185 | 212 | 235 | 257 | 276 | 17 | 79 | 141 | 185 | 212 | 235 | 257 | 276 |
| | 100 | HR250 | 28 | 122 | 182 | 230 | 263 | 292 | 318 | 343 | 21 | 99 | 176 | 230 | 263 | 292 | 318 | 343 | 18 | 81 | 145 | 209 | 263 | 292 | 318 | 343 |
| | | HR150 | 25 | 102 | 151 | 185 | 212 | 235 | 257 | 276 | 19 | 86 | 151 | 185 | 212 | 235 | 257 | 276 | 15 | 71 | 127 | 183 | 212 | 235 | 257 | 276 |
| ROOFS >7° TO 27° | 105 | HR250 | 27 | 120 | 180 | 228 | 263 | 292 | 318 | 343 | 20 | 94 | 168 | 228 | 263 | 292 | 318 | 343 | 17 | 77 | 138 | 199 | 259 | 292 | 318 | 343 |
| | | HR150 | 23 | 100 | 149 | 185 | 212 | 235 | 257 | 276 | 18 | 82 | 147 | 185 | 212 | 235 | 257 | 276 | 15 | 68 | 121 | 174 | 212 | 235 | 257 | 276 |
| | 110 | HR250 | 26 | 117 | 177 | 225 | 263 | 292 | 318 | 343 | 19 | 90 | 160 | 225 | 263 | 292 | 318 | 343 | 16 | 74 | 132 | 190 | 247 | 292 | 318 | 343 |
| | | HR150 | 22 | 98 | 147 | 185 | 212 | 235 | 257 | 276 | 17 | 79 | 140 | 185 | 212 | 235 | 257 | 276 | 14 | 65 | 115 | 166 | 212 | 235 | 257 | 276 |
| | 115 | HR250 | 25 | 113 | 175 | 223 | 263 | 292 | 318 | 343 | 19 | 86 | 153 | 221 | 263 | 292 | 318 | 343 | 15 | 71 | 126 | 181 | 237 | 292 | 318 | 343 |
| | | HR150 | 21 | 96 | 145 | 184 | 212 | 235 | 257 | 276 | 16 | 75 | 134 | 184 | 212 | 235 | 257 | 276 | 13 | 62 | 110 | 159 | 208 | 235 | 257 | 276 |
| | 120 | HR250 | 23 | 109 | 172 | 220 | 261 | 292 | 318 | 343 | 18 | 82 | 147 | 211 | 261 | 292 | 318 | 343 | 15 | 68 | 121 | 174 | 227 | 280 | 318 | 343 |
| | | HR150 | 21 | 95 | 143 | 182 | 212 | 235 | 257 | 276 | 16 | 72 | 129 | 182 | 212 | 235 | 257 | 276 | 13 | 59 | 106 | 152 | 199 | 235 | 257 | 276 |
| | 130 | HR250 | 22 | 100 | 167 | 215 | 256 | 292 | 318 | 343 | 16 | 76 | 136 | 195 | 255 | 292 | 318 | 343 | 14 | 62 | 111 | 160 | 209 | 258 | 307 | 343 |
| | | HR150 | 19 | 88 | 139 | 178 | 211 | 235 | 257 | 276 | 14 | 67 | 119 | 171 | 211 | 235 | 257 | 276 | 12 | 55 | 98 | 141 | 184 | 227 | 257 | 276 |
| | 140 | HR250 | 20 | 93 | 161 | 209 | 250 | 287 | 318 | 343 | 15 | 71 | 126 | 181 | 236 | 287 | 318 | 343 | 13 | 58 | 103 | 149 | 194 | 240 | 285 | 331 |
| | | HR150 | 18 | 81 | 135 | 174 | 207 | 235 | 257 | 276 | 13 | 62 | 110 | 159 | 207 | 235 | 257 | 276 | 11 | 51 | 91 | 131 | 171 | 210 | 250 | 276 |
| | 150 | HR250 | 19 | 87 | 155 | 204 | 245 | 281 | 315 | 343 | 14 | 66 | 117 | 169 | 221 | 272 | 315 | 343 | 12 | 54 | 97 | 139 | 181 | 224 | 266 | 309 |
| | | HR150 | 16 | 76 | 131 | 170 | 203 | 232 | 257 | 276 | 12 | 58 | 103 | 148 | 193 | 232 | 257 | 276 | 10 | 48 | 85 | 122 | 159 | 196 | 234 | 271 |

**Table 2.25: Maximum Span Length (in.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| B | 85 | HR250 | 105 | 85 | 68 | 57 | 50 | 45 | 41 | 38 | 105 | 85 | 68 | 57 | 50 | 45 | 41 | 38 | 105 | 85 | 68 | 57 | 50 | 45 | 41 | 38 |
| | | HR150 | 94 | 69 | 54 | 45 | 40 | 36 | 33 | 30 | 94 | 69 | 54 | 45 | 40 | 36 | 33 | 30 | 94 | 69 | 54 | 45 | 40 | 36 | 33 | 30 |
| | 90 | HR250 | 102 | 84 | 68 | 57 | 50 | 45 | 41 | 38 | 102 | 84 | 68 | 57 | 50 | 45 | 41 | 38 | 102 | 84 | 68 | 57 | 50 | 45 | 41 | 38 |
| | | HR150 | 90 | 68 | 54 | 45 | 40 | 36 | 33 | 30 | 90 | 68 | 54 | 45 | 40 | 36 | 33 | 30 | 90 | 68 | 54 | 45 | 40 | 36 | 33 | 30 |
| | 100 | HR250 | 99 | 81 | 67 | 57 | 50 | 45 | 41 | 38 | 99 | 81 | 67 | 57 | 50 | 45 | 41 | 38 | 99 | 81 | 67 | 57 | 50 | 45 | 41 | 38 |
| | | HR150 | 86 | 67 | 54 | 45 | 40 | 36 | 33 | 30 | 86 | 67 | 54 | 45 | 40 | 36 | 33 | 30 | 86 | 67 | 54 | 45 | 40 | 36 | 33 | 30 |
| | 105 | HR250 | 95 | 79 | 66 | 57 | 50 | 45 | 41 | 38 | 94 | 79 | 66 | 57 | 50 | 45 | 41 | 38 | 94 | 79 | 66 | 57 | 50 | 45 | 41 | 38 |
| | | HR150 | 81 | 65 | 54 | 45 | 40 | 36 | 33 | 30 | 81 | 65 | 54 | 45 | 40 | 36 | 33 | 30 | 81 | 65 | 54 | 45 | 40 | 36 | 33 | 30 |
| | 110 | HR250 | 91 | 77 | 65 | 57 | 50 | 45 | 41 | 38 | 90 | 77 | 65 | 57 | 50 | 45 | 41 | 38 | 90 | 77 | 65 | 57 | 50 | 45 | 41 | 38 |
| | | HR150 | 78 | 64 | 53 | 45 | 40 | 36 | 33 | 30 | 78 | 64 | 53 | 45 | 40 | 36 | 33 | 30 | 78 | 64 | 53 | 45 | 40 | 36 | 33 | 30 |
| | 115 | HR250 | 88 | 76 | 64 | 56 | 50 | 45 | 41 | 38 | 86 | 76 | 64 | 56 | 50 | 45 | 41 | 38 | 86 | 76 | 64 | 56 | 50 | 45 | 41 | 38 |
| | | HR150 | 76 | 63 | 52 | 45 | 40 | 36 | 33 | 30 | 75 | 63 | 52 | 45 | 40 | 36 | 33 | 30 | 75 | 63 | 52 | 45 | 40 | 36 | 33 | 30 |
| | 120 | HR250 | 85 | 75 | 63 | 56 | 50 | 45 | 41 | 38 | 83 | 75 | 63 | 56 | 50 | 45 | 41 | 38 | 83 | 75 | 63 | 56 | 50 | 45 | 41 | 38 |
| | | HR150 | 73 | 62 | 52 | 45 | 40 | 36 | 33 | 30 | 72 | 62 | 52 | 45 | 40 | 36 | 33 | 30 | 72 | 62 | 52 | 45 | 40 | 36 | 33 | 30 |
| | 130 | HR250 | 80 | 72 | 61 | 55 | 50 | 45 | 41 | 38 | 77 | 72 | 61 | 55 | 50 | 45 | 41 | 38 | 77 | 72 | 61 | 55 | 50 | 45 | 41 | 38 |
| | | HR150 | 69 | 60 | 51 | 45 | 40 | 36 | 33 | 30 | 67 | 60 | 51 | 45 | 40 | 36 | 33 | 30 | 67 | 60 | 51 | 45 | 40 | 36 | 33 | 30 |
| | 140 | HR250 | 75 | 69 | 60 | 53 | 49 | 45 | 41 | 38 | 71 | 69 | 60 | 53 | 49 | 45 | 41 | 38 | 71 | 69 | 60 | 53 | 49 | 45 | 41 | 38 |
| | | HR150 | 65 | 58 | 49 | 44 | 40 | 36 | 33 | 30 | 62 | 58 | 49 | 44 | 40 | 36 | 33 | 30 | 62 | 58 | 49 | 44 | 40 | 36 | 33 | 30 |
| | 150 | HR250 | 71 | 66 | 58 | 52 | 48 | 44 | 41 | 38 | 67 | 66 | 58 | 52 | 48 | 44 | 41 | 38 | 67 | 66 | 58 | 52 | 48 | 44 | 41 | 38 |
| | | HR150 | 61 | 56 | 48 | 43 | 39 | 36 | 33 | 30 | 58 | 56 | 48 | 43 | 39 | 36 | 33 | 30 | 58 | 56 | 48 | 43 | 39 | 36 | 33 | 30 |

ROOFS >27° TO 45°

**Table 2.26: Maximum Uplift (lb.) - Wind Exposure B Condition**

| Exposure B | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >27° TO 45° | 85 | HR250 | -334 | -272 | -219 | -182 | -160 | -144 | -132 | -122 | -398 | -323 | -260 | -217 | -190 | -171 | -157 | -145 | -398 | -323 | -260 | -217 | -190 | -171 | -157 | -145 |
| | | HR150 | -300 | -222 | -174 | -145 | -127 | -114 | -105 | -97 | -356 | -264 | -206 | -172 | -151 | -136 | -124 | -115 | -356 | -264 | -206 | -172 | -151 | -136 | -124 | -115 |
| | 90 | HR250 | -371 | -304 | -249 | -207 | -181 | -163 | -150 | -139 | -439 | -359 | -294 | -245 | -214 | -193 | -177 | -164 | -439 | -359 | -294 | -245 | -214 | -193 | -177 | -164 |
| | | HR150 | -329 | -249 | -197 | -165 | -144 | -130 | -119 | -110 | -388 | -294 | -233 | -194 | -170 | -153 | -140 | -130 | -388 | -294 | -233 | -194 | -170 | -153 | -140 | -130 |
| | 100 | HR250 | -452 | -372 | -307 | -261 | -228 | -205 | -188 | -175 | -534 | -439 | -363 | -308 | -269 | -242 | -222 | -206 | -534 | -439 | -363 | -308 | -269 | -242 | -222 | -206 |
| | | HR150 | -393 | -306 | -248 | -207 | -181 | -163 | -149 | -139 | -462 | -361 | -293 | -244 | -214 | -192 | -176 | -164 | -462 | -361 | -293 | -244 | -214 | -192 | -176 | -164 |
| | 105 | HR250 | -479 | -399 | -333 | -289 | -253 | -228 | -209 | -194 | -566 | -473 | -394 | -342 | -299 | -269 | -247 | -229 | -566 | -473 | -394 | -342 | -299 | -269 | -247 | -229 |
| | | HR150 | -410 | -329 | -271 | -229 | -201 | -181 | -166 | -154 | -486 | -390 | -321 | -271 | -238 | -214 | -196 | -182 | -486 | -390 | -321 | -271 | -238 | -214 | -196 | -182 |
| | 110 | HR250 | -513 | -435 | -364 | -320 | -280 | -252 | -231 | -215 | -597 | -513 | -430 | -378 | -331 | -298 | -273 | -254 | -597 | -513 | -430 | -378 | -331 | -298 | -273 | -254 |
| | | HR150 | -440 | -359 | -298 | -254 | -222 | -200 | -184 | -170 | -518 | -424 | -351 | -300 | -263 | -236 | -217 | -201 | -518 | -424 | -351 | -300 | -263 | -236 | -217 | -201 |
| | 115 | HR250 | -543 | -468 | -395 | -348 | -308 | -277 | -254 | -236 | -627 | -551 | -465 | -409 | -362 | -326 | -299 | -278 | -627 | -551 | -465 | -409 | -362 | -326 | -299 | -278 |
| | | HR150 | -467 | -388 | -323 | -279 | -244 | -220 | -201 | -187 | -544 | -457 | -380 | -329 | -288 | -259 | -237 | -220 | -544 | -457 | -380 | -329 | -288 | -259 | -237 | -220 |
| | 120 | HR250 | -574 | -502 | -426 | -376 | -336 | -303 | -278 | -258 | -658 | -592 | -502 | -443 | -397 | -357 | -327 | -304 | -658 | -592 | -502 | -443 | -397 | -357 | -327 | -304 |
| | | HR150 | -494 | -417 | -349 | -305 | -267 | -240 | -220 | -205 | -571 | -491 | -411 | -360 | -315 | -283 | -260 | -241 | -571 | -491 | -411 | -360 | -315 | -283 | -260 | -241 |
| | 130 | HR250 | -636 | -571 | -490 | -435 | -396 | -358 | -329 | -305 | -719 | -674 | -577 | -513 | -467 | -422 | -387 | -360 | -719 | -674 | -577 | -513 | -467 | -422 | -387 | -360 |
| | | HR150 | -549 | -476 | -403 | -355 | -316 | -284 | -261 | -242 | -626 | -562 | -475 | -419 | -372 | -335 | -307 | -286 | -626 | -562 | -475 | -419 | -372 | -335 | -307 | -286 |
| | 140 | HR250 | -698 | -642 | -556 | -497 | -454 | -419 | -384 | -357 | -779 | -754 | -652 | -583 | -533 | -492 | -451 | -419 | -779 | -754 | -652 | -583 | -533 | -492 | -451 | -419 |
| | | HR150 | -603 | -537 | -459 | -407 | -369 | -332 | -305 | -283 | -678 | -631 | -538 | -478 | -433 | -390 | -358 | -332 | -678 | -631 | -538 | -478 | -433 | -390 | -358 | -332 |
| | 150 | HR250 | -759 | -713 | -623 | -560 | -513 | -476 | -443 | -411 | -839 | -836 | -731 | -657 | -602 | -559 | -520 | -483 | -839 | -836 | -731 | -657 | -602 | -559 | -520 | -483 |
| | | HR150 | -657 | -598 | -516 | -460 | -419 | -383 | -351 | -326 | -732 | -702 | -605 | -540 | -492 | -450 | -412 | -383 | -732 | -702 | -605 | -540 | -492 | -450 | -412 | -383 |

**Table 2.27: Maximum Downforce (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >27° TO 45° | **85** | HR250 | 407 | 404 | 441 | 464 | 490 | 533 | 581 | 626 | 407 | 404 | 441 | 464 | 490 | 533 | 581 | 626 | 407 | 404 | 441 | 464 | 490 | 533 | 581 | 626 |
| | | HR150 | 364 | 330 | 350 | 368 | 389 | 423 | 462 | 497 | 364 | 330 | 350 | 368 | 389 | 423 | 462 | 497 | 364 | 330 | 350 | 368 | 389 | 423 | 462 | 497 |
| | **90** | HR250 | 436 | 421 | 460 | 480 | 504 | 533 | 581 | 626 | 436 | 421 | 460 | 480 | 504 | 533 | 581 | 626 | 436 | 421 | 460 | 480 | 504 | 533 | 581 | 626 |
| | | HR150 | 386 | 345 | 366 | 381 | 400 | 423 | 462 | 497 | 386 | 345 | 366 | 381 | 400 | 423 | 462 | 497 | 386 | 345 | 366 | 381 | 400 | 423 | 462 | 497 |
| | **100** | HR250 | 480 | 446 | 482 | 505 | 526 | 549 | 581 | 626 | 480 | 446 | 482 | 505 | 526 | 549 | 581 | 626 | 480 | 446 | 482 | 505 | 526 | 549 | 581 | 626 |
| | | HR150 | 417 | 366 | 389 | 401 | 417 | 436 | 462 | 497 | 415 | 366 | 389 | 401 | 417 | 436 | 462 | 497 | 415 | 366 | 389 | 401 | 417 | 436 | 462 | 497 |
| | **105** | HR250 | 531 | 477 | 509 | 538 | 555 | 575 | 597 | 626 | 530 | 477 | 509 | 538 | 555 | 575 | 597 | 626 | 530 | 477 | 509 | 538 | 555 | 575 | 597 | 626 |
| | | HR150 | 455 | 394 | 415 | 427 | 440 | 457 | 474 | 497 | 455 | 394 | 415 | 427 | 440 | 457 | 474 | 497 | 455 | 394 | 415 | 427 | 440 | 457 | 474 | 497 |
| | **110** | HR250 | 556 | 496 | 525 | 557 | 572 | 591 | 611 | 632 | 548 | 496 | 525 | 557 | 572 | 591 | 611 | 632 | 548 | 496 | 525 | 557 | 572 | 591 | 611 | 632 |
| | | HR150 | 477 | 410 | 429 | 443 | 454 | 469 | 485 | 502 | 475 | 410 | 429 | 443 | 454 | 469 | 485 | 502 | 475 | 410 | 429 | 443 | 454 | 469 | 485 | 502 |
| | **115** | HR250 | 582 | 516 | 543 | 574 | 592 | 608 | 627 | 647 | 570 | 516 | 543 | 574 | 592 | 608 | 627 | 647 | 570 | 516 | 543 | 574 | 592 | 608 | 627 | 647 |
| | | HR150 | 500 | 427 | 444 | 460 | 470 | 483 | 498 | 514 | 495 | 427 | 444 | 460 | 470 | 483 | 498 | 514 | 495 | 427 | 444 | 460 | 470 | 483 | 498 | 514 |
| | **120** | HR250 | 607 | 535 | 560 | 589 | 611 | 626 | 644 | 662 | 590 | 535 | 560 | 589 | 611 | 626 | 644 | 662 | 590 | 535 | 560 | 589 | 611 | 626 | 644 | 662 |
| | | HR150 | 523 | 444 | 459 | 478 | 485 | 497 | 511 | 526 | 513 | 444 | 459 | 478 | 485 | 497 | 511 | 526 | 513 | 444 | 459 | 478 | 485 | 497 | 511 | 526 |
| | **130** | HR250 | 658 | 591 | 597 | 623 | 650 | 664 | 678 | 694 | 631 | 591 | 597 | 623 | 650 | 664 | 678 | 694 | 631 | 591 | 597 | 623 | 650 | 664 | 678 | 694 |
| | | HR150 | 568 | 493 | 491 | 508 | 519 | 527 | 538 | 551 | 549 | 493 | 491 | 508 | 519 | 527 | 538 | 551 | 549 | 493 | 491 | 508 | 519 | 527 | 538 | 551 |
| | **140** | HR250 | 710 | 654 | 635 | 658 | 682 | 706 | 716 | 730 | 675 | 654 | 635 | 658 | 682 | 706 | 716 | 730 | 675 | 654 | 635 | 658 | 682 | 706 | 716 | 730 |
| | | HR150 | 614 | 547 | 524 | 538 | 555 | 560 | 569 | 579 | 588 | 547 | 524 | 538 | 555 | 560 | 569 | 579 | 588 | 547 | 524 | 538 | 555 | 560 | 569 | 579 |
| | **150** | HR250 | 761 | 715 | 673 | 693 | 716 | 739 | 756 | 767 | 717 | 715 | 673 | 693 | 716 | 739 | 756 | 767 | 717 | 715 | 673 | 693 | 716 | 739 | 756 | 767 |
| | | HR150 | 659 | 600 | 557 | 569 | 584 | 595 | 600 | 609 | 625 | 600 | 557 | 569 | 584 | 595 | 600 | 609 | 625 | 600 | 557 | 569 | 584 | 595 | 600 | 609 |

**Table 2.28: Maximum Shear (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| B | 85 | HR250 | 45 | 171 | 245 | 294 | 336 | 373 | 407 | 438 | 45 | 171 | 245 | 294 | 336 | 373 | 407 | 438 | 45 | 171 | 245 | 294 | 336 | 373 | 407 | 438 |
| | | HR150 | 41 | 139 | 195 | 233 | 267 | 296 | 323 | 348 | 41 | 139 | 195 | 233 | 267 | 296 | 323 | 348 | 41 | 139 | 195 | 233 | 267 | 296 | 323 | 348 |
| | 90 | HR250 | 44 | 168 | 245 | 294 | 336 | 373 | 407 | 438 | 44 | 168 | 245 | 294 | 336 | 373 | 407 | 438 | 44 | 168 | 245 | 294 | 336 | 373 | 407 | 438 |
| | | HR150 | 39 | 137 | 195 | 233 | 267 | 296 | 323 | 348 | 39 | 137 | 195 | 233 | 267 | 296 | 323 | 348 | 39 | 137 | 195 | 233 | 267 | 296 | 323 | 348 |
| | 100 | HR250 | 43 | 164 | 241 | 294 | 336 | 373 | 407 | 438 | 43 | 164 | 241 | 294 | 336 | 373 | 407 | 438 | 43 | 164 | 241 | 294 | 336 | 373 | 407 | 438 |
| | | HR150 | 37 | 134 | 195 | 233 | 267 | 296 | 323 | 348 | 37 | 134 | 195 | 233 | 267 | 296 | 323 | 348 | 37 | 134 | 195 | 233 | 267 | 296 | 323 | 348 |
| ROOFS >27° TO 45° | 105 | HR250 | 41 | 158 | 236 | 294 | 336 | 373 | 407 | 438 | 41 | 158 | 236 | 294 | 336 | 373 | 407 | 438 | 41 | 158 | 236 | 294 | 336 | 373 | 407 | 438 |
| | | HR150 | 35 | 131 | 192 | 233 | 267 | 296 | 323 | 348 | 35 | 131 | 192 | 233 | 267 | 296 | 323 | 348 | 35 | 131 | 192 | 233 | 267 | 296 | 323 | 348 |
| | 110 | HR250 | 40 | 156 | 233 | 294 | 336 | 373 | 407 | 438 | 39 | 156 | 233 | 294 | 336 | 373 | 407 | 438 | 39 | 156 | 233 | 294 | 336 | 373 | 407 | 438 |
| | | HR150 | 34 | 129 | 190 | 233 | 267 | 296 | 323 | 348 | 34 | 129 | 190 | 233 | 267 | 296 | 323 | 348 | 34 | 129 | 190 | 233 | 267 | 296 | 323 | 348 |
| | 115 | HR250 | 38 | 153 | 229 | 291 | 336 | 373 | 407 | 438 | 38 | 153 | 229 | 291 | 336 | 373 | 407 | 438 | 38 | 153 | 229 | 291 | 336 | 373 | 407 | 438 |
| | | HR150 | 33 | 126 | 188 | 233 | 267 | 296 | 323 | 348 | 33 | 126 | 188 | 233 | 267 | 296 | 323 | 348 | 33 | 126 | 188 | 233 | 267 | 296 | 323 | 348 |
| | 120 | HR250 | 37 | 150 | 226 | 288 | 336 | 373 | 407 | 438 | 36 | 150 | 226 | 288 | 336 | 373 | 407 | 438 | 36 | 150 | 226 | 288 | 336 | 373 | 407 | 438 |
| | | HR150 | 32 | 124 | 185 | 233 | 267 | 296 | 323 | 348 | 31 | 124 | 185 | 233 | 267 | 296 | 323 | 348 | 31 | 124 | 185 | 233 | 267 | 296 | 323 | 348 |
| | 130 | HR250 | 35 | 144 | 220 | 282 | 334 | 373 | 407 | 438 | 33 | 144 | 220 | 282 | 334 | 373 | 407 | 438 | 33 | 144 | 220 | 282 | 334 | 373 | 407 | 438 |
| | | HR150 | 30 | 120 | 181 | 230 | 267 | 296 | 323 | 348 | 29 | 120 | 181 | 230 | 267 | 296 | 323 | 348 | 29 | 120 | 181 | 230 | 267 | 296 | 323 | 348 |
| | 140 | HR250 | 33 | 138 | 214 | 275 | 328 | 373 | 407 | 438 | 31 | 138 | 214 | 275 | 328 | 373 | 407 | 438 | 31 | 138 | 214 | 275 | 328 | 373 | 407 | 438 |
| | | HR150 | 28 | 116 | 176 | 225 | 267 | 296 | 323 | 348 | 27 | 116 | 176 | 225 | 267 | 296 | 323 | 348 | 27 | 116 | 176 | 225 | 267 | 296 | 323 | 348 |
| | 150 | HR250 | 31 | 133 | 208 | 269 | 321 | 368 | 407 | 438 | 29 | 133 | 208 | 269 | 321 | 368 | 407 | 438 | 29 | 133 | 208 | 269 | 321 | 368 | 407 | 438 |
| | | HR150 | 27 | 112 | 172 | 221 | 263 | 296 | 323 | 348 | 25 | 112 | 172 | 221 | 263 | 296 | 323 | 348 | 25 | 112 | 172 | 221 | 263 | 296 | 323 | 348 |

**Table 2.29: Maximum Span Length (in.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| C | 85 | HR250 | 97 | 80 | 67 | 57 | 50 | 45 | 41 | 38 | 97 | 80 | 67 | 57 | 50 | 45 | 41 | 38 | 97 | 80 | 67 | 57 | 50 | 45 | 41 | 38 |
| | | HR150 | 84 | 66 | 54 | 45 | 40 | 36 | 33 | 30 | 84 | 66 | 54 | 45 | 40 | 36 | 33 | 30 | 84 | 66 | 54 | 45 | 40 | 36 | 33 | 30 |
| | 90 | HR250 | 94 | 79 | 66 | 57 | 50 | 45 | 41 | 38 | 93 | 79 | 66 | 57 | 50 | 45 | 41 | 38 | 93 | 79 | 66 | 57 | 50 | 45 | 41 | 38 |
| | | HR150 | 80 | 65 | 53 | 45 | 40 | 36 | 33 | 30 | 80 | 65 | 53 | 45 | 40 | 36 | 33 | 30 | 80 | 65 | 53 | 45 | 40 | 36 | 33 | 30 |
| | 100 | HR250 | 89 | 76 | 64 | 57 | 50 | 45 | 41 | 38 | 84 | 76 | 64 | 57 | 50 | 45 | 41 | 38 | 84 | 76 | 64 | 57 | 50 | 45 | 41 | 38 |
| | | HR150 | 76 | 63 | 52 | 45 | 40 | 36 | 33 | 30 | 73 | 63 | 52 | 45 | 40 | 36 | 33 | 30 | 73 | 63 | 52 | 45 | 40 | 36 | 33 | 30 |
| | 105 | HR250 | 83 | 73 | 62 | 55 | 50 | 45 | 41 | 38 | 80 | 73 | 62 | 55 | 50 | 45 | 41 | 38 | 80 | 73 | 62 | 55 | 50 | 45 | 41 | 38 |
| | | HR150 | 71 | 61 | 51 | 45 | 40 | 36 | 33 | 30 | 70 | 61 | 51 | 45 | 40 | 36 | 33 | 30 | 70 | 61 | 51 | 45 | 40 | 36 | 33 | 30 |
| | 110 | HR250 | 80 | 72 | 61 | 55 | 50 | 45 | 41 | 38 | 76 | 72 | 61 | 55 | 50 | 45 | 41 | 38 | 76 | 72 | 61 | 55 | 50 | 45 | 41 | 38 |
| | | HR150 | 69 | 60 | 51 | 45 | 40 | 36 | 33 | 30 | 67 | 60 | 51 | 45 | 40 | 36 | 33 | 30 | 67 | 60 | 51 | 45 | 40 | 36 | 33 | 30 |
| | 115 | HR250 | 77 | 70 | 60 | 54 | 49 | 45 | 41 | 38 | 73 | 70 | 60 | 54 | 49 | 45 | 41 | 38 | 73 | 70 | 60 | 54 | 49 | 45 | 41 | 38 |
| | | HR150 | 66 | 58 | 50 | 44 | 40 | 36 | 33 | 30 | 64 | 58 | 50 | 44 | 40 | 36 | 33 | 30 | 64 | 58 | 50 | 44 | 40 | 36 | 33 | 30 |
| | 120 | HR250 | 74 | 68 | 59 | 53 | 49 | 45 | 41 | 38 | 70 | 68 | 59 | 53 | 49 | 45 | 41 | 38 | 70 | 68 | 59 | 53 | 49 | 45 | 41 | 38 |
| | | HR150 | 64 | 57 | 49 | 44 | 40 | 36 | 33 | 30 | 61 | 57 | 49 | 44 | 40 | 36 | 33 | 30 | 61 | 57 | 49 | 44 | 40 | 36 | 33 | 30 |
| | 130 | HR250 | 69 | 65 | 57 | 52 | 47 | 44 | 41 | 38 | 65 | 65 | 57 | 52 | 47 | 44 | 41 | 38 | 65 | 65 | 57 | 52 | 47 | 44 | 41 | 38 |
| | | HR150 | 60 | 55 | 48 | 42 | 39 | 36 | 33 | 30 | 57 | 55 | 48 | 42 | 39 | 36 | 33 | 30 | 57 | 55 | 48 | 42 | 39 | 36 | 33 | 30 |
| | 140 | HR250 | 65 | 62 | 55 | 50 | 46 | 43 | 41 | 38 | 60 | 60 | 55 | 50 | 46 | 43 | 41 | 38 | 60 | 60 | 55 | 50 | 46 | 43 | 41 | 38 |
| | | HR150 | 56 | 53 | 46 | 41 | 38 | 35 | 33 | 30 | 53 | 53 | 46 | 41 | 38 | 35 | 33 | 30 | 53 | 53 | 46 | 41 | 38 | 35 | 33 | 30 |
| | 150 | HR250 | 61 | 60 | 53 | 49 | 45 | 42 | 40 | 38 | 56 | 56 | 53 | 49 | 45 | 42 | 40 | 38 | 56 | 56 | 53 | 49 | 45 | 42 | 40 | 38 |
| | | HR150 | 53 | 51 | 45 | 40 | 37 | 35 | 32 | 30 | 49 | 49 | 45 | 40 | 37 | 35 | 32 | 30 | 49 | 49 | 45 | 40 | 37 | 35 | 32 | 30 |

ROOFS >27° TO 45°

**Table 2.30: Maximum Uplift (lb.) - Wind Exposure C Condition**

| Exposure C | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >27° TO 45° | 85 | HR250 | -450 | -371 | -308 | -264 | -231 | -208 | -191 | -177 | -532 | -439 | -364 | -312 | -273 | -246 | -225 | -209 | -532 | -439 | -364 | -312 | -273 | -246 | -225 | -209 |
| | | HR150 | -387 | -305 | -250 | -209 | -183 | -165 | -151 | -140 | -457 | -361 | -296 | -248 | -217 | -195 | -179 | -166 | -457 | -361 | -296 | -248 | -217 | -195 | -179 | -166 |
| | 90 | HR250 | -491 | -411 | -343 | -299 | -262 | -235 | -216 | -200 | -574 | -484 | -404 | -351 | -308 | -277 | -254 | -236 | -574 | -484 | -404 | -351 | -308 | -277 | -254 | -236 |
| | | HR150 | -421 | -339 | -280 | -237 | -208 | -187 | -171 | -159 | -495 | -399 | -329 | -279 | -244 | -220 | -201 | -187 | -495 | -399 | -329 | -279 | -244 | -220 | -201 | -187 |
| | 100 | HR250 | -579 | -498 | -420 | -370 | -327 | -294 | -270 | -250 | -647 | -586 | -494 | -435 | -384 | -346 | -317 | -295 | -647 | -586 | -494 | -435 | -384 | -346 | -317 | -295 |
| | | HR150 | -498 | -413 | -343 | -296 | -259 | -233 | -214 | -199 | -562 | -485 | -404 | -348 | -305 | -275 | -252 | -234 | -562 | -485 | -404 | -348 | -305 | -275 | -252 | -234 |
| | 105 | HR250 | -598 | -530 | -452 | -400 | -361 | -325 | -298 | -277 | -684 | -626 | -533 | -472 | -426 | -384 | -352 | -327 | -684 | -626 | -533 | -472 | -426 | -384 | -352 | -327 |
| | | HR150 | -516 | -441 | -371 | -326 | -287 | -258 | -237 | -220 | -594 | -520 | -438 | -385 | -339 | -305 | -279 | -260 | -594 | -520 | -438 | -385 | -339 | -305 | -279 | -260 |
| | 110 | HR250 | -638 | -573 | -491 | -437 | -397 | -360 | -330 | -306 | -720 | -675 | -579 | -515 | -468 | -424 | -388 | -361 | -720 | -675 | -579 | -515 | -468 | -424 | -388 | -361 |
| | | HR150 | -551 | -478 | -404 | -357 | -317 | -286 | -262 | -243 | -627 | -563 | -476 | -420 | -374 | -336 | -308 | -286 | -627 | -563 | -476 | -420 | -374 | -336 | -308 | -286 |
| | 115 | HR250 | -673 | -614 | -529 | -472 | -430 | -394 | -362 | -336 | -755 | -721 | -622 | -555 | -506 | -463 | -425 | -395 | -755 | -721 | -622 | -555 | -506 | -463 | -425 | -395 |
| | | HR150 | -582 | -513 | -436 | -386 | -348 | -313 | -287 | -267 | -657 | -603 | -513 | -454 | -409 | -368 | -337 | -313 | -657 | -603 | -513 | -454 | -409 | -368 | -337 | -313 |
| | 120 | HR250 | -709 | -655 | -568 | -509 | -465 | -430 | -395 | -367 | -791 | -771 | -669 | -599 | -547 | -506 | -464 | -431 | -791 | -771 | -669 | -599 | -547 | -506 | -464 | -431 |
| | | HR150 | -614 | -549 | -469 | -417 | -379 | -342 | -313 | -291 | -689 | -646 | -552 | -490 | -446 | -402 | -369 | -342 | -689 | -646 | -552 | -490 | -446 | -402 | -369 | -342 |
| | 130 | HR250 | -781 | -739 | -648 | -584 | -536 | -498 | -466 | -433 | -863 | -863 | -763 | -687 | -631 | -586 | -548 | -509 | -863 | -863 | -763 | -687 | -631 | -586 | -548 | -509 |
| | | HR150 | -677 | -621 | -537 | -480 | -438 | -403 | -370 | -344 | -753 | -731 | -632 | -565 | -516 | -475 | -435 | -404 | -753 | -731 | -632 | -565 | -516 | -475 | -435 | -404 |
| | 140 | HR250 | -853 | -824 | -730 | -662 | -610 | -569 | -535 | -505 | -932 | -932 | -855 | -776 | -715 | -667 | -627 | -592 | -932 | -932 | -855 | -776 | -715 | -667 | -627 | -592 |
| | | HR150 | -740 | -695 | -607 | -546 | -500 | -464 | -432 | -401 | -814 | -814 | -712 | -640 | -586 | -544 | -506 | -470 | -814 | -814 | -712 | -640 | -586 | -544 | -506 | -470 |
| | 150 | HR250 | -924 | -908 | -812 | -741 | -686 | -641 | -604 | -573 | -1002 | -1002 | -952 | -868 | -804 | -752 | -708 | -672 | -1002 | -1002 | -952 | -868 | -804 | -752 | -708 | -672 |
| | | HR150 | -803 | -769 | -678 | -613 | -564 | -525 | -493 | -461 | -876 | -876 | -795 | -719 | -661 | -615 | -578 | -541 | -876 | -876 | -795 | -719 | -661 | -615 | -578 | -541 |

**Table 2.31: Maximum Downforce (lb.) - Wind Exposure C Condition**

| Exposure C | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >27° TO 45° | 85 | HR250 | 505 | 460 | 494 | 520 | 539 | 561 | 584 | 626 | 505 | 460 | 494 | 520 | 539 | 561 | 584 | 626 | 505 | 460 | 494 | 520 | 539 | 561 | 584 | 626 |
| | | HR150 | 434 | 379 | 402 | 412 | 428 | 445 | 463 | 497 | 434 | 379 | 402 | 412 | 428 | 445 | 463 | 497 | 434 | 379 | 402 | 412 | 428 | 445 | 463 | 497 |
| | 90 | HR250 | 537 | 482 | 513 | 543 | 559 | 579 | 600 | 626 | 534 | 482 | 513 | 543 | 559 | 579 | 600 | 626 | 534 | 482 | 513 | 543 | 559 | 579 | 600 | 626 |
| | | HR150 | 461 | 398 | 418 | 431 | 444 | 460 | 477 | 497 | 461 | 398 | 418 | 431 | 444 | 460 | 477 | 497 | 461 | 398 | 418 | 431 | 444 | 460 | 477 | 497 |
| | 100 | HR250 | 579 | 513 | 541 | 572 | 589 | 606 | 625 | 645 | 550 | 513 | 541 | 572 | 589 | 606 | 625 | 645 | 550 | 513 | 541 | 572 | 589 | 606 | 625 | 645 |
| | | HR150 | 497 | 425 | 442 | 458 | 468 | 481 | 496 | 512 | 477 | 425 | 442 | 458 | 468 | 481 | 496 | 512 | 477 | 425 | 442 | 458 | 468 | 481 | 496 | 512 |
| | 105 | HR250 | 630 | 558 | 576 | 604 | 630 | 643 | 659 | 676 | 609 | 558 | 576 | 604 | 630 | 643 | 659 | 676 | 609 | 558 | 576 | 604 | 630 | 643 | 659 | 676 |
| | | HR150 | 543 | 464 | 473 | 492 | 500 | 510 | 523 | 537 | 530 | 464 | 473 | 492 | 500 | 510 | 523 | 537 | 530 | 464 | 473 | 492 | 500 | 510 | 523 | 537 |
| | 110 | HR250 | 659 | 592 | 597 | 623 | 650 | 665 | 679 | 695 | 632 | 592 | 597 | 623 | 650 | 665 | 679 | 695 | 632 | 592 | 597 | 623 | 650 | 665 | 679 | 695 |
| | | HR150 | 569 | 494 | 491 | 508 | 519 | 528 | 539 | 552 | 550 | 494 | 491 | 508 | 519 | 528 | 539 | 552 | 550 | 494 | 491 | 508 | 519 | 528 | 539 | 552 |
| | 115 | HR250 | 690 | 629 | 620 | 644 | 670 | 689 | 701 | 716 | 659 | 629 | 620 | 644 | 670 | 689 | 701 | 716 | 659 | 629 | 620 | 644 | 670 | 689 | 701 | 716 |
| | | HR150 | 596 | 526 | 511 | 527 | 541 | 547 | 557 | 568 | 574 | 526 | 511 | 527 | 541 | 547 | 557 | 568 | 574 | 526 | 511 | 527 | 541 | 547 | 557 | 568 |
| | 120 | HR250 | 720 | 665 | 642 | 664 | 689 | 714 | 724 | 737 | 683 | 665 | 642 | 664 | 689 | 714 | 724 | 737 | 683 | 665 | 642 | 664 | 689 | 714 | 724 | 737 |
| | | HR150 | 623 | 557 | 530 | 544 | 561 | 567 | 575 | 585 | 595 | 557 | 530 | 544 | 561 | 567 | 575 | 585 | 595 | 557 | 530 | 544 | 561 | 567 | 575 | 585 |
| | 130 | HR250 | 781 | 739 | 688 | 707 | 729 | 751 | 773 | 782 | 733 | 733 | 688 | 707 | 729 | 751 | 773 | 782 | 733 | 733 | 688 | 707 | 729 | 751 | 773 | 782 |
| | | HR150 | 677 | 621 | 570 | 581 | 596 | 609 | 613 | 621 | 639 | 621 | 570 | 581 | 596 | 609 | 613 | 621 | 639 | 621 | 570 | 581 | 596 | 609 | 613 | 621 |
| | 140 | HR250 | 842 | 814 | 736 | 752 | 771 | 792 | 813 | 832 | 786 | 786 | 736 | 752 | 771 | 792 | 813 | 832 | 786 | 786 | 736 | 752 | 771 | 792 | 813 | 832 |
| | | HR150 | 731 | 687 | 612 | 620 | 632 | 646 | 656 | 660 | 686 | 686 | 612 | 620 | 632 | 646 | 656 | 660 | 686 | 686 | 612 | 620 | 632 | 646 | 656 | 660 |
| | 150 | HR250 | 902 | 887 | 793 | 797 | 814 | 832 | 852 | 871 | 836 | 836 | 793 | 797 | 814 | 832 | 852 | 871 | 836 | 836 | 793 | 797 | 814 | 832 | 852 | 871 |
| | | HR150 | 785 | 751 | 662 | 660 | 669 | 681 | 695 | 701 | 730 | 730 | 662 | 660 | 669 | 681 | 695 | 701 | 730 | 730 | 662 | 660 | 669 | 681 | 695 | 701 |

**Table 2.32: Maximum Shear (lb.) - Wind Exposure C Condition**

| Exposure C | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >27° TO 45° | 85 | HR250 | 42 | 161 | 239 | 294 | 336 | 373 | 407 | 438 | 42 | 161 | 239 | 294 | 336 | 373 | 407 | 438 | 42 | 161 | 239 | 294 | 336 | 373 | 407 | 438 |
| | | HR150 | 36 | 133 | 194 | 233 | 267 | 296 | 323 | 348 | 36 | 133 | 194 | 233 | 267 | 296 | 323 | 348 | 36 | 133 | 194 | 233 | 267 | 296 | 323 | 348 |
| | 90 | HR250 | 41 | 158 | 235 | 294 | 336 | 373 | 407 | 438 | 40 | 158 | 235 | 294 | 336 | 373 | 407 | 438 | 40 | 158 | 235 | 294 | 336 | 373 | 407 | 438 |
| | | HR150 | 35 | 130 | 192 | 233 | 267 | 296 | 323 | 348 | 35 | 130 | 192 | 233 | 267 | 296 | 323 | 348 | 35 | 130 | 192 | 233 | 267 | 296 | 323 | 348 |
| | 100 | HR250 | 38 | 153 | 230 | 291 | 336 | 373 | 407 | 438 | 36 | 153 | 230 | 291 | 336 | 373 | 407 | 438 | 36 | 153 | 230 | 291 | 336 | 373 | 407 | 438 |
| | | HR150 | 33 | 127 | 188 | 233 | 267 | 296 | 323 | 348 | 32 | 127 | 188 | 233 | 267 | 296 | 323 | 348 | 32 | 127 | 188 | 233 | 267 | 296 | 323 | 348 |
| | 105 | HR250 | 36 | 147 | 224 | 285 | 336 | 373 | 407 | 438 | 35 | 147 | 224 | 285 | 336 | 373 | 407 | 438 | 35 | 147 | 224 | 285 | 336 | 373 | 407 | 438 |
| | | HR150 | 31 | 122 | 183 | 232 | 267 | 296 | 323 | 348 | 30 | 122 | 183 | 232 | 267 | 296 | 323 | 348 | 30 | 122 | 183 | 232 | 267 | 296 | 323 | 348 |
| | 110 | HR250 | 35 | 144 | 220 | 281 | 334 | 373 | 407 | 438 | 33 | 144 | 220 | 281 | 334 | 373 | 407 | 438 | 33 | 144 | 220 | 281 | 334 | 373 | 407 | 438 |
| | | HR150 | 30 | 120 | 181 | 230 | 267 | 296 | 323 | 348 | 29 | 120 | 181 | 230 | 267 | 296 | 323 | 348 | 29 | 120 | 181 | 230 | 267 | 296 | 323 | 348 |
| | 115 | HR250 | 33 | 141 | 216 | 278 | 330 | 373 | 407 | 438 | 32 | 141 | 216 | 278 | 330 | 373 | 407 | 438 | 32 | 141 | 216 | 278 | 330 | 373 | 407 | 438 |
| | | HR150 | 29 | 117 | 178 | 227 | 267 | 296 | 323 | 348 | 28 | 117 | 178 | 227 | 267 | 296 | 323 | 348 | 28 | 117 | 178 | 227 | 267 | 296 | 323 | 348 |
| | 120 | HR250 | 32 | 137 | 213 | 274 | 327 | 373 | 407 | 438 | 30 | 137 | 213 | 274 | 327 | 373 | 407 | 438 | 30 | 137 | 213 | 274 | 327 | 373 | 407 | 438 |
| | | HR150 | 28 | 115 | 176 | 224 | 266 | 296 | 323 | 348 | 27 | 115 | 176 | 224 | 266 | 296 | 323 | 348 | 27 | 115 | 176 | 224 | 266 | 296 | 323 | 348 |
| | 130 | HR250 | 30 | 131 | 205 | 266 | 319 | 366 | 407 | 438 | 28 | 130 | 205 | 266 | 319 | 366 | 407 | 438 | 28 | 130 | 205 | 266 | 319 | 366 | 407 | 438 |
| | | HR150 | 26 | 110 | 170 | 219 | 261 | 296 | 323 | 348 | 25 | 110 | 170 | 219 | 261 | 296 | 323 | 348 | 25 | 110 | 170 | 219 | 261 | 296 | 323 | 348 |
| | 140 | HR250 | 28 | 125 | 198 | 259 | 311 | 358 | 401 | 438 | 26 | 121 | 198 | 259 | 311 | 358 | 401 | 438 | 26 | 121 | 198 | 259 | 311 | 358 | 401 | 438 |
| | | HR150 | 24 | 106 | 165 | 214 | 255 | 292 | 323 | 348 | 23 | 106 | 165 | 214 | 255 | 292 | 323 | 348 | 23 | 106 | 165 | 214 | 255 | 292 | 323 | 348 |
| | 150 | HR250 | 26 | 120 | 191 | 252 | 304 | 351 | 393 | 432 | 24 | 113 | 191 | 252 | 304 | 351 | 393 | 432 | 24 | 113 | 191 | 252 | 304 | 351 | 393 | 432 |
| | | HR150 | 23 | 102 | 160 | 208 | 250 | 287 | 321 | 348 | 21 | 99 | 160 | 208 | 250 | 287 | 321 | 348 | 21 | 99 | 160 | 208 | 250 | 287 | 321 | 348 |

**Table 2.33: Maximum Span Length (in.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 92 | 78 | 65 | 57 | 50 | 45 | 41 | 38 | 91 | 78 | 65 | 57 | 50 | 45 | 41 | 38 | 91 | 78 | 65 | 57 | 50 | 45 | 41 | 38 |
| | | HR150 | 79 | 64 | 53 | 45 | 40 | 36 | 33 | 30 | 79 | 64 | 53 | 45 | 40 | 36 | 33 | 30 | 79 | 64 | 53 | 45 | 40 | 36 | 33 | 30 |
| | 90 | HR250 | 88 | 76 | 64 | 56 | 50 | 45 | 41 | 38 | 86 | 76 | 64 | 56 | 50 | 45 | 41 | 38 | 86 | 76 | 64 | 56 | 50 | 45 | 41 | 38 |
| | | HR150 | 75 | 63 | 52 | 45 | 40 | 36 | 33 | 30 | 74 | 63 | 52 | 45 | 40 | 36 | 33 | 30 | 74 | 63 | 52 | 45 | 40 | 36 | 33 | 30 |
| | 100 | HR250 | 83 | 73 | 62 | 55 | 50 | 45 | 41 | 38 | 77 | 73 | 62 | 55 | 50 | 45 | 41 | 38 | 77 | 73 | 62 | 55 | 50 | 45 | 41 | 38 |
| | | HR150 | 71 | 61 | 51 | 45 | 40 | 36 | 33 | 30 | 67 | 61 | 51 | 45 | 40 | 36 | 33 | 30 | 67 | 61 | 51 | 45 | 40 | 36 | 33 | 30 |
| ROOFS >27° TO 45° | 105 | HR250 | 77 | 70 | 60 | 54 | 49 | 45 | 41 | 38 | 74 | 70 | 60 | 54 | 49 | 45 | 41 | 38 | 74 | 70 | 60 | 54 | 49 | 45 | 41 | 38 |
| | | HR150 | 67 | 59 | 50 | 44 | 40 | 36 | 33 | 30 | 64 | 59 | 50 | 44 | 40 | 36 | 33 | 30 | 64 | 59 | 50 | 44 | 40 | 36 | 33 | 30 |
| | 110 | HR250 | 74 | 69 | 59 | 53 | 49 | 45 | 41 | 38 | 70 | 69 | 59 | 53 | 49 | 45 | 41 | 38 | 70 | 69 | 59 | 53 | 49 | 45 | 41 | 38 |
| | | HR150 | 64 | 57 | 49 | 44 | 40 | 36 | 33 | 30 | 61 | 57 | 49 | 44 | 40 | 36 | 33 | 30 | 61 | 57 | 49 | 44 | 40 | 36 | 33 | 30 |
| | 115 | HR250 | 71 | 67 | 58 | 52 | 48 | 44 | 41 | 38 | 67 | 67 | 58 | 52 | 48 | 44 | 41 | 38 | 67 | 67 | 58 | 52 | 48 | 44 | 41 | 38 |
| | | HR150 | 62 | 56 | 48 | 43 | 39 | 36 | 33 | 30 | 59 | 56 | 48 | 43 | 39 | 36 | 33 | 30 | 59 | 56 | 48 | 43 | 39 | 36 | 33 | 30 |
| | 120 | HR250 | 69 | 65 | 57 | 52 | 47 | 44 | 41 | 38 | 65 | 65 | 57 | 52 | 47 | 44 | 41 | 38 | 65 | 65 | 57 | 52 | 47 | 44 | 41 | 38 |
| | | HR150 | 60 | 55 | 47 | 42 | 39 | 36 | 33 | 30 | 56 | 55 | 47 | 42 | 39 | 36 | 33 | 30 | 56 | 55 | 47 | 42 | 39 | 36 | 33 | 30 |
| | 130 | HR250 | 64 | 62 | 55 | 50 | 46 | 43 | 40 | 38 | 60 | 60 | 55 | 50 | 46 | 43 | 40 | 38 | 60 | 60 | 55 | 50 | 46 | 43 | 40 | 38 |
| | | HR150 | 56 | 52 | 46 | 41 | 38 | 35 | 33 | 30 | 52 | 52 | 46 | 41 | 38 | 35 | 33 | 30 | 52 | 52 | 46 | 41 | 38 | 35 | 33 | 30 |
| | 140 | HR250 | 60 | 59 | 53 | 48 | 45 | 42 | 40 | 38 | 55 | 55 | 53 | 48 | 45 | 42 | 40 | 38 | 55 | 55 | 53 | 48 | 45 | 42 | 40 | 38 |
| | | HR150 | 52 | 50 | 44 | 40 | 37 | 34 | 32 | 30 | 48 | 48 | 44 | 40 | 37 | 34 | 32 | 30 | 48 | 48 | 44 | 40 | 37 | 34 | 32 | 30 |
| | 150 | HR250 | 56 | 56 | 51 | 47 | 44 | 41 | 39 | 37 | 52 | 52 | 51 | 47 | 44 | 41 | 39 | 37 | 52 | 52 | 51 | 47 | 44 | 41 | 39 | 37 |
| | | HR150 | 49 | 48 | 43 | 39 | 36 | 34 | 32 | 30 | 45 | 45 | 43 | 39 | 36 | 34 | 32 | 30 | 45 | 45 | 43 | 39 | 36 | 34 | 32 | 30 |

**Table 2.34: Maximum Uplift (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | -509 | -431 | -361 | -317 | -277 | -249 | -229 | -212 | -594 | -508 | -426 | -374 | -327 | -295 | -270 | -251 | -594 | -508 | -426 | -374 | -327 | -295 | -270 | -251 |
| | | HR150 | -436 | -356 | -295 | -251 | -220 | -198 | -182 | -169 | -514 | -420 | -348 | -297 | -260 | -234 | -214 | -199 | -514 | -420 | -348 | -297 | -260 | -234 | -214 | -199 |
| | 90 | HR250 | -551 | -475 | -401 | -354 | -314 | -282 | -259 | -240 | -632 | -558 | -471 | -415 | -368 | -331 | -304 | -282 | -632 | -558 | -471 | -415 | -368 | -331 | -304 | -282 |
| | | HR150 | -473 | -394 | -328 | -284 | -249 | -224 | -205 | -191 | -549 | -463 | -386 | -334 | -292 | -263 | -241 | -224 | -549 | -463 | -386 | -334 | -292 | -263 | -241 | -224 |
| | 100 | HR250 | -647 | -573 | -488 | -433 | -391 | -352 | -323 | -300 | -711 | -673 | -573 | -508 | -459 | -413 | -379 | -352 | -711 | -673 | -573 | -508 | -459 | -413 | -379 | -352 |
| | | HR150 | -557 | -477 | -401 | -352 | -310 | -279 | -256 | -238 | -618 | -560 | -471 | -414 | -364 | -328 | -301 | -279 | -618 | -560 | -471 | -414 | -364 | -328 | -301 | -279 |
| | 105 | HR250 | -666 | -607 | -523 | -466 | -425 | -389 | -356 | -331 | -751 | -715 | -617 | -550 | -501 | -458 | -420 | -390 | -751 | -715 | -617 | -550 | -501 | -458 | -420 | -390 |
| | | HR150 | -576 | -507 | -431 | -381 | -343 | -309 | -283 | -263 | -654 | -598 | -508 | -450 | -404 | -364 | -334 | -310 | -654 | -598 | -508 | -450 | -404 | -364 | -334 | -310 |
| | 110 | HR250 | -709 | -655 | -568 | -508 | -464 | -430 | -394 | -366 | -790 | -770 | -668 | -598 | -546 | -505 | -463 | -430 | -790 | -770 | -668 | -598 | -546 | -505 | -463 | -430 |
| | | HR150 | -613 | -548 | -469 | -416 | -378 | -341 | -313 | -290 | -689 | -645 | -551 | -490 | -445 | -401 | -368 | -342 | -689 | -645 | -551 | -490 | -445 | -401 | -368 | -342 |
| | 115 | HR250 | -747 | -699 | -610 | -548 | -502 | -466 | -432 | -401 | -828 | -821 | -716 | -643 | -589 | -547 | -507 | -471 | -828 | -821 | -716 | -643 | -589 | -547 | -507 | -471 |
| | | HR150 | -647 | -587 | -505 | -450 | -410 | -374 | -343 | -318 | -722 | -689 | -593 | -528 | -481 | -439 | -402 | -373 | -722 | -689 | -593 | -528 | -481 | -439 | -402 | -373 |
| | 120 | HR250 | -786 | -745 | -653 | -589 | -541 | -503 | -471 | -437 | -867 | -867 | -768 | -692 | -636 | -591 | -554 | -514 | -867 | -867 | -768 | -692 | -636 | -591 | -554 | -514 |
| | | HR150 | -681 | -626 | -542 | -484 | -442 | -408 | -374 | -347 | -756 | -736 | -637 | -569 | -520 | -479 | -439 | -408 | -756 | -736 | -637 | -569 | -520 | -479 | -439 | -408 |
| | 130 | HR250 | -863 | -836 | -742 | -674 | -621 | -579 | -545 | -516 | -944 | -944 | -872 | -792 | -730 | -681 | -641 | -607 | -944 | -944 | -872 | -792 | -730 | -681 | -641 | -607 |
| | | HR150 | -750 | -706 | -618 | -556 | -510 | -473 | -441 | -409 | -825 | -825 | -726 | -654 | -599 | -556 | -518 | -481 | -825 | -825 | -726 | -654 | -599 | -556 | -518 | -481 |
| | 140 | HR250 | -940 | -929 | -832 | -760 | -705 | -659 | -622 | -590 | -1020 | -1020 | -974 | -891 | -825 | -772 | -728 | -691 | -1020 | -1020 | -974 | -891 | -825 | -772 | -728 | -691 |
| | | HR150 | -818 | -787 | -696 | -630 | -580 | -540 | -508 | -477 | -891 | -891 | -815 | -738 | -679 | -633 | -595 | -559 | -891 | -891 | -815 | -738 | -679 | -633 | -595 | -559 |
| | 150 | HR250 | -1010 | -1010 | -923 | -848 | -789 | -741 | -701 | -666 | -1096 | -1096 | -1081 | -993 | -924 | -868 | -821 | -781 | -1096 | -1096 | -1081 | -993 | -924 | -868 | -821 | -781 |
| | | HR150 | -883 | -868 | -774 | -705 | -652 | -609 | -574 | -544 | -959 | -959 | -906 | -826 | -764 | -714 | -672 | -637 | -959 | -959 | -906 | -826 | -764 | -714 | -672 | -637 |

ROOFS >27° TO 45°

**Table 2.35: Maximum Downforce (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 554 | 494 | 524 | 556 | 571 | 590 | 610 | 631 | 547 | 494 | 524 | 556 | 571 | 590 | 610 | 631 | 547 | 494 | 524 | 556 | 571 | 590 | 610 | 631 |
| | | HR150 | 475 | 409 | 428 | 441 | 453 | 468 | 484 | 501 | 474 | 409 | 428 | 441 | 453 | 468 | 484 | 501 | 474 | 409 | 428 | 441 | 453 | 468 | 484 | 501 |
| | 90 | HR250 | 586 | 519 | 546 | 576 | 595 | 611 | 630 | 649 | 573 | 519 | 546 | 576 | 595 | 611 | 630 | 649 | 573 | 519 | 546 | 576 | 595 | 611 | 630 | 649 |
| | | HR150 | 504 | 430 | 446 | 463 | 472 | 485 | 500 | 515 | 497 | 430 | 446 | 463 | 472 | 485 | 500 | 515 | 497 | 430 | 446 | 463 | 472 | 485 | 500 | 515 |
| | 100 | HR250 | 631 | 559 | 577 | 605 | 630 | 643 | 659 | 677 | 590 | 559 | 577 | 605 | 630 | 643 | 659 | 677 | 590 | 559 | 577 | 605 | 630 | 643 | 659 | 677 |
| | | HR150 | 544 | 465 | 474 | 493 | 500 | 511 | 523 | 537 | 514 | 465 | 474 | 493 | 500 | 511 | 523 | 537 | 514 | 465 | 474 | 493 | 500 | 511 | 523 | 537 |
| | 105 | HR250 | 687 | 625 | 617 | 642 | 667 | 686 | 699 | 713 | 656 | 625 | 617 | 642 | 667 | 686 | 699 | 713 | 656 | 625 | 617 | 642 | 667 | 686 | 699 | 713 |
| | | HR150 | 593 | 522 | 509 | 524 | 538 | 545 | 555 | 566 | 571 | 522 | 509 | 524 | 538 | 545 | 555 | 566 | 571 | 522 | 509 | 524 | 538 | 545 | 555 | 566 |
| | 110 | HR250 | 718 | 663 | 641 | 663 | 688 | 712 | 723 | 736 | 681 | 663 | 641 | 663 | 688 | 712 | 723 | 736 | 681 | 663 | 641 | 663 | 688 | 712 | 723 | 736 |
| | | HR150 | 621 | 555 | 529 | 543 | 560 | 566 | 574 | 584 | 593 | 555 | 529 | 543 | 560 | 566 | 574 | 584 | 593 | 555 | 529 | 543 | 560 | 566 | 574 | 584 |
| | 115 | HR250 | 752 | 704 | 666 | 687 | 710 | 734 | 749 | 761 | 710 | 704 | 666 | 687 | 710 | 734 | 749 | 761 | 710 | 704 | 666 | 687 | 710 | 734 | 749 | 761 |
| | | HR150 | 652 | 591 | 552 | 564 | 579 | 589 | 595 | 604 | 620 | 591 | 552 | 564 | 579 | 589 | 595 | 604 | 620 | 591 | 552 | 564 | 579 | 589 | 595 | 604 |
| | 120 | HR250 | 785 | 744 | 691 | 710 | 732 | 754 | 776 | 785 | 737 | 737 | 691 | 710 | 732 | 754 | 776 | 785 | 737 | 737 | 691 | 710 | 732 | 754 | 776 | 785 |
| | | HR150 | 681 | 626 | 573 | 584 | 598 | 612 | 616 | 623 | 643 | 626 | 573 | 584 | 598 | 612 | 616 | 623 | 643 | 626 | 573 | 584 | 598 | 612 | 616 | 623 |
| | 130 | HR250 | 851 | 825 | 743 | 759 | 777 | 797 | 818 | 839 | 792 | 792 | 743 | 759 | 777 | 797 | 818 | 839 | 792 | 792 | 743 | 759 | 777 | 797 | 818 | 839 |
| | | HR150 | 739 | 696 | 618 | 626 | 638 | 651 | 662 | 666 | 691 | 691 | 618 | 626 | 638 | 651 | 662 | 666 | 691 | 691 | 618 | 626 | 638 | 651 | 662 | 666 |
| | 140 | HR250 | 918 | 907 | 812 | 809 | 825 | 843 | 862 | 881 | 850 | 850 | 812 | 809 | 825 | 843 | 862 | 881 | 850 | 850 | 812 | 809 | 825 | 843 | 862 | 881 |
| | | HR150 | 799 | 768 | 679 | 670 | 679 | 691 | 704 | 713 | 743 | 743 | 679 | 670 | 679 | 691 | 704 | 713 | 743 | 743 | 679 | 670 | 679 | 691 | 704 | 713 |
| | 150 | HR250 | 977 | 977 | 892 | 859 | 873 | 889 | 906 | 924 | 904 | 904 | 892 | 859 | 873 | 889 | 906 | 924 | 904 | 904 | 892 | 859 | 873 | 889 | 906 | 924 |
| | | HR150 | 854 | 839 | 748 | 714 | 721 | 731 | 742 | 754 | 791 | 791 | 748 | 714 | 721 | 731 | 742 | 754 | 791 | 791 | 748 | 714 | 721 | 731 | 742 | 754 |

ROOFS >27° TO 45°

**Table 2.36: Maximum Shear (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 40 | 156 | 233 | 294 | 336 | 373 | 407 | 438 | 39 | 156 | 233 | 294 | 336 | 373 | 407 | 438 | 39 | 156 | 233 | 294 | 336 | 373 | 407 | 438 |
| | | HR150 | 34 | 129 | 190 | 233 | 267 | 296 | 323 | 348 | 34 | 129 | 190 | 233 | 267 | 296 | 323 | 348 | 34 | 129 | 190 | 233 | 267 | 296 | 323 | 348 |
| | 90 | HR250 | 38 | 152 | 229 | 290 | 336 | 373 | 407 | 438 | 37 | 152 | 229 | 290 | 336 | 373 | 407 | 438 | 37 | 152 | 229 | 290 | 336 | 373 | 407 | 438 |
| | | HR150 | 33 | 126 | 187 | 233 | 267 | 296 | 323 | 348 | 32 | 126 | 187 | 233 | 267 | 296 | 323 | 348 | 32 | 126 | 187 | 233 | 267 | 296 | 323 | 348 |
| | 100 | HR250 | 36 | 147 | 223 | 285 | 336 | 373 | 407 | 438 | 34 | 147 | 223 | 285 | 336 | 373 | 407 | 438 | 34 | 147 | 223 | 285 | 336 | 373 | 407 | 438 |
| | | HR150 | 31 | 122 | 183 | 232 | 267 | 296 | 323 | 348 | 29 | 122 | 183 | 232 | 267 | 296 | 323 | 348 | 29 | 122 | 183 | 232 | 267 | 296 | 323 | 348 |
| | 105 | HR250 | 33 | 141 | 217 | 278 | 331 | 373 | 407 | 438 | 32 | 141 | 217 | 278 | 331 | 373 | 407 | 438 | 32 | 141 | 217 | 278 | 331 | 373 | 407 | 438 |
| | | HR150 | 29 | 118 | 178 | 227 | 267 | 296 | 323 | 348 | 28 | 118 | 178 | 227 | 267 | 296 | 323 | 348 | 28 | 118 | 178 | 227 | 267 | 296 | 323 | 348 |
| | 110 | HR250 | 32 | 138 | 213 | 274 | 327 | 373 | 407 | 438 | 31 | 138 | 213 | 274 | 327 | 373 | 407 | 438 | 31 | 138 | 213 | 274 | 327 | 373 | 407 | 438 |
| | | HR150 | 28 | 115 | 176 | 225 | 266 | 296 | 323 | 348 | 27 | 115 | 176 | 225 | 266 | 296 | 323 | 348 | 27 | 115 | 176 | 225 | 266 | 296 | 323 | 348 |
| | 115 | HR250 | 31 | 134 | 209 | 270 | 323 | 369 | 407 | 438 | 29 | 134 | 209 | 270 | 323 | 369 | 407 | 438 | 29 | 134 | 209 | 270 | 323 | 369 | 407 | 438 |
| | | HR150 | 27 | 113 | 173 | 222 | 263 | 296 | 323 | 348 | 25 | 113 | 173 | 222 | 263 | 296 | 323 | 348 | 25 | 113 | 173 | 222 | 263 | 296 | 323 | 348 |
| | 120 | HR250 | 30 | 131 | 205 | 266 | 318 | 365 | 407 | 438 | 28 | 130 | 205 | 266 | 318 | 365 | 407 | 438 | 28 | 130 | 205 | 266 | 318 | 365 | 407 | 438 |
| | | HR150 | 26 | 110 | 170 | 219 | 260 | 296 | 323 | 348 | 24 | 110 | 170 | 219 | 260 | 296 | 323 | 348 | 24 | 110 | 170 | 219 | 260 | 296 | 323 | 348 |
| | 130 | HR250 | 28 | 125 | 197 | 258 | 310 | 357 | 400 | 438 | 26 | 120 | 197 | 258 | 310 | 357 | 400 | 438 | 26 | 120 | 197 | 258 | 310 | 357 | 400 | 438 |
| | | HR150 | 24 | 105 | 164 | 213 | 255 | 292 | 323 | 348 | 23 | 105 | 164 | 213 | 255 | 292 | 323 | 348 | 23 | 105 | 164 | 213 | 255 | 292 | 323 | 348 |
| | 140 | HR250 | 26 | 119 | 190 | 250 | 302 | 349 | 391 | 430 | 24 | 111 | 190 | 250 | 302 | 349 | 391 | 430 | 24 | 111 | 190 | 250 | 302 | 349 | 391 | 430 |
| | | HR150 | 23 | 101 | 159 | 207 | 249 | 286 | 319 | 348 | 21 | 97 | 159 | 207 | 249 | 286 | 319 | 348 | 21 | 97 | 159 | 207 | 249 | 286 | 319 | 348 |
| | 150 | HR250 | 24 | 112 | 183 | 242 | 294 | 340 | 383 | 422 | 22 | 104 | 183 | 242 | 294 | 340 | 383 | 422 | 22 | 104 | 183 | 242 | 294 | 340 | 383 | 422 |
| | | HR150 | 21 | 96 | 153 | 201 | 243 | 280 | 314 | 345 | 20 | 91 | 153 | 201 | 243 | 280 | 314 | 345 | 20 | 91 | 153 | 201 | 243 | 280 | 314 | 345 |

ROOFS >27° TO 45°

**Table 2.37: Maximum Span Length (in.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >45° TO 55° | **85** | HR250 | 103 | 86 | 69 | 57 | 50 | 45 | 41 | 39 | 103 | 86 | 69 | 57 | 50 | 45 | 41 | 39 | 103 | 86 | 69 | 57 | 50 | 45 | 41 | 39 |
| | | HR150 | 94 | 69 | 54 | 45 | 39 | 35 | 32 | 30 | 94 | 69 | 54 | 45 | 39 | 35 | 32 | 30 | 94 | 69 | 54 | 45 | 39 | 35 | 32 | 30 |
| | **90** | HR250 | 101 | 85 | 69 | 57 | 50 | 45 | 41 | 39 | 101 | 85 | 69 | 57 | 50 | 45 | 41 | 39 | 101 | 85 | 69 | 57 | 50 | 45 | 41 | 39 |
| | | HR150 | 91 | 68 | 54 | 45 | 39 | 35 | 32 | 30 | 91 | 68 | 54 | 45 | 39 | 35 | 32 | 30 | 91 | 68 | 54 | 45 | 39 | 35 | 32 | 30 |
| | **100** | HR250 | 100 | 83 | 68 | 57 | 50 | 45 | 41 | 39 | 100 | 83 | 68 | 57 | 50 | 45 | 41 | 39 | 100 | 83 | 68 | 57 | 50 | 45 | 41 | 39 |
| | | HR150 | 89 | 67 | 54 | 45 | 39 | 35 | 32 | 30 | 89 | 67 | 54 | 45 | 39 | 35 | 32 | 30 | 89 | 67 | 54 | 45 | 39 | 35 | 32 | 30 |
| | **105** | HR250 | 96 | 81 | 67 | 57 | 50 | 45 | 41 | 39 | 96 | 81 | 67 | 57 | 50 | 45 | 41 | 39 | 96 | 81 | 67 | 57 | 50 | 45 | 41 | 39 |
| | | HR150 | 84 | 66 | 54 | 45 | 39 | 35 | 32 | 30 | 83 | 66 | 54 | 45 | 39 | 35 | 32 | 30 | 83 | 66 | 54 | 45 | 39 | 35 | 32 | 30 |
| | **110** | HR250 | 93 | 79 | 66 | 57 | 50 | 45 | 41 | 39 | 89 | 79 | 66 | 57 | 50 | 45 | 41 | 39 | 89 | 79 | 66 | 57 | 50 | 45 | 41 | 39 |
| | | HR150 | 80 | 64 | 53 | 45 | 39 | 35 | 32 | 30 | 77 | 64 | 53 | 45 | 39 | 35 | 32 | 30 | 77 | 64 | 53 | 45 | 39 | 35 | 32 | 30 |
| | **115** | HR250 | 89 | 76 | 64 | 57 | 50 | 45 | 41 | 39 | 84 | 76 | 64 | 57 | 50 | 45 | 41 | 39 | 84 | 76 | 64 | 57 | 50 | 45 | 41 | 39 |
| | | HR150 | 76 | 63 | 52 | 45 | 39 | 35 | 32 | 30 | 72 | 63 | 52 | 45 | 39 | 35 | 32 | 30 | 72 | 63 | 52 | 45 | 39 | 35 | 32 | 30 |
| | **120** | HR250 | 84 | 74 | 63 | 56 | 50 | 45 | 41 | 39 | 79 | 74 | 63 | 56 | 50 | 45 | 41 | 39 | 79 | 74 | 63 | 56 | 50 | 45 | 41 | 39 |
| | | HR150 | 72 | 61 | 51 | 45 | 39 | 35 | 32 | 30 | 68 | 61 | 51 | 45 | 39 | 35 | 32 | 30 | 68 | 61 | 51 | 45 | 39 | 35 | 32 | 30 |
| | **130** | HR250 | 80 | 72 | 62 | 55 | 50 | 45 | 41 | 39 | 74 | 72 | 62 | 55 | 50 | 45 | 41 | 39 | 74 | 72 | 62 | 55 | 50 | 45 | 41 | 39 |
| | | HR150 | 69 | 59 | 50 | 44 | 39 | 35 | 32 | 30 | 64 | 59 | 50 | 44 | 39 | 35 | 32 | 30 | 64 | 59 | 50 | 44 | 39 | 35 | 32 | 30 |
| | **140** | HR250 | 76 | 70 | 60 | 54 | 49 | 45 | 41 | 39 | 70 | 70 | 60 | 54 | 49 | 45 | 41 | 39 | 70 | 70 | 60 | 54 | 49 | 45 | 41 | 39 |
| | | HR150 | 66 | 58 | 49 | 44 | 39 | 35 | 32 | 30 | 61 | 58 | 49 | 44 | 39 | 35 | 32 | 30 | 61 | 58 | 49 | 44 | 39 | 35 | 32 | 30 |
| | **150** | HR250 | 70 | 66 | 58 | 52 | 48 | 44 | 41 | 39 | 63 | 63 | 58 | 52 | 48 | 44 | 41 | 39 | 63 | 63 | 58 | 52 | 48 | 44 | 41 | 39 |
| | | HR150 | 60 | 55 | 47 | 42 | 38 | 35 | 32 | 30 | 55 | 55 | 47 | 42 | 38 | 35 | 32 | 30 | 55 | 55 | 47 | 42 | 38 | 35 | 32 | 30 |

**Table 2.38: Maximum Uplift (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| B | 85 | HR250 | -372 | -308 | -248 | -206 | -181 | -163 | -149 | -138 | -465 | -385 | -310 | -258 | -226 | -204 | -187 | -173 | -465 | -385 | -310 | -258 | -226 | -204 | -187 | -173 |
| | | HR150 | -338 | -248 | -193 | -161 | -141 | -127 | -116 | -108 | -423 | -311 | -241 | -201 | -176 | -159 | -145 | -135 | -423 | -311 | -241 | -201 | -176 | -159 | -145 | -135 |
| | 90 | HR250 | -401 | -334 | -272 | -227 | -199 | -179 | -164 | -152 | -503 | -419 | -342 | -285 | -249 | -224 | -206 | -191 | -503 | -419 | -342 | -285 | -249 | -224 | -206 | -191 |
| | | HR150 | -361 | -270 | -212 | -177 | -155 | -139 | -128 | -119 | -453 | -338 | -266 | -222 | -194 | -175 | -160 | -149 | -453 | -338 | -266 | -222 | -194 | -175 | -160 | -149 |
| | 100 | HR250 | -431 | -361 | -297 | -249 | -218 | -196 | -180 | -167 | -540 | -452 | -371 | -311 | -272 | -245 | -225 | -209 | -540 | -452 | -371 | -311 | -272 | -245 | -225 | -209 |
| | | HR150 | -385 | -292 | -233 | -194 | -170 | -153 | -140 | -130 | -481 | -366 | -291 | -243 | -212 | -191 | -175 | -163 | -481 | -366 | -291 | -243 | -212 | -191 | -175 | -163 |
| | 105 | HR250 | -493 | -416 | -345 | -295 | -258 | -233 | -213 | -198 | -614 | -519 | -430 | -368 | -322 | -290 | -266 | -247 | -614 | -519 | -430 | -368 | -322 | -290 | -266 | -247 |
| | | HR150 | -432 | -338 | -276 | -230 | -201 | -181 | -166 | -154 | -529 | -422 | -344 | -287 | -251 | -226 | -207 | -192 | -529 | -422 | -344 | -287 | -251 | -226 | -207 | -192 |
| | 110 | HR250 | -556 | -472 | -394 | -344 | -301 | -271 | -249 | -231 | -668 | -588 | -492 | -429 | -376 | -338 | -310 | -288 | -668 | -588 | -492 | -429 | -376 | -338 | -310 | -288 |
| | | HR150 | -478 | -385 | -317 | -268 | -235 | -211 | -194 | -180 | -577 | -480 | -396 | -335 | -293 | -264 | -242 | -224 | -577 | -480 | -396 | -335 | -293 | -264 | -242 | -224 |
| | 115 | HR250 | -614 | -529 | -447 | -394 | -349 | -314 | -288 | -267 | -722 | -659 | -556 | -490 | -434 | -390 | -358 | -333 | -722 | -659 | -556 | -490 | -434 | -390 | -358 | -333 |
| | | HR150 | -525 | -434 | -361 | -310 | -272 | -244 | -224 | -208 | -625 | -540 | -449 | -386 | -338 | -304 | -279 | -259 | -625 | -540 | -449 | -386 | -338 | -304 | -279 | -259 |
| | 120 | HR250 | -667 | -588 | -501 | -443 | -399 | -359 | -329 | -306 | -775 | -731 | -622 | -551 | -496 | -446 | -409 | -380 | -775 | -731 | -622 | -551 | -496 | -446 | -409 | -380 |
| | | HR150 | -572 | -484 | -405 | -355 | -311 | -280 | -257 | -238 | -673 | -601 | -504 | -441 | -386 | -348 | -319 | -296 | -673 | -601 | -504 | -441 | -386 | -348 | -319 | -296 |
| | 130 | HR250 | -718 | -647 | -555 | -493 | -449 | -407 | -373 | -346 | -828 | -803 | -689 | -613 | -557 | -505 | -463 | -430 | -828 | -803 | -689 | -613 | -557 | -505 | -463 | -430 |
| | | HR150 | -618 | -534 | -451 | -397 | -352 | -317 | -291 | -270 | -720 | -663 | -560 | -493 | -437 | -394 | -361 | -335 | -720 | -663 | -560 | -493 | -437 | -394 | -361 | -335 |
| | 140 | HR250 | -770 | -706 | -610 | -545 | -497 | -458 | -419 | -390 | -881 | -876 | -757 | -676 | -617 | -568 | -521 | -483 | -881 | -876 | -757 | -676 | -617 | -568 | -521 | -483 |
| | | HR150 | -663 | -585 | -497 | -440 | -396 | -356 | -327 | -304 | -766 | -726 | -617 | -546 | -491 | -442 | -406 | -377 | -766 | -726 | -617 | -546 | -491 | -442 | -406 | -377 |
| | 150 | HR250 | -873 | -826 | -725 | -653 | -599 | -557 | -521 | -484 | -986 | -986 | -898 | -809 | -742 | -690 | -646 | -600 | -986 | -986 | -898 | -809 | -742 | -690 | -646 | -600 |
| | | HR150 | -755 | -689 | -594 | -530 | -483 | -443 | -406 | -377 | -859 | -853 | -736 | -657 | -599 | -549 | -503 | -467 | -859 | -853 | -736 | -657 | -599 | -549 | -503 | -467 |

ROOFS >45° TO 55°

**Table 2.39: Maximum Downforce (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| B | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >45° TO 55° | 85 | HR250 | 421 | 386 | 401 | 410 | 426 | 443 | 461 | 494 | 421 | 386 | 401 | 410 | 426 | 443 | 461 | 494 | 421 | 386 | 401 | 410 | 426 | 443 | 461 | 494 |
| | | HR150 | 383 | 311 | 313 | 320 | 332 | 345 | 359 | 385 | 383 | 311 | 313 | 320 | 332 | 345 | 359 | 385 | 383 | 311 | 313 | 320 | 332 | 345 | 359 | 385 |
| | 90 | HR250 | 447 | 401 | 418 | 424 | 438 | 454 | 471 | 494 | 447 | 401 | 418 | 424 | 438 | 454 | 471 | 494 | 447 | 401 | 418 | 424 | 438 | 454 | 471 | 494 |
| | | HR150 | 402 | 324 | 326 | 331 | 341 | 354 | 367 | 385 | 402 | 324 | 326 | 331 | 341 | 354 | 367 | 385 | 402 | 324 | 326 | 331 | 341 | 354 | 367 | 385 |
| | 100 | HR250 | 473 | 417 | 433 | 439 | 451 | 466 | 482 | 499 | 473 | 417 | 433 | 439 | 451 | 466 | 482 | 499 | 473 | 417 | 433 | 439 | 451 | 466 | 482 | 499 |
| | | HR150 | 422 | 338 | 340 | 342 | 351 | 363 | 376 | 389 | 422 | 338 | 340 | 342 | 351 | 363 | 376 | 389 | 422 | 338 | 340 | 342 | 351 | 363 | 376 | 389 |
| | 105 | HR250 | 527 | 450 | 462 | 471 | 479 | 491 | 505 | 520 | 526 | 450 | 462 | 471 | 479 | 491 | 505 | 520 | 526 | 450 | 462 | 471 | 479 | 491 | 505 | 520 |
| | | HR150 | 462 | 366 | 370 | 367 | 373 | 383 | 394 | 405 | 454 | 366 | 370 | 367 | 373 | 383 | 394 | 405 | 454 | 366 | 370 | 367 | 373 | 383 | 394 | 405 |
| | 110 | HR250 | 584 | 495 | 493 | 506 | 509 | 518 | 530 | 543 | 562 | 495 | 493 | 506 | 509 | 518 | 530 | 543 | 562 | 495 | 493 | 506 | 509 | 518 | 530 | 543 |
| | | HR150 | 502 | 404 | 396 | 394 | 397 | 404 | 413 | 423 | 486 | 404 | 396 | 394 | 397 | 404 | 413 | 423 | 486 | 404 | 396 | 394 | 397 | 404 | 413 | 423 |
| | 115 | HR250 | 633 | 546 | 524 | 537 | 542 | 547 | 557 | 568 | 598 | 546 | 524 | 537 | 542 | 547 | 557 | 568 | 598 | 546 | 524 | 537 | 542 | 547 | 557 | 568 |
| | | HR150 | 542 | 447 | 423 | 423 | 422 | 427 | 434 | 443 | 518 | 447 | 423 | 423 | 422 | 427 | 434 | 443 | 518 | 447 | 423 | 423 | 422 | 427 | 434 | 443 |
| | 120 | HR250 | 678 | 598 | 556 | 566 | 576 | 579 | 586 | 595 | 635 | 598 | 556 | 566 | 576 | 579 | 586 | 595 | 635 | 598 | 556 | 566 | 576 | 579 | 586 | 595 |
| | | HR150 | 582 | 492 | 450 | 454 | 449 | 451 | 456 | 463 | 551 | 492 | 450 | 454 | 449 | 451 | 456 | 463 | 551 | 492 | 450 | 454 | 449 | 451 | 456 | 463 |
| | 130 | HR250 | 723 | 651 | 589 | 597 | 609 | 612 | 616 | 623 | 671 | 651 | 589 | 597 | 609 | 612 | 616 | 623 | 671 | 651 | 589 | 597 | 609 | 612 | 616 | 623 |
| | | HR150 | 622 | 537 | 479 | 480 | 478 | 477 | 480 | 485 | 583 | 537 | 479 | 480 | 478 | 477 | 480 | 485 | 583 | 537 | 479 | 480 | 478 | 477 | 480 | 485 |
| | 140 | HR250 | 768 | 704 | 623 | 628 | 638 | 647 | 648 | 653 | 708 | 704 | 623 | 628 | 638 | 647 | 648 | 653 | 708 | 704 | 623 | 628 | 638 | 647 | 648 | 653 |
| | | HR150 | 662 | 583 | 508 | 507 | 508 | 504 | 505 | 509 | 616 | 583 | 508 | 507 | 508 | 504 | 505 | 509 | 616 | 583 | 508 | 507 | 508 | 504 | 505 | 509 |
| | 150 | HR250 | 857 | 812 | 712 | 694 | 700 | 709 | 718 | 718 | 782 | 782 | 712 | 694 | 700 | 709 | 718 | 718 | 782 | 782 | 712 | 694 | 700 | 709 | 718 | 718 |
| | | HR150 | 741 | 676 | 584 | 563 | 564 | 564 | 560 | 559 | 681 | 676 | 584 | 563 | 564 | 564 | 560 | 559 | 681 | 676 | 584 | 563 | 564 | 564 | 560 | 559 |

**Table 2.40: Maximum Shear (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >45° TO 55° | **85** | HR250 | 60 | 230 | 330 | 395 | 452 | 502 | 547 | 589 | 60 | 230 | 330 | 395 | 452 | 502 | 547 | 589 | 60 | 230 | 330 | 395 | 452 | 502 | 547 | 589 |
| | | HR150 | 54 | 185 | 257 | 308 | 352 | 391 | 426 | 459 | 54 | 185 | 257 | 308 | 352 | 391 | 426 | 459 | 54 | 185 | 257 | 308 | 352 | 391 | 426 | 459 |
| | **90** | HR250 | 59 | 227 | 330 | 395 | 452 | 502 | 547 | 589 | 59 | 227 | 330 | 395 | 452 | 502 | 547 | 589 | 59 | 227 | 330 | 395 | 452 | 502 | 547 | 589 |
| | | HR150 | 53 | 183 | 257 | 308 | 352 | 391 | 426 | 459 | 53 | 183 | 257 | 308 | 352 | 391 | 426 | 459 | 53 | 183 | 257 | 308 | 352 | 391 | 426 | 459 |
| | **100** | HR250 | 58 | 223 | 327 | 395 | 452 | 502 | 547 | 589 | 58 | 223 | 327 | 395 | 452 | 502 | 547 | 589 | 58 | 223 | 327 | 395 | 452 | 502 | 547 | 589 |
| | | HR150 | 52 | 181 | 257 | 308 | 352 | 391 | 426 | 459 | 51 | 181 | 257 | 308 | 352 | 391 | 426 | 459 | 51 | 181 | 257 | 308 | 352 | 391 | 426 | 459 |
| | **105** | HR250 | 56 | 217 | 321 | 395 | 452 | 502 | 547 | 589 | 56 | 217 | 321 | 395 | 452 | 502 | 547 | 589 | 56 | 217 | 321 | 395 | 452 | 502 | 547 | 589 |
| | | HR150 | 49 | 176 | 257 | 308 | 352 | 391 | 426 | 459 | 48 | 176 | 257 | 308 | 352 | 391 | 426 | 459 | 48 | 176 | 257 | 308 | 352 | 391 | 426 | 459 |
| | **110** | HR250 | 54 | 211 | 315 | 395 | 452 | 502 | 547 | 589 | 52 | 211 | 315 | 395 | 452 | 502 | 547 | 589 | 52 | 211 | 315 | 395 | 452 | 502 | 547 | 589 |
| | | HR150 | 46 | 172 | 253 | 308 | 352 | 391 | 426 | 459 | 45 | 172 | 253 | 308 | 352 | 391 | 426 | 459 | 45 | 172 | 253 | 308 | 352 | 391 | 426 | 459 |
| | **115** | HR250 | 51 | 205 | 308 | 391 | 452 | 502 | 547 | 589 | 48 | 205 | 308 | 391 | 452 | 502 | 547 | 589 | 48 | 205 | 308 | 391 | 452 | 502 | 547 | 589 |
| | | HR150 | 44 | 168 | 249 | 308 | 352 | 391 | 426 | 459 | 42 | 168 | 249 | 308 | 352 | 391 | 426 | 459 | 42 | 168 | 249 | 308 | 352 | 391 | 426 | 459 |
| | **120** | HR250 | 49 | 199 | 302 | 384 | 452 | 502 | 547 | 589 | 46 | 199 | 302 | 384 | 452 | 502 | 547 | 589 | 46 | 199 | 302 | 384 | 452 | 502 | 547 | 589 |
| | | HR150 | 42 | 163 | 244 | 308 | 352 | 391 | 426 | 459 | 40 | 163 | 244 | 308 | 352 | 391 | 426 | 459 | 40 | 163 | 244 | 308 | 352 | 391 | 426 | 459 |
| | **130** | HR250 | 46 | 193 | 295 | 378 | 448 | 502 | 547 | 589 | 43 | 193 | 295 | 378 | 448 | 502 | 547 | 589 | 43 | 193 | 295 | 378 | 448 | 502 | 547 | 589 |
| | | HR150 | 40 | 159 | 240 | 304 | 352 | 391 | 426 | 459 | 37 | 159 | 240 | 304 | 352 | 391 | 426 | 459 | 37 | 159 | 240 | 304 | 352 | 391 | 426 | 459 |
| | **140** | HR250 | 44 | 187 | 289 | 371 | 442 | 502 | 547 | 589 | 41 | 187 | 289 | 371 | 442 | 502 | 547 | 589 | 41 | 187 | 289 | 371 | 442 | 502 | 547 | 589 |
| | | HR150 | 38 | 155 | 235 | 300 | 352 | 391 | 426 | 459 | 35 | 155 | 235 | 300 | 352 | 391 | 426 | 459 | 35 | 155 | 235 | 300 | 352 | 391 | 426 | 459 |
| | **150** | HR250 | 40 | 176 | 276 | 358 | 429 | 492 | 547 | 589 | 37 | 170 | 276 | 358 | 429 | 492 | 547 | 589 | 37 | 170 | 276 | 358 | 429 | 492 | 547 | 589 |
| | | HR150 | 35 | 147 | 226 | 291 | 346 | 391 | 426 | 459 | 32 | 147 | 226 | 291 | 346 | 391 | 426 | 459 | 32 | 147 | 226 | 291 | 346 | 391 | 426 | 459 |

**Table 2.41: Maximum Span Length (in.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| C | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >45° TO 55° | 85 | HR250 | 93 | 76 | 63 | 54 | 47 | 43 | 39 | 36 | 90 | 76 | 63 | 54 | 47 | 43 | 39 | 36 | 90 | 76 | 63 | 54 | 47 | 43 | 39 | 36 |
| | | HR150 | 79 | 62 | 51 | 42 | 37 | 33 | 31 | 28 | 78 | 62 | 51 | 42 | 37 | 33 | 31 | 28 | 78 | 62 | 51 | 42 | 37 | 33 | 31 | 28 |
| | 90 | HR250 | 90 | 75 | 63 | 54 | 47 | 43 | 39 | 36 | 87 | 75 | 63 | 54 | 47 | 43 | 39 | 36 | 87 | 75 | 63 | 54 | 47 | 43 | 39 | 36 |
| | | HR150 | 77 | 61 | 50 | 42 | 37 | 33 | 31 | 28 | 75 | 61 | 50 | 42 | 37 | 33 | 31 | 28 | 75 | 61 | 50 | 42 | 37 | 33 | 31 | 28 |
| | 100 | HR250 | 87 | 74 | 62 | 54 | 47 | 43 | 39 | 36 | 83 | 74 | 62 | 54 | 47 | 43 | 39 | 36 | 83 | 74 | 62 | 54 | 47 | 43 | 39 | 36 |
| | | HR150 | 75 | 60 | 50 | 42 | 37 | 33 | 31 | 28 | 72 | 60 | 50 | 42 | 37 | 33 | 31 | 28 | 72 | 60 | 50 | 42 | 37 | 33 | 31 | 28 |
| | 105 | HR250 | 82 | 71 | 60 | 53 | 47 | 43 | 39 | 36 | 77 | 71 | 60 | 53 | 47 | 43 | 39 | 36 | 77 | 71 | 60 | 53 | 47 | 43 | 39 | 36 |
| | | HR150 | 70 | 58 | 49 | 42 | 37 | 33 | 31 | 28 | 67 | 58 | 49 | 42 | 37 | 33 | 31 | 28 | 67 | 58 | 49 | 42 | 37 | 33 | 31 | 28 |
| | 110 | HR250 | 77 | 69 | 59 | 52 | 47 | 43 | 39 | 36 | 72 | 69 | 59 | 52 | 47 | 43 | 39 | 36 | 72 | 69 | 59 | 52 | 47 | 43 | 39 | 36 |
| | | HR150 | 66 | 57 | 48 | 42 | 37 | 33 | 31 | 28 | 62 | 57 | 48 | 42 | 37 | 33 | 31 | 28 | 62 | 57 | 48 | 42 | 37 | 33 | 31 | 28 |
| | 115 | HR250 | 73 | 66 | 57 | 51 | 47 | 43 | 39 | 36 | 67 | 66 | 57 | 51 | 47 | 43 | 39 | 36 | 67 | 66 | 57 | 51 | 47 | 43 | 39 | 36 |
| | | HR150 | 63 | 55 | 47 | 41 | 37 | 33 | 31 | 28 | 58 | 55 | 47 | 41 | 37 | 33 | 31 | 28 | 58 | 55 | 47 | 41 | 37 | 33 | 31 | 28 |
| | 120 | HR250 | 69 | 64 | 56 | 50 | 46 | 42 | 39 | 36 | 63 | 63 | 56 | 50 | 46 | 42 | 39 | 36 | 63 | 63 | 56 | 50 | 46 | 42 | 39 | 36 |
| | | HR150 | 59 | 53 | 46 | 41 | 37 | 33 | 31 | 28 | 55 | 53 | 46 | 41 | 37 | 33 | 31 | 28 | 55 | 53 | 46 | 41 | 37 | 33 | 31 | 28 |
| | 130 | HR250 | 65 | 62 | 54 | 49 | 45 | 42 | 39 | 36 | 59 | 59 | 54 | 49 | 45 | 42 | 39 | 36 | 59 | 59 | 54 | 49 | 45 | 42 | 39 | 36 |
| | | HR150 | 56 | 52 | 45 | 40 | 36 | 33 | 31 | 28 | 52 | 52 | 45 | 40 | 36 | 33 | 31 | 28 | 52 | 52 | 45 | 40 | 36 | 33 | 31 | 28 |
| | 140 | HR250 | 62 | 60 | 53 | 48 | 44 | 41 | 39 | 36 | 56 | 56 | 53 | 48 | 44 | 41 | 39 | 36 | 56 | 56 | 53 | 48 | 44 | 41 | 39 | 36 |
| | | HR150 | 54 | 50 | 44 | 39 | 36 | 33 | 31 | 28 | 49 | 49 | 44 | 39 | 36 | 33 | 31 | 28 | 49 | 49 | 44 | 39 | 36 | 33 | 31 | 28 |
| | 150 | HR250 | 56 | 56 | 50 | 46 | 42 | 40 | 38 | 36 | 51 | 51 | 50 | 46 | 42 | 40 | 38 | 36 | 51 | 51 | 50 | 46 | 42 | 40 | 38 | 36 |
| | | HR150 | 49 | 47 | 41 | 38 | 35 | 32 | 30 | 28 | 44 | 44 | 41 | 38 | 35 | 32 | 30 | 28 | 44 | 44 | 41 | 38 | 35 | 32 | 30 | 28 |

**Table 2.42: Maximum Uplift (lb.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| C | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >45° TO 55° | 85 | HR250 | -480 | -393 | -326 | -279 | -244 | -220 | -202 | -187 | -580 | -490 | -406 | -348 | -304 | -274 | -251 | -233 | -580 | -490 | -406 | -348 | -304 | -274 | -251 | -233 |
| | | HR150 | -408 | -320 | -261 | -217 | -190 | -171 | -157 | -146 | -500 | -398 | -325 | -271 | -237 | -213 | -196 | -182 | -500 | -398 | -325 | -271 | -237 | -213 | -196 | -182 |
| | 90 | HR250 | -510 | -425 | -354 | -306 | -268 | -241 | -221 | -206 | -611 | -530 | -442 | -383 | -335 | -301 | -276 | -257 | -611 | -530 | -442 | -383 | -335 | -301 | -276 | -257 |
| | | HR150 | -435 | -346 | -284 | -239 | -209 | -188 | -172 | -160 | -528 | -432 | -355 | -298 | -261 | -235 | -215 | -200 | -528 | -432 | -355 | -298 | -261 | -235 | -215 | -200 |
| | 100 | HR250 | -540 | -456 | -382 | -335 | -293 | -264 | -242 | -225 | -641 | -569 | -476 | -418 | -366 | -329 | -302 | -280 | -641 | -569 | -476 | -418 | -366 | -329 | -302 | -280 |
| | | HR150 | -461 | -373 | -308 | -261 | -229 | -206 | -189 | -175 | -554 | -464 | -384 | -325 | -285 | -256 | -235 | -218 | -554 | -464 | -384 | -325 | -285 | -256 | -235 | -218 |
| | 105 | HR250 | -599 | -521 | -441 | -389 | -347 | -312 | -286 | -266 | -700 | -648 | -548 | -484 | -431 | -388 | -356 | -330 | -700 | -648 | -548 | -484 | -431 | -388 | -356 | -330 |
| | | HR150 | -513 | -428 | -356 | -309 | -270 | -243 | -223 | -207 | -607 | -531 | -443 | -384 | -336 | -302 | -277 | -258 | -607 | -531 | -443 | -384 | -336 | -302 | -277 | -258 |
| | 110 | HR250 | -656 | -585 | -500 | -444 | -403 | -363 | -333 | -310 | -760 | -728 | -622 | -552 | -502 | -452 | -414 | -385 | -760 | -728 | -622 | -552 | -502 | -452 | -414 | -385 |
| | | HR150 | -563 | -482 | -406 | -357 | -315 | -283 | -260 | -241 | -660 | -600 | -505 | -444 | -391 | -352 | -323 | -300 | -660 | -600 | -505 | -444 | -391 | -352 | -323 | -300 |
| | 115 | HR250 | -714 | -652 | -563 | -502 | -458 | -420 | -385 | -357 | -819 | -810 | -699 | -623 | -568 | -521 | -478 | -444 | -819 | -810 | -699 | -623 | -568 | -521 | -478 | -444 |
| | | HR150 | -615 | -540 | -458 | -405 | -363 | -327 | -300 | -278 | -712 | -670 | -569 | -503 | -451 | -406 | -372 | -346 | -712 | -670 | -569 | -503 | -451 | -406 | -372 | -346 |
| | 120 | HR250 | -773 | -720 | -626 | -562 | -514 | -477 | -440 | -408 | -878 | -878 | -777 | -697 | -637 | -591 | -545 | -506 | -878 | -878 | -777 | -697 | -637 | -591 | -545 | -506 |
| | | HR150 | -667 | -598 | -512 | -455 | -413 | -374 | -343 | -318 | -765 | -741 | -635 | -564 | -513 | -463 | -425 | -395 | -765 | -741 | -635 | -564 | -513 | -463 | -425 | -395 |
| | 130 | HR250 | -829 | -786 | -690 | -622 | -571 | -531 | -498 | -462 | -936 | -936 | -855 | -771 | -708 | -658 | -617 | -573 | -936 | -936 | -855 | -771 | -708 | -658 | -617 | -573 |
| | | HR150 | -717 | -656 | -566 | -505 | -461 | -423 | -388 | -360 | -816 | -813 | -701 | -626 | -571 | -524 | -480 | -446 | -816 | -813 | -701 | -626 | -571 | -524 | -480 | -446 |
| | 140 | HR250 | -886 | -853 | -755 | -684 | -630 | -587 | -552 | -519 | -994 | -994 | -935 | -847 | -780 | -727 | -683 | -643 | -994 | -994 | -935 | -847 | -780 | -727 | -683 | -643 |
| | | HR150 | -767 | -714 | -621 | -557 | -509 | -472 | -435 | -404 | -868 | -868 | -769 | -690 | -631 | -585 | -540 | -501 | -868 | -868 | -769 | -690 | -631 | -585 | -540 | -501 |
| | 150 | HR250 | -995 | -989 | -887 | -811 | -752 | -704 | -664 | -631 | -1111 | -1111 | -1097 | -1003 | -930 | -871 | -822 | -780 | -1111 | -1111 | -1097 | -1003 | -930 | -871 | -822 | -780 |
| | | HR150 | -868 | -832 | -735 | -665 | -612 | -570 | -535 | -502 | -971 | -971 | -909 | -822 | -757 | -705 | -662 | -621 | -971 | -971 | -909 | -822 | -757 | -705 | -662 | -621 |

**Table 2.43: Maximum Downforce (lb.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| C | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >45° TO 55° | 85 | HR250 | 514 | 426 | 437 | 446 | 453 | 464 | 477 | 491 | 498 | 426 | 437 | 446 | 453 | 464 | 477 | 491 | 498 | 426 | 437 | 446 | 453 | 464 | 477 | 491 |
| | | HR150 | 437 | 346 | 350 | 347 | 353 | 362 | 372 | 383 | 430 | 346 | 350 | 347 | 353 | 362 | 372 | 383 | 430 | 346 | 350 | 347 | 353 | 362 | 372 | 383 |
| | 90 | HR250 | 538 | 448 | 453 | 464 | 469 | 479 | 491 | 504 | 517 | 448 | 453 | 464 | 469 | 479 | 491 | 504 | 517 | 448 | 453 | 464 | 469 | 479 | 491 | 504 |
| | | HR150 | 459 | 365 | 364 | 362 | 366 | 373 | 382 | 393 | 446 | 365 | 364 | 362 | 366 | 373 | 382 | 393 | 446 | 365 | 364 | 362 | 366 | 373 | 382 | 393 |
| | 100 | HR250 | 563 | 476 | 470 | 484 | 486 | 494 | 505 | 517 | 537 | 476 | 470 | 484 | 486 | 494 | 505 | 517 | 537 | 476 | 470 | 484 | 486 | 494 | 505 | 517 |
| | | HR150 | 481 | 389 | 379 | 377 | 379 | 385 | 394 | 403 | 464 | 389 | 379 | 377 | 379 | 385 | 394 | 403 | 464 | 389 | 379 | 377 | 379 | 385 | 394 | 403 |
| | 105 | HR250 | 614 | 534 | 506 | 517 | 523 | 528 | 536 | 545 | 577 | 534 | 506 | 517 | 523 | 528 | 536 | 545 | 577 | 534 | 506 | 517 | 523 | 528 | 536 | 545 |
| | | HR150 | 526 | 438 | 409 | 410 | 408 | 411 | 417 | 425 | 501 | 438 | 409 | 410 | 408 | 411 | 417 | 425 | 501 | 438 | 409 | 410 | 408 | 411 | 417 | 425 |
| | 110 | HR250 | 664 | 593 | 543 | 551 | 563 | 564 | 569 | 576 | 619 | 593 | 543 | 551 | 563 | 564 | 569 | 576 | 619 | 593 | 543 | 551 | 563 | 564 | 569 | 576 |
| | | HR150 | 571 | 489 | 440 | 443 | 439 | 439 | 443 | 449 | 537 | 489 | 440 | 443 | 439 | 439 | 443 | 449 | 537 | 489 | 440 | 443 | 439 | 439 | 443 | 449 |
| | 115 | HR250 | 714 | 652 | 580 | 585 | 595 | 602 | 604 | 609 | 659 | 652 | 580 | 585 | 595 | 602 | 604 | 609 | 659 | 652 | 580 | 585 | 595 | 602 | 604 | 609 |
| | | HR150 | 615 | 539 | 473 | 472 | 472 | 469 | 471 | 474 | 573 | 539 | 473 | 472 | 472 | 469 | 471 | 474 | 573 | 539 | 473 | 472 | 472 | 469 | 471 | 474 |
| | 120 | HR250 | 764 | 712 | 620 | 621 | 629 | 639 | 642 | 644 | 700 | 700 | 620 | 621 | 629 | 639 | 642 | 644 | 700 | 700 | 620 | 621 | 629 | 639 | 642 | 644 |
| | | HR150 | 660 | 591 | 506 | 503 | 506 | 501 | 500 | 502 | 610 | 591 | 506 | 503 | 506 | 501 | 500 | 502 | 610 | 591 | 506 | 503 | 506 | 501 | 500 | 502 |
| | 130 | HR250 | 814 | 772 | 677 | 658 | 664 | 672 | 682 | 681 | 741 | 741 | 677 | 658 | 664 | 672 | 682 | 681 | 741 | 741 | 677 | 658 | 664 | 672 | 682 | 681 |
| | | HR150 | 704 | 643 | 555 | 535 | 535 | 535 | 531 | 531 | 646 | 643 | 555 | 535 | 535 | 535 | 531 | 531 | 646 | 643 | 555 | 535 | 535 | 535 | 531 | 531 |
| | 140 | HR250 | 864 | 832 | 736 | 696 | 699 | 706 | 715 | 721 | 783 | 783 | 736 | 696 | 699 | 706 | 715 | 721 | 783 | 783 | 736 | 696 | 699 | 706 | 715 | 721 |
| | | HR150 | 748 | 696 | 606 | 567 | 566 | 568 | 564 | 562 | 683 | 683 | 606 | 567 | 566 | 568 | 564 | 562 | 683 | 683 | 606 | 567 | 566 | 568 | 564 | 562 |
| | 150 | HR250 | 960 | 954 | 856 | 782 | 774 | 777 | 783 | 790 | 866 | 866 | 856 | 782 | 774 | 777 | 783 | 790 | 866 | 866 | 856 | 782 | 774 | 777 | 783 | 790 |
| | | HR150 | 837 | 803 | 709 | 641 | 630 | 629 | 631 | 629 | 757 | 757 | 709 | 641 | 630 | 629 | 631 | 629 | 757 | 757 | 709 | 641 | 630 | 629 | 631 | 629 |

**Table 2.44: Maximum Shear (lb.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| C | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >45° TO 55° | 85 | HR250 | 54 | 205 | 303 | 373 | 426 | 474 | 516 | 556 | 52 | 205 | 303 | 373 | 426 | 474 | 516 | 556 | 52 | 205 | 303 | 373 | 426 | 474 | 516 | 556 |
| | | HR150 | 46 | 166 | 242 | 291 | 332 | 369 | 402 | 433 | 45 | 166 | 242 | 291 | 332 | 369 | 402 | 433 | 45 | 166 | 242 | 291 | 332 | 369 | 402 | 433 |
| | 90 | HR250 | 52 | 201 | 299 | 373 | 426 | 474 | 516 | 556 | 50 | 201 | 299 | 373 | 426 | 474 | 516 | 556 | 50 | 201 | 299 | 373 | 426 | 474 | 516 | 556 |
| | | HR150 | 45 | 164 | 240 | 291 | 332 | 369 | 402 | 433 | 43 | 164 | 240 | 291 | 332 | 369 | 402 | 433 | 43 | 164 | 240 | 291 | 332 | 369 | 402 | 433 |
| | 100 | HR250 | 51 | 198 | 296 | 373 | 426 | 474 | 516 | 556 | 48 | 198 | 296 | 373 | 426 | 474 | 516 | 556 | 48 | 198 | 296 | 373 | 426 | 474 | 516 | 556 |
| | | HR150 | 43 | 162 | 238 | 291 | 332 | 369 | 402 | 433 | 42 | 162 | 238 | 291 | 332 | 369 | 402 | 433 | 42 | 162 | 238 | 291 | 332 | 369 | 402 | 433 |
| | 105 | HR250 | 47 | 191 | 288 | 367 | 426 | 474 | 516 | 556 | 45 | 191 | 288 | 367 | 426 | 474 | 516 | 556 | 45 | 191 | 288 | 367 | 426 | 474 | 516 | 556 |
| | | HR150 | 41 | 157 | 233 | 291 | 332 | 369 | 402 | 433 | 39 | 157 | 233 | 291 | 332 | 369 | 402 | 433 | 39 | 157 | 233 | 291 | 332 | 369 | 402 | 433 |
| | 110 | HR250 | 45 | 184 | 281 | 359 | 426 | 474 | 516 | 556 | 42 | 184 | 281 | 359 | 426 | 474 | 516 | 556 | 42 | 184 | 281 | 359 | 426 | 474 | 516 | 556 |
| | | HR150 | 38 | 152 | 228 | 289 | 332 | 369 | 402 | 433 | 36 | 152 | 228 | 289 | 332 | 369 | 402 | 433 | 36 | 152 | 228 | 289 | 332 | 369 | 402 | 433 |
| | 115 | HR250 | 42 | 178 | 274 | 352 | 419 | 474 | 516 | 556 | 39 | 178 | 274 | 352 | 419 | 474 | 516 | 556 | 39 | 178 | 274 | 352 | 419 | 474 | 516 | 556 |
| | | HR150 | 36 | 147 | 223 | 284 | 332 | 369 | 402 | 433 | 34 | 147 | 223 | 284 | 332 | 369 | 402 | 433 | 34 | 147 | 223 | 284 | 332 | 369 | 402 | 433 |
| | 120 | HR250 | 40 | 172 | 267 | 344 | 411 | 470 | 516 | 556 | 37 | 169 | 267 | 344 | 411 | 470 | 516 | 556 | 37 | 169 | 267 | 344 | 411 | 470 | 516 | 556 |
| | | HR150 | 34 | 143 | 218 | 279 | 331 | 369 | 402 | 433 | 32 | 143 | 218 | 279 | 331 | 369 | 402 | 433 | 32 | 143 | 218 | 279 | 331 | 369 | 402 | 433 |
| | 130 | HR250 | 38 | 166 | 260 | 337 | 404 | 463 | 516 | 556 | 34 | 159 | 260 | 337 | 404 | 463 | 516 | 556 | 34 | 159 | 260 | 337 | 404 | 463 | 516 | 556 |
| | | HR150 | 33 | 138 | 213 | 274 | 326 | 369 | 402 | 433 | 30 | 138 | 213 | 274 | 326 | 369 | 402 | 433 | 30 | 138 | 213 | 274 | 326 | 369 | 402 | 433 |
| | 140 | HR250 | 36 | 160 | 253 | 330 | 396 | 456 | 510 | 556 | 33 | 151 | 253 | 330 | 396 | 456 | 510 | 556 | 33 | 151 | 253 | 330 | 396 | 456 | 510 | 556 |
| | | HR150 | 31 | 134 | 208 | 269 | 321 | 367 | 402 | 433 | 28 | 132 | 208 | 269 | 321 | 367 | 402 | 433 | 28 | 132 | 208 | 269 | 321 | 367 | 402 | 433 |
| | 150 | HR250 | 33 | 150 | 240 | 315 | 382 | 441 | 495 | 545 | 29 | 136 | 240 | 315 | 382 | 441 | 495 | 545 | 29 | 136 | 240 | 315 | 382 | 441 | 495 | 545 |
| | | HR150 | 28 | 126 | 198 | 258 | 310 | 357 | 399 | 433 | 26 | 119 | 198 | 258 | 310 | 357 | 399 | 433 | 26 | 119 | 198 | 258 | 310 | 357 | 399 | 433 |

**Table 2.45: Maximum Span Length (in.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| D | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >45° TO 55° | 85 | HR250 | 87 | 74 | 62 | 54 | 47 | 43 | 39 | 36 | 83 | 74 | 62 | 54 | 47 | 43 | 39 | 36 | 83 | 74 | 62 | 54 | 47 | 43 | 39 | 36 |
| | | HR150 | 75 | 60 | 50 | 42 | 37 | 33 | 31 | 28 | 72 | 60 | 50 | 42 | 37 | 33 | 31 | 28 | 72 | 60 | 50 | 42 | 37 | 33 | 31 | 28 |
| | 90 | HR250 | 84 | 72 | 61 | 54 | 47 | 43 | 39 | 36 | 80 | 72 | 61 | 54 | 47 | 43 | 39 | 36 | 80 | 72 | 61 | 54 | 47 | 43 | 39 | 36 |
| | | HR150 | 72 | 59 | 49 | 42 | 37 | 33 | 31 | 28 | 69 | 59 | 49 | 42 | 37 | 33 | 31 | 28 | 69 | 59 | 49 | 42 | 37 | 33 | 31 | 28 |
| | 100 | HR250 | 82 | 71 | 60 | 53 | 47 | 43 | 39 | 36 | 77 | 71 | 60 | 53 | 47 | 43 | 39 | 36 | 77 | 71 | 60 | 53 | 47 | 43 | 39 | 36 |
| | | HR150 | 70 | 58 | 49 | 42 | 37 | 33 | 31 | 28 | 66 | 58 | 49 | 42 | 37 | 33 | 31 | 28 | 66 | 58 | 49 | 42 | 37 | 33 | 31 | 28 |
| | 105 | HR250 | 76 | 68 | 59 | 52 | 47 | 43 | 39 | 36 | 71 | 68 | 59 | 52 | 47 | 43 | 39 | 36 | 71 | 68 | 59 | 52 | 47 | 43 | 39 | 36 |
| | | HR150 | 66 | 56 | 48 | 42 | 37 | 33 | 31 | 28 | 62 | 56 | 48 | 42 | 37 | 33 | 31 | 28 | 62 | 56 | 48 | 42 | 37 | 33 | 31 | 28 |
| | 110 | HR250 | 72 | 66 | 57 | 51 | 46 | 43 | 39 | 36 | 66 | 66 | 57 | 51 | 46 | 43 | 39 | 36 | 66 | 66 | 57 | 51 | 46 | 43 | 39 | 36 |
| | | HR150 | 62 | 55 | 46 | 41 | 37 | 33 | 31 | 28 | 58 | 55 | 46 | 41 | 37 | 33 | 31 | 28 | 58 | 55 | 46 | 41 | 37 | 33 | 31 | 28 |
| | 115 | HR250 | 68 | 63 | 55 | 50 | 46 | 42 | 39 | 36 | 62 | 62 | 55 | 50 | 46 | 42 | 39 | 36 | 62 | 62 | 55 | 50 | 46 | 42 | 39 | 36 |
| | | HR150 | 58 | 53 | 45 | 40 | 37 | 33 | 31 | 28 | 54 | 53 | 45 | 40 | 37 | 33 | 31 | 28 | 54 | 53 | 45 | 40 | 37 | 33 | 31 | 28 |
| | 120 | HR250 | 64 | 61 | 54 | 49 | 45 | 41 | 39 | 36 | 58 | 58 | 54 | 49 | 45 | 41 | 39 | 36 | 58 | 58 | 54 | 49 | 45 | 41 | 39 | 36 |
| | | HR150 | 55 | 51 | 44 | 39 | 36 | 33 | 31 | 28 | 51 | 51 | 44 | 39 | 36 | 33 | 31 | 28 | 51 | 51 | 44 | 39 | 36 | 33 | 31 | 28 |
| | 130 | HR250 | 61 | 59 | 52 | 47 | 44 | 41 | 38 | 36 | 55 | 55 | 52 | 47 | 44 | 41 | 38 | 36 | 55 | 55 | 52 | 47 | 44 | 41 | 38 | 36 |
| | | HR150 | 52 | 49 | 43 | 39 | 35 | 33 | 31 | 28 | 48 | 48 | 43 | 39 | 35 | 33 | 31 | 28 | 48 | 48 | 43 | 39 | 35 | 33 | 31 | 28 |
| | 140 | HR250 | 57 | 57 | 51 | 46 | 43 | 40 | 38 | 36 | 52 | 52 | 51 | 46 | 43 | 40 | 38 | 36 | 52 | 52 | 51 | 46 | 43 | 40 | 38 | 36 |
| | | HR150 | 50 | 48 | 42 | 38 | 35 | 32 | 30 | 28 | 45 | 45 | 42 | 38 | 35 | 32 | 30 | 28 | 45 | 45 | 42 | 38 | 35 | 32 | 30 | 28 |
| | 150 | HR250 | 52 | 52 | 48 | 44 | 41 | 39 | 37 | 35 | 47 | 47 | 47 | 44 | 41 | 39 | 37 | 35 | 47 | 47 | 47 | 44 | 41 | 39 | 37 | 35 |
| | | HR150 | 45 | 45 | 40 | 36 | 34 | 31 | 30 | 28 | 41 | 41 | 40 | 36 | 34 | 31 | 30 | 28 | 41 | 41 | 40 | 36 | 34 | 31 | 30 | 28 |

**Table 2.46: Maximum Uplift (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| D | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >45° TO 55° | 85 | HR250 | -538 | -455 | -381 | -334 | -292 | -263 | -241 | -224 | -639 | -566 | -474 | -415 | -363 | -327 | -300 | -279 | -639 | -566 | -474 | -415 | -363 | -327 | -300 | -279 |
| | | HR150 | -459 | -371 | -307 | -260 | -228 | -205 | -188 | -174 | -552 | -462 | -381 | -323 | -283 | -255 | -234 | -217 | -552 | -462 | -381 | -323 | -283 | -255 | -234 | -217 |
| | 90 | HR250 | -570 | -490 | -412 | -363 | -321 | -289 | -265 | -246 | -672 | -610 | -514 | -453 | -400 | -360 | -330 | -306 | -672 | -610 | -514 | -453 | -400 | -360 | -330 | -306 |
| | | HR150 | -488 | -401 | -333 | -285 | -250 | -225 | -206 | -191 | -582 | -500 | -415 | -356 | -311 | -280 | -257 | -239 | -582 | -500 | -415 | -356 | -311 | -280 | -257 | -239 |
| | 100 | HR250 | -602 | -525 | -445 | -393 | -350 | -315 | -289 | -269 | -704 | -653 | -553 | -489 | -436 | -392 | -360 | -334 | -704 | -653 | -553 | -489 | -436 | -392 | -360 | -334 |
| | | HR150 | -516 | -431 | -360 | -312 | -273 | -246 | -225 | -209 | -611 | -536 | -447 | -388 | -340 | -306 | -280 | -260 | -611 | -536 | -447 | -388 | -340 | -306 | -280 | -260 |
| | 105 | HR250 | -666 | -597 | -511 | -454 | -412 | -373 | -342 | -317 | -769 | -741 | -634 | -563 | -512 | -462 | -424 | -394 | -769 | -741 | -634 | -563 | -512 | -462 | -424 | -394 |
| | | HR150 | -573 | -492 | -415 | -365 | -323 | -290 | -266 | -247 | -668 | -611 | -515 | -453 | -400 | -360 | -330 | -307 | -668 | -611 | -515 | -453 | -400 | -360 | -330 | -307 |
| | 110 | HR250 | -727 | -668 | -577 | -516 | -471 | -433 | -397 | -369 | -833 | -829 | -717 | -641 | -585 | -538 | -494 | -458 | -833 | -829 | -717 | -641 | -585 | -538 | -494 | -458 |
| | | HR150 | -627 | -553 | -471 | -417 | -375 | -338 | -310 | -288 | -725 | -687 | -585 | -517 | -466 | -419 | -385 | -357 | -725 | -687 | -585 | -517 | -466 | -419 | -385 | -357 |
| | 115 | HR250 | -791 | -741 | -647 | -581 | -532 | -494 | -458 | -426 | -897 | -897 | -803 | -721 | -660 | -613 | -568 | -528 | -897 | -897 | -803 | -721 | -660 | -613 | -568 | -528 |
| | | HR150 | -683 | -617 | -529 | -471 | -429 | -389 | -357 | -332 | -782 | -765 | -657 | -584 | -532 | -483 | -443 | -411 | -782 | -765 | -657 | -584 | -532 | -483 | -443 | -411 |
| | 120 | HR250 | -854 | -815 | -718 | -649 | -596 | -555 | -521 | -486 | -961 | -961 | -889 | -804 | -739 | -687 | -645 | -603 | -961 | -961 | -889 | -804 | -739 | -687 | -645 | -603 |
| | | HR150 | -739 | -681 | -590 | -527 | -482 | -445 | -408 | -379 | -838 | -838 | -731 | -654 | -597 | -551 | -505 | -469 | -838 | -838 | -731 | -654 | -597 | -551 | -505 | -469 |
| | 130 | HR250 | -915 | -888 | -788 | -716 | -661 | -616 | -580 | -549 | -1024 | -1024 | -976 | -887 | -818 | -763 | -718 | -680 | -1024 | -1024 | -976 | -887 | -818 | -763 | -718 | -680 |
| | | HR150 | -793 | -744 | -650 | -584 | -535 | -497 | -461 | -428 | -894 | -894 | -805 | -724 | -663 | -615 | -571 | -531 | -894 | -894 | -805 | -724 | -663 | -615 | -571 | -531 |
| | 140 | HR250 | -974 | -961 | -860 | -785 | -727 | -680 | -641 | -608 | -1088 | -1088 | -1064 | -972 | -900 | -842 | -794 | -753 | -1088 | -1088 | -1064 | -972 | -900 | -842 | -794 | -753 |
| | | HR150 | -847 | -808 | -711 | -642 | -590 | -549 | -516 | -481 | -950 | -950 | -881 | -796 | -731 | -680 | -639 | -596 | -950 | -950 | -881 | -796 | -731 | -680 | -639 | -596 |
| | 150 | HR250 | -1088 | -1088 | -1005 | -926 | -864 | -812 | -769 | -732 | -1214 | -1214 | -1214 | -1145 | -1068 | -1004 | -950 | -904 | -1214 | -1214 | -1214 | -1145 | -1068 | -1004 | -950 | -904 |
| | | HR150 | -951 | -938 | -837 | -763 | -706 | -660 | -622 | -590 | -1062 | -1062 | -1035 | -943 | -873 | -816 | -769 | -729 | -1062 | -1062 | -1035 | -943 | -873 | -816 | -769 | -729 |

**Table 2.47: Maximum Downforce (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| D | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >45° TO 55° | 85 | HR250 | 563 | 476 | 470 | 484 | 486 | 494 | 505 | 517 | 537 | 476 | 470 | 484 | 486 | 494 | 505 | 517 | 537 | 476 | 470 | 484 | 486 | 494 | 505 | 517 |
| | | HR150 | 481 | 389 | 378 | 377 | 379 | 385 | 393 | 403 | 465 | 389 | 378 | 377 | 379 | 385 | 393 | 403 | 465 | 389 | 378 | 377 | 379 | 385 | 393 | 403 |
| | 90 | HR250 | 590 | 506 | 489 | 501 | 505 | 511 | 521 | 532 | 558 | 506 | 489 | 501 | 505 | 511 | 521 | 532 | 558 | 506 | 489 | 501 | 505 | 511 | 521 | 532 |
| | | HR150 | 505 | 415 | 394 | 394 | 394 | 399 | 406 | 414 | 483 | 415 | 394 | 394 | 394 | 399 | 406 | 414 | 483 | 415 | 394 | 394 | 394 | 399 | 406 | 414 |
| | 100 | HR250 | 617 | 538 | 508 | 519 | 526 | 530 | 538 | 547 | 580 | 538 | 508 | 519 | 526 | 530 | 538 | 547 | 580 | 538 | 508 | 519 | 526 | 530 | 538 | 547 |
| | | HR150 | 529 | 441 | 411 | 412 | 410 | 413 | 419 | 427 | 503 | 441 | 411 | 412 | 410 | 413 | 419 | 427 | 503 | 441 | 411 | 412 | 410 | 413 | 419 | 427 |
| | 105 | HR250 | 671 | 601 | 548 | 556 | 568 | 569 | 574 | 581 | 624 | 601 | 548 | 556 | 568 | 569 | 574 | 581 | 624 | 601 | 548 | 556 | 568 | 569 | 574 | 581 |
| | | HR150 | 577 | 496 | 445 | 447 | 444 | 444 | 447 | 453 | 542 | 496 | 445 | 447 | 444 | 444 | 447 | 453 | 542 | 496 | 445 | 447 | 444 | 444 | 447 | 453 |
| | 110 | HR250 | 726 | 667 | 590 | 594 | 603 | 612 | 613 | 617 | 670 | 667 | 590 | 594 | 603 | 612 | 613 | 617 | 670 | 667 | 590 | 594 | 603 | 612 | 613 | 617 |
| | | HR150 | 626 | 552 | 481 | 480 | 481 | 477 | 478 | 481 | 583 | 552 | 481 | 480 | 481 | 477 | 478 | 481 | 583 | 552 | 481 | 480 | 481 | 477 | 478 | 481 |
| | 115 | HR250 | 781 | 732 | 639 | 634 | 640 | 650 | 655 | 656 | 714 | 714 | 639 | 634 | 640 | 650 | 655 | 656 | 714 | 714 | 639 | 634 | 640 | 650 | 655 | 656 |
| | | HR150 | 674 | 609 | 523 | 513 | 516 | 512 | 510 | 511 | 622 | 609 | 523 | 513 | 516 | 512 | 510 | 511 | 622 | 609 | 523 | 513 | 516 | 512 | 510 | 511 |
| | 120 | HR250 | 835 | 798 | 702 | 674 | 679 | 687 | 696 | 698 | 759 | 759 | 702 | 674 | 679 | 687 | 696 | 698 | 759 | 759 | 702 | 674 | 679 | 687 | 696 | 698 |
| | | HR150 | 723 | 666 | 577 | 548 | 548 | 551 | 545 | 544 | 662 | 662 | 577 | 548 | 548 | 551 | 545 | 544 | 662 | 662 | 577 | 548 | 548 | 551 | 545 | 544 |
| | 130 | HR250 | 889 | 863 | 766 | 716 | 718 | 724 | 732 | 741 | 804 | 804 | 766 | 716 | 718 | 724 | 732 | 741 | 804 | 804 | 766 | 716 | 718 | 724 | 732 | 741 |
| | | HR150 | 771 | 723 | 632 | 584 | 582 | 583 | 582 | 578 | 702 | 702 | 632 | 584 | 582 | 583 | 582 | 578 | 702 | 702 | 632 | 584 | 582 | 583 | 582 | 578 |
| | 140 | HR250 | 941 | 929 | 831 | 759 | 759 | 763 | 769 | 777 | 849 | 849 | 831 | 759 | 759 | 763 | 769 | 777 | 849 | 849 | 831 | 759 | 759 | 763 | 769 | 777 |
| | | HR150 | 819 | 781 | 688 | 621 | 616 | 616 | 619 | 615 | 742 | 742 | 688 | 621 | 616 | 616 | 619 | 615 | 742 | 742 | 688 | 621 | 616 | 616 | 619 | 615 |
| | 150 | HR250 | 1042 | 1042 | 963 | 887 | 842 | 843 | 846 | 851 | 940 | 940 | 940 | 887 | 842 | 843 | 846 | 851 | 940 | 940 | 940 | 887 | 842 | 843 | 846 | 851 |
| | | HR150 | 910 | 898 | 802 | 731 | 689 | 685 | 685 | 686 | 822 | 822 | 802 | 731 | 689 | 685 | 685 | 686 | 822 | 822 | 802 | 731 | 689 | 685 | 685 | 686 |

**Table 2.48: Maximum Shear (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 51 | 198 | 296 | 373 | 426 | 474 | 516 | 556 | 48 | 198 | 296 | 373 | 426 | 474 | 516 | 556 | 48 | 198 | 296 | 373 | 426 | 474 | 516 | 556 |
| | | HR150 | 43 | 162 | 238 | 291 | 332 | 369 | 402 | 433 | 42 | 162 | 238 | 291 | 332 | 369 | 402 | 433 | 42 | 162 | 238 | 291 | 332 | 369 | 402 | 433 |
| | 90 | HR250 | 49 | 194 | 292 | 370 | 426 | 474 | 516 | 556 | 46 | 194 | 292 | 370 | 426 | 474 | 516 | 556 | 46 | 194 | 292 | 370 | 426 | 474 | 516 | 556 |
| | | HR150 | 42 | 159 | 235 | 291 | 332 | 369 | 402 | 433 | 40 | 159 | 235 | 291 | 332 | 369 | 402 | 433 | 40 | 159 | 235 | 291 | 332 | 369 | 402 | 433 |
| | 100 | HR250 | 47 | 191 | 288 | 366 | 426 | 474 | 516 | 556 | 44 | 191 | 288 | 366 | 426 | 474 | 516 | 556 | 44 | 191 | 288 | 366 | 426 | 474 | 516 | 556 |
| | | HR150 | 41 | 156 | 233 | 291 | 332 | 369 | 402 | 433 | 39 | 156 | 233 | 291 | 332 | 369 | 402 | 433 | 39 | 156 | 233 | 291 | 332 | 369 | 402 | 433 |
| ROOFS >45° TO 55° | 105 | HR250 | 44 | 183 | 280 | 358 | 425 | 474 | 516 | 556 | 41 | 183 | 280 | 358 | 425 | 474 | 516 | 556 | 41 | 183 | 280 | 358 | 425 | 474 | 516 | 556 |
| | | HR150 | 38 | 151 | 227 | 288 | 332 | 369 | 402 | 433 | 36 | 151 | 227 | 288 | 332 | 369 | 402 | 433 | 36 | 151 | 227 | 288 | 332 | 369 | 402 | 433 |
| | 110 | HR250 | 42 | 176 | 272 | 350 | 417 | 474 | 516 | 556 | 38 | 176 | 272 | 350 | 417 | 474 | 516 | 556 | 38 | 176 | 272 | 350 | 417 | 474 | 516 | 556 |
| | | HR150 | 36 | 146 | 222 | 283 | 332 | 369 | 402 | 433 | 33 | 146 | 222 | 283 | 332 | 369 | 402 | 433 | 33 | 146 | 222 | 283 | 332 | 369 | 402 | 433 |
| | 115 | HR250 | 39 | 170 | 264 | 342 | 409 | 468 | 516 | 556 | 36 | 166 | 264 | 342 | 409 | 468 | 516 | 556 | 36 | 166 | 264 | 342 | 409 | 468 | 516 | 556 |
| | | HR150 | 34 | 141 | 216 | 277 | 329 | 369 | 402 | 433 | 31 | 141 | 216 | 277 | 329 | 369 | 402 | 433 | 31 | 141 | 216 | 277 | 329 | 369 | 402 | 433 |
| | 120 | HR250 | 37 | 163 | 257 | 334 | 401 | 460 | 514 | 556 | 34 | 156 | 257 | 334 | 401 | 460 | 514 | 556 | 34 | 156 | 257 | 334 | 401 | 460 | 514 | 556 |
| | | HR150 | 32 | 137 | 211 | 272 | 324 | 369 | 402 | 433 | 29 | 136 | 211 | 272 | 324 | 369 | 402 | 433 | 29 | 136 | 211 | 272 | 324 | 369 | 402 | 433 |
| | 130 | HR250 | 35 | 157 | 249 | 326 | 393 | 452 | 506 | 556 | 32 | 147 | 249 | 326 | 393 | 452 | 506 | 556 | 32 | 147 | 249 | 326 | 393 | 452 | 506 | 556 |
| | | HR150 | 30 | 132 | 206 | 266 | 318 | 364 | 402 | 433 | 28 | 128 | 206 | 266 | 318 | 364 | 402 | 433 | 28 | 128 | 206 | 266 | 318 | 364 | 402 | 433 |
| | 140 | HR250 | 33 | 152 | 242 | 318 | 385 | 444 | 498 | 548 | 30 | 139 | 242 | 318 | 385 | 444 | 498 | 548 | 30 | 139 | 242 | 318 | 385 | 444 | 498 | 548 |
| | | HR150 | 29 | 128 | 200 | 261 | 313 | 359 | 401 | 433 | 26 | 121 | 200 | 261 | 313 | 359 | 401 | 433 | 26 | 121 | 200 | 261 | 313 | 359 | 401 | 433 |
| | 150 | HR250 | 30 | 139 | 228 | 303 | 369 | 428 | 482 | 531 | 27 | 125 | 223 | 303 | 369 | 428 | 482 | 531 | 27 | 125 | 223 | 303 | 369 | 428 | 482 | 531 |
| | | HR150 | 26 | 119 | 190 | 250 | 301 | 348 | 390 | 428 | 24 | 109 | 190 | 250 | 301 | 348 | 390 | 428 | 24 | 109 | 190 | 250 | 301 | 348 | 390 | 428 |

**Table 2.1: Maximum Span Length (in.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS 0° TO 7°** | **85** | HR250 | 107 | 98 | 84 | 72 | 63 | 57 | 52 | 48 | 100 | 98 | 84 | 72 | 63 | 57 | 52 | 48 | 81 | 81 | 81 | 72 | 63 | 57 | 52 | 48 |
| | | HR150 | 98 | 87 | 72 | 61 | 54 | 48 | 44 | 41 | 87 | 87 | 72 | 61 | 54 | 48 | 44 | 41 | 71 | 71 | 71 | 61 | 54 | 48 | 44 | 41 |
| | **90** | HR250 | 107 | 98 | 84 | 72 | 63 | 57 | 52 | 48 | 94 | 94 | 84 | 72 | 63 | 57 | 52 | 48 | 76 | 76 | 76 | 72 | 63 | 57 | 52 | 48 |
| | | HR150 | 98 | 87 | 72 | 61 | 54 | 48 | 44 | 41 | 82 | 82 | 72 | 61 | 54 | 48 | 44 | 41 | 67 | 67 | 67 | 61 | 54 | 48 | 44 | 41 |
| | **100** | HR250 | 107 | 98 | 84 | 72 | 63 | 57 | 52 | 48 | 84 | 84 | 84 | 72 | 63 | 57 | 52 | 48 | 68 | 68 | 68 | 68 | 63 | 57 | 52 | 48 |
| | | HR150 | 97 | 87 | 72 | 61 | 54 | 48 | 44 | 41 | 74 | 74 | 72 | 61 | 54 | 48 | 44 | 41 | 60 | 60 | 60 | 60 | 54 | 48 | 44 | 41 |
| | **105** | HR250 | 105 | 98 | 84 | 72 | 63 | 57 | 52 | 48 | 80 | 80 | 80 | 72 | 63 | 57 | 52 | 48 | 65 | 65 | 65 | 65 | 63 | 57 | 52 | 48 |
| | | HR150 | 92 | 87 | 72 | 61 | 54 | 48 | 44 | 41 | 70 | 70 | 70 | 61 | 54 | 48 | 44 | 41 | 57 | 57 | 57 | 57 | 54 | 48 | 44 | 41 |
| | **110** | HR250 | 100 | 98 | 84 | 72 | 63 | 57 | 52 | 48 | 76 | 76 | 76 | 72 | 63 | 57 | 52 | 48 | 62 | 62 | 62 | 62 | 62 | 57 | 52 | 48 |
| | | HR150 | 87 | 87 | 72 | 61 | 54 | 48 | 44 | 41 | 67 | 67 | 67 | 61 | 54 | 48 | 44 | 41 | 54 | 54 | 54 | 54 | 54 | 48 | 44 | 41 |
| | **115** | HR250 | 95 | 95 | 84 | 72 | 63 | 57 | 52 | 48 | 73 | 73 | 73 | 72 | 63 | 57 | 52 | 48 | 59 | 59 | 59 | 59 | 59 | 57 | 52 | 48 |
| | | HR150 | 83 | 83 | 72 | 61 | 54 | 48 | 44 | 41 | 64 | 64 | 64 | 61 | 54 | 48 | 44 | 41 | 52 | 52 | 52 | 52 | 52 | 48 | 44 | 41 |
| | **120** | HR250 | 91 | 91 | 83 | 72 | 63 | 57 | 52 | 48 | 70 | 70 | 70 | 70 | 63 | 57 | 52 | 48 | 56 | 56 | 56 | 56 | 56 | 56 | 52 | 48 |
| | | HR150 | 80 | 80 | 72 | 61 | 54 | 48 | 44 | 41 | 61 | 61 | 61 | 61 | 54 | 48 | 44 | 41 | 50 | 50 | 50 | 50 | 50 | 48 | 44 | 41 |
| | **130** | HR250 | 84 | 84 | 82 | 72 | 63 | 57 | 52 | 48 | 64 | 64 | 64 | 64 | 63 | 57 | 52 | 48 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 48 |
| | | HR150 | 73 | 73 | 70 | 61 | 54 | 48 | 44 | 41 | 56 | 56 | 56 | 56 | 54 | 48 | 44 | 41 | 46 | 46 | 46 | 46 | 46 | 46 | 44 | 41 |
| | **140** | HR250 | 78 | 78 | 78 | 70 | 63 | 57 | 52 | 48 | 59 | 59 | 59 | 59 | 59 | 57 | 52 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 |
| | | HR150 | 68 | 68 | 68 | 60 | 54 | 48 | 44 | 41 | 52 | 52 | 52 | 52 | 52 | 48 | 44 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 |
| | **150** | HR250 | 72 | 72 | 72 | 69 | 63 | 57 | 52 | 48 | 55 | 55 | 55 | 55 | 55 | 55 | 52 | 48 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 |
| | | HR150 | 63 | 63 | 63 | 59 | 54 | 48 | 44 | 41 | 49 | 49 | 49 | 49 | 49 | 48 | 44 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |

**Table 2.2: Maximum Uplift (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS 0° TO 7°** | **85** | HR250 | -344 | -317 | -272 | -232 | -203 | -183 | -168 | -156 | -573 | -563 | -482 | -413 | -361 | -325 | -298 | -277 | -714 | -714 | -714 | -638 | -558 | -502 | -461 | -428 |
| | | HR150 | -317 | -282 | -233 | -198 | -173 | -156 | -143 | -133 | -502 | -501 | -414 | -351 | -307 | -277 | -254 | -235 | -627 | -627 | -627 | -542 | -475 | -427 | -392 | -364 |
| | **90** | HR250 | -393 | -362 | -310 | -265 | -232 | -209 | -192 | -178 | -609 | -609 | -545 | -466 | -408 | -367 | -336 | -313 | -759 | -759 | -759 | -720 | -630 | -567 | -520 | -483 |
| | | HR150 | -362 | -322 | -266 | -226 | -197 | -178 | -163 | -151 | -534 | -534 | -467 | -396 | -347 | -312 | -286 | -266 | -666 | -666 | -666 | -612 | -536 | -482 | -442 | -411 |
| | **100** | HR250 | -496 | -457 | -391 | -335 | -293 | -264 | -242 | -225 | -684 | -684 | -683 | -584 | -512 | -461 | -422 | -392 | -848 | -848 | -848 | -848 | -784 | -706 | -647 | -601 |
| | | HR150 | -451 | -407 | -336 | -285 | -249 | -224 | -206 | -191 | -599 | -599 | -586 | -497 | -435 | -392 | -359 | -334 | -744 | -744 | -744 | -744 | -667 | -600 | -550 | -511 |
| | **105** | HR250 | -543 | -507 | -434 | -372 | -325 | -293 | -268 | -249 | -720 | -720 | -720 | -648 | -567 | -511 | -468 | -435 | -893 | -893 | -893 | -893 | -868 | -781 | -716 | -665 |
| | | HR150 | -476 | -451 | -373 | -316 | -277 | -249 | -228 | -212 | -632 | -632 | -632 | -551 | -482 | -434 | -398 | -370 | -784 | -784 | -784 | -784 | -738 | -665 | -609 | -566 |
| | **110** | HR250 | -573 | -563 | -482 | -413 | -361 | -325 | -298 | -277 | -756 | -756 | -756 | -713 | -624 | -562 | -515 | -479 | -937 | -937 | -937 | -937 | -937 | -860 | -789 | -733 |
| | | HR150 | -502 | -501 | -414 | -351 | -307 | -277 | -254 | -235 | -663 | -663 | -663 | -607 | -531 | -478 | -438 | -407 | -823 | -823 | -823 | -823 | -813 | -732 | -671 | -623 |
| | **115** | HR250 | -601 | -601 | -530 | -454 | -397 | -357 | -328 | -304 | -792 | -792 | -792 | -783 | -685 | -617 | -566 | -525 | -981 | -981 | -981 | -981 | -981 | -943 | -864 | -803 |
| | | HR150 | -527 | -527 | -455 | -386 | -338 | -304 | -279 | -259 | -695 | -695 | -695 | -666 | -583 | -525 | -481 | -447 | -861 | -861 | -861 | -861 | -861 | -802 | -735 | -683 |
| | **120** | HR250 | -629 | -629 | -577 | -496 | -435 | -391 | -359 | -333 | -829 | -829 | -829 | -829 | -750 | -675 | -619 | -575 | -1025 | -1025 | -1025 | -1025 | -1025 | -1025 | -943 | -875 |
| | | HR150 | -552 | -552 | -495 | -422 | -370 | -333 | -305 | -283 | -728 | -728 | -728 | -728 | -638 | -574 | -526 | -489 | -900 | -900 | -900 | -900 | -900 | -875 | -802 | -745 |
| | **130** | HR250 | -686 | -686 | -668 | -587 | -515 | -464 | -425 | -395 | -901 | -901 | -901 | -901 | -884 | -796 | -730 | -678 | -1113 | -1113 | -1113 | -1113 | -1113 | -1113 | -1111 | -1032 |
| | | HR150 | -602 | -602 | -573 | -501 | -438 | -394 | -362 | -336 | -791 | -791 | -791 | -791 | -752 | -677 | -621 | -577 | -978 | -978 | -978 | -978 | -978 | -978 | -945 | -878 |
| | **140** | HR250 | -743 | -743 | -743 | -675 | -603 | -543 | -498 | -462 | -973 | -973 | -973 | -973 | -973 | -928 | -851 | -790 | -1200 | -1200 | -1200 | -1200 | -1200 | -1200 | -1200 | -1200 |
| | | HR150 | -652 | -652 | -652 | -579 | -513 | -462 | -423 | -393 | -855 | -855 | -855 | -855 | -855 | -790 | -724 | -672 | -1054 | -1054 | -1054 | -1054 | -1054 | -1054 | -1054 | -1020 |
| | **150** | HR250 | -799 | -799 | -799 | -764 | -694 | -627 | -575 | -534 | -1045 | -1045 | -1045 | -1045 | -1045 | -1045 | -980 | -910 | -1288 | -1288 | -1288 | -1288 | -1288 | -1288 | -1288 | -1288 |
| | | HR150 | -701 | -701 | -701 | -656 | -592 | -533 | -489 | -454 | -917 | -917 | -917 | -917 | -917 | -909 | -833 | -774 | -1132 | -1132 | -1132 | -1132 | -1132 | -1132 | -1132 | -1132 |

**Table 2.3: Maximum Downforce (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| B | 85 | HR250 | 386 | 494 | 602 | 667 | 762 | 846 | 923 | 993 | 362 | 494 | 602 | 667 | 762 | 846 | 923 | 993 | 292 | 406 | 577 | 667 | 762 | 846 | 923 | 993 |
| | | HR150 | 355 | 440 | 516 | 568 | 648 | 720 | 785 | 845 | 317 | 440 | 516 | 568 | 648 | 720 | 785 | 845 | 256 | 356 | 506 | 568 | 648 | 720 | 785 | 845 |
| | 90 | HR250 | 386 | 494 | 602 | 667 | 762 | 846 | 923 | 993 | 341 | 474 | 602 | 667 | 762 | 846 | 923 | 993 | 275 | 382 | 543 | 667 | 762 | 846 | 923 | 993 |
| | | HR150 | 355 | 440 | 516 | 568 | 648 | 720 | 785 | 845 | 299 | 415 | 516 | 568 | 648 | 720 | 785 | 845 | 241 | 335 | 477 | 568 | 648 | 720 | 785 | 845 |
| | 100 | HR250 | 386 | 494 | 602 | 667 | 762 | 846 | 923 | 993 | 305 | 423 | 602 | 667 | 762 | 846 | 923 | 993 | 247 | 343 | 487 | 632 | 762 | 846 | 923 | 993 |
| | | HR150 | 351 | 440 | 516 | 568 | 648 | 720 | 785 | 845 | 267 | 371 | 516 | 568 | 648 | 720 | 785 | 845 | 217 | 301 | 428 | 555 | 648 | 720 | 785 | 845 |
| | 105 | HR250 | 381 | 494 | 602 | 667 | 762 | 846 | 923 | 993 | 290 | 402 | 572 | 667 | 762 | 846 | 923 | 993 | 235 | 326 | 463 | 601 | 762 | 846 | 923 | 993 |
| | | HR150 | 334 | 440 | 516 | 568 | 648 | 720 | 785 | 845 | 254 | 353 | 502 | 568 | 648 | 720 | 785 | 845 | 206 | 286 | 407 | 527 | 648 | 720 | 785 | 845 |
| ROOFS 0° TO 7° | 110 | HR250 | 362 | 494 | 602 | 667 | 762 | 846 | 923 | 993 | 276 | 384 | 545 | 667 | 762 | 846 | 923 | 993 | 224 | 311 | 442 | 573 | 747 | 846 | 923 | 993 |
| | | HR150 | 317 | 440 | 516 | 568 | 648 | 720 | 785 | 845 | 242 | 337 | 479 | 568 | 648 | 720 | 785 | 845 | 196 | 273 | 388 | 503 | 648 | 720 | 785 | 845 |
| | 115 | HR250 | 345 | 480 | 602 | 667 | 762 | 846 | 923 | 993 | 264 | 366 | 521 | 667 | 762 | 846 | 923 | 993 | 214 | 297 | 422 | 547 | 713 | 846 | 923 | 993 |
| | | HR150 | 303 | 421 | 516 | 568 | 648 | 720 | 785 | 845 | 231 | 322 | 457 | 568 | 648 | 720 | 785 | 845 | 188 | 261 | 371 | 480 | 626 | 720 | 785 | 845 |
| | 120 | HR250 | 343 | 469 | 607 | 675 | 762 | 846 | 923 | 993 | 262 | 358 | 506 | 653 | 762 | 846 | 923 | 993 | 213 | 290 | 410 | 530 | 683 | 843 | 923 | 993 |
| | | HR150 | 301 | 411 | 521 | 574 | 648 | 720 | 785 | 845 | 230 | 314 | 444 | 573 | 648 | 720 | 785 | 845 | 187 | 255 | 360 | 466 | 600 | 720 | 785 | 845 |
| | 130 | HR250 | 361 | 465 | 626 | 702 | 762 | 846 | 923 | 993 | 276 | 356 | 492 | 628 | 762 | 846 | 923 | 993 | 224 | 289 | 399 | 510 | 630 | 777 | 923 | 993 |
| | | HR150 | 317 | 408 | 537 | 599 | 648 | 720 | 785 | 845 | 242 | 312 | 432 | 551 | 648 | 720 | 785 | 845 | 197 | 254 | 351 | 448 | 553 | 682 | 785 | 845 |
| | 140 | HR250 | 376 | 462 | 626 | 718 | 776 | 846 | 923 | 993 | 288 | 354 | 480 | 606 | 732 | 846 | 923 | 993 | 234 | 287 | 390 | 492 | 595 | 721 | 858 | 993 |
| | | HR150 | 330 | 405 | 549 | 616 | 660 | 720 | 785 | 845 | 253 | 311 | 421 | 532 | 643 | 720 | 785 | 845 | 206 | 252 | 342 | 432 | 523 | 633 | 753 | 845 |
| | 150 | HR250 | 395 | 464 | 617 | 737 | 803 | 846 | 923 | 993 | 303 | 356 | 473 | 591 | 709 | 827 | 923 | 993 | 246 | 289 | 385 | 480 | 576 | 672 | 799 | 927 |
| | | HR150 | 347 | 407 | 541 | 633 | 685 | 720 | 785 | 845 | 266 | 312 | 416 | 519 | 622 | 720 | 785 | 845 | 216 | 254 | 338 | 422 | 506 | 590 | 702 | 814 |

**Table 2.4: Maximum Shear (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS 0° TO 7°** | **85** | HR250 | 9 | 37 | 57 | 70 | 80 | 89 | 97 | 104 | 8 | 37 | 57 | 70 | 80 | 89 | 97 | 104 | 7 | 31 | 55 | 70 | 80 | 89 | 97 | 104 |
| | | HR150 | 8 | 33 | 49 | 60 | 68 | 76 | 82 | 89 | 7 | 33 | 49 | 60 | 68 | 76 | 82 | 89 | 6 | 27 | 48 | 60 | 68 | 76 | 82 | 89 |
| | **90** | HR250 | 9 | 37 | 57 | 70 | 80 | 89 | 97 | 104 | 8 | 36 | 57 | 70 | 80 | 89 | 97 | 104 | 6 | 29 | 51 | 70 | 80 | 89 | 97 | 104 |
| | | HR150 | 8 | 33 | 49 | 60 | 68 | 76 | 82 | 89 | 7 | 31 | 49 | 60 | 68 | 76 | 82 | 89 | 5 | 25 | 45 | 60 | 68 | 76 | 82 | 89 |
| | **100** | HR250 | 9 | 37 | 57 | 70 | 80 | 89 | 97 | 104 | 7 | 32 | 57 | 70 | 80 | 89 | 97 | 104 | 6 | 26 | 46 | 66 | 80 | 89 | 97 | 104 |
| | | HR150 | 8 | 33 | 49 | 60 | 68 | 76 | 82 | 89 | 6 | 28 | 49 | 60 | 68 | 76 | 82 | 89 | 5 | 23 | 40 | 58 | 68 | 76 | 82 | 89 |
| | **105** | HR250 | 9 | 37 | 57 | 70 | 80 | 89 | 97 | 104 | 7 | 30 | 54 | 70 | 80 | 89 | 97 | 104 | 5 | 25 | 44 | 63 | 80 | 89 | 97 | 104 |
| | | HR150 | 8 | 33 | 49 | 60 | 68 | 76 | 82 | 89 | 6 | 27 | 47 | 60 | 68 | 76 | 82 | 89 | 5 | 22 | 38 | 55 | 68 | 76 | 82 | 89 |
| | **110** | HR250 | 8 | 37 | 57 | 70 | 80 | 89 | 97 | 104 | 6 | 29 | 52 | 70 | 80 | 89 | 97 | 104 | 5 | 23 | 42 | 60 | 78 | 89 | 97 | 104 |
| | | HR150 | 7 | 33 | 49 | 60 | 68 | 76 | 82 | 89 | 5 | 25 | 45 | 60 | 68 | 76 | 82 | 89 | 4 | 21 | 37 | 53 | 68 | 76 | 82 | 89 |
| | **115** | HR250 | 8 | 36 | 57 | 70 | 80 | 89 | 97 | 104 | 6 | 28 | 49 | 70 | 80 | 89 | 97 | 104 | 5 | 22 | 40 | 57 | 75 | 89 | 97 | 104 |
| | | HR150 | 7 | 32 | 49 | 60 | 68 | 76 | 82 | 89 | 5 | 24 | 43 | 60 | 68 | 76 | 82 | 89 | 4 | 20 | 35 | 50 | 66 | 76 | 82 | 89 |
| | **120** | HR250 | 7 | 35 | 57 | 70 | 80 | 89 | 97 | 104 | 6 | 26 | 47 | 68 | 80 | 89 | 97 | 104 | 5 | 21 | 38 | 55 | 72 | 89 | 97 | 104 |
| | | HR150 | 7 | 30 | 48 | 60 | 68 | 76 | 82 | 89 | 5 | 23 | 41 | 60 | 68 | 76 | 82 | 89 | 4 | 19 | 34 | 48 | 63 | 76 | 82 | 89 |
| | **130** | HR250 | 7 | 32 | 55 | 70 | 80 | 89 | 97 | 104 | 5 | 24 | 43 | 62 | 80 | 89 | 97 | 104 | 4 | 20 | 35 | 51 | 66 | 82 | 97 | 104 |
| | | HR150 | 6 | 28 | 47 | 60 | 68 | 76 | 82 | 89 | 5 | 21 | 38 | 55 | 68 | 76 | 82 | 89 | 4 | 17 | 31 | 45 | 58 | 72 | 82 | 89 |
| | **140** | HR250 | 6 | 29 | 52 | 69 | 80 | 89 | 97 | 104 | 5 | 23 | 40 | 58 | 76 | 89 | 97 | 104 | 4 | 18 | 33 | 47 | 61 | 76 | 90 | 104 |
| | | HR150 | 6 | 26 | 46 | 59 | 68 | 76 | 82 | 89 | 4 | 20 | 35 | 51 | 66 | 76 | 82 | 89 | 3 | 16 | 29 | 41 | 54 | 67 | 79 | 89 |
| | **150** | HR250 | 6 | 27 | 49 | 67 | 80 | 89 | 97 | 104 | 5 | 21 | 37 | 54 | 70 | 87 | 97 | 104 | 4 | 17 | 30 | 44 | 57 | 71 | 84 | 97 |
| | | HR150 | 5 | 24 | 43 | 58 | 68 | 76 | 82 | 89 | 4 | 18 | 33 | 47 | 62 | 76 | 82 | 89 | 3 | 15 | 27 | 39 | 50 | 62 | 74 | 86 |

**Table 2.5: Maximum Span Length (in.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **C** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS 0° TO 7°** | **85** | HR250 | 107 | 98 | 84 | 72 | 63 | 57 | 52 | 48 | 84 | 84 | 84 | 72 | 63 | 57 | 52 | 48 | 68 | 68 | 68 | 68 | 63 | 57 | 52 | 48 |
| | | HR150 | 96 | 87 | 72 | 61 | 54 | 48 | 44 | 41 | 73 | 73 | 72 | 61 | 54 | 48 | 44 | 41 | 59 | 59 | 59 | 59 | 54 | 48 | 44 | 41 |
| | **90** | HR250 | 103 | 98 | 84 | 72 | 63 | 57 | 52 | 48 | 79 | 79 | 79 | 72 | 63 | 57 | 52 | 48 | 64 | 64 | 64 | 64 | 63 | 57 | 52 | 48 |
| | | HR150 | 90 | 87 | 72 | 61 | 54 | 48 | 44 | 41 | 69 | 69 | 69 | 61 | 54 | 48 | 44 | 41 | 56 | 56 | 56 | 56 | 54 | 48 | 44 | 41 |
| | **100** | HR250 | 92 | 92 | 84 | 72 | 63 | 57 | 52 | 48 | 71 | 71 | 71 | 71 | 63 | 57 | 52 | 48 | 57 | 57 | 57 | 57 | 57 | 57 | 52 | 48 |
| | | HR150 | 81 | 81 | 72 | 61 | 54 | 48 | 44 | 41 | 62 | 62 | 62 | 61 | 54 | 48 | 44 | 41 | 50 | 50 | 50 | 50 | 50 | 48 | 44 | 41 |
| | **105** | HR250 | 88 | 88 | 83 | 72 | 63 | 57 | 52 | 48 | 67 | 67 | 67 | 67 | 63 | 57 | 52 | 48 | 54 | 54 | 54 | 54 | 54 | 54 | 52 | 48 |
| | | HR150 | 77 | 77 | 71 | 61 | 54 | 48 | 44 | 41 | 59 | 59 | 59 | 59 | 54 | 48 | 44 | 41 | 48 | 48 | 48 | 48 | 48 | 48 | 44 | 41 |
| | **110** | HR250 | 84 | 84 | 81 | 72 | 63 | 57 | 52 | 48 | 64 | 64 | 64 | 64 | 63 | 57 | 52 | 48 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 48 |
| | | HR150 | 73 | 73 | 70 | 61 | 54 | 48 | 44 | 41 | 56 | 56 | 56 | 56 | 54 | 48 | 44 | 41 | 46 | 46 | 46 | 46 | 46 | 46 | 44 | 41 |
| | **115** | HR250 | 80 | 80 | 80 | 71 | 63 | 57 | 52 | 48 | 61 | 61 | 61 | 61 | 61 | 57 | 52 | 48 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 48 |
| | | HR150 | 70 | 70 | 69 | 61 | 54 | 48 | 44 | 41 | 54 | 54 | 54 | 54 | 54 | 48 | 44 | 41 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 41 |
| | **120** | HR250 | 76 | 76 | 76 | 70 | 63 | 57 | 52 | 48 | 59 | 59 | 59 | 59 | 59 | 57 | 52 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 |
| | | HR150 | 67 | 67 | 67 | 60 | 54 | 48 | 44 | 41 | 51 | 51 | 51 | 51 | 51 | 48 | 44 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 |
| | **130** | HR250 | 70 | 70 | 70 | 69 | 62 | 57 | 52 | 48 | 54 | 54 | 54 | 54 | 54 | 54 | 52 | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 62 | 62 | 62 | 59 | 53 | 48 | 44 | 41 | 47 | 47 | 47 | 47 | 47 | 47 | 44 | 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | **140** | HR250 | 65 | 65 | 65 | 65 | 61 | 57 | 52 | 48 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 57 | 57 | 57 | 57 | 53 | 48 | 44 | 41 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | **150** | HR250 | 61 | 61 | 61 | 61 | 60 | 56 | 52 | 48 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 53 | 53 | 53 | 53 | 51 | 48 | 44 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 2.6: Maximum Uplift (lb.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| C | 85 | HR250 | -502 | -463 | -396 | -339 | -297 | -267 | -245 | -227 | -687 | -687 | -687 | -591 | -517 | -466 | -427 | -397 | -853 | -853 | -853 | -853 | -793 | -714 | -655 | -608 |
| | | HR150 | -454 | -412 | -340 | -288 | -252 | -227 | -208 | -193 | -603 | -603 | -593 | -503 | -440 | -396 | -363 | -337 | -749 | -749 | -749 | -749 | -675 | -607 | -557 | -517 |
| | 90 | HR250 | -553 | -525 | -450 | -385 | -337 | -303 | -278 | -258 | -730 | -730 | -730 | -666 | -583 | -524 | -481 | -447 | -906 | -906 | -906 | -906 | -893 | -804 | -737 | -685 |
| | | HR150 | -484 | -467 | -386 | -327 | -286 | -258 | -236 | -220 | -640 | -640 | -640 | -566 | -495 | -446 | -409 | -380 | -795 | -795 | -795 | -795 | -760 | -684 | -627 | -583 |
| | 100 | HR250 | -620 | -620 | -562 | -482 | -422 | -380 | -348 | -324 | -817 | -817 | -817 | -817 | -728 | -655 | -601 | -558 | -1010 | -1010 | -1010 | -1010 | -1010 | -998 | -915 | -850 |
| | | HR150 | -543 | -543 | -482 | -410 | -359 | -323 | -296 | -275 | -717 | -717 | -717 | -707 | -619 | -557 | -511 | -475 | -887 | -887 | -887 | -887 | -887 | -849 | -779 | -723 |
| | 105 | HR250 | -653 | -653 | -613 | -534 | -467 | -421 | -386 | -358 | -860 | -860 | -860 | -860 | -806 | -725 | -665 | -618 | -1062 | -1062 | -1062 | -1062 | -1062 | -1062 | -1013 | -941 |
| | | HR150 | -572 | -572 | -527 | -454 | -397 | -358 | -328 | -305 | -755 | -755 | -755 | -755 | -685 | -617 | -566 | -525 | -933 | -933 | -933 | -933 | -933 | -933 | -861 | -800 |
| | 110 | HR250 | -687 | -687 | -670 | -589 | -517 | -466 | -427 | -397 | -902 | -902 | -902 | -902 | -886 | -798 | -731 | -679 | -1115 | -1115 | -1115 | -1115 | -1115 | -1115 | -1114 | -1035 |
| | | HR150 | -603 | -603 | -575 | -503 | -440 | -396 | -363 | -337 | -792 | -792 | -792 | -792 | -754 | -678 | -622 | -578 | -979 | -979 | -979 | -979 | -979 | -979 | -948 | -880 |
| | 115 | HR250 | -720 | -720 | -720 | -639 | -567 | -511 | -468 | -435 | -945 | -945 | -945 | -945 | -945 | -874 | -802 | -744 | -1166 | -1166 | -1166 | -1166 | -1166 | -1166 | -1166 | -1133 |
| | | HR150 | -632 | -632 | -623 | -548 | -483 | -435 | -398 | -370 | -829 | -829 | -829 | -829 | -826 | -744 | -682 | -633 | -1024 | -1024 | -1024 | -1024 | -1024 | -1024 | -1024 | -964 |
| | 120 | HR250 | -753 | -753 | -753 | -691 | -620 | -558 | -512 | -475 | -988 | -988 | -988 | -988 | -988 | -956 | -876 | -814 | -1218 | -1218 | -1218 | -1218 | -1218 | -1218 | -1218 | -1218 |
| | | HR150 | -661 | -661 | -661 | -593 | -527 | -475 | -435 | -404 | -867 | -867 | -867 | -867 | -867 | -813 | -745 | -692 | -1070 | -1070 | -1070 | -1070 | -1070 | -1070 | -1070 | -1050 |
| | 130 | HR250 | -820 | -820 | -820 | -798 | -726 | -660 | -605 | -562 | -1072 | -1072 | -1072 | -1072 | -1072 | -1072 | -1031 | -958 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | -719 | -719 | -719 | -686 | -623 | -561 | -515 | -478 | -942 | -942 | -942 | -942 | -942 | -942 | -877 | -815 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 140 | HR250 | -886 | -886 | -886 | -886 | -832 | -770 | -706 | -656 | -1157 | -1157 | -1157 | -1157 | -1157 | -1157 | -1157 | -1116 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | -778 | -778 | -778 | -778 | -714 | -655 | -601 | -558 | -1017 | -1017 | -1017 | -1017 | -1017 | -1017 | -1017 | -949 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 150 | HR250 | -952 | -952 | -952 | -952 | -940 | -873 | -814 | -756 | -1242 | -1242 | -1242 | -1242 | -1242 | -1242 | -1242 | -1242 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | -836 | -836 | -836 | -836 | -807 | -749 | -692 | -643 | -1090 | -1090 | -1090 | -1090 | -1090 | -1090 | -1090 | -1090 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

ROOFS 0° TO 7°

**Table 2.7: Maximum Downforce (lb.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| C | 85 | HR250 | 386 | 494 | 602 | 667 | 762 | 846 | 923 | 993 | 303 | 421 | 599 | 667 | 762 | 846 | 923 | 993 | 245 | 341 | 485 | 628 | 762 | 846 | 923 | 993 |
| | | HR150 | 349 | 440 | 516 | 568 | 648 | 720 | 785 | 845 | 266 | 369 | 516 | 568 | 648 | 720 | 785 | 845 | 215 | 299 | 425 | 551 | 648 | 720 | 785 | 845 |
| | 90 | HR250 | 374 | 494 | 602 | 667 | 762 | 846 | 923 | 993 | 286 | 397 | 565 | 667 | 762 | 846 | 923 | 993 | 231 | 321 | 457 | 592 | 762 | 846 | 923 | 993 |
| | | HR150 | 328 | 440 | 516 | 568 | 648 | 720 | 785 | 845 | 251 | 348 | 495 | 568 | 648 | 720 | 785 | 845 | 203 | 282 | 401 | 520 | 648 | 720 | 785 | 845 |
| | 100 | HR250 | 341 | 470 | 604 | 671 | 762 | 846 | 923 | 993 | 260 | 359 | 509 | 659 | 762 | 846 | 923 | 993 | 211 | 291 | 413 | 535 | 693 | 846 | 923 | 993 |
| | | HR150 | 299 | 412 | 518 | 571 | 648 | 720 | 785 | 845 | 228 | 315 | 447 | 571 | 648 | 720 | 785 | 845 | 185 | 256 | 363 | 469 | 609 | 720 | 785 | 845 |
| | 105 | HR250 | 352 | 468 | 615 | 688 | 762 | 846 | 923 | 993 | 269 | 357 | 500 | 643 | 762 | 846 | 923 | 993 | 218 | 290 | 406 | 521 | 659 | 814 | 923 | 993 |
| | | HR150 | 309 | 410 | 528 | 585 | 648 | 720 | 785 | 845 | 236 | 314 | 439 | 564 | 648 | 720 | 785 | 845 | 192 | 255 | 356 | 458 | 579 | 714 | 785 | 845 |
| ROOFS 0° TO 7° | 110 | HR250 | 362 | 465 | 626 | 703 | 762 | 846 | 923 | 993 | 277 | 356 | 492 | 628 | 762 | 846 | 923 | 993 | 225 | 289 | 399 | 510 | 629 | 776 | 923 | 993 |
| | | HR150 | 317 | 408 | 538 | 600 | 648 | 720 | 785 | 845 | 243 | 313 | 432 | 551 | 648 | 720 | 785 | 845 | 197 | 254 | 351 | 448 | 552 | 681 | 785 | 845 |
| | 115 | HR250 | 371 | 463 | 633 | 712 | 766 | 846 | 923 | 993 | 284 | 355 | 485 | 615 | 745 | 846 | 923 | 993 | 231 | 288 | 394 | 499 | 604 | 742 | 882 | 993 |
| | | HR150 | 325 | 406 | 548 | 611 | 651 | 720 | 785 | 845 | 249 | 312 | 426 | 540 | 651 | 720 | 785 | 845 | 203 | 253 | 346 | 438 | 531 | 651 | 775 | 845 |
| | 120 | HR250 | 379 | 462 | 624 | 722 | 781 | 846 | 923 | 993 | 291 | 354 | 478 | 602 | 727 | 846 | 923 | 993 | 236 | 287 | 388 | 489 | 590 | 711 | 845 | 980 |
| | | HR150 | 333 | 405 | 547 | 619 | 664 | 720 | 785 | 845 | 255 | 311 | 420 | 529 | 638 | 720 | 785 | 845 | 207 | 252 | 341 | 430 | 519 | 624 | 742 | 845 |
| | 130 | HR250 | 403 | 465 | 614 | 744 | 809 | 855 | 923 | 993 | 309 | 357 | 471 | 586 | 701 | 815 | 923 | 993 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 353 | 408 | 539 | 639 | 694 | 728 | 785 | 845 | 271 | 313 | 414 | 515 | 615 | 716 | 785 | 845 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 140 | HR250 | 422 | 468 | 606 | 744 | 829 | 888 | 924 | 993 | 324 | 359 | 465 | 572 | 678 | 784 | 890 | 993 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 370 | 410 | 532 | 653 | 711 | 755 | 786 | 845 | 285 | 315 | 409 | 502 | 595 | 689 | 782 | 845 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 150 | HR250 | 447 | 476 | 605 | 734 | 851 | 909 | 958 | 993 | 343 | 366 | 465 | 564 | 663 | 762 | 861 | 962 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 392 | 418 | 531 | 644 | 731 | 780 | 815 | 845 | 302 | 321 | 408 | 495 | 582 | 669 | 757 | 845 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 2.8: Maximum Shear (lb.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **C** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS 0° TO 7°** | **85** | HR250 | 9 | 37 | 57 | 70 | 80 | 89 | 97 | 104 | 7 | 32 | 57 | 70 | 80 | 89 | 97 | 104 | 6 | 26 | 46 | 66 | 80 | 89 | 97 | 104 |
| | | HR150 | 8 | 33 | 49 | 60 | 68 | 76 | 82 | 89 | 6 | 28 | 49 | 60 | 68 | 76 | 82 | 89 | 5 | 23 | 40 | 58 | 68 | 76 | 82 | 89 |
| | **90** | HR250 | 8 | 37 | 57 | 70 | 80 | 89 | 97 | 104 | 6 | 30 | 53 | 70 | 80 | 89 | 97 | 104 | 5 | 24 | 43 | 62 | 80 | 89 | 97 | 104 |
| | | HR150 | 7 | 33 | 49 | 60 | 68 | 76 | 82 | 89 | 6 | 26 | 47 | 60 | 68 | 76 | 82 | 89 | 5 | 21 | 38 | 55 | 68 | 76 | 82 | 89 |
| | **100** | HR250 | 8 | 35 | 57 | 70 | 80 | 89 | 97 | 104 | 6 | 27 | 48 | 69 | 80 | 89 | 97 | 104 | 5 | 22 | 39 | 56 | 73 | 89 | 97 | 104 |
| | | HR150 | 7 | 31 | 49 | 60 | 68 | 76 | 82 | 89 | 5 | 24 | 42 | 60 | 68 | 76 | 82 | 89 | 4 | 19 | 34 | 49 | 64 | 76 | 82 | 89 |
| | **105** | HR250 | 7 | 33 | 56 | 70 | 80 | 89 | 97 | 104 | 5 | 25 | 45 | 65 | 80 | 89 | 97 | 104 | 4 | 21 | 37 | 53 | 69 | 86 | 97 | 104 |
| | | HR150 | 6 | 29 | 48 | 60 | 68 | 76 | 82 | 89 | 5 | 22 | 40 | 57 | 68 | 76 | 82 | 89 | 4 | 18 | 32 | 47 | 61 | 75 | 82 | 89 |
| | **110** | HR250 | 7 | 32 | 55 | 70 | 80 | 89 | 97 | 104 | 5 | 24 | 43 | 62 | 80 | 89 | 97 | 104 | 4 | 20 | 35 | 51 | 66 | 82 | 97 | 104 |
| | | HR150 | 6 | 28 | 47 | 60 | 68 | 76 | 82 | 89 | 5 | 21 | 38 | 55 | 68 | 76 | 82 | 89 | 4 | 17 | 31 | 44 | 58 | 72 | 82 | 89 |
| | **115** | HR250 | 7 | 30 | 54 | 69 | 80 | 89 | 97 | 104 | 5 | 23 | 41 | 60 | 78 | 89 | 97 | 104 | 4 | 19 | 34 | 48 | 63 | 78 | 93 | 104 |
| | | HR150 | 6 | 27 | 47 | 59 | 68 | 76 | 82 | 89 | 4 | 20 | 36 | 52 | 68 | 76 | 82 | 89 | 4 | 17 | 30 | 43 | 55 | 68 | 81 | 89 |
| | **120** | HR250 | 6 | 29 | 52 | 68 | 80 | 89 | 97 | 104 | 5 | 22 | 40 | 57 | 74 | 89 | 97 | 104 | 4 | 18 | 32 | 46 | 61 | 75 | 89 | 103 |
| | | HR150 | 5 | 25 | 45 | 59 | 68 | 76 | 82 | 89 | 4 | 20 | 35 | 50 | 65 | 76 | 82 | 89 | 3 | 16 | 28 | 41 | 53 | 66 | 78 | 89 |
| | **130** | HR250 | 6 | 27 | 48 | 67 | 79 | 89 | 97 | 104 | 4 | 20 | 37 | 53 | 69 | 85 | 97 | 104 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 5 | 23 | 42 | 57 | 68 | 76 | 82 | 89 | 4 | 18 | 32 | 46 | 60 | 74 | 82 | 89 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | **140** | HR250 | 5 | 25 | 44 | 63 | 78 | 89 | 97 | 104 | 4 | 19 | 34 | 49 | 64 | 79 | 93 | 104 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 5 | 22 | 39 | 56 | 67 | 76 | 82 | 89 | 4 | 17 | 30 | 43 | 56 | 69 | 82 | 89 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | **150** | HR250 | 5 | 23 | 41 | 59 | 76 | 87 | 97 | 104 | 4 | 18 | 32 | 45 | 59 | 73 | 87 | 101 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 4 | 20 | 36 | 52 | 66 | 75 | 82 | 89 | 3 | 16 | 28 | 40 | 52 | 64 | 77 | 89 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 2.9: Maximum Span Length (in.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 100 | 98 | 84 | 72 | 63 | 57 | 52 | 48 | 77 | 77 | 77 | 72 | 63 | 57 | 52 | 48 | 62 | 62 | 62 | 62 | 62 | 57 | 52 | 48 |
| | | HR150 | 88 | 87 | 72 | 61 | 54 | 48 | 44 | 41 | 67 | 67 | 67 | 61 | 54 | 48 | 44 | 41 | 54 | 54 | 54 | 54 | 54 | 48 | 44 | 41 |
| | 90 | HR250 | 94 | 94 | 84 | 72 | 63 | 57 | 52 | 48 | 72 | 72 | 72 | 72 | 63 | 57 | 52 | 48 | 58 | 58 | 58 | 58 | 58 | 57 | 52 | 48 |
| | | HR150 | 83 | 83 | 72 | 61 | 54 | 48 | 44 | 41 | 63 | 63 | 63 | 61 | 54 | 48 | 44 | 41 | 51 | 51 | 51 | 51 | 51 | 48 | 44 | 41 |
| | 100 | HR250 | 85 | 85 | 82 | 72 | 63 | 57 | 52 | 48 | 65 | 65 | 65 | 65 | 63 | 57 | 52 | 48 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 48 |
| | | HR150 | 74 | 74 | 70 | 61 | 54 | 48 | 44 | 41 | 57 | 57 | 57 | 57 | 54 | 48 | 44 | 41 | 46 | 46 | 46 | 46 | 46 | 46 | 44 | 41 |
| | 105 | HR250 | 80 | 80 | 80 | 71 | 63 | 57 | 52 | 48 | 62 | 62 | 62 | 62 | 62 | 57 | 52 | 48 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 48 |
| | | HR150 | 71 | 71 | 69 | 61 | 54 | 48 | 44 | 41 | 54 | 54 | 54 | 54 | 54 | 48 | 44 | 41 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 41 |
| | 110 | HR250 | 77 | 77 | 77 | 70 | 63 | 57 | 52 | 48 | 59 | 59 | 59 | 59 | 59 | 57 | 52 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 |
| | | HR150 | 67 | 67 | 67 | 60 | 54 | 48 | 44 | 41 | 52 | 52 | 52 | 52 | 52 | 48 | 44 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 |
| | 115 | HR250 | 73 | 73 | 73 | 69 | 63 | 57 | 52 | 48 | 56 | 56 | 56 | 56 | 56 | 56 | 52 | 48 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 |
| | | HR150 | 64 | 64 | 64 | 59 | 54 | 48 | 44 | 41 | 49 | 49 | 49 | 49 | 49 | 48 | 44 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| | 120 | HR250 | 70 | 70 | 70 | 68 | 62 | 57 | 52 | 48 | 54 | 54 | 54 | 54 | 54 | 54 | 52 | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 61 | 61 | 61 | 59 | 53 | 48 | 44 | 41 | 47 | 47 | 47 | 47 | 47 | 47 | 44 | 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 130 | HR250 | 64 | 64 | 64 | 64 | 61 | 56 | 52 | 48 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 57 | 57 | 57 | 57 | 52 | 48 | 44 | 41 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 140 | HR250 | 60 | 60 | 60 | 60 | 60 | 55 | 52 | 48 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 52 | 52 | 52 | 52 | 51 | 48 | 44 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 150 | HR250 | 56 | 56 | 56 | 56 | 56 | 54 | 51 | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 49 | 49 | 49 | 49 | 49 | 47 | 44 | 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 2.10: Maximum Uplift (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | -570 | -557 | -477 | -408 | -357 | -322 | -295 | -274 | -753 | -753 | -753 | -707 | -619 | -557 | -511 | -474 | -932 | -932 | -932 | -932 | -932 | -852 | -781 | -725 |
| | | HR150 | -499 | -496 | -409 | -347 | -304 | -273 | -251 | -233 | -660 | -660 | -660 | -601 | -526 | -474 | -434 | -404 | -818 | -818 | -818 | -818 | -805 | -724 | -664 | -617 |
| | 90 | HR250 | -607 | -607 | -541 | -462 | -405 | -364 | -334 | -310 | -799 | -799 | -799 | -795 | -696 | -627 | -575 | -534 | -989 | -989 | -989 | -989 | -989 | -959 | -879 | -816 |
| | | HR150 | -532 | -532 | -464 | -393 | -344 | -310 | -284 | -264 | -701 | -701 | -701 | -677 | -592 | -533 | -489 | -454 | -869 | -869 | -869 | -869 | -869 | -815 | -748 | -694 |
| | 100 | HR250 | -680 | -680 | -658 | -578 | -506 | -455 | -418 | -388 | -893 | -893 | -893 | -893 | -869 | -782 | -717 | -666 | -1102 | -1102 | -1102 | -1102 | -1102 | -1102 | -1090 | -1012 |
| | | HR150 | -596 | -596 | -565 | -492 | -430 | -387 | -355 | -330 | -784 | -784 | -784 | -784 | -739 | -665 | -610 | -566 | -968 | -968 | -968 | -968 | -968 | -968 | -927 | -861 |
| | 105 | HR250 | -715 | -715 | -715 | -631 | -559 | -504 | -462 | -429 | -939 | -939 | -939 | -939 | -939 | -865 | -793 | -737 | -1159 | -1159 | -1159 | -1159 | -1159 | -1159 | -1159 | -1119 |
| | | HR150 | -627 | -627 | -615 | -541 | -476 | -428 | -393 | -365 | -825 | -825 | -825 | -825 | -817 | -736 | -675 | -626 | -1018 | -1018 | -1018 | -1018 | -1018 | -1018 | -1018 | -952 |
| | 110 | HR250 | -753 | -753 | -753 | -690 | -619 | -557 | -511 | -474 | -985 | -985 | -985 | -985 | -985 | -951 | -872 | -809 | -1216 | -1216 | -1216 | -1216 | -1216 | -1216 | -1216 | -1216 |
| | | HR150 | -660 | -660 | -660 | -592 | -526 | -474 | -434 | -404 | -865 | -865 | -865 | -865 | -865 | -809 | -741 | -689 | -1068 | -1068 | -1068 | -1068 | -1068 | -1068 | -1068 | -1047 |
| | 115 | HR250 | -788 | -788 | -788 | -747 | -678 | -611 | -560 | -520 | -1031 | -1031 | -1031 | -1031 | -1031 | -1031 | -955 | -887 | -1273 | -1273 | -1273 | -1273 | -1273 | -1273 | -1273 | -1273 |
| | | HR150 | -692 | -692 | -692 | -641 | -577 | -519 | -476 | -442 | -906 | -906 | -906 | -906 | -906 | -886 | -812 | -754 | -1118 | -1118 | -1118 | -1118 | -1118 | -1118 | -1118 | -1118 |
| | 120 | HR250 | -824 | -824 | -824 | -806 | -734 | -667 | -611 | -568 | -1078 | -1078 | -1078 | -1078 | -1078 | -1078 | -1043 | -969 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | -723 | -723 | -723 | -693 | -629 | -567 | -520 | -483 | -947 | -947 | -947 | -947 | -947 | -947 | -887 | -824 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 130 | HR250 | -896 | -896 | -896 | -896 | -847 | -785 | -722 | -670 | -1170 | -1170 | -1170 | -1170 | -1170 | -1170 | -1170 | -1140 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | -786 | -786 | -786 | -786 | -727 | -670 | -614 | -570 | -1028 | -1028 | -1028 | -1028 | -1028 | -1028 | -1028 | -970 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 140 | HR250 | -968 | -968 | -968 | -968 | -968 | -900 | -842 | -782 | -1263 | -1263 | -1263 | -1263 | -1263 | -1263 | -1263 | -1263 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | -850 | -850 | -850 | -850 | -832 | -772 | -716 | -665 | -1109 | -1109 | -1109 | -1109 | -1109 | -1109 | -1109 | -1109 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 150 | HR250 | -1039 | -1039 | -1039 | -1039 | -1039 | -1015 | -955 | -901 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | -913 | -913 | -913 | -913 | -913 | -872 | -819 | -766 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 2.11: Maximum Downforce (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 364 | 494 | 602 | 667 | 762 | 846 | 923 | 993 | 277 | 385 | 548 | 667 | 762 | 846 | 923 | 993 | 225 | 312 | 444 | 576 | 750 | 846 | 923 | 993 |
| | | HR150 | 319 | 440 | 516 | 568 | 648 | 720 | 785 | 845 | 243 | 338 | 481 | 568 | 648 | 720 | 785 | 845 | 197 | 274 | 390 | 505 | 648 | 720 | 785 | 845 |
| | 90 | HR250 | 342 | 475 | 602 | 667 | 762 | 846 | 923 | 993 | 262 | 364 | 517 | 667 | 762 | 846 | 923 | 993 | 212 | 294 | 419 | 543 | 708 | 846 | 923 | 993 |
| | | HR150 | 300 | 417 | 516 | 568 | 648 | 720 | 785 | 845 | 230 | 319 | 454 | 568 | 648 | 720 | 785 | 845 | 186 | 259 | 368 | 476 | 621 | 720 | 785 | 845 |
| | 100 | HR250 | 357 | 464 | 623 | 700 | 762 | 846 | 923 | 993 | 273 | 355 | 492 | 630 | 762 | 846 | 923 | 993 | 222 | 288 | 400 | 511 | 636 | 784 | 923 | 993 |
| | | HR150 | 313 | 407 | 535 | 595 | 648 | 720 | 785 | 845 | 240 | 312 | 432 | 553 | 648 | 720 | 785 | 845 | 195 | 253 | 351 | 449 | 558 | 689 | 785 | 845 |
| | 105 | HR250 | 371 | 464 | 635 | 711 | 764 | 846 | 923 | 993 | 283 | 355 | 486 | 616 | 747 | 846 | 923 | 993 | 230 | 288 | 394 | 501 | 607 | 746 | 888 | 993 |
| | | HR150 | 325 | 407 | 546 | 610 | 650 | 720 | 785 | 845 | 249 | 312 | 426 | 541 | 650 | 720 | 785 | 845 | 202 | 253 | 346 | 440 | 533 | 655 | 779 | 845 |
| ROOFS 0° TO 7° | 110 | HR250 | 381 | 463 | 626 | 722 | 782 | 846 | 923 | 993 | 293 | 356 | 480 | 605 | 729 | 846 | 923 | 993 | 237 | 289 | 390 | 491 | 592 | 712 | 846 | 981 |
| | | HR150 | 335 | 407 | 549 | 620 | 665 | 720 | 785 | 845 | 257 | 312 | 422 | 531 | 640 | 720 | 785 | 845 | 209 | 253 | 342 | 431 | 520 | 625 | 743 | 845 |
| | 115 | HR250 | 392 | 464 | 619 | 734 | 800 | 846 | 923 | 993 | 301 | 356 | 475 | 594 | 713 | 838 | 923 | 993 | 244 | 289 | 386 | 482 | 579 | 680 | 809 | 938 |
| | | HR150 | 344 | 407 | 543 | 630 | 680 | 720 | 785 | 845 | 264 | 312 | 417 | 521 | 626 | 720 | 785 | 845 | 215 | 254 | 339 | 424 | 509 | 598 | 711 | 824 |
| | 120 | HR250 | 402 | 464 | 612 | 745 | 810 | 856 | 923 | 993 | 308 | 356 | 470 | 583 | 697 | 811 | 923 | 993 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 353 | 407 | 537 | 639 | 694 | 728 | 785 | 845 | 271 | 312 | 412 | 512 | 612 | 713 | 785 | 845 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 130 | HR250 | 428 | 470 | 607 | 744 | 833 | 892 | 930 | 993 | 329 | 361 | 466 | 572 | 677 | 782 | 887 | 993 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 376 | 413 | 533 | 653 | 715 | 761 | 791 | 845 | 289 | 317 | 410 | 502 | 594 | 687 | 779 | 845 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 140 | HR250 | 450 | 476 | 603 | 730 | 856 | 913 | 965 | 999 | 346 | 366 | 463 | 561 | 658 | 756 | 853 | 951 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 395 | 418 | 529 | 640 | 735 | 784 | 821 | 850 | 304 | 321 | 407 | 493 | 578 | 664 | 749 | 835 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 150 | HR250 | 477 | 487 | 605 | 724 | 842 | 937 | 990 | 1037 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 419 | 428 | 532 | 635 | 739 | 805 | 849 | 882 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 2.12: Maximum Shear (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 8 | 37 | 57 | 70 | 80 | 89 | 97 | 104 | 6 | 29 | 52 | 70 | 80 | 89 | 97 | 104 | 5 | 24 | 42 | 60 | 79 | 89 | 97 | 104 |
| | | HR150 | 7 | 33 | 49 | 60 | 68 | 76 | 82 | 89 | 5 | 25 | 45 | 60 | 68 | 76 | 82 | 89 | 4 | 21 | 37 | 53 | 68 | 76 | 82 | 89 |
| | 90 | HR250 | 8 | 36 | 57 | 70 | 80 | 89 | 97 | 104 | 6 | 27 | 49 | 70 | 80 | 89 | 97 | 104 | 5 | 22 | 40 | 57 | 74 | 89 | 97 | 104 |
| | | HR150 | 7 | 31 | 49 | 60 | 68 | 76 | 82 | 89 | 5 | 24 | 43 | 60 | 68 | 76 | 82 | 89 | 4 | 19 | 35 | 50 | 65 | 76 | 82 | 89 |
| | 100 | HR250 | 7 | 32 | 55 | 70 | 80 | 89 | 97 | 104 | 5 | 25 | 44 | 63 | 80 | 89 | 97 | 104 | 4 | 20 | 36 | 51 | 67 | 82 | 97 | 104 |
| | | HR150 | 6 | 28 | 48 | 60 | 68 | 76 | 82 | 89 | 5 | 22 | 38 | 55 | 68 | 76 | 82 | 89 | 4 | 17 | 31 | 45 | 59 | 72 | 82 | 89 |
| | 105 | HR250 | 7 | 31 | 54 | 69 | 80 | 89 | 97 | 104 | 5 | 23 | 42 | 60 | 78 | 89 | 97 | 104 | 4 | 19 | 34 | 49 | 64 | 78 | 93 | 104 |
| | | HR150 | 6 | 27 | 47 | 59 | 68 | 76 | 82 | 89 | 4 | 20 | 37 | 53 | 68 | 76 | 82 | 89 | 4 | 17 | 30 | 43 | 56 | 69 | 82 | 89 |
| | 110 | HR250 | 6 | 29 | 52 | 68 | 80 | 89 | 97 | 104 | 5 | 22 | 40 | 57 | 75 | 89 | 97 | 104 | 4 | 18 | 32 | 46 | 61 | 75 | 89 | 103 |
| | | HR150 | 5 | 25 | 45 | 59 | 68 | 76 | 82 | 89 | 4 | 20 | 35 | 50 | 66 | 76 | 82 | 89 | 3 | 16 | 28 | 41 | 53 | 66 | 78 | 89 |
| | 115 | HR250 | 6 | 28 | 49 | 68 | 80 | 89 | 97 | 104 | 5 | 21 | 38 | 55 | 71 | 88 | 97 | 104 | 4 | 17 | 31 | 44 | 58 | 72 | 85 | 99 |
| | | HR150 | 5 | 24 | 43 | 58 | 68 | 76 | 82 | 89 | 4 | 19 | 33 | 48 | 63 | 76 | 82 | 89 | 3 | 15 | 27 | 39 | 51 | 63 | 75 | 87 |
| | 120 | HR250 | 6 | 27 | 47 | 67 | 79 | 89 | 97 | 104 | 4 | 20 | 36 | 52 | 68 | 84 | 97 | 104 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 5 | 23 | 42 | 57 | 68 | 76 | 82 | 89 | 4 | 18 | 32 | 46 | 60 | 74 | 82 | 89 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 130 | HR250 | 5 | 24 | 44 | 63 | 78 | 89 | 97 | 104 | 4 | 19 | 34 | 48 | 63 | 78 | 92 | 104 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 5 | 21 | 38 | 55 | 67 | 76 | 82 | 89 | 4 | 16 | 29 | 42 | 55 | 68 | 81 | 89 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 140 | HR250 | 5 | 23 | 40 | 58 | 76 | 87 | 97 | 104 | 4 | 17 | 31 | 45 | 58 | 72 | 86 | 99 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 4 | 20 | 35 | 51 | 65 | 75 | 82 | 89 | 3 | 15 | 27 | 39 | 51 | 63 | 75 | 87 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 150 | HR250 | 5 | 21 | 38 | 54 | 71 | 85 | 95 | 104 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 4 | 19 | 33 | 48 | 62 | 73 | 82 | 89 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

ROOFS 0° TO 7°

**Table 2.13: Maximum Span Length (in.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS >7° TO 27°** | **85** | HR250 | 107 | 89 | 71 | 59 | 52 | 47 | 43 | 40 | 100 | 89 | 71 | 59 | 52 | 47 | 43 | 40 | 82 | 82 | 71 | 59 | 52 | 47 | 43 | 40 |
| | | HR150 | 98 | 74 | 58 | 48 | 42 | 38 | 35 | 32 | 86 | 74 | 58 | 48 | 42 | 38 | 35 | 32 | 71 | 71 | 58 | 48 | 42 | 38 | 35 | 32 |
| | **90** | HR250 | 107 | 89 | 71 | 59 | 52 | 47 | 43 | 40 | 94 | 89 | 71 | 59 | 52 | 47 | 43 | 40 | 77 | 77 | 71 | 59 | 52 | 47 | 43 | 40 |
| | | HR150 | 98 | 74 | 58 | 48 | 42 | 38 | 35 | 32 | 82 | 74 | 58 | 48 | 42 | 38 | 35 | 32 | 67 | 67 | 58 | 48 | 42 | 38 | 35 | 32 |
| | **100** | HR250 | 106 | 89 | 71 | 59 | 52 | 47 | 43 | 40 | 84 | 84 | 71 | 59 | 52 | 47 | 43 | 40 | 69 | 69 | 69 | 59 | 52 | 47 | 43 | 40 |
| | | HR150 | 96 | 73 | 58 | 48 | 42 | 38 | 35 | 32 | 74 | 73 | 58 | 48 | 42 | 38 | 35 | 32 | 61 | 61 | 58 | 48 | 42 | 38 | 35 | 32 |
| | **105** | HR250 | 104 | 88 | 71 | 59 | 52 | 47 | 43 | 40 | 81 | 81 | 71 | 59 | 52 | 47 | 43 | 40 | 66 | 66 | 66 | 59 | 52 | 47 | 43 | 40 |
| | | HR150 | 92 | 72 | 58 | 48 | 42 | 38 | 35 | 32 | 70 | 70 | 58 | 48 | 42 | 38 | 35 | 32 | 58 | 58 | 58 | 48 | 42 | 38 | 35 | 32 |
| | **110** | HR250 | 102 | 86 | 71 | 59 | 52 | 47 | 43 | 40 | 77 | 77 | 71 | 59 | 52 | 47 | 43 | 40 | 63 | 63 | 63 | 59 | 52 | 47 | 43 | 40 |
| | | HR150 | 88 | 71 | 58 | 48 | 42 | 38 | 35 | 32 | 67 | 67 | 58 | 48 | 42 | 38 | 35 | 32 | 55 | 55 | 55 | 48 | 42 | 38 | 35 | 32 |
| | **115** | HR250 | 97 | 85 | 70 | 59 | 52 | 47 | 43 | 40 | 73 | 73 | 70 | 59 | 52 | 47 | 43 | 40 | 60 | 60 | 60 | 59 | 52 | 47 | 43 | 40 |
| | | HR150 | 84 | 70 | 58 | 48 | 42 | 38 | 35 | 32 | 64 | 64 | 58 | 48 | 42 | 38 | 35 | 32 | 53 | 53 | 53 | 48 | 42 | 38 | 35 | 32 |
| | **120** | HR250 | 93 | 84 | 69 | 59 | 52 | 47 | 43 | 40 | 70 | 70 | 69 | 59 | 52 | 47 | 43 | 40 | 58 | 58 | 58 | 58 | 52 | 47 | 43 | 40 |
| | | HR150 | 81 | 69 | 57 | 48 | 42 | 38 | 35 | 32 | 61 | 61 | 57 | 48 | 42 | 38 | 35 | 32 | 51 | 51 | 51 | 48 | 42 | 38 | 35 | 32 |
| | **130** | HR250 | 86 | 81 | 68 | 59 | 52 | 47 | 43 | 40 | 65 | 65 | 65 | 59 | 52 | 47 | 43 | 40 | 53 | 53 | 53 | 53 | 52 | 47 | 43 | 40 |
| | | HR150 | 75 | 68 | 56 | 48 | 42 | 38 | 35 | 32 | 57 | 57 | 56 | 48 | 42 | 38 | 35 | 32 | 47 | 47 | 47 | 47 | 42 | 38 | 35 | 32 |
| | **140** | HR250 | 80 | 78 | 66 | 58 | 52 | 47 | 43 | 40 | 60 | 60 | 60 | 58 | 52 | 47 | 43 | 40 | 50 | 50 | 50 | 50 | 50 | 47 | 43 | 40 |
| | | HR150 | 69 | 66 | 55 | 48 | 42 | 38 | 35 | 32 | 53 | 53 | 53 | 48 | 42 | 38 | 35 | 32 | 43 | 43 | 43 | 43 | 42 | 38 | 35 | 32 |
| | **150** | HR250 | 74 | 74 | 65 | 57 | 52 | 47 | 43 | 40 | 56 | 56 | 56 | 56 | 52 | 47 | 43 | 40 | 46 | 46 | 46 | 46 | 46 | 46 | 43 | 40 |
| | | HR150 | 65 | 64 | 54 | 47 | 42 | 38 | 35 | 32 | 49 | 49 | 49 | 47 | 42 | 38 | 35 | 32 | 41 | 41 | 41 | 41 | 41 | 38 | 35 | 32 |

**Table 2.14: Maximum Uplift (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS >7° TO 27°** | **85** | HR250 | -317 | -265 | -211 | -176 | -154 | -139 | -127 | -118 | -544 | -488 | -390 | -325 | -284 | -256 | -235 | -218 | -678 | -678 | -591 | -492 | -431 | -388 | -356 | -330 |
| | | HR150 | -292 | -219 | -170 | -142 | -124 | -112 | -103 | -95 | -472 | -403 | -314 | -262 | -229 | -206 | -189 | -176 | -591 | -591 | -477 | -397 | -348 | -313 | -287 | -266 |
| | **90** | HR250 | -360 | -300 | -240 | -200 | -175 | -157 | -144 | -134 | -581 | -552 | -441 | -367 | -321 | -289 | -265 | -246 | -722 | -722 | -666 | -555 | -486 | -437 | -401 | -372 |
| | | HR150 | -331 | -248 | -193 | -161 | -141 | -127 | -116 | -108 | -505 | -456 | -355 | -296 | -259 | -233 | -214 | -199 | -629 | -629 | -537 | -448 | -392 | -353 | -323 | -300 |
| | **100** | HR250 | -454 | -379 | -305 | -254 | -222 | -200 | -183 | -170 | -654 | -654 | -552 | -460 | -403 | -363 | -332 | -309 | -809 | -809 | -809 | -692 | -606 | -545 | -500 | -464 |
| | | HR150 | -412 | -314 | -246 | -205 | -179 | -161 | -148 | -137 | -570 | -568 | -445 | -371 | -325 | -293 | -268 | -249 | -707 | -707 | -670 | -558 | -489 | -440 | -403 | -374 |
| | **105** | HR250 | -496 | -416 | -339 | -283 | -247 | -223 | -204 | -190 | -690 | -690 | -611 | -509 | -446 | -401 | -368 | -342 | -852 | -852 | -852 | -765 | -669 | -603 | -552 | -513 |
| | | HR150 | -437 | -345 | -274 | -228 | -200 | -180 | -165 | -153 | -601 | -601 | -493 | -411 | -360 | -324 | -297 | -276 | -745 | -745 | -740 | -617 | -540 | -486 | -446 | -414 |
| | **110** | HR250 | -532 | -452 | -371 | -311 | -273 | -245 | -225 | -209 | -726 | -726 | -670 | -562 | -492 | -443 | -406 | -377 | -896 | -896 | -896 | -843 | -737 | -664 | -609 | -565 |
| | | HR150 | -461 | -375 | -301 | -251 | -220 | -198 | -181 | -169 | -633 | -633 | -544 | -453 | -397 | -357 | -327 | -304 | -783 | -783 | -783 | -680 | -595 | -535 | -491 | -456 |
| | **115** | HR250 | -561 | -490 | -405 | -344 | -301 | -271 | -248 | -230 | -762 | -762 | -726 | -616 | -539 | -485 | -445 | -413 | -938 | -938 | -938 | -922 | -807 | -727 | -666 | -619 |
| | | HR150 | -487 | -407 | -332 | -277 | -243 | -218 | -200 | -186 | -665 | -665 | -596 | -497 | -435 | -391 | -359 | -333 | -820 | -820 | -820 | -744 | -651 | -586 | -537 | -499 |
| | **120** | HR250 | -588 | -528 | -438 | -376 | -329 | -296 | -271 | -252 | -798 | -798 | -785 | -673 | -589 | -531 | -486 | -452 | -981 | -981 | -981 | -981 | -881 | -793 | -727 | -675 |
| | | HR150 | -511 | -439 | -361 | -303 | -265 | -239 | -219 | -203 | -697 | -697 | -647 | -543 | -475 | -428 | -392 | -364 | -859 | -859 | -859 | -812 | -711 | -640 | -587 | -545 |
| | **130** | HR250 | -643 | -606 | -508 | -445 | -389 | -351 | -321 | -299 | -868 | -868 | -868 | -793 | -695 | -625 | -573 | -532 | -1067 | -1067 | -1067 | -1067 | -1038 | -934 | -857 | -796 |
| | | HR150 | -560 | -506 | -419 | -359 | -314 | -283 | -259 | -241 | -759 | -759 | -748 | -640 | -560 | -504 | -462 | -429 | -934 | -934 | -934 | -934 | -837 | -754 | -691 | -642 |
| | **140** | HR250 | -698 | -687 | -581 | -512 | -456 | -411 | -376 | -350 | -940 | -940 | -940 | -910 | -810 | -729 | -669 | -621 | -1153 | -1153 | -1153 | -1153 | -1153 | -1088 | -997 | -926 |
| | | HR150 | -609 | -575 | -481 | -420 | -368 | -331 | -304 | -282 | -822 | -822 | -822 | -746 | -653 | -588 | -539 | -501 | -1010 | -1010 | -1010 | -1010 | -975 | -877 | -804 | -747 |
| | **150** | HR250 | -752 | -752 | -654 | -580 | -526 | -473 | -434 | -403 | -1010 | -1010 | -1010 | -1010 | -933 | -840 | -770 | -715 | -1238 | -1238 | -1238 | -1238 | -1238 | -1238 | -1148 | -1066 |
| | | HR150 | -656 | -643 | -543 | -478 | -424 | -382 | -350 | -325 | -884 | -884 | -884 | -849 | -752 | -677 | -621 | -577 | -1085 | -1085 | -1085 | -1085 | -1085 | -1010 | -926 | -860 |

**Table 2.15: Maximum Downforce (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| B | 85 | HR250 | 381 | 427 | 479 | 514 | 574 | 637 | 695 | 748 | 354 | 427 | 479 | 514 | 574 | 637 | 695 | 748 | 291 | 391 | 479 | 514 | 574 | 637 | 695 | 748 |
| | | HR150 | 350 | 353 | 386 | 415 | 463 | 514 | 561 | 604 | 307 | 353 | 386 | 415 | 463 | 514 | 561 | 604 | 253 | 341 | 386 | 415 | 463 | 514 | 561 | 604 |
| | 90 | HR250 | 381 | 427 | 479 | 514 | 574 | 637 | 695 | 748 | 334 | 427 | 479 | 514 | 574 | 637 | 695 | 748 | 275 | 369 | 479 | 514 | 574 | 637 | 695 | 748 |
| | | HR150 | 350 | 353 | 386 | 415 | 463 | 514 | 561 | 604 | 290 | 353 | 386 | 415 | 463 | 514 | 561 | 604 | 240 | 322 | 386 | 415 | 463 | 514 | 561 | 604 |
| | 100 | HR250 | 390 | 432 | 485 | 519 | 574 | 637 | 695 | 748 | 310 | 411 | 485 | 519 | 574 | 637 | 695 | 748 | 255 | 338 | 472 | 519 | 574 | 637 | 695 | 748 |
| | | HR150 | 354 | 357 | 391 | 419 | 463 | 514 | 561 | 604 | 270 | 357 | 391 | 419 | 463 | 514 | 561 | 604 | 223 | 295 | 391 | 419 | 463 | 514 | 561 | 604 |
| ROOFS >7° TO 27° | 105 | HR250 | 412 | 445 | 500 | 532 | 574 | 637 | 695 | 748 | 318 | 409 | 500 | 532 | 574 | 637 | 695 | 748 | 262 | 336 | 464 | 532 | 574 | 637 | 695 | 748 |
| | | HR150 | 364 | 368 | 403 | 429 | 463 | 514 | 561 | 604 | 277 | 356 | 403 | 429 | 463 | 514 | 561 | 604 | 229 | 294 | 403 | 429 | 463 | 514 | 561 | 604 |
| | 110 | HR250 | 433 | 458 | 513 | 546 | 578 | 637 | 695 | 748 | 328 | 408 | 513 | 546 | 578 | 637 | 695 | 748 | 270 | 336 | 458 | 546 | 578 | 637 | 695 | 748 |
| | | HR150 | 376 | 380 | 417 | 440 | 466 | 514 | 561 | 604 | 286 | 356 | 417 | 440 | 466 | 514 | 561 | 604 | 236 | 293 | 400 | 440 | 466 | 514 | 561 | 604 |
| | 115 | HR250 | 447 | 473 | 526 | 561 | 592 | 637 | 695 | 748 | 339 | 409 | 526 | 561 | 592 | 637 | 695 | 748 | 279 | 337 | 454 | 561 | 592 | 637 | 695 | 748 |
| | | HR150 | 388 | 393 | 432 | 452 | 477 | 514 | 561 | 604 | 296 | 357 | 432 | 452 | 477 | 514 | 561 | 604 | 244 | 294 | 397 | 452 | 477 | 514 | 561 | 604 |
| | 120 | HR250 | 460 | 487 | 538 | 576 | 605 | 637 | 695 | 748 | 349 | 410 | 538 | 576 | 605 | 637 | 695 | 748 | 287 | 337 | 449 | 562 | 605 | 637 | 695 | 748 |
| | | HR150 | 400 | 405 | 443 | 465 | 488 | 514 | 561 | 604 | 304 | 358 | 443 | 465 | 488 | 514 | 561 | 604 | 251 | 295 | 393 | 465 | 488 | 514 | 561 | 604 |
| | 130 | HR250 | 489 | 516 | 564 | 609 | 634 | 661 | 695 | 748 | 370 | 415 | 541 | 609 | 634 | 661 | 695 | 748 | 304 | 341 | 444 | 548 | 634 | 661 | 695 | 748 |
| | | HR150 | 425 | 431 | 466 | 491 | 511 | 533 | 561 | 604 | 323 | 363 | 466 | 491 | 511 | 533 | 561 | 604 | 266 | 299 | 389 | 480 | 511 | 533 | 561 | 604 |
| | 140 | HR250 | 517 | 546 | 590 | 634 | 665 | 689 | 715 | 748 | 392 | 421 | 538 | 634 | 665 | 689 | 715 | 748 | 322 | 346 | 442 | 538 | 634 | 689 | 715 | 748 |
| | | HR150 | 450 | 458 | 489 | 520 | 536 | 556 | 577 | 604 | 342 | 368 | 470 | 520 | 536 | 556 | 577 | 604 | 282 | 303 | 387 | 472 | 536 | 556 | 577 | 604 |
| | 150 | HR250 | 546 | 567 | 618 | 659 | 698 | 719 | 742 | 767 | 414 | 429 | 538 | 647 | 698 | 719 | 742 | 767 | 340 | 353 | 442 | 532 | 622 | 711 | 742 | 767 |
| | | HR150 | 477 | 485 | 513 | 544 | 563 | 580 | 599 | 618 | 362 | 376 | 471 | 544 | 563 | 580 | 599 | 618 | 298 | 309 | 388 | 466 | 545 | 580 | 599 | 618 |

**Table 2.16: Maximum Shear (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| B | 85 | HR250 | 35 | 137 | 195 | 234 | 268 | 297 | 324 | 349 | 33 | 137 | 195 | 234 | 268 | 297 | 324 | 349 | 27 | 125 | 195 | 234 | 268 | 297 | 324 | 349 |
| | | HR150 | 33 | 113 | 157 | 189 | 216 | 240 | 261 | 281 | 29 | 113 | 157 | 189 | 216 | 240 | 261 | 281 | 24 | 109 | 157 | 189 | 216 | 240 | 261 | 281 |
| | 90 | HR250 | 35 | 137 | 195 | 234 | 268 | 297 | 324 | 349 | 31 | 137 | 195 | 234 | 268 | 297 | 324 | 349 | 26 | 119 | 195 | 234 | 268 | 297 | 324 | 349 |
| | | HR150 | 33 | 113 | 157 | 189 | 216 | 240 | 261 | 281 | 27 | 113 | 157 | 189 | 216 | 240 | 261 | 281 | 22 | 103 | 157 | 189 | 216 | 240 | 261 | 281 |
| | 100 | HR250 | 35 | 136 | 195 | 234 | 268 | 297 | 324 | 349 | 28 | 130 | 195 | 234 | 268 | 297 | 324 | 349 | 23 | 107 | 190 | 234 | 268 | 297 | 324 | 349 |
| | | HR150 | 32 | 113 | 157 | 189 | 216 | 240 | 261 | 281 | 24 | 113 | 157 | 189 | 216 | 240 | 261 | 281 | 20 | 93 | 157 | 189 | 216 | 240 | 261 | 281 |
| | 105 | HR250 | 34 | 134 | 195 | 234 | 268 | 297 | 324 | 349 | 27 | 123 | 195 | 234 | 268 | 297 | 324 | 349 | 22 | 102 | 181 | 234 | 268 | 297 | 324 | 349 |
| | | HR150 | 30 | 111 | 157 | 189 | 216 | 240 | 261 | 281 | 23 | 108 | 157 | 189 | 216 | 240 | 261 | 281 | 19 | 89 | 157 | 189 | 216 | 240 | 261 | 281 |
| | 110 | HR250 | 34 | 132 | 194 | 234 | 268 | 297 | 324 | 349 | 25 | 118 | 194 | 234 | 268 | 297 | 324 | 349 | 21 | 97 | 173 | 234 | 268 | 297 | 324 | 349 |
| | | HR150 | 29 | 110 | 157 | 189 | 216 | 240 | 261 | 281 | 22 | 103 | 157 | 189 | 216 | 240 | 261 | 281 | 18 | 85 | 151 | 189 | 216 | 240 | 261 | 281 |
| | 115 | HR250 | 32 | 130 | 192 | 234 | 268 | 297 | 324 | 349 | 24 | 113 | 192 | 234 | 268 | 297 | 324 | 349 | 20 | 93 | 165 | 234 | 268 | 297 | 324 | 349 |
| | | HR150 | 28 | 108 | 157 | 189 | 216 | 240 | 261 | 281 | 21 | 98 | 157 | 189 | 216 | 240 | 261 | 281 | 17 | 81 | 145 | 189 | 216 | 240 | 261 | 281 |
| | 120 | HR250 | 31 | 128 | 190 | 234 | 268 | 297 | 324 | 349 | 23 | 108 | 190 | 234 | 268 | 297 | 324 | 349 | 19 | 89 | 159 | 228 | 268 | 297 | 324 | 349 |
| | | HR150 | 27 | 107 | 156 | 189 | 216 | 240 | 261 | 281 | 20 | 94 | 156 | 189 | 216 | 240 | 261 | 281 | 17 | 78 | 139 | 189 | 216 | 240 | 261 | 281 |
| | 130 | HR250 | 28 | 124 | 185 | 234 | 268 | 297 | 324 | 349 | 22 | 100 | 178 | 234 | 268 | 297 | 324 | 349 | 18 | 82 | 146 | 211 | 268 | 297 | 324 | 349 |
| | | HR150 | 25 | 104 | 153 | 189 | 216 | 240 | 261 | 281 | 19 | 87 | 153 | 189 | 216 | 240 | 261 | 281 | 15 | 72 | 128 | 184 | 216 | 240 | 261 | 281 |
| | 140 | HR250 | 26 | 120 | 181 | 230 | 268 | 297 | 324 | 349 | 20 | 93 | 165 | 230 | 268 | 297 | 324 | 349 | 16 | 76 | 136 | 195 | 255 | 297 | 324 | 349 |
| | | HR150 | 23 | 101 | 150 | 189 | 216 | 240 | 261 | 281 | 17 | 81 | 144 | 189 | 216 | 240 | 261 | 281 | 14 | 67 | 119 | 171 | 216 | 240 | 261 | 281 |
| | 150 | HR250 | 25 | 114 | 177 | 226 | 268 | 297 | 324 | 349 | 19 | 86 | 154 | 222 | 268 | 297 | 324 | 349 | 15 | 71 | 127 | 182 | 238 | 294 | 324 | 349 |
| | | HR150 | 21 | 98 | 147 | 187 | 216 | 240 | 261 | 281 | 16 | 76 | 135 | 187 | 216 | 240 | 261 | 281 | 13 | 62 | 111 | 160 | 209 | 240 | 261 | 281 |

ROOFS >7° TO 27°

**Table 2.17: Maximum Span Length (in.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **C** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| **ROOFS >7° TO 27°** | **85** | HR250 | 106 | 89 | 71 | 59 | 52 | 47 | 43 | 40 | 84 | 84 | 71 | 59 | 52 | 47 | 43 | 40 | 69 | 69 | 69 | 59 | 52 | 47 | 43 | 40 |
| | | HR150 | 96 | 73 | 58 | 48 | 42 | 38 | 35 | 32 | 73 | 73 | 58 | 48 | 42 | 38 | 35 | 32 | 60 | 60 | 58 | 48 | 42 | 38 | 35 | 32 |
| | **90** | HR250 | 104 | 87 | 71 | 59 | 52 | 47 | 43 | 40 | 79 | 79 | 71 | 59 | 52 | 47 | 43 | 40 | 65 | 65 | 65 | 59 | 52 | 47 | 43 | 40 |
| | | HR150 | 91 | 72 | 58 | 48 | 42 | 38 | 35 | 32 | 69 | 69 | 58 | 48 | 42 | 38 | 35 | 32 | 57 | 57 | 57 | 48 | 42 | 38 | 35 | 32 |
| | **100** | HR250 | 94 | 84 | 70 | 59 | 52 | 47 | 43 | 40 | 71 | 71 | 70 | 59 | 52 | 47 | 43 | 40 | 59 | 59 | 59 | 59 | 52 | 47 | 43 | 40 |
| | | HR150 | 82 | 70 | 57 | 48 | 42 | 38 | 35 | 32 | 62 | 62 | 57 | 48 | 42 | 38 | 35 | 32 | 51 | 51 | 51 | 48 | 42 | 38 | 35 | 32 |
| | **105** | HR250 | 90 | 82 | 69 | 59 | 52 | 47 | 43 | 40 | 68 | 68 | 68 | 59 | 52 | 47 | 43 | 40 | 56 | 56 | 56 | 56 | 52 | 47 | 43 | 40 |
| | | HR150 | 78 | 69 | 57 | 48 | 42 | 38 | 35 | 32 | 59 | 59 | 57 | 48 | 42 | 38 | 35 | 32 | 49 | 49 | 49 | 48 | 42 | 38 | 35 | 32 |
| | **110** | HR250 | 86 | 81 | 68 | 59 | 52 | 47 | 43 | 40 | 65 | 65 | 65 | 59 | 52 | 47 | 43 | 40 | 53 | 53 | 53 | 53 | 52 | 47 | 43 | 40 |
| | | HR150 | 75 | 68 | 56 | 48 | 42 | 38 | 35 | 32 | 57 | 57 | 56 | 48 | 42 | 38 | 35 | 32 | 47 | 47 | 47 | 47 | 42 | 38 | 35 | 32 |
| | **115** | HR250 | 82 | 79 | 67 | 59 | 52 | 47 | 43 | 40 | 62 | 62 | 62 | 59 | 52 | 47 | 43 | 40 | 51 | 51 | 51 | 51 | 51 | 47 | 43 | 40 |
| | | HR150 | 71 | 66 | 55 | 48 | 42 | 38 | 35 | 32 | 54 | 54 | 54 | 48 | 42 | 38 | 35 | 32 | 45 | 45 | 45 | 45 | 42 | 38 | 35 | 32 |
| | **120** | HR250 | 79 | 78 | 66 | 58 | 52 | 47 | 43 | 40 | 59 | 59 | 59 | 58 | 52 | 47 | 43 | 40 | 49 | 49 | 49 | 49 | 49 | 47 | 43 | 40 |
| | | HR150 | 68 | 65 | 55 | 48 | 42 | 38 | 35 | 32 | 52 | 52 | 52 | 48 | 42 | 38 | 35 | 32 | 43 | 43 | 43 | 43 | 42 | 38 | 35 | 32 |
| | **130** | HR250 | 73 | 73 | 64 | 57 | 52 | 47 | 43 | 40 | 55 | 55 | 55 | 55 | 52 | 47 | 43 | 40 | 45 | 45 | 45 | 45 | 45 | 45 | 43 | 40 |
| | | HR150 | 63 | 63 | 53 | 47 | 42 | 38 | 35 | 32 | 48 | 48 | 48 | 47 | 42 | 38 | 35 | 32 | 40 | 40 | 40 | 40 | 40 | 38 | 35 | 32 |
| | **140** | HR250 | 67 | 67 | 62 | 56 | 51 | 47 | 43 | 40 | 51 | 51 | 51 | 51 | 51 | 47 | 43 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 59 | 59 | 52 | 46 | 42 | 38 | 35 | 32 | 45 | 45 | 45 | 45 | 42 | 38 | 35 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | **150** | HR250 | 63 | 63 | 60 | 54 | 50 | 46 | 43 | 40 | 48 | 48 | 48 | 48 | 48 | 46 | 43 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 55 | 55 | 51 | 45 | 41 | 38 | 35 | 32 | 42 | 42 | 42 | 42 | 41 | 38 | 35 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 2.18: Maximum Uplift (lb.) - Wind Exposure C Condition**

| Exposure C | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >7° TO 27° | 85 | HR250 | -458 | -383 | -308 | -257 | -225 | -202 | -185 | -172 | -658 | -658 | -558 | -465 | -407 | -366 | -336 | -312 | -814 | -814 | -814 | -699 | -612 | -551 | -505 | -469 |
| | | HR150 | -414 | -316 | -248 | -207 | -181 | -163 | -149 | -139 | -573 | -573 | -450 | -375 | -328 | -296 | -271 | -252 | -711 | -711 | -677 | -564 | -494 | -445 | -408 | -379 |
| | 90 | HR250 | -505 | -425 | -348 | -290 | -254 | -228 | -209 | -194 | -700 | -700 | -629 | -524 | -459 | -413 | -379 | -352 | -865 | -865 | -865 | -787 | -689 | -620 | -569 | -528 |
| | | HR150 | -443 | -352 | -280 | -234 | -205 | -184 | -169 | -157 | -611 | -611 | -507 | -423 | -370 | -333 | -305 | -284 | -756 | -756 | -756 | -635 | -556 | -500 | -459 | -426 |
| | 100 | HR250 | -579 | -516 | -428 | -365 | -320 | -288 | -264 | -245 | -786 | -786 | -766 | -654 | -573 | -516 | -473 | -439 | -967 | -967 | -967 | -967 | -857 | -771 | -707 | -657 |
| | | HR150 | -503 | -429 | -352 | -295 | -258 | -232 | -213 | -198 | -686 | -686 | -631 | -528 | -462 | -416 | -381 | -354 | -846 | -846 | -846 | -790 | -691 | -622 | -570 | -530 |
| | 105 | HR250 | -612 | -563 | -469 | -406 | -355 | -320 | -293 | -272 | -828 | -828 | -828 | -723 | -633 | -570 | -522 | -485 | -1017 | -1017 | -1017 | -1017 | -946 | -852 | -781 | -725 |
| | | HR150 | -533 | -469 | -387 | -327 | -286 | -258 | -236 | -220 | -723 | -723 | -689 | -583 | -511 | -460 | -421 | -391 | -891 | -891 | -891 | -872 | -763 | -687 | -630 | -585 |
| | 110 | HR250 | -644 | -607 | -509 | -446 | -390 | -351 | -322 | -299 | -870 | -870 | -870 | -797 | -697 | -628 | -575 | -534 | -1068 | -1068 | -1068 | -1068 | -1041 | -937 | -859 | -798 |
| | | HR150 | -560 | -507 | -420 | -360 | -315 | -283 | -260 | -241 | -760 | -760 | -750 | -642 | -562 | -506 | -464 | -431 | -936 | -936 | -936 | -936 | -840 | -756 | -693 | -644 |
| | 115 | HR250 | -677 | -655 | -552 | -486 | -430 | -387 | -355 | -329 | -912 | -912 | -912 | -864 | -764 | -687 | -630 | -585 | -1118 | -1118 | -1118 | -1118 | -1118 | -1025 | -940 | -873 |
| | | HR150 | -590 | -548 | -457 | -396 | -347 | -312 | -286 | -266 | -797 | -797 | -797 | -704 | -616 | -554 | -508 | -472 | -980 | -980 | -980 | -980 | -918 | -827 | -758 | -704 |
| | 120 | HR250 | -709 | -702 | -595 | -525 | -469 | -422 | -387 | -360 | -954 | -954 | -954 | -934 | -834 | -751 | -688 | -639 | -1169 | -1169 | -1169 | -1169 | -1169 | -1118 | -1025 | -952 |
| | | HR150 | -618 | -588 | -493 | -432 | -378 | -341 | -312 | -290 | -835 | -835 | -835 | -769 | -673 | -606 | -555 | -516 | -1024 | -1024 | -1024 | -1024 | -1002 | -902 | -827 | -768 |
| | 130 | HR250 | -773 | -773 | -683 | -607 | -552 | -499 | -457 | -425 | -1037 | -1037 | -1037 | -1037 | -977 | -883 | -810 | -752 | -1270 | -1270 | -1270 | -1270 | -1270 | -1270 | -1207 | -1121 |
| | | HR150 | -675 | -670 | -568 | -501 | -447 | -402 | -369 | -343 | -907 | -907 | -907 | -887 | -791 | -712 | -653 | -607 | -1113 | -1113 | -1113 | -1113 | -1113 | -1062 | -973 | -904 |
| | 140 | HR250 | -837 | -837 | -775 | -693 | -632 | -583 | -534 | -496 | -1120 | -1120 | -1120 | -1120 | -1116 | -1029 | -943 | -876 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | -732 | -732 | -646 | -574 | -521 | -470 | -431 | -400 | -981 | -981 | -981 | -981 | -920 | -830 | -761 | -707 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 150 | HR250 | -900 | -900 | -866 | -779 | -713 | -662 | -615 | -571 | -1203 | -1203 | -1203 | -1203 | -1203 | -1169 | -1085 | -1008 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | -787 | -787 | -724 | -647 | -589 | -541 | -496 | -461 | -1054 | -1054 | -1054 | -1054 | -1041 | -955 | -875 | -813 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 2.19: Maximum Downforce (lb.) - Wind Exposure C Condition**

| Exposure C | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >7° TO 27° | 85 | HR250 | 392 | 433 | 486 | 520 | 574 | 637 | 695 | 748 | 311 | 411 | 486 | 520 | 574 | 637 | 695 | 748 | 256 | 338 | 472 | 520 | 574 | 637 | 695 | 748 |
| | | HR150 | 355 | 358 | 392 | 420 | 463 | 514 | 561 | 604 | 271 | 358 | 392 | 420 | 463 | 514 | 561 | 604 | 223 | 295 | 392 | 420 | 463 | 514 | 561 | 604 |
| | 90 | HR250 | 420 | 449 | 506 | 536 | 574 | 637 | 695 | 748 | 322 | 409 | 506 | 536 | 574 | 637 | 695 | 748 | 265 | 337 | 463 | 536 | 574 | 637 | 695 | 748 |
| | | HR150 | 369 | 372 | 408 | 433 | 463 | 514 | 561 | 604 | 281 | 357 | 408 | 433 | 463 | 514 | 561 | 604 | 231 | 294 | 405 | 433 | 463 | 514 | 561 | 604 |
| | 100 | HR250 | 457 | 483 | 534 | 572 | 601 | 637 | 695 | 748 | 347 | 411 | 534 | 572 | 601 | 637 | 695 | 748 | 285 | 338 | 451 | 565 | 601 | 637 | 695 | 748 |
| | | HR150 | 397 | 401 | 440 | 461 | 485 | 514 | 561 | 604 | 303 | 359 | 440 | 461 | 485 | 514 | 561 | 604 | 249 | 296 | 395 | 461 | 485 | 514 | 561 | 604 |
| | 105 | HR250 | 471 | 499 | 548 | 590 | 617 | 646 | 695 | 748 | 357 | 412 | 543 | 590 | 617 | 646 | 695 | 748 | 294 | 339 | 447 | 555 | 617 | 646 | 695 | 748 |
| | | HR150 | 410 | 416 | 452 | 476 | 497 | 521 | 561 | 604 | 312 | 360 | 452 | 476 | 497 | 521 | 561 | 604 | 257 | 296 | 391 | 476 | 497 | 521 | 561 | 604 |
| | 110 | HR250 | 488 | 516 | 564 | 609 | 634 | 661 | 695 | 748 | 369 | 414 | 540 | 609 | 634 | 661 | 695 | 748 | 304 | 341 | 444 | 547 | 634 | 661 | 695 | 748 |
| | | HR150 | 425 | 431 | 466 | 491 | 511 | 533 | 561 | 604 | 323 | 362 | 466 | 491 | 511 | 533 | 561 | 604 | 266 | 298 | 389 | 479 | 511 | 533 | 561 | 604 |
| | 115 | HR250 | 505 | 534 | 580 | 624 | 652 | 678 | 705 | 748 | 383 | 419 | 539 | 624 | 652 | 678 | 705 | 748 | 315 | 344 | 443 | 542 | 641 | 678 | 705 | 748 |
| | | HR150 | 440 | 447 | 480 | 509 | 526 | 547 | 568 | 604 | 335 | 366 | 471 | 509 | 526 | 547 | 568 | 604 | 276 | 302 | 388 | 475 | 526 | 547 | 568 | 604 |
| | 120 | HR250 | 522 | 552 | 596 | 639 | 671 | 695 | 720 | 748 | 395 | 422 | 537 | 639 | 671 | 695 | 720 | 748 | 325 | 347 | 442 | 537 | 631 | 695 | 720 | 748 |
| | | HR150 | 455 | 463 | 494 | 526 | 541 | 560 | 581 | 604 | 346 | 369 | 470 | 526 | 541 | 560 | 581 | 604 | 285 | 304 | 387 | 470 | 541 | 560 | 581 | 604 |
| | 130 | HR250 | 557 | 571 | 629 | 669 | 708 | 731 | 753 | 777 | 422 | 433 | 539 | 645 | 708 | 731 | 753 | 777 | 347 | 356 | 443 | 531 | 618 | 705 | 753 | 777 |
| | | HR150 | 486 | 496 | 523 | 552 | 574 | 590 | 608 | 627 | 370 | 379 | 472 | 552 | 574 | 590 | 608 | 627 | 304 | 312 | 388 | 465 | 542 | 590 | 608 | 627 |
| | 140 | HR250 | 592 | 592 | 663 | 700 | 737 | 770 | 789 | 810 | 449 | 449 | 543 | 642 | 737 | 770 | 789 | 810 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 517 | 517 | 553 | 580 | 608 | 621 | 637 | 654 | 393 | 393 | 476 | 562 | 608 | 621 | 637 | 654 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 150 | HR250 | 628 | 628 | 698 | 733 | 768 | 802 | 828 | 846 | 476 | 476 | 549 | 641 | 734 | 802 | 828 | 846 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 549 | 549 | 584 | 609 | 634 | 655 | 668 | 682 | 417 | 417 | 481 | 562 | 634 | 655 | 668 | 682 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 2.20: Maximum Shear (lb.) - Wind Exposure C Condition**

| Exposure C | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >7° TO 27° | 85 | HR250 | 35 | 136 | 195 | 234 | 268 | 297 | 324 | 349 | 28 | 129 | 195 | 234 | 268 | 297 | 324 | 349 | 23 | 106 | 189 | 234 | 268 | 297 | 324 | 349 |
| | | HR150 | 32 | 112 | 157 | 189 | 216 | 240 | 261 | 281 | 24 | 112 | 157 | 189 | 216 | 240 | 261 | 281 | 20 | 93 | 157 | 189 | 216 | 240 | 261 | 281 |
| | 90 | HR250 | 34 | 134 | 195 | 234 | 268 | 297 | 324 | 349 | 26 | 122 | 195 | 234 | 268 | 297 | 324 | 349 | 22 | 100 | 179 | 234 | 268 | 297 | 324 | 349 |
| | | HR150 | 30 | 111 | 157 | 189 | 216 | 240 | 261 | 281 | 23 | 106 | 157 | 189 | 216 | 240 | 261 | 281 | 19 | 88 | 156 | 189 | 216 | 240 | 261 | 281 |
| | 100 | HR250 | 31 | 129 | 190 | 234 | 268 | 297 | 324 | 349 | 24 | 109 | 190 | 234 | 268 | 297 | 324 | 349 | 19 | 90 | 161 | 231 | 268 | 297 | 324 | 349 |
| | | HR150 | 27 | 107 | 157 | 189 | 216 | 240 | 261 | 281 | 21 | 96 | 157 | 189 | 216 | 240 | 261 | 281 | 17 | 79 | 141 | 189 | 216 | 240 | 261 | 281 |
| | 105 | HR250 | 30 | 126 | 188 | 234 | 268 | 297 | 324 | 349 | 22 | 104 | 186 | 234 | 268 | 297 | 324 | 349 | 18 | 86 | 153 | 220 | 268 | 297 | 324 | 349 |
| | | HR150 | 26 | 105 | 155 | 189 | 216 | 240 | 261 | 281 | 20 | 91 | 155 | 189 | 216 | 240 | 261 | 281 | 16 | 75 | 134 | 189 | 216 | 240 | 261 | 281 |
| | 110 | HR250 | 28 | 124 | 185 | 234 | 268 | 297 | 324 | 349 | 21 | 100 | 178 | 234 | 268 | 297 | 324 | 349 | 18 | 82 | 146 | 210 | 268 | 297 | 324 | 349 |
| | | HR150 | 25 | 104 | 153 | 189 | 216 | 240 | 261 | 281 | 19 | 87 | 153 | 189 | 216 | 240 | 261 | 281 | 15 | 72 | 128 | 184 | 216 | 240 | 261 | 281 |
| | 115 | HR250 | 27 | 122 | 183 | 232 | 268 | 297 | 324 | 349 | 21 | 95 | 170 | 232 | 268 | 297 | 324 | 349 | 17 | 78 | 140 | 201 | 263 | 297 | 324 | 349 |
| | | HR150 | 24 | 102 | 151 | 189 | 216 | 240 | 261 | 281 | 18 | 83 | 149 | 189 | 216 | 240 | 261 | 281 | 15 | 69 | 122 | 176 | 216 | 240 | 261 | 281 |
| | 120 | HR250 | 26 | 119 | 180 | 229 | 268 | 297 | 324 | 349 | 20 | 91 | 163 | 229 | 268 | 297 | 324 | 349 | 16 | 75 | 134 | 193 | 252 | 297 | 324 | 349 |
| | | HR150 | 23 | 100 | 150 | 189 | 216 | 240 | 261 | 281 | 17 | 80 | 142 | 189 | 216 | 240 | 261 | 281 | 14 | 66 | 117 | 169 | 216 | 240 | 261 | 281 |
| | 130 | HR250 | 24 | 111 | 175 | 224 | 266 | 297 | 324 | 349 | 18 | 84 | 150 | 216 | 266 | 297 | 324 | 349 | 15 | 69 | 124 | 178 | 232 | 287 | 324 | 349 |
| | | HR150 | 21 | 97 | 146 | 185 | 216 | 240 | 261 | 281 | 16 | 74 | 132 | 185 | 216 | 240 | 261 | 281 | 13 | 61 | 108 | 156 | 204 | 240 | 261 | 281 |
| | 140 | HR250 | 22 | 103 | 170 | 219 | 261 | 297 | 324 | 349 | 17 | 78 | 140 | 201 | 261 | 297 | 324 | 349 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 19 | 90 | 142 | 182 | 215 | 240 | 261 | 281 | 15 | 69 | 122 | 176 | 215 | 240 | 261 | 281 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 150 | HR250 | 21 | 96 | 166 | 214 | 256 | 293 | 324 | 349 | 16 | 73 | 130 | 188 | 245 | 293 | 324 | 349 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 18 | 84 | 138 | 178 | 212 | 240 | 261 | 281 | 14 | 64 | 114 | 164 | 212 | 240 | 261 | 281 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 2.21: Maximum Span Length (in.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 102 | 86 | 71 | 59 | 52 | 47 | 43 | 40 | 77 | 77 | 71 | 59 | 52 | 47 | 43 | 40 | 63 | 63 | 63 | 59 | 52 | 47 | 43 | 40 |
| | | HR150 | 88 | 72 | 58 | 48 | 42 | 38 | 35 | 32 | 67 | 67 | 58 | 48 | 42 | 38 | 35 | 32 | 55 | 55 | 55 | 48 | 42 | 38 | 35 | 32 |
| | 90 | HR250 | 96 | 85 | 70 | 59 | 52 | 47 | 43 | 40 | 73 | 73 | 70 | 59 | 52 | 47 | 43 | 40 | 60 | 60 | 60 | 59 | 52 | 47 | 43 | 40 |
| | | HR150 | 84 | 70 | 58 | 48 | 42 | 38 | 35 | 32 | 64 | 64 | 58 | 48 | 42 | 38 | 35 | 32 | 52 | 52 | 52 | 48 | 42 | 38 | 35 | 32 |
| | 100 | HR250 | 86 | 81 | 68 | 59 | 52 | 47 | 43 | 40 | 66 | 66 | 66 | 59 | 52 | 47 | 43 | 40 | 54 | 54 | 54 | 54 | 52 | 47 | 43 | 40 |
| | | HR150 | 75 | 68 | 56 | 48 | 42 | 38 | 35 | 32 | 57 | 57 | 56 | 48 | 42 | 38 | 35 | 32 | 47 | 47 | 47 | 47 | 42 | 38 | 35 | 32 |
| | 105 | HR250 | 82 | 80 | 67 | 59 | 52 | 47 | 43 | 40 | 62 | 62 | 62 | 59 | 52 | 47 | 43 | 40 | 51 | 51 | 51 | 51 | 51 | 47 | 43 | 40 |
| | | HR150 | 72 | 66 | 55 | 48 | 42 | 38 | 35 | 32 | 55 | 55 | 55 | 48 | 42 | 38 | 35 | 32 | 45 | 45 | 45 | 45 | 42 | 38 | 35 | 32 |
| | 110 | HR250 | 79 | 78 | 66 | 58 | 52 | 47 | 43 | 40 | 60 | 60 | 60 | 58 | 52 | 47 | 43 | 40 | 49 | 49 | 49 | 49 | 49 | 47 | 43 | 40 |
| | | HR150 | 69 | 65 | 55 | 48 | 42 | 38 | 35 | 32 | 52 | 52 | 52 | 48 | 42 | 38 | 35 | 32 | 43 | 43 | 43 | 43 | 42 | 38 | 35 | 32 |
| | 115 | HR250 | 75 | 75 | 65 | 58 | 52 | 47 | 43 | 40 | 57 | 57 | 57 | 57 | 52 | 47 | 43 | 40 | 47 | 47 | 47 | 47 | 47 | 47 | 43 | 40 |
| | | HR150 | 66 | 64 | 54 | 47 | 42 | 38 | 35 | 32 | 50 | 50 | 50 | 47 | 42 | 38 | 35 | 32 | 41 | 41 | 41 | 41 | 41 | 38 | 35 | 32 |
| | 120 | HR250 | 72 | 72 | 64 | 57 | 52 | 47 | 43 | 40 | 55 | 55 | 55 | 55 | 52 | 47 | 43 | 40 | 45 | 45 | 45 | 45 | 45 | 45 | 43 | 40 |
| | | HR150 | 63 | 63 | 53 | 47 | 42 | 38 | 35 | 32 | 48 | 48 | 48 | 47 | 42 | 38 | 35 | 32 | 39 | 39 | 39 | 39 | 39 | 38 | 35 | 32 |
| | 130 | HR250 | 67 | 67 | 62 | 55 | 51 | 47 | 43 | 40 | 50 | 50 | 50 | 50 | 50 | 47 | 43 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 58 | 58 | 52 | 46 | 42 | 38 | 35 | 32 | 44 | 44 | 44 | 44 | 42 | 38 | 35 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 140 | HR250 | 62 | 62 | 60 | 54 | 50 | 46 | 43 | 40 | 47 | 47 | 47 | 47 | 47 | 46 | 43 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 54 | 54 | 50 | 45 | 41 | 38 | 35 | 32 | 41 | 41 | 41 | 41 | 41 | 38 | 35 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 150 | HR250 | 58 | 58 | 58 | 53 | 48 | 45 | 42 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 51 | 51 | 49 | 44 | 40 | 37 | 35 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

ROOFS >7° TO 27°

**Table 2.22: Maximum Uplift (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | -530 | -449 | -368 | -309 | -270 | -243 | -223 | -207 | -722 | -722 | -663 | -556 | -487 | -438 | -402 | -373 | -891 | -891 | -891 | -834 | -730 | -657 | -603 | -560 |
| | | HR150 | -459 | -372 | -299 | -249 | -218 | -196 | -180 | -167 | -630 | -630 | -538 | -448 | -393 | -353 | -324 | -301 | -779 | -779 | -779 | -673 | -589 | -530 | -486 | -451 |
| | 90 | HR250 | -565 | -496 | -410 | -348 | -305 | -274 | -252 | -234 | -768 | -768 | -737 | -626 | -548 | -493 | -452 | -420 | -946 | -946 | -946 | -938 | -821 | -739 | -678 | -629 |
| | | HR150 | -490 | -412 | -337 | -281 | -246 | -221 | -203 | -188 | -671 | -671 | -606 | -505 | -442 | -398 | -365 | -339 | -828 | -828 | -828 | -757 | -662 | -596 | -547 | -508 |
| | 100 | HR250 | -638 | -598 | -501 | -438 | -383 | -345 | -316 | -294 | -861 | -861 | -861 | -781 | -683 | -615 | -564 | -524 | -1057 | -1057 | -1057 | -1057 | -1020 | -918 | -842 | -782 |
| | | HR150 | -555 | -499 | -413 | -353 | -309 | -278 | -255 | -237 | -753 | -753 | -737 | -630 | -551 | -496 | -455 | -422 | -926 | -926 | -926 | -926 | -823 | -741 | -679 | -631 |
| | 105 | HR250 | -673 | -650 | -548 | -482 | -425 | -383 | -351 | -326 | -906 | -906 | -906 | -855 | -755 | -679 | -623 | -578 | -1112 | -1112 | -1112 | -1112 | -1112 | -1013 | -929 | -863 |
| | | HR150 | -586 | -544 | -453 | -392 | -343 | -309 | -283 | -263 | -792 | -792 | -792 | -695 | -609 | -548 | -502 | -467 | -974 | -974 | -974 | -974 | -908 | -817 | -749 | -696 |
| | 110 | HR250 | -707 | -699 | -593 | -523 | -467 | -420 | -385 | -358 | -952 | -952 | -952 | -931 | -831 | -748 | -686 | -637 | -1167 | -1167 | -1167 | -1167 | -1167 | -1115 | -1022 | -950 |
| | | HR150 | -616 | -586 | -491 | -430 | -377 | -339 | -311 | -289 | -833 | -833 | -833 | -766 | -670 | -603 | -553 | -514 | -1023 | -1023 | -1023 | -1023 | -999 | -900 | -825 | -766 |
| | 115 | HR250 | -743 | -743 | -642 | -569 | -514 | -462 | -424 | -394 | -997 | -997 | -997 | -997 | -909 | -819 | -751 | -697 | -1221 | -1221 | -1221 | -1221 | -1221 | -1219 | -1118 | -1038 |
| | | HR150 | -648 | -632 | -533 | -469 | -414 | -373 | -342 | -318 | -873 | -873 | -873 | -830 | -734 | -660 | -605 | -562 | -1070 | -1070 | -1070 | -1070 | -1070 | -983 | -902 | -837 |
| | 120 | HR250 | -777 | -777 | -689 | -613 | -557 | -504 | -463 | -430 | -1043 | -1043 | -1043 | -1043 | -987 | -894 | -820 | -761 | -1276 | -1276 | -1276 | -1276 | -1276 | -1276 | -1219 | -1132 |
| | | HR150 | -679 | -676 | -573 | -506 | -452 | -407 | -373 | -347 | -913 | -913 | -913 | -897 | -801 | -721 | -661 | -614 | -1119 | -1119 | -1119 | -1119 | -1119 | -1073 | -983 | -913 |
| | 130 | HR250 | -847 | -847 | -788 | -705 | -644 | -595 | -546 | -507 | -1133 | -1133 | -1133 | -1133 | -1133 | -1051 | -964 | -895 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | -740 | -740 | -657 | -584 | -531 | -480 | -440 | -409 | -992 | -992 | -992 | -992 | -938 | -848 | -777 | -722 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 140 | HR250 | -917 | -917 | -891 | -802 | -736 | -683 | -637 | -592 | -1224 | -1224 | -1224 | -1224 | -1224 | -1203 | -1122 | -1042 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | -802 | -802 | -746 | -667 | -608 | -560 | -514 | -477 | -1072 | -1072 | -1072 | -1072 | -1071 | -987 | -905 | -840 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 150 | HR250 | -985 | -985 | -985 | -899 | -827 | -771 | -724 | -680 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | -862 | -862 | -833 | -749 | -686 | -636 | -591 | -549 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

ROOFS >7° TO 27°

**Table 2.23: Maximum Downforce (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 433 | 458 | 513 | 545 | 578 | 637 | 695 | 748 | 328 | 409 | 513 | 545 | 578 | 637 | 695 | 748 | 270 | 337 | 459 | 545 | 578 | 637 | 695 | 748 |
| | | HR150 | 376 | 379 | 416 | 440 | 466 | 514 | 561 | 604 | 286 | 357 | 416 | 440 | 466 | 514 | 561 | 604 | 236 | 294 | 402 | 440 | 466 | 514 | 561 | 604 |
| | 90 | HR250 | 451 | 475 | 528 | 564 | 594 | 637 | 695 | 748 | 341 | 410 | 528 | 564 | 594 | 637 | 695 | 748 | 280 | 337 | 453 | 564 | 594 | 637 | 695 | 748 |
| | | HR150 | 392 | 395 | 435 | 455 | 479 | 514 | 561 | 604 | 298 | 358 | 435 | 455 | 479 | 514 | 561 | 604 | 245 | 295 | 396 | 455 | 479 | 514 | 561 | 604 |
| | 100 | HR250 | 486 | 513 | 561 | 606 | 631 | 659 | 695 | 748 | 369 | 415 | 542 | 606 | 631 | 659 | 695 | 748 | 303 | 341 | 446 | 550 | 631 | 659 | 695 | 748 |
| | | HR150 | 423 | 429 | 464 | 489 | 509 | 531 | 561 | 604 | 322 | 363 | 464 | 489 | 509 | 531 | 561 | 604 | 265 | 299 | 390 | 482 | 509 | 531 | 561 | 604 |
| | 105 | HR250 | 502 | 532 | 577 | 622 | 650 | 675 | 702 | 748 | 381 | 418 | 538 | 622 | 650 | 675 | 702 | 748 | 313 | 343 | 443 | 542 | 642 | 675 | 702 | 748 |
| | | HR150 | 437 | 445 | 478 | 506 | 524 | 545 | 567 | 604 | 333 | 365 | 471 | 506 | 524 | 545 | 567 | 604 | 274 | 301 | 388 | 475 | 524 | 545 | 567 | 604 |
| | 110 | HR250 | 521 | 551 | 595 | 638 | 670 | 694 | 719 | 748 | 394 | 422 | 537 | 638 | 670 | 694 | 719 | 748 | 324 | 347 | 442 | 536 | 631 | 694 | 719 | 748 |
| | | HR150 | 454 | 462 | 493 | 525 | 540 | 560 | 580 | 604 | 345 | 369 | 470 | 525 | 540 | 560 | 580 | 604 | 284 | 304 | 387 | 470 | 540 | 560 | 580 | 604 |
| | 115 | HR250 | 540 | 564 | 613 | 654 | 692 | 714 | 737 | 762 | 410 | 428 | 538 | 648 | 692 | 714 | 737 | 762 | 337 | 352 | 443 | 533 | 624 | 714 | 737 | 762 |
| | | HR150 | 471 | 480 | 509 | 540 | 558 | 576 | 595 | 615 | 359 | 374 | 471 | 540 | 558 | 576 | 595 | 615 | 295 | 308 | 388 | 467 | 547 | 576 | 595 | 615 |
| | 120 | HR250 | 559 | 572 | 631 | 671 | 710 | 733 | 756 | 779 | 423 | 433 | 539 | 644 | 710 | 733 | 756 | 779 | 348 | 356 | 443 | 530 | 617 | 704 | 756 | 779 |
| | | HR150 | 488 | 498 | 525 | 554 | 576 | 592 | 609 | 628 | 371 | 379 | 472 | 554 | 576 | 592 | 609 | 628 | 305 | 312 | 388 | 465 | 541 | 592 | 609 | 628 |
| | 130 | HR250 | 598 | 598 | 669 | 705 | 742 | 777 | 795 | 816 | 453 | 453 | 544 | 642 | 739 | 777 | 795 | 816 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 523 | 523 | 558 | 584 | 612 | 626 | 641 | 658 | 397 | 397 | 477 | 562 | 612 | 626 | 641 | 658 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 140 | HR250 | 636 | 636 | 707 | 741 | 776 | 809 | 838 | 855 | 482 | 482 | 551 | 642 | 732 | 809 | 838 | 855 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 557 | 557 | 592 | 616 | 641 | 664 | 676 | 690 | 423 | 423 | 483 | 563 | 641 | 664 | 676 | 690 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 150 | HR250 | 676 | 676 | 741 | 778 | 810 | 842 | 874 | 898 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 592 | 592 | 627 | 648 | 672 | 695 | 713 | 724 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

ROOFS >7° TO 27°

**Table 2.24: Maximum Shear (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 34 | 132 | 194 | 234 | 268 | 297 | 324 | 349 | 26 | 118 | 194 | 234 | 268 | 297 | 324 | 349 | 21 | 97 | 174 | 234 | 268 | 297 | 324 | 349 |
| | | HR150 | 29 | 110 | 157 | 189 | 216 | 240 | 261 | 281 | 22 | 103 | 157 | 189 | 216 | 240 | 261 | 281 | 18 | 85 | 152 | 189 | 216 | 240 | 261 | 281 |
| | 90 | HR250 | 32 | 130 | 191 | 234 | 268 | 297 | 324 | 349 | 24 | 112 | 191 | 234 | 268 | 297 | 324 | 349 | 20 | 92 | 164 | 234 | 268 | 297 | 324 | 349 |
| | | HR150 | 28 | 108 | 157 | 189 | 216 | 240 | 261 | 281 | 21 | 98 | 157 | 189 | 216 | 240 | 261 | 281 | 17 | 80 | 144 | 189 | 216 | 240 | 261 | 281 |
| | 100 | HR250 | 29 | 124 | 186 | 234 | 268 | 297 | 324 | 349 | 22 | 101 | 179 | 234 | 268 | 297 | 324 | 349 | 18 | 83 | 148 | 212 | 268 | 297 | 324 | 349 |
| | | HR150 | 25 | 104 | 154 | 189 | 216 | 240 | 261 | 281 | 19 | 88 | 154 | 189 | 216 | 240 | 261 | 281 | 16 | 72 | 129 | 186 | 216 | 240 | 261 | 281 |
| | 105 | HR250 | 27 | 122 | 183 | 232 | 268 | 297 | 324 | 349 | 21 | 96 | 171 | 232 | 268 | 297 | 324 | 349 | 17 | 79 | 141 | 202 | 264 | 297 | 324 | 349 |
| | | HR150 | 24 | 102 | 152 | 189 | 216 | 240 | 261 | 281 | 18 | 84 | 149 | 189 | 216 | 240 | 261 | 281 | 15 | 69 | 123 | 177 | 216 | 240 | 261 | 281 |
| | 110 | HR250 | 26 | 119 | 181 | 230 | 268 | 297 | 324 | 349 | 20 | 91 | 163 | 230 | 268 | 297 | 324 | 349 | 16 | 75 | 134 | 193 | 252 | 297 | 324 | 349 |
| | | HR150 | 23 | 100 | 150 | 189 | 216 | 240 | 261 | 281 | 17 | 80 | 143 | 189 | 216 | 240 | 261 | 281 | 14 | 66 | 118 | 169 | 216 | 240 | 261 | 281 |
| | 115 | HR250 | 25 | 115 | 178 | 227 | 268 | 297 | 324 | 349 | 19 | 87 | 156 | 225 | 268 | 297 | 324 | 349 | 16 | 72 | 128 | 185 | 241 | 297 | 324 | 349 |
| | | HR150 | 22 | 98 | 148 | 187 | 216 | 240 | 261 | 281 | 17 | 77 | 137 | 187 | 216 | 240 | 261 | 281 | 14 | 63 | 113 | 162 | 211 | 240 | 261 | 281 |
| | 120 | HR250 | 24 | 111 | 175 | 224 | 266 | 297 | 324 | 349 | 18 | 84 | 150 | 215 | 266 | 297 | 324 | 349 | 15 | 69 | 123 | 177 | 231 | 285 | 324 | 349 |
| | | HR150 | 21 | 96 | 146 | 185 | 216 | 240 | 261 | 281 | 16 | 73 | 131 | 185 | 216 | 240 | 261 | 281 | 13 | 60 | 108 | 155 | 203 | 240 | 261 | 281 |
| | 130 | HR250 | 22 | 102 | 170 | 219 | 260 | 297 | 324 | 349 | 17 | 77 | 138 | 199 | 260 | 297 | 324 | 349 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 19 | 89 | 142 | 181 | 215 | 240 | 261 | 281 | 15 | 68 | 121 | 174 | 215 | 240 | 261 | 281 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 140 | HR250 | 20 | 95 | 164 | 213 | 255 | 292 | 324 | 349 | 15 | 72 | 128 | 184 | 241 | 292 | 324 | 349 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 18 | 83 | 138 | 177 | 211 | 240 | 261 | 281 | 14 | 63 | 112 | 162 | 211 | 240 | 261 | 281 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 150 | HR250 | 19 | 89 | 158 | 208 | 249 | 287 | 320 | 349 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HR150 | 17 | 77 | 134 | 173 | 207 | 237 | 261 | 281 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

ROOFS >7° TO 27°

**Table 2.25: Maximum Span Length (in.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >27° TO 45° | **85** | HR250 | 104 | 84 | 67 | 56 | 49 | 44 | 40 | 38 | 104 | 84 | 67 | 56 | 49 | 44 | 40 | 38 | 104 | 84 | 67 | 56 | 49 | 44 | 40 | 38 |
| | | HR150 | 92 | 68 | 53 | 44 | 39 | 35 | 32 | 30 | 92 | 68 | 53 | 44 | 39 | 35 | 32 | 30 | 92 | 68 | 53 | 44 | 39 | 35 | 32 | 30 |
| | **90** | HR250 | 101 | 82 | 67 | 56 | 49 | 44 | 40 | 38 | 101 | 82 | 67 | 56 | 49 | 44 | 40 | 38 | 101 | 82 | 67 | 56 | 49 | 44 | 40 | 38 |
| | | HR150 | 89 | 67 | 53 | 44 | 39 | 35 | 32 | 30 | 89 | 67 | 53 | 44 | 39 | 35 | 32 | 30 | 89 | 67 | 53 | 44 | 39 | 35 | 32 | 30 |
| | **100** | HR250 | 98 | 80 | 66 | 56 | 49 | 44 | 40 | 38 | 97 | 80 | 66 | 56 | 49 | 44 | 40 | 38 | 97 | 80 | 66 | 56 | 49 | 44 | 40 | 38 |
| | | HR150 | 85 | 66 | 53 | 44 | 39 | 35 | 32 | 30 | 84 | 66 | 53 | 44 | 39 | 35 | 32 | 30 | 84 | 66 | 53 | 44 | 39 | 35 | 32 | 30 |
| | **105** | HR250 | 93 | 77 | 65 | 56 | 49 | 44 | 40 | 38 | 93 | 77 | 65 | 56 | 49 | 44 | 40 | 38 | 93 | 77 | 65 | 56 | 49 | 44 | 40 | 38 |
| | | HR150 | 80 | 64 | 53 | 44 | 39 | 35 | 32 | 30 | 80 | 64 | 53 | 44 | 39 | 35 | 32 | 30 | 80 | 64 | 53 | 44 | 39 | 35 | 32 | 30 |
| | **110** | HR250 | 90 | 76 | 64 | 56 | 49 | 44 | 40 | 38 | 89 | 76 | 64 | 56 | 49 | 44 | 40 | 38 | 89 | 76 | 64 | 56 | 49 | 44 | 40 | 38 |
| | | HR150 | 77 | 63 | 52 | 44 | 39 | 35 | 32 | 30 | 77 | 63 | 52 | 44 | 39 | 35 | 32 | 30 | 77 | 63 | 52 | 44 | 39 | 35 | 32 | 30 |
| | **115** | HR250 | 87 | 75 | 63 | 55 | 49 | 44 | 40 | 38 | 85 | 75 | 63 | 55 | 49 | 44 | 40 | 38 | 85 | 75 | 63 | 55 | 49 | 44 | 40 | 38 |
| | | HR150 | 74 | 62 | 51 | 44 | 39 | 35 | 32 | 30 | 74 | 62 | 51 | 44 | 39 | 35 | 32 | 30 | 74 | 62 | 51 | 44 | 39 | 35 | 32 | 30 |
| | **120** | HR250 | 84 | 73 | 62 | 55 | 49 | 44 | 40 | 38 | 81 | 73 | 62 | 55 | 49 | 44 | 40 | 38 | 81 | 73 | 62 | 55 | 49 | 44 | 40 | 38 |
| | | HR150 | 72 | 61 | 51 | 44 | 39 | 35 | 32 | 30 | 71 | 61 | 51 | 44 | 39 | 35 | 32 | 30 | 71 | 61 | 51 | 44 | 39 | 35 | 32 | 30 |
| | **130** | HR250 | 78 | 70 | 60 | 54 | 49 | 44 | 40 | 38 | 75 | 70 | 60 | 54 | 49 | 44 | 40 | 38 | 75 | 70 | 60 | 54 | 49 | 44 | 40 | 38 |
| | | HR150 | 68 | 59 | 50 | 44 | 39 | 35 | 32 | 30 | 65 | 59 | 50 | 44 | 39 | 35 | 32 | 30 | 65 | 59 | 50 | 44 | 39 | 35 | 32 | 30 |
| | **140** | HR250 | 74 | 68 | 59 | 52 | 48 | 44 | 40 | 38 | 70 | 68 | 59 | 52 | 48 | 44 | 40 | 38 | 70 | 68 | 59 | 52 | 48 | 44 | 40 | 38 |
| | | HR150 | 64 | 57 | 48 | 43 | 39 | 35 | 32 | 30 | 61 | 57 | 48 | 43 | 39 | 35 | 32 | 30 | 61 | 57 | 48 | 43 | 39 | 35 | 32 | 30 |
| | **150** | HR250 | 69 | 65 | 57 | 51 | 47 | 44 | 40 | 38 | 65 | 65 | 57 | 51 | 47 | 44 | 40 | 38 | 65 | 65 | 57 | 51 | 47 | 44 | 40 | 38 |
| | | HR150 | 60 | 55 | 47 | 42 | 38 | 35 | 32 | 30 | 57 | 55 | 47 | 42 | 38 | 35 | 32 | 30 | 57 | 55 | 47 | 42 | 38 | 35 | 32 | 30 |

**Table 2.26: Maximum Uplift (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| B | 85 | HR250 | -344 | -277 | -223 | -186 | -163 | -146 | -134 | -125 | -409 | -329 | -265 | -221 | -193 | -174 | -160 | -148 | -409 | -329 | -265 | -221 | -193 | -174 | -160 | -148 |
| | | HR150 | -306 | -226 | -177 | -147 | -129 | -116 | -107 | -99 | -363 | -269 | -210 | -175 | -153 | -138 | -127 | -118 | -363 | -269 | -210 | -175 | -153 | -138 | -127 | -118 |
| | 90 | HR250 | -382 | -310 | -253 | -211 | -185 | -167 | -153 | -142 | -451 | -366 | -299 | -250 | -218 | -197 | -180 | -167 | -451 | -366 | -299 | -250 | -218 | -197 | -180 | -167 |
| | | HR150 | -335 | -253 | -201 | -168 | -147 | -132 | -121 | -113 | -396 | -299 | -238 | -198 | -173 | -156 | -143 | -133 | -396 | -299 | -238 | -198 | -173 | -156 | -143 | -133 |
| | 100 | HR250 | -465 | -379 | -313 | -266 | -232 | -209 | -192 | -178 | -544 | -448 | -370 | -313 | -274 | -247 | -226 | -210 | -544 | -448 | -370 | -313 | -274 | -247 | -226 | -210 |
| | | HR150 | -401 | -312 | -253 | -211 | -185 | -166 | -152 | -141 | -470 | -368 | -299 | -249 | -218 | -196 | -180 | -167 | -470 | -368 | -299 | -249 | -218 | -196 | -180 | -167 |
| | 105 | HR250 | -488 | -407 | -339 | -294 | -258 | -232 | -213 | -197 | -577 | -482 | -402 | -349 | -305 | -275 | -252 | -234 | -577 | -482 | -402 | -349 | -305 | -275 | -252 | -234 |
| | | HR150 | -418 | -336 | -277 | -234 | -204 | -184 | -169 | -157 | -495 | -398 | -328 | -277 | -242 | -218 | -200 | -186 | -495 | -398 | -328 | -277 | -242 | -218 | -200 | -186 |
| | 110 | HR250 | -523 | -443 | -371 | -326 | -286 | -257 | -236 | -219 | -609 | -523 | -439 | -385 | -337 | -304 | -278 | -258 | -609 | -523 | -439 | -385 | -337 | -304 | -278 | -258 |
| | | HR150 | -449 | -366 | -303 | -259 | -227 | -204 | -187 | -174 | -527 | -432 | -358 | -306 | -268 | -241 | -221 | -205 | -527 | -432 | -358 | -306 | -268 | -241 | -221 | -205 |
| | 115 | HR250 | -553 | -477 | -402 | -354 | -313 | -282 | -259 | -240 | -639 | -562 | -474 | -417 | -369 | -332 | -305 | -283 | -639 | -562 | -474 | -417 | -369 | -332 | -305 | -283 |
| | | HR150 | -476 | -395 | -329 | -284 | -249 | -224 | -205 | -191 | -554 | -465 | -388 | -335 | -293 | -264 | -242 | -225 | -554 | -465 | -388 | -335 | -293 | -264 | -242 | -225 |
| | 120 | HR250 | -585 | -512 | -434 | -383 | -343 | -309 | -283 | -263 | -670 | -603 | -511 | -452 | -404 | -364 | -334 | -310 | -670 | -603 | -511 | -452 | -404 | -364 | -334 | -310 |
| | | HR150 | -504 | -425 | -355 | -311 | -272 | -245 | -225 | -209 | -582 | -501 | -419 | -367 | -321 | -289 | -265 | -246 | -582 | -501 | -419 | -367 | -321 | -289 | -265 | -246 |
| | 130 | HR250 | -648 | -582 | -499 | -444 | -403 | -365 | -335 | -311 | -733 | -687 | -588 | -523 | -475 | -430 | -395 | -367 | -733 | -687 | -588 | -523 | -475 | -430 | -395 | -367 |
| | | HR150 | -559 | -485 | -410 | -362 | -322 | -290 | -266 | -247 | -638 | -572 | -484 | -427 | -380 | -342 | -313 | -291 | -638 | -572 | -484 | -427 | -380 | -342 | -313 | -291 |
| | 140 | HR250 | -711 | -654 | -566 | -506 | -462 | -427 | -391 | -363 | -793 | -768 | -665 | -595 | -543 | -501 | -459 | -426 | -793 | -768 | -665 | -595 | -543 | -501 | -459 | -426 |
| | | HR150 | -615 | -547 | -467 | -415 | -376 | -339 | -311 | -288 | -691 | -643 | -549 | -487 | -442 | -398 | -365 | -339 | -691 | -643 | -549 | -487 | -442 | -398 | -365 | -339 |
| | 150 | HR250 | -773 | -726 | -635 | -571 | -523 | -485 | -451 | -419 | -855 | -852 | -745 | -670 | -614 | -570 | -530 | -492 | -855 | -852 | -745 | -670 | -614 | -570 | -530 | -492 |
| | | HR150 | -670 | -610 | -526 | -469 | -427 | -391 | -358 | -333 | -745 | -716 | -617 | -550 | -501 | -458 | -420 | -390 | -745 | -716 | -617 | -550 | -501 | -458 | -420 | -390 |

ROOFS >27° TO 45°

**Table 2.27: Maximum Downforce (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| B | 85 | HR250 | 418 | 412 | 449 | 472 | 499 | 543 | 592 | 638 | 418 | 412 | 449 | 472 | 499 | 543 | 592 | 638 | 418 | 412 | 449 | 472 | 499 | 543 | 592 | 638 |
| | | HR150 | 371 | 336 | 356 | 375 | 396 | 431 | 470 | 506 | 371 | 336 | 356 | 375 | 396 | 431 | 470 | 506 | 371 | 336 | 356 | 375 | 396 | 431 | 470 | 506 |
| | 90 | HR250 | 449 | 429 | 469 | 489 | 514 | 543 | 592 | 638 | 449 | 429 | 469 | 489 | 514 | 543 | 592 | 638 | 449 | 429 | 469 | 489 | 514 | 543 | 592 | 638 |
| | | HR150 | 393 | 351 | 372 | 388 | 408 | 431 | 470 | 506 | 393 | 351 | 372 | 388 | 408 | 431 | 470 | 506 | 393 | 351 | 372 | 388 | 408 | 431 | 470 | 506 |
| | 100 | HR250 | 493 | 454 | 491 | 514 | 536 | 560 | 592 | 638 | 489 | 454 | 491 | 514 | 536 | 560 | 592 | 638 | 489 | 454 | 491 | 514 | 536 | 560 | 592 | 638 |
| | | HR150 | 425 | 373 | 396 | 408 | 425 | 444 | 470 | 506 | 423 | 373 | 396 | 408 | 425 | 444 | 470 | 506 | 423 | 373 | 396 | 408 | 425 | 444 | 470 | 506 |
| | 105 | HR250 | 541 | 486 | 519 | 548 | 565 | 586 | 608 | 638 | 540 | 486 | 519 | 548 | 565 | 586 | 608 | 638 | 540 | 486 | 519 | 548 | 565 | 586 | 608 | 638 |
| | | HR150 | 464 | 401 | 423 | 435 | 449 | 465 | 483 | 506 | 464 | 401 | 423 | 435 | 449 | 465 | 483 | 506 | 464 | 401 | 423 | 435 | 449 | 465 | 483 | 506 |
| | 110 | HR250 | 566 | 505 | 535 | 568 | 583 | 602 | 623 | 644 | 558 | 505 | 535 | 568 | 583 | 602 | 623 | 644 | 558 | 505 | 535 | 568 | 583 | 602 | 623 | 644 |
| | | HR150 | 486 | 418 | 437 | 451 | 463 | 478 | 494 | 511 | 484 | 418 | 437 | 451 | 463 | 478 | 494 | 511 | 484 | 418 | 437 | 451 | 463 | 478 | 494 | 511 |
| | 115 | HR250 | 593 | 526 | 553 | 584 | 603 | 620 | 639 | 659 | 581 | 526 | 553 | 584 | 603 | 620 | 639 | 659 | 581 | 526 | 553 | 584 | 603 | 620 | 639 | 659 |
| | | HR150 | 510 | 435 | 453 | 469 | 478 | 492 | 507 | 523 | 504 | 435 | 453 | 469 | 478 | 492 | 507 | 523 | 504 | 435 | 453 | 469 | 478 | 492 | 507 | 523 |
| | 120 | HR250 | 618 | 545 | 571 | 600 | 623 | 638 | 656 | 675 | 601 | 545 | 571 | 600 | 623 | 638 | 656 | 675 | 601 | 545 | 571 | 600 | 623 | 638 | 656 | 675 |
| | | HR150 | 532 | 453 | 468 | 487 | 494 | 506 | 520 | 535 | 522 | 453 | 468 | 487 | 494 | 506 | 520 | 535 | 522 | 453 | 468 | 487 | 494 | 506 | 520 | 535 |
| | 130 | HR250 | 671 | 602 | 608 | 634 | 662 | 676 | 691 | 708 | 643 | 602 | 608 | 634 | 662 | 676 | 691 | 708 | 643 | 602 | 608 | 634 | 662 | 676 | 691 | 708 |
| | | HR150 | 579 | 502 | 500 | 518 | 528 | 537 | 549 | 562 | 559 | 502 | 500 | 518 | 528 | 537 | 549 | 562 | 559 | 502 | 500 | 518 | 528 | 537 | 549 | 562 |
| | 140 | HR250 | 724 | 666 | 647 | 670 | 695 | 719 | 730 | 744 | 688 | 666 | 647 | 670 | 695 | 719 | 730 | 744 | 688 | 666 | 647 | 670 | 695 | 719 | 730 | 744 |
| | | HR150 | 626 | 557 | 534 | 549 | 566 | 571 | 579 | 590 | 599 | 557 | 534 | 549 | 566 | 571 | 579 | 590 | 599 | 557 | 534 | 549 | 566 | 571 | 579 | 590 |
| | 150 | HR250 | 775 | 728 | 686 | 706 | 729 | 753 | 771 | 781 | 730 | 728 | 686 | 706 | 729 | 753 | 771 | 781 | 730 | 728 | 686 | 706 | 729 | 753 | 771 | 781 |
| | | HR150 | 672 | 611 | 568 | 580 | 595 | 606 | 612 | 620 | 637 | 611 | 568 | 580 | 595 | 606 | 612 | 620 | 637 | 611 | 568 | 580 | 595 | 606 | 612 | 620 |

ROOFS >27° TO 45°

**Table 2.28: Maximum Shear (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >27° TO 45° | **85** | HR250 | 47 | 174 | 250 | 300 | 342 | 380 | 415 | 447 | 47 | 174 | 250 | 300 | 342 | 380 | 415 | 447 | 47 | 174 | 250 | 300 | 342 | 380 | 415 | 447 |
| | | HR150 | 41 | 142 | 198 | 238 | 272 | 302 | 329 | 354 | 41 | 142 | 198 | 238 | 272 | 302 | 329 | 354 | 41 | 142 | 198 | 238 | 272 | 302 | 329 | 354 |
| | **90** | HR250 | 45 | 171 | 250 | 300 | 342 | 380 | 415 | 447 | 45 | 171 | 250 | 300 | 342 | 380 | 415 | 447 | 45 | 171 | 250 | 300 | 342 | 380 | 415 | 447 |
| | | HR150 | 40 | 140 | 198 | 238 | 272 | 302 | 329 | 354 | 40 | 140 | 198 | 238 | 272 | 302 | 329 | 354 | 40 | 140 | 198 | 238 | 272 | 302 | 329 | 354 |
| | **100** | HR250 | 44 | 167 | 245 | 300 | 342 | 380 | 415 | 447 | 44 | 167 | 245 | 300 | 342 | 380 | 415 | 447 | 44 | 167 | 245 | 300 | 342 | 380 | 415 | 447 |
| | | HR150 | 38 | 137 | 198 | 238 | 272 | 302 | 329 | 354 | 38 | 137 | 198 | 238 | 272 | 302 | 329 | 354 | 38 | 137 | 198 | 238 | 272 | 302 | 329 | 354 |
| | **105** | HR250 | 42 | 161 | 240 | 300 | 342 | 380 | 415 | 447 | 42 | 161 | 240 | 300 | 342 | 380 | 415 | 447 | 42 | 161 | 240 | 300 | 342 | 380 | 415 | 447 |
| | | HR150 | 36 | 133 | 196 | 238 | 272 | 302 | 329 | 354 | 36 | 133 | 196 | 238 | 272 | 302 | 329 | 354 | 36 | 133 | 196 | 238 | 272 | 302 | 329 | 354 |
| | **110** | HR250 | 40 | 158 | 237 | 300 | 342 | 380 | 415 | 447 | 40 | 158 | 237 | 300 | 342 | 380 | 415 | 447 | 40 | 158 | 237 | 300 | 342 | 380 | 415 | 447 |
| | | HR150 | 35 | 131 | 194 | 238 | 272 | 302 | 329 | 354 | 34 | 131 | 194 | 238 | 272 | 302 | 329 | 354 | 34 | 131 | 194 | 238 | 272 | 302 | 329 | 354 |
| | **115** | HR250 | 39 | 155 | 234 | 296 | 342 | 380 | 415 | 447 | 38 | 155 | 234 | 296 | 342 | 380 | 415 | 447 | 38 | 155 | 234 | 296 | 342 | 380 | 415 | 447 |
| | | HR150 | 33 | 129 | 191 | 238 | 272 | 302 | 329 | 354 | 33 | 129 | 191 | 238 | 272 | 302 | 329 | 354 | 33 | 129 | 191 | 238 | 272 | 302 | 329 | 354 |
| | **120** | HR250 | 38 | 152 | 231 | 293 | 342 | 380 | 415 | 447 | 37 | 152 | 231 | 293 | 342 | 380 | 415 | 447 | 37 | 152 | 231 | 293 | 342 | 380 | 415 | 447 |
| | | HR150 | 32 | 127 | 189 | 238 | 272 | 302 | 329 | 354 | 32 | 127 | 189 | 238 | 272 | 302 | 329 | 354 | 32 | 127 | 189 | 238 | 272 | 302 | 329 | 354 |
| | **130** | HR250 | 35 | 147 | 224 | 287 | 340 | 380 | 415 | 447 | 34 | 147 | 224 | 287 | 340 | 380 | 415 | 447 | 34 | 147 | 224 | 287 | 340 | 380 | 415 | 447 |
| | | HR150 | 30 | 122 | 184 | 234 | 272 | 302 | 329 | 354 | 29 | 122 | 184 | 234 | 272 | 302 | 329 | 354 | 29 | 122 | 184 | 234 | 272 | 302 | 329 | 354 |
| | **140** | HR250 | 33 | 141 | 218 | 280 | 334 | 380 | 415 | 447 | 31 | 141 | 218 | 280 | 334 | 380 | 415 | 447 | 31 | 141 | 218 | 280 | 334 | 380 | 415 | 447 |
| | | HR150 | 29 | 118 | 180 | 229 | 272 | 302 | 329 | 354 | 27 | 118 | 180 | 229 | 272 | 302 | 329 | 354 | 27 | 118 | 180 | 229 | 272 | 302 | 329 | 354 |
| | **150** | HR250 | 31 | 136 | 212 | 274 | 327 | 375 | 415 | 447 | 29 | 136 | 212 | 274 | 327 | 375 | 415 | 447 | 29 | 136 | 212 | 274 | 327 | 375 | 415 | 447 |
| | | HR150 | 27 | 114 | 175 | 225 | 267 | 302 | 329 | 354 | 26 | 114 | 175 | 225 | 267 | 302 | 329 | 354 | 26 | 114 | 175 | 225 | 267 | 302 | 329 | 354 |

**Table 2.29: Maximum Span Length (in.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| C | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >27° TO 45° | 85 | HR250 | 96 | 79 | 65 | 56 | 49 | 44 | 40 | 38 | 96 | 79 | 65 | 56 | 49 | 44 | 40 | 38 | 96 | 79 | 65 | 56 | 49 | 44 | 40 | 38 |
| | | HR150 | 82 | 65 | 53 | 44 | 39 | 35 | 32 | 30 | 82 | 65 | 53 | 44 | 39 | 35 | 32 | 30 | 82 | 65 | 53 | 44 | 39 | 35 | 32 | 30 |
| | 90 | HR250 | 92 | 77 | 64 | 56 | 49 | 44 | 40 | 38 | 92 | 77 | 64 | 56 | 49 | 44 | 40 | 38 | 92 | 77 | 64 | 56 | 49 | 44 | 40 | 38 |
| | | HR150 | 79 | 64 | 53 | 44 | 39 | 35 | 32 | 30 | 79 | 64 | 53 | 44 | 39 | 35 | 32 | 30 | 79 | 64 | 53 | 44 | 39 | 35 | 32 | 30 |
| | 100 | HR250 | 87 | 75 | 63 | 55 | 49 | 44 | 40 | 38 | 83 | 75 | 63 | 55 | 49 | 44 | 40 | 38 | 83 | 75 | 63 | 55 | 49 | 44 | 40 | 38 |
| | | HR150 | 75 | 62 | 52 | 44 | 39 | 35 | 32 | 30 | 72 | 62 | 52 | 44 | 39 | 35 | 32 | 30 | 72 | 62 | 52 | 44 | 39 | 35 | 32 | 30 |
| | 105 | HR250 | 81 | 72 | 61 | 54 | 49 | 44 | 40 | 38 | 79 | 72 | 61 | 54 | 49 | 44 | 40 | 38 | 79 | 72 | 61 | 54 | 49 | 44 | 40 | 38 |
| | | HR150 | 70 | 60 | 50 | 44 | 39 | 35 | 32 | 30 | 68 | 60 | 50 | 44 | 39 | 35 | 32 | 30 | 68 | 60 | 50 | 44 | 39 | 35 | 32 | 30 |
| | 110 | HR250 | 78 | 70 | 60 | 54 | 49 | 44 | 40 | 38 | 75 | 70 | 60 | 54 | 49 | 44 | 40 | 38 | 75 | 70 | 60 | 54 | 49 | 44 | 40 | 38 |
| | | HR150 | 68 | 59 | 50 | 44 | 39 | 35 | 32 | 30 | 65 | 59 | 50 | 44 | 39 | 35 | 32 | 30 | 65 | 59 | 50 | 44 | 39 | 35 | 32 | 30 |
| | 115 | HR250 | 75 | 69 | 59 | 53 | 48 | 44 | 40 | 38 | 72 | 69 | 59 | 53 | 48 | 44 | 40 | 38 | 72 | 69 | 59 | 53 | 48 | 44 | 40 | 38 |
| | | HR150 | 65 | 57 | 49 | 43 | 39 | 35 | 32 | 30 | 63 | 57 | 49 | 43 | 39 | 35 | 32 | 30 | 63 | 57 | 49 | 43 | 39 | 35 | 32 | 30 |
| | 120 | HR250 | 73 | 67 | 58 | 52 | 48 | 44 | 40 | 38 | 69 | 67 | 58 | 52 | 48 | 44 | 40 | 38 | 69 | 67 | 58 | 52 | 48 | 44 | 40 | 38 |
| | | HR150 | 63 | 56 | 48 | 43 | 39 | 35 | 32 | 30 | 60 | 56 | 48 | 43 | 39 | 35 | 32 | 30 | 60 | 56 | 48 | 43 | 39 | 35 | 32 | 30 |
| | 130 | HR250 | 68 | 64 | 56 | 51 | 47 | 43 | 40 | 38 | 64 | 64 | 56 | 51 | 47 | 43 | 40 | 38 | 64 | 64 | 56 | 51 | 47 | 43 | 40 | 38 |
| | | HR150 | 59 | 54 | 47 | 42 | 38 | 35 | 32 | 30 | 56 | 54 | 47 | 42 | 38 | 35 | 32 | 30 | 56 | 54 | 47 | 42 | 38 | 35 | 32 | 30 |
| | 140 | HR250 | 63 | 61 | 54 | 49 | 45 | 42 | 40 | 38 | 59 | 59 | 54 | 49 | 45 | 42 | 40 | 38 | 59 | 59 | 54 | 49 | 45 | 42 | 40 | 38 |
| | | HR150 | 55 | 52 | 45 | 41 | 37 | 35 | 32 | 30 | 52 | 52 | 45 | 41 | 37 | 35 | 32 | 30 | 52 | 52 | 45 | 41 | 37 | 35 | 32 | 30 |
| | 150 | HR250 | 60 | 59 | 52 | 48 | 44 | 41 | 39 | 37 | 55 | 55 | 52 | 48 | 44 | 41 | 39 | 37 | 55 | 55 | 52 | 48 | 44 | 41 | 39 | 37 |
| | | HR150 | 52 | 50 | 44 | 40 | 36 | 34 | 32 | 30 | 48 | 48 | 44 | 40 | 36 | 34 | 32 | 30 | 48 | 48 | 44 | 40 | 36 | 34 | 32 | 30 |

**Table 2.30: Maximum Uplift (lb.) - Wind Exposure C Condition**

| Exposure C | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >27° TO 45° | 85 | HR250 | -461 | -378 | -314 | -269 | -235 | -212 | -194 | -180 | -545 | -447 | -371 | -318 | -278 | -250 | -230 | -213 | -545 | -447 | -371 | -318 | -278 | -250 | -230 | -213 |
| | | HR150 | -394 | -311 | -255 | -213 | -187 | -168 | -154 | -143 | -466 | -368 | -302 | -252 | -221 | -199 | -182 | -169 | -466 | -368 | -302 | -252 | -221 | -199 | -182 | -169 |
| | 90 | HR250 | -501 | -419 | -350 | -305 | -267 | -240 | -220 | -204 | -585 | -493 | -412 | -358 | -313 | -282 | -259 | -240 | -585 | -493 | -412 | -358 | -313 | -282 | -259 | -240 |
| | | HR150 | -429 | -346 | -285 | -242 | -212 | -190 | -175 | -162 | -505 | -407 | -336 | -284 | -249 | -224 | -205 | -191 | -505 | -407 | -336 | -284 | -249 | -224 | -205 | -191 |
| | 100 | HR250 | -590 | -508 | -428 | -377 | -333 | -300 | -275 | -255 | -659 | -597 | -503 | -443 | -392 | -353 | -323 | -300 | -659 | -597 | -503 | -443 | -392 | -353 | -323 | -300 |
| | | HR150 | -507 | -421 | -350 | -302 | -264 | -238 | -218 | -203 | -572 | -495 | -412 | -355 | -311 | -280 | -257 | -238 | -572 | -495 | -412 | -355 | -311 | -280 | -257 | -238 |
| | 105 | HR250 | -610 | -540 | -460 | -408 | -368 | -331 | -304 | -282 | -697 | -638 | -543 | -481 | -435 | -391 | -359 | -333 | -697 | -638 | -543 | -481 | -435 | -391 | -359 | -333 |
| | | HR150 | -526 | -449 | -378 | -332 | -292 | -263 | -241 | -224 | -606 | -530 | -446 | -392 | -345 | -311 | -285 | -264 | -606 | -530 | -446 | -392 | -345 | -311 | -285 | -264 |
| | 110 | HR250 | -650 | -584 | -501 | -445 | -405 | -367 | -336 | -312 | -734 | -688 | -590 | -524 | -477 | -432 | -396 | -368 | -734 | -688 | -590 | -524 | -477 | -432 | -396 | -368 |
| | | HR150 | -561 | -487 | -412 | -363 | -323 | -291 | -267 | -248 | -639 | -574 | -485 | -428 | -381 | -343 | -314 | -292 | -639 | -574 | -485 | -428 | -381 | -343 | -314 | -292 |
| | 115 | HR250 | -686 | -626 | -539 | -481 | -439 | -402 | -368 | -342 | -769 | -735 | -634 | -566 | -515 | -472 | -433 | -402 | -769 | -735 | -634 | -566 | -515 | -472 | -433 | -402 |
| | | HR150 | -593 | -523 | -445 | -394 | -354 | -319 | -292 | -272 | -670 | -614 | -523 | -463 | -416 | -375 | -344 | -319 | -670 | -614 | -523 | -463 | -416 | -375 | -344 | -319 |
| | 120 | HR250 | -723 | -668 | -579 | -519 | -474 | -439 | -402 | -374 | -806 | -786 | -681 | -610 | -557 | -516 | -473 | -440 | -806 | -786 | -681 | -610 | -557 | -516 | -473 | -440 |
| | | HR150 | -625 | -559 | -478 | -425 | -386 | -348 | -319 | -297 | -702 | -658 | -563 | -500 | -454 | -410 | -376 | -349 | -702 | -658 | -563 | -500 | -454 | -410 | -376 | -349 |
| | 130 | HR250 | -796 | -753 | -661 | -595 | -546 | -508 | -475 | -441 | -879 | -879 | -777 | -700 | -643 | -597 | -559 | -519 | -879 | -879 | -777 | -700 | -643 | -597 | -559 | -519 |
| | | HR150 | -690 | -633 | -548 | -489 | -446 | -411 | -377 | -350 | -767 | -745 | -644 | -576 | -525 | -484 | -444 | -412 | -767 | -745 | -644 | -576 | -525 | -484 | -444 | -412 |
| | 140 | HR250 | -869 | -840 | -744 | -675 | -622 | -580 | -545 | -514 | -950 | -950 | -871 | -790 | -729 | -679 | -639 | -603 | -950 | -950 | -871 | -790 | -729 | -679 | -639 | -603 |
| | | HR150 | -755 | -709 | -619 | -557 | -510 | -473 | -440 | -408 | -830 | -830 | -725 | -652 | -597 | -555 | -515 | -479 | -830 | -830 | -725 | -652 | -597 | -555 | -515 | -479 |
| | 150 | HR250 | -941 | -926 | -827 | -755 | -699 | -653 | -616 | -584 | -1021 | -1021 | -970 | -885 | -819 | -766 | -722 | -685 | -1021 | -1021 | -970 | -885 | -819 | -766 | -722 | -685 |
| | | HR150 | -819 | -784 | -691 | -625 | -575 | -535 | -503 | -470 | -893 | -893 | -810 | -732 | -674 | -627 | -589 | -551 | -893 | -893 | -810 | -732 | -674 | -627 | -589 | -551 |

**Table 2.31: Maximum Downforce (lb.) - Wind Exposure C Condition**

| Exposure C | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >27° TO 45° | 85 | HR250 | 517 | 469 | 503 | 529 | 549 | 571 | 595 | 638 | 517 | 469 | 503 | 529 | 549 | 571 | 595 | 638 | 517 | 469 | 503 | 529 | 549 | 571 | 595 | 638 |
| | | HR150 | 443 | 386 | 410 | 420 | 436 | 454 | 472 | 506 | 443 | 386 | 410 | 420 | 436 | 454 | 472 | 506 | 443 | 386 | 410 | 420 | 436 | 454 | 472 | 506 |
| | 90 | HR250 | 547 | 491 | 523 | 553 | 570 | 590 | 612 | 638 | 544 | 491 | 523 | 553 | 570 | 590 | 612 | 638 | 544 | 491 | 523 | 553 | 570 | 590 | 612 | 638 |
| | | HR150 | 469 | 405 | 426 | 439 | 452 | 468 | 486 | 506 | 469 | 405 | 426 | 439 | 452 | 468 | 486 | 506 | 469 | 405 | 426 | 439 | 452 | 468 | 486 | 506 |
| | 100 | HR250 | 589 | 523 | 551 | 582 | 600 | 618 | 637 | 657 | 560 | 523 | 551 | 582 | 600 | 618 | 637 | 657 | 560 | 523 | 551 | 582 | 600 | 618 | 637 | 657 |
| | | HR150 | 507 | 433 | 451 | 467 | 477 | 490 | 506 | 522 | 486 | 433 | 451 | 467 | 477 | 490 | 506 | 522 | 486 | 433 | 451 | 467 | 477 | 490 | 506 | 522 |
| | 105 | HR250 | 642 | 568 | 587 | 615 | 641 | 655 | 671 | 689 | 621 | 568 | 587 | 615 | 641 | 655 | 671 | 689 | 621 | 568 | 587 | 615 | 641 | 655 | 671 | 689 |
| | | HR150 | 553 | 472 | 482 | 501 | 509 | 520 | 533 | 547 | 540 | 472 | 482 | 501 | 509 | 520 | 533 | 547 | 540 | 472 | 482 | 501 | 509 | 520 | 533 | 547 |
| | 110 | HR250 | 671 | 603 | 608 | 635 | 662 | 677 | 692 | 708 | 643 | 603 | 608 | 635 | 662 | 677 | 692 | 708 | 643 | 603 | 608 | 635 | 662 | 677 | 692 | 708 |
| | | HR150 | 579 | 503 | 500 | 518 | 529 | 537 | 549 | 562 | 560 | 503 | 500 | 518 | 529 | 537 | 549 | 562 | 560 | 503 | 500 | 518 | 529 | 537 | 549 | 562 |
| | 115 | HR250 | 703 | 641 | 632 | 656 | 682 | 702 | 715 | 729 | 671 | 641 | 632 | 656 | 682 | 702 | 715 | 729 | 671 | 641 | 632 | 656 | 682 | 702 | 715 | 729 |
| | | HR150 | 608 | 536 | 521 | 536 | 551 | 557 | 567 | 579 | 584 | 536 | 521 | 536 | 551 | 557 | 567 | 579 | 584 | 536 | 521 | 536 | 551 | 557 | 567 | 579 |
| | 120 | HR250 | 734 | 678 | 654 | 677 | 702 | 727 | 738 | 751 | 695 | 678 | 654 | 677 | 702 | 727 | 738 | 751 | 695 | 678 | 654 | 677 | 702 | 727 | 738 | 751 |
| | | HR150 | 635 | 568 | 540 | 554 | 572 | 577 | 585 | 596 | 606 | 568 | 540 | 554 | 572 | 577 | 585 | 596 | 606 | 568 | 540 | 554 | 572 | 577 | 585 | 596 |
| | 130 | HR250 | 795 | 753 | 701 | 720 | 742 | 766 | 787 | 797 | 746 | 746 | 701 | 720 | 742 | 766 | 787 | 797 | 746 | 746 | 701 | 720 | 742 | 766 | 787 | 797 |
| | | HR150 | 690 | 633 | 581 | 592 | 607 | 620 | 625 | 632 | 651 | 633 | 581 | 592 | 607 | 620 | 625 | 632 | 651 | 633 | 581 | 592 | 607 | 620 | 625 | 632 |
| | 140 | HR250 | 858 | 829 | 750 | 766 | 786 | 806 | 828 | 847 | 800 | 800 | 750 | 766 | 786 | 806 | 828 | 847 | 800 | 800 | 750 | 766 | 786 | 806 | 828 | 847 |
| | | HR150 | 745 | 700 | 624 | 632 | 644 | 659 | 668 | 673 | 699 | 699 | 624 | 632 | 644 | 659 | 668 | 673 | 699 | 699 | 624 | 632 | 644 | 659 | 668 | 673 |
| | 150 | HR250 | 919 | 904 | 808 | 812 | 829 | 848 | 868 | 888 | 851 | 851 | 808 | 812 | 829 | 848 | 868 | 888 | 851 | 851 | 808 | 812 | 829 | 848 | 868 | 888 |
| | | HR150 | 799 | 765 | 675 | 672 | 682 | 694 | 708 | 715 | 744 | 744 | 675 | 672 | 682 | 694 | 708 | 715 | 744 | 744 | 675 | 672 | 682 | 694 | 708 | 715 |

**Table 2.32: Maximum Shear (lb.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| C | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >27° TO 45° | 85 | HR250 | 43 | 164 | 243 | 300 | 342 | 380 | 415 | 447 | 43 | 164 | 243 | 300 | 342 | 380 | 415 | 447 | 43 | 164 | 243 | 300 | 342 | 380 | 415 | 447 |
| | | HR150 | 37 | 135 | 198 | 238 | 272 | 302 | 329 | 354 | 37 | 135 | 198 | 238 | 272 | 302 | 329 | 354 | 37 | 135 | 198 | 238 | 272 | 302 | 329 | 354 |
| | 90 | HR250 | 41 | 161 | 239 | 300 | 342 | 380 | 415 | 447 | 41 | 161 | 239 | 300 | 342 | 380 | 415 | 447 | 41 | 161 | 239 | 300 | 342 | 380 | 415 | 447 |
| | | HR150 | 35 | 133 | 195 | 238 | 272 | 302 | 329 | 354 | 35 | 133 | 195 | 238 | 272 | 302 | 329 | 354 | 35 | 133 | 195 | 238 | 272 | 302 | 329 | 354 |
| | 100 | HR250 | 39 | 156 | 234 | 297 | 342 | 380 | 415 | 447 | 37 | 156 | 234 | 297 | 342 | 380 | 415 | 447 | 37 | 156 | 234 | 297 | 342 | 380 | 415 | 447 |
| | | HR150 | 34 | 129 | 191 | 238 | 272 | 302 | 329 | 354 | 32 | 129 | 191 | 238 | 272 | 302 | 329 | 354 | 32 | 129 | 191 | 238 | 272 | 302 | 329 | 354 |
| | 105 | HR250 | 36 | 150 | 228 | 290 | 342 | 380 | 415 | 447 | 35 | 150 | 228 | 290 | 342 | 380 | 415 | 447 | 35 | 150 | 228 | 290 | 342 | 380 | 415 | 447 |
| | | HR150 | 31 | 125 | 187 | 237 | 272 | 302 | 329 | 354 | 31 | 125 | 187 | 237 | 272 | 302 | 329 | 354 | 31 | 125 | 187 | 237 | 272 | 302 | 329 | 354 |
| | 110 | HR250 | 35 | 146 | 224 | 287 | 340 | 380 | 415 | 447 | 34 | 146 | 224 | 287 | 340 | 380 | 415 | 447 | 34 | 146 | 224 | 287 | 340 | 380 | 415 | 447 |
| | | HR150 | 30 | 122 | 184 | 234 | 272 | 302 | 329 | 354 | 29 | 122 | 184 | 234 | 272 | 302 | 329 | 354 | 29 | 122 | 184 | 234 | 272 | 302 | 329 | 354 |
| | 115 | HR250 | 34 | 143 | 220 | 283 | 336 | 380 | 415 | 447 | 32 | 143 | 220 | 283 | 336 | 380 | 415 | 447 | 32 | 143 | 220 | 283 | 336 | 380 | 415 | 447 |
| | | HR150 | 29 | 120 | 181 | 231 | 272 | 302 | 329 | 354 | 28 | 120 | 181 | 231 | 272 | 302 | 329 | 354 | 28 | 120 | 181 | 231 | 272 | 302 | 329 | 354 |
| | 120 | HR250 | 33 | 140 | 216 | 279 | 333 | 380 | 415 | 447 | 31 | 140 | 216 | 279 | 333 | 380 | 415 | 447 | 31 | 140 | 216 | 279 | 333 | 380 | 415 | 447 |
| | | HR150 | 28 | 117 | 179 | 229 | 271 | 302 | 329 | 354 | 27 | 117 | 179 | 229 | 271 | 302 | 329 | 354 | 27 | 117 | 179 | 229 | 271 | 302 | 329 | 354 |
| | 130 | HR250 | 30 | 134 | 209 | 271 | 325 | 373 | 415 | 447 | 29 | 133 | 209 | 271 | 325 | 373 | 415 | 447 | 29 | 133 | 209 | 271 | 325 | 373 | 415 | 447 |
| | | HR150 | 26 | 112 | 173 | 223 | 266 | 302 | 329 | 354 | 25 | 112 | 173 | 223 | 266 | 302 | 329 | 354 | 25 | 112 | 173 | 223 | 266 | 302 | 329 | 354 |
| | 140 | HR250 | 29 | 128 | 202 | 264 | 317 | 365 | 408 | 447 | 27 | 123 | 202 | 264 | 317 | 365 | 408 | 447 | 27 | 123 | 202 | 264 | 317 | 365 | 408 | 447 |
| | | HR150 | 25 | 108 | 168 | 217 | 260 | 298 | 329 | 354 | 23 | 108 | 168 | 217 | 260 | 298 | 329 | 354 | 23 | 108 | 168 | 217 | 260 | 298 | 329 | 354 |
| | 150 | HR250 | 27 | 122 | 195 | 256 | 310 | 357 | 401 | 440 | 25 | 115 | 195 | 256 | 310 | 357 | 401 | 440 | 25 | 115 | 195 | 256 | 310 | 357 | 401 | 440 |
| | | HR150 | 23 | 104 | 163 | 212 | 255 | 292 | 327 | 354 | 22 | 101 | 163 | 212 | 255 | 292 | 327 | 354 | 22 | 101 | 163 | 212 | 255 | 292 | 327 | 354 |

**Table 2.33: Maximum Span Length (in.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 90 | 76 | 64 | 56 | 49 | 44 | 40 | 38 | 89 | 76 | 64 | 56 | 49 | 44 | 40 | 38 | 89 | 76 | 64 | 56 | 49 | 44 | 40 | 38 |
| | | HR150 | 77 | 63 | 52 | 44 | 39 | 35 | 32 | 30 | 77 | 63 | 52 | 44 | 39 | 35 | 32 | 30 | 77 | 63 | 52 | 44 | 39 | 35 | 32 | 30 |
| | 90 | HR250 | 86 | 74 | 63 | 55 | 49 | 44 | 40 | 38 | 84 | 74 | 63 | 55 | 49 | 44 | 40 | 38 | 84 | 74 | 63 | 55 | 49 | 44 | 40 | 38 |
| | | HR150 | 74 | 62 | 51 | 44 | 39 | 35 | 32 | 30 | 73 | 62 | 51 | 44 | 39 | 35 | 32 | 30 | 73 | 62 | 51 | 44 | 39 | 35 | 32 | 30 |
| | 100 | HR250 | 81 | 72 | 61 | 54 | 49 | 44 | 40 | 38 | 76 | 72 | 61 | 54 | 49 | 44 | 40 | 38 | 76 | 72 | 61 | 54 | 49 | 44 | 40 | 38 |
| | | HR150 | 70 | 60 | 50 | 44 | 39 | 35 | 32 | 30 | 66 | 60 | 50 | 44 | 39 | 35 | 32 | 30 | 66 | 60 | 50 | 44 | 39 | 35 | 32 | 30 |
| ROOFS >27° TO 45° | 105 | HR250 | 76 | 69 | 59 | 53 | 48 | 44 | 40 | 38 | 72 | 69 | 59 | 53 | 48 | 44 | 40 | 38 | 72 | 69 | 59 | 53 | 48 | 44 | 40 | 38 |
| | | HR150 | 65 | 58 | 49 | 43 | 39 | 35 | 32 | 30 | 63 | 58 | 49 | 43 | 39 | 35 | 32 | 30 | 63 | 58 | 49 | 43 | 39 | 35 | 32 | 30 |
| | 110 | HR250 | 73 | 67 | 58 | 52 | 48 | 44 | 40 | 38 | 69 | 67 | 58 | 52 | 48 | 44 | 40 | 38 | 69 | 67 | 58 | 52 | 48 | 44 | 40 | 38 |
| | | HR150 | 63 | 56 | 48 | 43 | 39 | 35 | 32 | 30 | 60 | 56 | 48 | 43 | 39 | 35 | 32 | 30 | 60 | 56 | 48 | 43 | 39 | 35 | 32 | 30 |
| | 115 | HR250 | 70 | 66 | 57 | 51 | 47 | 44 | 40 | 38 | 66 | 66 | 57 | 51 | 47 | 44 | 40 | 38 | 66 | 66 | 57 | 51 | 47 | 44 | 40 | 38 |
| | | HR150 | 61 | 55 | 47 | 42 | 38 | 35 | 32 | 30 | 58 | 55 | 47 | 42 | 38 | 35 | 32 | 30 | 58 | 55 | 47 | 42 | 38 | 35 | 32 | 30 |
| | 120 | HR250 | 68 | 64 | 56 | 51 | 46 | 43 | 40 | 38 | 63 | 63 | 56 | 51 | 46 | 43 | 40 | 38 | 63 | 63 | 56 | 51 | 46 | 43 | 40 | 38 |
| | | HR150 | 59 | 54 | 47 | 42 | 38 | 35 | 32 | 30 | 55 | 54 | 47 | 42 | 38 | 35 | 32 | 30 | 55 | 54 | 47 | 42 | 38 | 35 | 32 | 30 |
| | 130 | HR250 | 63 | 61 | 54 | 49 | 45 | 42 | 40 | 38 | 59 | 59 | 54 | 49 | 45 | 42 | 40 | 38 | 59 | 59 | 54 | 49 | 45 | 42 | 40 | 38 |
| | | HR150 | 55 | 51 | 45 | 41 | 37 | 34 | 32 | 30 | 51 | 51 | 45 | 41 | 37 | 34 | 32 | 30 | 51 | 51 | 45 | 41 | 37 | 34 | 32 | 30 |
| | 140 | HR250 | 59 | 58 | 52 | 48 | 44 | 41 | 39 | 37 | 54 | 54 | 52 | 48 | 44 | 41 | 39 | 37 | 54 | 54 | 52 | 48 | 44 | 41 | 39 | 37 |
| | | HR150 | 51 | 49 | 43 | 39 | 36 | 34 | 32 | 30 | 48 | 48 | 43 | 39 | 36 | 34 | 32 | 30 | 48 | 48 | 43 | 39 | 36 | 34 | 32 | 30 |
| | 150 | HR250 | 55 | 55 | 50 | 46 | 43 | 40 | 38 | 36 | 51 | 51 | 50 | 46 | 43 | 40 | 38 | 36 | 51 | 51 | 50 | 46 | 43 | 40 | 38 | 36 |
| | | HR150 | 48 | 47 | 42 | 38 | 35 | 33 | 31 | 30 | 44 | 44 | 42 | 38 | 35 | 33 | 31 | 30 | 44 | 44 | 42 | 38 | 35 | 33 | 31 | 30 |

**Table 2.34: Maximum Uplift (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | -518 | -439 | -368 | -323 | -282 | -254 | -233 | -217 | -605 | -518 | -434 | -381 | -333 | -300 | -275 | -256 | -605 | -518 | -434 | -381 | -333 | -300 | -275 | -256 |
| | | HR150 | -445 | -363 | -300 | -256 | -224 | -202 | -185 | -172 | -524 | -428 | -354 | -302 | -265 | -238 | -218 | -203 | -524 | -428 | -354 | -302 | -265 | -238 | -218 | -203 |
| | 90 | HR250 | -561 | -485 | -409 | -361 | -320 | -288 | -264 | -245 | -644 | -569 | -480 | -423 | -375 | -338 | -310 | -288 | -644 | -569 | -480 | -423 | -375 | -338 | -310 | -288 |
| | | HR150 | -483 | -402 | -335 | -290 | -254 | -228 | -209 | -194 | -559 | -472 | -393 | -340 | -298 | -268 | -246 | -228 | -559 | -472 | -393 | -340 | -298 | -268 | -246 | -228 |
| | 100 | HR250 | -659 | -584 | -498 | -441 | -398 | -359 | -329 | -305 | -724 | -686 | -584 | -518 | -468 | -421 | -386 | -359 | -724 | -686 | -584 | -518 | -468 | -421 | -386 | -359 |
| | | HR150 | -568 | -486 | -408 | -359 | -316 | -285 | -261 | -242 | -630 | -570 | -480 | -422 | -371 | -334 | -307 | -285 | -630 | -570 | -480 | -422 | -371 | -334 | -307 | -285 |
| | 105 | HR250 | -679 | -618 | -533 | -475 | -433 | -396 | -363 | -337 | -765 | -729 | -628 | -560 | -511 | -467 | -428 | -398 | -765 | -729 | -628 | -560 | -511 | -467 | -428 | -398 |
| | | HR150 | -587 | -517 | -439 | -389 | -349 | -314 | -288 | -268 | -666 | -609 | -518 | -458 | -412 | -371 | -340 | -316 | -666 | -609 | -518 | -458 | -412 | -371 | -340 | -316 |
| | 110 | HR250 | -723 | -667 | -579 | -518 | -473 | -438 | -401 | -373 | -805 | -785 | -681 | -609 | -556 | -515 | -472 | -439 | -805 | -785 | -681 | -609 | -556 | -515 | -472 | -439 |
| | | HR150 | -625 | -559 | -478 | -424 | -385 | -348 | -319 | -296 | -702 | -657 | -562 | -499 | -453 | -409 | -375 | -348 | -702 | -657 | -562 | -499 | -453 | -409 | -375 | -348 |
| | 115 | HR250 | -761 | -712 | -622 | -558 | -511 | -474 | -440 | -408 | -843 | -836 | -730 | -656 | -600 | -557 | -516 | -479 | -843 | -836 | -730 | -656 | -600 | -557 | -516 | -479 |
| | | HR150 | -659 | -598 | -514 | -458 | -417 | -381 | -349 | -324 | -736 | -702 | -604 | -538 | -490 | -447 | -410 | -381 | -736 | -702 | -604 | -538 | -490 | -447 | -410 | -381 |
| | 120 | HR250 | -801 | -759 | -666 | -600 | -551 | -512 | -480 | -446 | -883 | -883 | -783 | -706 | -648 | -602 | -564 | -524 | -883 | -883 | -783 | -706 | -648 | -602 | -564 | -524 |
| | | HR150 | -694 | -638 | -552 | -494 | -451 | -415 | -381 | -354 | -771 | -750 | -649 | -580 | -530 | -488 | -448 | -416 | -771 | -750 | -649 | -580 | -530 | -488 | -448 | -416 |
| | 130 | HR250 | -880 | -852 | -756 | -686 | -633 | -590 | -555 | -526 | -962 | -962 | -889 | -807 | -744 | -694 | -653 | -618 | -962 | -962 | -889 | -807 | -744 | -694 | -653 | -618 |
| | | HR150 | -764 | -720 | -630 | -567 | -519 | -482 | -449 | -417 | -840 | -840 | -740 | -666 | -611 | -567 | -528 | -491 | -840 | -840 | -740 | -666 | -611 | -567 | -528 | -491 |
| | 140 | HR250 | -958 | -947 | -848 | -775 | -718 | -672 | -634 | -601 | -1039 | -1039 | -993 | -907 | -841 | -787 | -742 | -704 | -1039 | -1039 | -993 | -907 | -841 | -787 | -742 | -704 |
| | | HR150 | -834 | -802 | -709 | -642 | -591 | -551 | -518 | -486 | -908 | -908 | -830 | -752 | -692 | -645 | -606 | -570 | -908 | -908 | -830 | -752 | -692 | -645 | -606 | -570 |
| | 150 | HR250 | -1030 | -1030 | -940 | -864 | -804 | -755 | -714 | -679 | -1117 | -1117 | -1101 | -1012 | -942 | -885 | -836 | -795 | -1117 | -1117 | -1101 | -1012 | -942 | -885 | -836 | -795 |
| | | HR150 | -900 | -884 | -789 | -718 | -664 | -621 | -585 | -554 | -977 | -977 | -924 | -842 | -778 | -727 | -685 | -649 | -977 | -977 | -924 | -842 | -778 | -727 | -685 | -649 |

ROOFS >27° TO 45°

**Table 2.35: Maximum Downforce (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 564 | 504 | 534 | 566 | 581 | 601 | 621 | 643 | 557 | 504 | 534 | 566 | 581 | 601 | 621 | 643 | 557 | 504 | 534 | 566 | 581 | 601 | 621 | 643 |
| | | HR150 | 484 | 416 | 436 | 449 | 461 | 477 | 493 | 510 | 483 | 416 | 436 | 449 | 461 | 477 | 493 | 510 | 483 | 416 | 436 | 449 | 461 | 477 | 493 | 510 |
| | 90 | HR250 | 597 | 528 | 556 | 587 | 606 | 623 | 642 | 662 | 583 | 528 | 556 | 587 | 606 | 623 | 642 | 662 | 583 | 528 | 556 | 587 | 606 | 623 | 642 | 662 |
| | | HR150 | 513 | 438 | 455 | 472 | 481 | 494 | 509 | 525 | 506 | 438 | 455 | 472 | 481 | 494 | 509 | 525 | 506 | 438 | 455 | 472 | 481 | 494 | 509 | 525 |
| | 100 | HR250 | 643 | 569 | 588 | 616 | 642 | 655 | 672 | 690 | 601 | 569 | 588 | 616 | 642 | 655 | 672 | 690 | 601 | 569 | 588 | 616 | 642 | 655 | 672 | 690 |
| | | HR150 | 554 | 474 | 483 | 502 | 510 | 520 | 533 | 547 | 523 | 474 | 483 | 502 | 510 | 520 | 533 | 547 | 523 | 474 | 483 | 502 | 510 | 520 | 533 | 547 |
| | 105 | HR250 | 699 | 637 | 629 | 654 | 680 | 699 | 712 | 727 | 668 | 637 | 629 | 654 | 680 | 699 | 712 | 727 | 668 | 637 | 629 | 654 | 680 | 699 | 712 | 727 |
| | | HR150 | 604 | 532 | 518 | 534 | 548 | 555 | 565 | 577 | 582 | 532 | 518 | 534 | 548 | 555 | 565 | 577 | 582 | 532 | 518 | 534 | 548 | 555 | 565 | 577 |
| | 110 | HR250 | 732 | 676 | 653 | 676 | 701 | 726 | 736 | 750 | 693 | 676 | 653 | 676 | 701 | 726 | 736 | 750 | 693 | 676 | 653 | 676 | 701 | 726 | 736 | 750 |
| | | HR150 | 633 | 566 | 539 | 553 | 571 | 576 | 584 | 595 | 604 | 566 | 539 | 553 | 571 | 576 | 584 | 595 | 604 | 566 | 539 | 553 | 571 | 576 | 584 | 595 |
| | 115 | HR250 | 767 | 718 | 679 | 700 | 723 | 747 | 764 | 775 | 724 | 718 | 679 | 700 | 723 | 747 | 764 | 775 | 724 | 718 | 679 | 700 | 723 | 747 | 764 | 775 |
| | | HR150 | 664 | 602 | 562 | 574 | 590 | 600 | 606 | 615 | 631 | 602 | 562 | 574 | 590 | 600 | 606 | 615 | 631 | 602 | 562 | 574 | 590 | 600 | 606 | 615 |
| | 120 | HR250 | 800 | 758 | 704 | 724 | 745 | 768 | 791 | 800 | 750 | 750 | 704 | 724 | 745 | 768 | 791 | 800 | 750 | 750 | 704 | 724 | 745 | 768 | 791 | 800 |
| | | HR150 | 693 | 637 | 584 | 595 | 609 | 623 | 628 | 635 | 655 | 637 | 584 | 595 | 609 | 623 | 628 | 635 | 655 | 637 | 584 | 595 | 609 | 623 | 628 | 635 |
| | 130 | HR250 | 867 | 840 | 757 | 773 | 792 | 812 | 834 | 855 | 806 | 806 | 757 | 773 | 792 | 812 | 834 | 855 | 806 | 806 | 757 | 773 | 792 | 812 | 834 | 855 |
| | | HR150 | 753 | 709 | 630 | 638 | 650 | 664 | 674 | 679 | 704 | 704 | 630 | 638 | 650 | 664 | 674 | 679 | 704 | 704 | 630 | 638 | 650 | 664 | 674 | 679 |
| | 140 | HR250 | 935 | 924 | 828 | 824 | 841 | 859 | 878 | 898 | 866 | 866 | 828 | 824 | 841 | 859 | 878 | 898 | 866 | 866 | 828 | 824 | 841 | 859 | 878 | 898 |
| | | HR150 | 814 | 783 | 692 | 683 | 692 | 704 | 717 | 726 | 757 | 757 | 692 | 683 | 692 | 704 | 717 | 726 | 757 | 757 | 692 | 683 | 692 | 704 | 717 | 726 |
| | 150 | HR250 | 995 | 995 | 909 | 876 | 890 | 906 | 923 | 941 | 921 | 921 | 909 | 876 | 890 | 906 | 923 | 941 | 921 | 921 | 909 | 876 | 890 | 906 | 923 | 941 |
| | | HR150 | 870 | 855 | 762 | 728 | 735 | 745 | 756 | 768 | 806 | 806 | 762 | 728 | 735 | 745 | 756 | 768 | 806 | 806 | 762 | 728 | 735 | 745 | 756 | 768 |

ROOFS >27° TO 45°

**Table 2.36: Maximum Shear (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 40 | 159 | 237 | 300 | 342 | 380 | 415 | 447 | 40 | 159 | 237 | 300 | 342 | 380 | 415 | 447 | 40 | 159 | 237 | 300 | 342 | 380 | 415 | 447 |
| | | HR150 | 35 | 131 | 194 | 238 | 272 | 302 | 329 | 354 | 35 | 131 | 194 | 238 | 272 | 302 | 329 | 354 | 35 | 131 | 194 | 238 | 272 | 302 | 329 | 354 |
| | 90 | HR250 | 39 | 155 | 233 | 296 | 342 | 380 | 415 | 447 | 38 | 155 | 233 | 296 | 342 | 380 | 415 | 447 | 38 | 155 | 233 | 296 | 342 | 380 | 415 | 447 |
| | | HR150 | 33 | 128 | 191 | 238 | 272 | 302 | 329 | 354 | 33 | 128 | 191 | 238 | 272 | 302 | 329 | 354 | 33 | 128 | 191 | 238 | 272 | 302 | 329 | 354 |
| | 100 | HR250 | 36 | 150 | 228 | 290 | 342 | 380 | 415 | 447 | 34 | 150 | 228 | 290 | 342 | 380 | 415 | 447 | 34 | 150 | 228 | 290 | 342 | 380 | 415 | 447 |
| | | HR150 | 31 | 124 | 187 | 237 | 272 | 302 | 329 | 354 | 30 | 124 | 187 | 237 | 272 | 302 | 329 | 354 | 30 | 124 | 187 | 237 | 272 | 302 | 329 | 354 |
| | 105 | HR250 | 34 | 143 | 221 | 283 | 337 | 380 | 415 | 447 | 32 | 143 | 221 | 283 | 337 | 380 | 415 | 447 | 32 | 143 | 221 | 283 | 337 | 380 | 415 | 447 |
| | | HR150 | 29 | 120 | 182 | 232 | 272 | 302 | 329 | 354 | 28 | 120 | 182 | 232 | 272 | 302 | 329 | 354 | 28 | 120 | 182 | 232 | 272 | 302 | 329 | 354 |
| | 110 | HR250 | 33 | 140 | 217 | 279 | 333 | 380 | 415 | 447 | 31 | 140 | 217 | 279 | 333 | 380 | 415 | 447 | 31 | 140 | 217 | 279 | 333 | 380 | 415 | 447 |
| | | HR150 | 28 | 117 | 179 | 229 | 271 | 302 | 329 | 354 | 27 | 117 | 179 | 229 | 271 | 302 | 329 | 354 | 27 | 117 | 179 | 229 | 271 | 302 | 329 | 354 |
| | 115 | HR250 | 31 | 137 | 213 | 275 | 329 | 376 | 415 | 447 | 30 | 137 | 213 | 275 | 329 | 376 | 415 | 447 | 30 | 137 | 213 | 275 | 329 | 376 | 415 | 447 |
| | | HR150 | 27 | 115 | 176 | 226 | 268 | 302 | 329 | 354 | 26 | 115 | 176 | 226 | 268 | 302 | 329 | 354 | 26 | 115 | 176 | 226 | 268 | 302 | 329 | 354 |
| | 120 | HR250 | 30 | 133 | 209 | 271 | 324 | 372 | 415 | 447 | 28 | 132 | 209 | 271 | 324 | 372 | 415 | 447 | 28 | 132 | 209 | 271 | 324 | 372 | 415 | 447 |
| | | HR150 | 26 | 112 | 173 | 223 | 265 | 302 | 329 | 354 | 25 | 112 | 173 | 223 | 265 | 302 | 329 | 354 | 25 | 112 | 173 | 223 | 265 | 302 | 329 | 354 |
| | 130 | HR250 | 28 | 127 | 201 | 263 | 316 | 364 | 407 | 447 | 26 | 122 | 201 | 263 | 316 | 364 | 407 | 447 | 26 | 122 | 201 | 263 | 316 | 364 | 407 | 447 |
| | | HR150 | 25 | 107 | 167 | 217 | 259 | 297 | 329 | 354 | 23 | 106 | 167 | 217 | 259 | 297 | 329 | 354 | 23 | 106 | 167 | 217 | 259 | 297 | 329 | 354 |
| | 140 | HR250 | 26 | 121 | 193 | 254 | 308 | 355 | 398 | 438 | 24 | 113 | 193 | 254 | 308 | 355 | 398 | 438 | 24 | 113 | 193 | 254 | 308 | 355 | 398 | 438 |
| | | HR150 | 23 | 102 | 162 | 211 | 253 | 291 | 325 | 354 | 21 | 99 | 162 | 211 | 253 | 291 | 325 | 354 | 21 | 99 | 162 | 211 | 253 | 291 | 325 | 354 |
| | 150 | HR250 | 25 | 114 | 186 | 246 | 299 | 347 | 390 | 430 | 23 | 106 | 186 | 246 | 299 | 347 | 390 | 430 | 23 | 106 | 186 | 246 | 299 | 347 | 390 | 430 |
| | | HR150 | 22 | 98 | 156 | 205 | 247 | 285 | 319 | 351 | 20 | 93 | 156 | 205 | 247 | 285 | 319 | 351 | 20 | 93 | 156 | 205 | 247 | 285 | 319 | 351 |

ROOFS >27° TO 45°

**Table 2.37: Maximum Span Length (in.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| B | 85 | HR250 | 103 | 79 | 64 | 53 | 47 | 42 | 38 | 0 | 103 | 79 | 64 | 53 | 47 | 42 | 38 | 0 | 103 | 79 | 64 | 53 | 47 | 42 | 38 | 0 |
| | | HR150 | 87 | 64 | 50 | 41 | 36 | 33 | 30 | 0 | 87 | 64 | 50 | 41 | 36 | 33 | 30 | 0 | 87 | 64 | 50 | 41 | 36 | 33 | 30 | 0 |
| | 90 | HR250 | 99 | 78 | 64 | 53 | 47 | 42 | 38 | 0 | 99 | 78 | 64 | 53 | 47 | 42 | 38 | 0 | 99 | 78 | 64 | 53 | 47 | 42 | 38 | 0 |
| | | HR150 | 84 | 63 | 50 | 41 | 36 | 33 | 30 | 0 | 84 | 63 | 50 | 41 | 36 | 33 | 30 | 0 | 84 | 63 | 50 | 41 | 36 | 33 | 30 | 0 |
| | 100 | HR250 | 92 | 75 | 62 | 53 | 47 | 42 | 38 | 0 | 89 | 75 | 62 | 53 | 47 | 42 | 38 | 0 | 89 | 75 | 62 | 53 | 47 | 42 | 38 | 0 |
| | | HR150 | 78 | 61 | 50 | 41 | 36 | 33 | 30 | 0 | 77 | 61 | 50 | 41 | 36 | 33 | 30 | 0 | 77 | 61 | 50 | 41 | 36 | 33 | 30 | 0 |
| | 105 | HR250 | 89 | 74 | 62 | 53 | 47 | 42 | 38 | 0 | 85 | 74 | 62 | 53 | 47 | 42 | 38 | 0 | 85 | 74 | 62 | 53 | 47 | 42 | 38 | 0 |
| | | HR150 | 76 | 60 | 49 | 41 | 36 | 33 | 30 | 0 | 74 | 60 | 49 | 41 | 36 | 33 | 30 | 0 | 74 | 60 | 49 | 41 | 36 | 33 | 30 | 0 |
| | 110 | HR250 | 86 | 72 | 61 | 53 | 47 | 42 | 38 | 0 | 82 | 72 | 61 | 53 | 47 | 42 | 38 | 0 | 82 | 72 | 61 | 53 | 47 | 42 | 38 | 0 |
| | | HR150 | 73 | 59 | 49 | 41 | 36 | 33 | 30 | 0 | 71 | 59 | 49 | 41 | 36 | 33 | 30 | 0 | 71 | 59 | 49 | 41 | 36 | 33 | 30 | 0 |
| | 115 | HR250 | 83 | 71 | 60 | 53 | 47 | 42 | 38 | 0 | 78 | 71 | 60 | 53 | 47 | 42 | 38 | 0 | 78 | 71 | 60 | 53 | 47 | 42 | 38 | 0 |
| | | HR150 | 71 | 58 | 48 | 41 | 36 | 33 | 30 | 0 | 68 | 58 | 48 | 41 | 36 | 33 | 30 | 0 | 68 | 58 | 48 | 41 | 36 | 33 | 30 | 0 |
| | 120 | HR250 | 80 | 70 | 59 | 52 | 47 | 42 | 38 | 0 | 75 | 70 | 59 | 52 | 47 | 42 | 38 | 0 | 75 | 70 | 59 | 52 | 47 | 42 | 38 | 0 |
| | | HR150 | 69 | 57 | 48 | 41 | 36 | 33 | 30 | 0 | 65 | 57 | 48 | 41 | 36 | 33 | 30 | 0 | 65 | 57 | 48 | 41 | 36 | 33 | 30 | 0 |
| | 130 | HR250 | 75 | 67 | 57 | 51 | 46 | 42 | 38 | 0 | 70 | 67 | 57 | 51 | 46 | 42 | 38 | 0 | 70 | 67 | 57 | 51 | 46 | 42 | 38 | 0 |
| | | HR150 | 64 | 55 | 47 | 41 | 36 | 33 | 30 | 0 | 60 | 55 | 47 | 41 | 36 | 33 | 30 | 0 | 60 | 55 | 47 | 41 | 36 | 33 | 30 | 0 |
| | 140 | HR250 | 70 | 65 | 56 | 50 | 46 | 42 | 38 | 0 | 65 | 65 | 56 | 50 | 46 | 42 | 38 | 0 | 65 | 65 | 56 | 50 | 46 | 42 | 38 | 0 |
| | | HR150 | 61 | 53 | 46 | 40 | 36 | 33 | 30 | 0 | 56 | 53 | 46 | 40 | 36 | 33 | 30 | 0 | 56 | 53 | 46 | 40 | 36 | 33 | 30 | 0 |
| | 150 | HR250 | 66 | 62 | 54 | 49 | 45 | 41 | 38 | 0 | 61 | 61 | 54 | 49 | 45 | 41 | 38 | 0 | 61 | 61 | 54 | 49 | 45 | 41 | 38 | 0 |
| | | HR150 | 57 | 52 | 44 | 40 | 36 | 33 | 30 | 0 | 53 | 52 | 44 | 40 | 36 | 33 | 30 | 0 | 53 | 52 | 44 | 40 | 36 | 33 | 30 | 0 |

ROOFS >45° TO 55°

**Table 2.38: Maximum Uplift (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| B | 85 | HR250 | -381 | -295 | -237 | -198 | -173 | -156 | -143 | 0 | -477 | -370 | -297 | -248 | -217 | -195 | -179 | 0 | -477 | -370 | -297 | -248 | -217 | -195 | -179 | 0 |
| | | HR150 | -324 | -238 | -185 | -154 | -135 | -121 | -111 | 0 | -406 | -298 | -231 | -193 | -169 | -152 | -139 | 0 | -406 | -298 | -231 | -193 | -169 | -152 | -139 | 0 |
| | 90 | HR250 | -417 | -328 | -268 | -223 | -195 | -176 | -161 | 0 | -518 | -410 | -335 | -279 | -245 | -220 | -202 | 0 | -518 | -410 | -335 | -279 | -245 | -220 | -202 | 0 |
| | | HR150 | -353 | -265 | -209 | -174 | -152 | -137 | -126 | 0 | -442 | -331 | -261 | -218 | -191 | -172 | -157 | 0 | -442 | -331 | -261 | -218 | -191 | -172 | -157 | 0 |
| | 100 | HR250 | -484 | -395 | -327 | -279 | -245 | -220 | -202 | 0 | -586 | -494 | -409 | -349 | -306 | -275 | -252 | 0 | -586 | -494 | -409 | -349 | -306 | -275 | -252 | 0 |
| | | HR150 | -411 | -321 | -261 | -218 | -191 | -172 | -157 | 0 | -505 | -401 | -326 | -272 | -238 | -214 | -196 | 0 | -505 | -401 | -326 | -272 | -238 | -214 | -196 | 0 |
| | 105 | HR250 | -517 | -430 | -358 | -310 | -271 | -244 | -224 | 0 | -620 | -537 | -447 | -387 | -339 | -305 | -280 | 0 | -620 | -537 | -447 | -387 | -339 | -305 | -280 | 0 |
| | | HR150 | -441 | -350 | -288 | -241 | -211 | -190 | -174 | 0 | -536 | -438 | -359 | -302 | -264 | -238 | -218 | 0 | -536 | -438 | -359 | -302 | -264 | -238 | -218 | 0 |
| | 110 | HR250 | -550 | -465 | -390 | -341 | -299 | -269 | -247 | 0 | -652 | -578 | -485 | -425 | -372 | -335 | -307 | 0 | -652 | -578 | -485 | -425 | -372 | -335 | -307 | 0 |
| | | HR150 | -469 | -380 | -314 | -266 | -233 | -210 | -192 | 0 | -564 | -472 | -390 | -331 | -290 | -261 | -239 | 0 | -564 | -472 | -390 | -331 | -290 | -261 | -239 | 0 |
| | 115 | HR250 | -583 | -501 | -422 | -371 | -328 | -295 | -271 | 0 | -687 | -624 | -526 | -463 | -409 | -368 | -338 | 0 | -687 | -624 | -526 | -463 | -409 | -368 | -338 | 0 |
| | | HR150 | -499 | -410 | -340 | -292 | -256 | -230 | -211 | 0 | -595 | -511 | -424 | -364 | -319 | -287 | -263 | 0 | -595 | -511 | -424 | -364 | -319 | -287 | -263 | 0 |
| | 120 | HR250 | -616 | -537 | -455 | -402 | -359 | -323 | -296 | 0 | -719 | -668 | -566 | -500 | -446 | -402 | -368 | 0 | -719 | -668 | -566 | -500 | -446 | -402 | -368 | 0 |
| | | HR150 | -528 | -441 | -368 | -319 | -279 | -252 | -231 | 0 | -624 | -548 | -457 | -397 | -348 | -313 | -287 | 0 | -624 | -548 | -457 | -397 | -348 | -313 | -287 | 0 |
| | 130 | HR250 | -681 | -610 | -522 | -464 | -422 | -381 | -350 | 0 | -785 | -757 | -648 | -576 | -524 | -473 | -434 | 0 | -785 | -757 | -648 | -576 | -524 | -473 | -434 | 0 |
| | | HR150 | -585 | -503 | -424 | -373 | -330 | -297 | -272 | 0 | -682 | -625 | -526 | -464 | -410 | -369 | -338 | 0 | -682 | -625 | -526 | -464 | -410 | -369 | -338 | 0 |
| | 140 | HR250 | -743 | -682 | -590 | -527 | -481 | -443 | -407 | 0 | -851 | -848 | -733 | -655 | -598 | -551 | -505 | 0 | -851 | -848 | -733 | -655 | -598 | -551 | -505 | 0 |
| | | HR150 | -641 | -565 | -481 | -426 | -384 | -345 | -317 | 0 | -740 | -702 | -598 | -529 | -477 | -429 | -394 | 0 | -740 | -702 | -598 | -529 | -477 | -429 | -394 | 0 |
| | 150 | HR250 | -808 | -758 | -661 | -594 | -544 | -505 | -469 | 0 | -916 | -916 | -820 | -737 | -675 | -627 | -582 | 0 | -916 | -916 | -820 | -737 | -675 | -627 | -582 | 0 |
| | | HR150 | -698 | -630 | -541 | -482 | -438 | -398 | -365 | 0 | -798 | -782 | -671 | -598 | -544 | -494 | -453 | 0 | -798 | -782 | -671 | -598 | -544 | -494 | -453 | 0 |

ROOFS >45° TO 55°

**Table 2.39: Maximum Downforce (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| B | 85 | HR250 | 432 | 370 | 385 | 394 | 408 | 425 | 443 | 0 | 432 | 370 | 385 | 394 | 408 | 425 | 443 | 0 | 432 | 370 | 385 | 394 | 408 | 425 | 443 | 0 |
| | | HR150 | 367 | 298 | 300 | 307 | 318 | 331 | 345 | 0 | 367 | 298 | 300 | 307 | 318 | 331 | 345 | 0 | 367 | 298 | 300 | 307 | 318 | 331 | 345 | 0 |
| | 90 | HR250 | 463 | 390 | 406 | 412 | 424 | 440 | 456 | 0 | 459 | 390 | 406 | 412 | 424 | 440 | 456 | 0 | 459 | 390 | 406 | 412 | 424 | 440 | 456 | 0 |
| | | HR150 | 392 | 315 | 317 | 321 | 331 | 343 | 355 | 0 | 392 | 315 | 317 | 321 | 331 | 343 | 355 | 0 | 392 | 315 | 317 | 321 | 331 | 343 | 355 | 0 |
| | 100 | HR250 | 519 | 430 | 442 | 450 | 458 | 470 | 484 | 0 | 503 | 430 | 442 | 450 | 458 | 470 | 484 | 0 | 503 | 430 | 442 | 450 | 458 | 470 | 484 | 0 |
| | | HR150 | 441 | 350 | 353 | 351 | 357 | 366 | 377 | 0 | 434 | 350 | 353 | 351 | 357 | 366 | 377 | 0 | 434 | 350 | 353 | 351 | 357 | 366 | 377 | 0 |
| | 105 | HR250 | 546 | 454 | 460 | 471 | 476 | 486 | 498 | 0 | 523 | 454 | 460 | 471 | 476 | 486 | 498 | 0 | 523 | 454 | 460 | 471 | 476 | 486 | 498 | 0 |
| | | HR150 | 465 | 370 | 370 | 367 | 371 | 379 | 388 | 0 | 452 | 370 | 370 | 367 | 371 | 379 | 388 | 0 | 452 | 370 | 370 | 367 | 371 | 379 | 388 | 0 |
| | 110 | HR250 | 575 | 486 | 480 | 494 | 496 | 504 | 515 | 0 | 548 | 486 | 480 | 494 | 496 | 504 | 515 | 0 | 548 | 486 | 480 | 494 | 496 | 504 | 515 | 0 |
| | | HR150 | 491 | 397 | 386 | 385 | 386 | 393 | 401 | 0 | 474 | 397 | 386 | 385 | 386 | 393 | 401 | 0 | 474 | 397 | 386 | 385 | 386 | 393 | 401 | 0 |
| | 115 | HR250 | 602 | 517 | 499 | 512 | 516 | 522 | 531 | 0 | 569 | 517 | 499 | 512 | 516 | 522 | 531 | 0 | 569 | 517 | 499 | 512 | 516 | 522 | 531 | 0 |
| | | HR150 | 515 | 424 | 403 | 402 | 402 | 407 | 414 | 0 | 493 | 424 | 403 | 402 | 402 | 407 | 414 | 0 | 493 | 424 | 403 | 402 | 402 | 407 | 414 | 0 |
| | 120 | HR250 | 630 | 549 | 519 | 530 | 537 | 541 | 549 | 0 | 592 | 549 | 519 | 530 | 537 | 541 | 549 | 0 | 592 | 549 | 519 | 530 | 537 | 541 | 549 | 0 |
| | | HR150 | 540 | 451 | 419 | 421 | 418 | 421 | 427 | 0 | 513 | 451 | 419 | 421 | 418 | 421 | 427 | 0 | 513 | 451 | 419 | 421 | 418 | 421 | 427 | 0 |
| | 130 | HR250 | 686 | 615 | 560 | 567 | 579 | 581 | 585 | 0 | 637 | 615 | 560 | 567 | 579 | 581 | 585 | 0 | 637 | 615 | 560 | 567 | 579 | 581 | 585 | 0 |
| | | HR150 | 589 | 507 | 454 | 456 | 453 | 453 | 456 | 0 | 554 | 507 | 454 | 456 | 453 | 453 | 456 | 0 | 554 | 507 | 454 | 456 | 453 | 453 | 456 | 0 |
| | 140 | HR250 | 742 | 681 | 602 | 607 | 616 | 625 | 626 | 0 | 683 | 681 | 602 | 607 | 616 | 625 | 626 | 0 | 683 | 681 | 602 | 607 | 616 | 625 | 626 | 0 |
| | | HR150 | 639 | 564 | 491 | 490 | 491 | 487 | 488 | 0 | 595 | 564 | 491 | 490 | 491 | 487 | 488 | 0 | 595 | 564 | 491 | 490 | 491 | 487 | 488 | 0 |
| | 150 | HR250 | 797 | 747 | 653 | 647 | 654 | 663 | 668 | 0 | 729 | 729 | 653 | 647 | 654 | 663 | 668 | 0 | 729 | 729 | 653 | 647 | 654 | 663 | 668 | 0 |
| | | HR150 | 689 | 622 | 534 | 524 | 526 | 523 | 521 | 0 | 635 | 622 | 534 | 524 | 526 | 523 | 521 | 0 | 635 | 622 | 534 | 524 | 526 | 523 | 521 | 0 |

ROOFS >45° TO 55°

**Table 2.40: Maximum Shear (lb.) - Wind Exposure B Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| **B** | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >45° TO 55° | **85** | HR250 | 62 | 221 | 317 | 380 | 434 | 482 | 526 | 0 | 62 | 221 | 317 | 380 | 434 | 482 | 526 | 0 | 62 | 221 | 317 | 380 | 434 | 482 | 526 | 0 |
| | | HR150 | 52 | 178 | 247 | 296 | 338 | 376 | 410 | 0 | 52 | 178 | 247 | 296 | 338 | 376 | 410 | 0 | 52 | 178 | 247 | 296 | 338 | 376 | 410 | 0 |
| | **90** | HR250 | 60 | 217 | 317 | 380 | 434 | 482 | 526 | 0 | 59 | 217 | 317 | 380 | 434 | 482 | 526 | 0 | 59 | 217 | 317 | 380 | 434 | 482 | 526 | 0 |
| | | HR150 | 50 | 175 | 247 | 296 | 338 | 376 | 410 | 0 | 50 | 175 | 247 | 296 | 338 | 376 | 410 | 0 | 50 | 175 | 247 | 296 | 338 | 376 | 410 | 0 |
| | **100** | HR250 | 55 | 209 | 309 | 380 | 434 | 482 | 526 | 0 | 54 | 209 | 309 | 380 | 434 | 482 | 526 | 0 | 54 | 209 | 309 | 380 | 434 | 482 | 526 | 0 |
| | | HR150 | 47 | 170 | 247 | 296 | 338 | 376 | 410 | 0 | 46 | 170 | 247 | 296 | 338 | 376 | 410 | 0 | 46 | 170 | 247 | 296 | 338 | 376 | 410 | 0 |
| | **105** | HR250 | 53 | 205 | 305 | 380 | 434 | 482 | 526 | 0 | 51 | 205 | 305 | 380 | 434 | 482 | 526 | 0 | 51 | 205 | 305 | 380 | 434 | 482 | 526 | 0 |
| | | HR150 | 45 | 167 | 245 | 296 | 338 | 376 | 410 | 0 | 44 | 167 | 245 | 296 | 338 | 376 | 410 | 0 | 44 | 167 | 245 | 296 | 338 | 376 | 410 | 0 |
| | **110** | HR250 | 51 | 201 | 301 | 380 | 434 | 482 | 526 | 0 | 49 | 201 | 301 | 380 | 434 | 482 | 526 | 0 | 49 | 201 | 301 | 380 | 434 | 482 | 526 | 0 |
| | | HR150 | 44 | 165 | 242 | 296 | 338 | 376 | 410 | 0 | 42 | 165 | 242 | 296 | 338 | 376 | 410 | 0 | 42 | 165 | 242 | 296 | 338 | 376 | 410 | 0 |
| | **115** | HR250 | 50 | 198 | 297 | 377 | 434 | 482 | 526 | 0 | 47 | 198 | 297 | 377 | 434 | 482 | 526 | 0 | 47 | 198 | 297 | 377 | 434 | 482 | 526 | 0 |
| | | HR150 | 42 | 162 | 240 | 296 | 338 | 376 | 410 | 0 | 41 | 162 | 240 | 296 | 338 | 376 | 410 | 0 | 41 | 162 | 240 | 296 | 338 | 376 | 410 | 0 |
| | **120** | HR250 | 48 | 194 | 293 | 373 | 434 | 482 | 526 | 0 | 45 | 194 | 293 | 373 | 434 | 482 | 526 | 0 | 45 | 194 | 293 | 373 | 434 | 482 | 526 | 0 |
| | | HR150 | 41 | 159 | 237 | 296 | 338 | 376 | 410 | 0 | 39 | 159 | 237 | 296 | 338 | 376 | 410 | 0 | 39 | 159 | 237 | 296 | 338 | 376 | 410 | 0 |
| | **130** | HR250 | 45 | 187 | 285 | 365 | 432 | 482 | 526 | 0 | 42 | 187 | 285 | 365 | 432 | 482 | 526 | 0 | 42 | 187 | 285 | 365 | 432 | 482 | 526 | 0 |
| | | HR150 | 39 | 154 | 231 | 293 | 338 | 376 | 410 | 0 | 36 | 154 | 231 | 293 | 338 | 376 | 410 | 0 | 36 | 154 | 231 | 293 | 338 | 376 | 410 | 0 |
| | **140** | HR250 | 42 | 179 | 277 | 356 | 424 | 482 | 526 | 0 | 39 | 179 | 277 | 356 | 424 | 482 | 526 | 0 | 39 | 179 | 277 | 356 | 424 | 482 | 526 | 0 |
| | | HR150 | 36 | 149 | 226 | 288 | 338 | 376 | 410 | 0 | 34 | 149 | 226 | 288 | 338 | 376 | 410 | 0 | 34 | 149 | 226 | 288 | 338 | 376 | 410 | 0 |
| | **150** | HR250 | 40 | 173 | 269 | 348 | 416 | 477 | 526 | 0 | 36 | 168 | 269 | 348 | 416 | 477 | 526 | 0 | 36 | 168 | 269 | 348 | 416 | 477 | 526 | 0 |
| | | HR150 | 34 | 144 | 220 | 282 | 335 | 376 | 410 | 0 | 32 | 144 | 220 | 282 | 335 | 376 | 410 | 0 | 32 | 144 | 220 | 282 | 335 | 376 | 410 | 0 |

**Table 2.41: Maximum Span Length (in.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| C | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >45° TO 55° | 85 | HR250 | 92 | 75 | 62 | 53 | 47 | 42 | 38 | 0 | 89 | 75 | 62 | 53 | 47 | 42 | 38 | 0 | 89 | 75 | 62 | 53 | 47 | 42 | 38 | 0 |
| | | HR150 | 78 | 61 | 50 | 41 | 36 | 33 | 30 | 0 | 77 | 61 | 50 | 41 | 36 | 33 | 30 | 0 | 77 | 61 | 50 | 41 | 36 | 33 | 30 | 0 |
| | 90 | HR250 | 88 | 73 | 61 | 53 | 47 | 42 | 38 | 0 | 84 | 73 | 61 | 53 | 47 | 42 | 38 | 0 | 84 | 73 | 61 | 53 | 47 | 42 | 38 | 0 |
| | | HR150 | 75 | 60 | 49 | 41 | 36 | 33 | 30 | 0 | 73 | 60 | 49 | 41 | 36 | 33 | 30 | 0 | 73 | 60 | 49 | 41 | 36 | 33 | 30 | 0 |
| | 100 | HR250 | 81 | 70 | 59 | 52 | 47 | 42 | 38 | 0 | 76 | 70 | 59 | 52 | 47 | 42 | 38 | 0 | 76 | 70 | 59 | 52 | 47 | 42 | 38 | 0 |
| | | HR150 | 69 | 58 | 48 | 41 | 36 | 33 | 30 | 0 | 66 | 58 | 48 | 41 | 36 | 33 | 30 | 0 | 66 | 58 | 48 | 41 | 36 | 33 | 30 | 0 |
| | 105 | HR250 | 78 | 69 | 58 | 52 | 47 | 42 | 38 | 0 | 73 | 69 | 58 | 52 | 47 | 42 | 38 | 0 | 73 | 69 | 58 | 52 | 47 | 42 | 38 | 0 |
| | | HR150 | 67 | 56 | 47 | 41 | 36 | 33 | 30 | 0 | 63 | 56 | 47 | 41 | 36 | 33 | 30 | 0 | 63 | 56 | 47 | 41 | 36 | 33 | 30 | 0 |
| | 110 | HR250 | 75 | 67 | 57 | 51 | 46 | 42 | 38 | 0 | 70 | 67 | 57 | 51 | 46 | 42 | 38 | 0 | 70 | 67 | 57 | 51 | 46 | 42 | 38 | 0 |
| | | HR150 | 64 | 55 | 47 | 41 | 36 | 33 | 30 | 0 | 60 | 55 | 47 | 41 | 36 | 33 | 30 | 0 | 60 | 55 | 47 | 41 | 36 | 33 | 30 | 0 |
| | 115 | HR250 | 72 | 66 | 56 | 50 | 46 | 42 | 38 | 0 | 67 | 66 | 56 | 50 | 46 | 42 | 38 | 0 | 67 | 66 | 56 | 50 | 46 | 42 | 38 | 0 |
| | | HR150 | 62 | 54 | 46 | 41 | 36 | 33 | 30 | 0 | 58 | 54 | 46 | 41 | 36 | 33 | 30 | 0 | 58 | 54 | 46 | 41 | 36 | 33 | 30 | 0 |
| | 120 | HR250 | 69 | 64 | 56 | 50 | 45 | 42 | 38 | 0 | 64 | 64 | 56 | 50 | 45 | 42 | 38 | 0 | 64 | 64 | 56 | 50 | 45 | 42 | 38 | 0 |
| | | HR150 | 60 | 53 | 45 | 40 | 36 | 33 | 30 | 0 | 56 | 53 | 45 | 40 | 36 | 33 | 30 | 0 | 56 | 53 | 45 | 40 | 36 | 33 | 30 | 0 |
| | 130 | HR250 | 65 | 61 | 54 | 48 | 44 | 41 | 38 | 0 | 59 | 59 | 54 | 48 | 44 | 41 | 38 | 0 | 59 | 59 | 54 | 48 | 44 | 41 | 38 | 0 |
| | | HR150 | 56 | 51 | 44 | 39 | 36 | 33 | 30 | 0 | 52 | 51 | 44 | 39 | 36 | 33 | 30 | 0 | 52 | 51 | 44 | 39 | 36 | 33 | 30 | 0 |
| | 140 | HR250 | 61 | 59 | 52 | 47 | 43 | 40 | 38 | 0 | 55 | 55 | 52 | 47 | 43 | 40 | 38 | 0 | 55 | 55 | 52 | 47 | 43 | 40 | 38 | 0 |
| | | HR150 | 53 | 49 | 43 | 38 | 35 | 32 | 30 | 0 | 48 | 48 | 43 | 38 | 35 | 32 | 30 | 0 | 48 | 48 | 43 | 38 | 35 | 32 | 30 | 0 |
| | 150 | HR250 | 57 | 56 | 50 | 46 | 42 | 39 | 37 | 0 | 51 | 51 | 50 | 46 | 42 | 39 | 37 | 0 | 51 | 51 | 50 | 46 | 42 | 39 | 37 | 0 |
| | | HR150 | 50 | 47 | 41 | 37 | 34 | 32 | 30 | 0 | 45 | 45 | 41 | 37 | 34 | 32 | 30 | 0 | 45 | 45 | 41 | 37 | 34 | 32 | 30 | 0 |

**Table 2.42: Maximum Uplift (lb.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| C | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >45° TO 55° | 85 | HR250 | -488 | -399 | -331 | -283 | -248 | -223 | -204 | 0 | -589 | -498 | -413 | -353 | -309 | -278 | -255 | 0 | -589 | -498 | -413 | -353 | -309 | -278 | -255 | 0 |
| | | HR150 | -415 | -325 | -265 | -221 | -193 | -174 | -159 | 0 | -509 | -405 | -330 | -275 | -241 | -217 | -199 | 0 | -509 | -405 | -330 | -275 | -241 | -217 | -199 | 0 |
| | 90 | HR250 | -527 | -440 | -367 | -319 | -279 | -251 | -231 | 0 | -629 | -548 | -458 | -398 | -348 | -313 | -287 | 0 | -629 | -548 | -458 | -398 | -348 | -313 | -287 | 0 |
| | | HR150 | -449 | -359 | -295 | -249 | -218 | -196 | -180 | 0 | -544 | -447 | -368 | -310 | -271 | -244 | -224 | 0 | -544 | -447 | -368 | -310 | -271 | -244 | -224 | 0 |
| | 100 | HR250 | -604 | -524 | -443 | -391 | -348 | -313 | -287 | 0 | -708 | -653 | -552 | -487 | -433 | -390 | -358 | 0 | -708 | -653 | -552 | -487 | -433 | -390 | -358 | 0 |
| | | HR150 | -517 | -430 | -358 | -310 | -271 | -244 | -224 | 0 | -614 | -536 | -446 | -386 | -338 | -304 | -279 | 0 | -614 | -536 | -446 | -386 | -338 | -304 | -279 | 0 |
| | 105 | HR250 | -643 | -567 | -483 | -428 | -385 | -347 | -318 | 0 | -748 | -707 | -602 | -533 | -480 | -432 | -396 | 0 | -748 | -707 | -602 | -533 | -480 | -432 | -396 | 0 |
| | | HR150 | -552 | -467 | -391 | -343 | -300 | -270 | -248 | 0 | -649 | -582 | -487 | -427 | -374 | -337 | -309 | 0 | -649 | -582 | -487 | -427 | -374 | -337 | -309 | 0 |
| | 110 | HR250 | -681 | -610 | -523 | -464 | -422 | -382 | -350 | 0 | -786 | -757 | -649 | -576 | -524 | -474 | -434 | 0 | -786 | -757 | -649 | -576 | -524 | -474 | -434 | 0 |
| | | HR150 | -585 | -503 | -424 | -374 | -330 | -297 | -273 | 0 | -683 | -625 | -527 | -464 | -410 | -369 | -338 | 0 | -683 | -625 | -527 | -464 | -410 | -369 | -338 | 0 |
| | 115 | HR250 | -719 | -654 | -564 | -503 | -458 | -419 | -384 | 0 | -826 | -814 | -701 | -625 | -569 | -520 | -477 | 0 | -826 | -814 | -701 | -625 | -569 | -520 | -477 | 0 |
| | | HR150 | -619 | -541 | -459 | -405 | -362 | -326 | -299 | 0 | -718 | -673 | -570 | -504 | -450 | -406 | -372 | 0 | -718 | -673 | -570 | -504 | -450 | -406 | -372 | 0 |
| | 120 | HR250 | -757 | -698 | -605 | -541 | -494 | -457 | -419 | 0 | -864 | -864 | -751 | -672 | -614 | -567 | -520 | 0 | -864 | -864 | -751 | -672 | -614 | -567 | -520 | 0 |
| | | HR150 | -653 | -579 | -494 | -437 | -396 | -356 | -326 | 0 | -752 | -719 | -613 | -543 | -491 | -442 | -405 | 0 | -752 | -719 | -613 | -543 | -491 | -442 | -405 | 0 |
| | 130 | HR250 | -833 | -787 | -689 | -621 | -569 | -529 | -494 | 0 | -941 | -941 | -854 | -769 | -705 | -655 | -612 | 0 | -941 | -941 | -854 | -769 | -705 | -655 | -612 | 0 |
| | | HR150 | -720 | -656 | -565 | -504 | -459 | -420 | -385 | 0 | -820 | -812 | -700 | -624 | -569 | -520 | -477 | 0 | -820 | -812 | -700 | -624 | -569 | -520 | -477 | 0 |
| | 140 | HR250 | -906 | -873 | -773 | -701 | -646 | -602 | -566 | 0 | -1018 | -1018 | -959 | -869 | -801 | -746 | -702 | 0 | -1018 | -1018 | -959 | -869 | -801 | -746 | -702 | 0 |
| | | HR150 | -785 | -731 | -636 | -571 | -522 | -484 | -447 | 0 | -888 | -888 | -789 | -708 | -648 | -601 | -555 | 0 | -888 | -888 | -789 | -708 | -648 | -601 | -555 | 0 |
| | 150 | HR250 | -980 | -963 | -860 | -785 | -726 | -679 | -640 | 0 | -1094 | -1094 | -1066 | -972 | -899 | -841 | -792 | 0 | -1094 | -1094 | -1066 | -972 | -899 | -841 | -792 | 0 |
| | | HR150 | -851 | -809 | -711 | -642 | -589 | -548 | -514 | 0 | -956 | -956 | -881 | -795 | -730 | -679 | -637 | 0 | -956 | -956 | -881 | -795 | -730 | -679 | -637 | 0 |

**Table 2.43: Maximum Downforce (lb.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| C | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >45° TO 55° | 85 | HR250 | 522 | 433 | 444 | 453 | 460 | 472 | 485 | 0 | 505 | 433 | 444 | 453 | 460 | 472 | 485 | 0 | 505 | 433 | 444 | 453 | 460 | 472 | 485 | 0 |
| | | HR150 | 444 | 352 | 355 | 353 | 359 | 368 | 378 | 0 | 436 | 352 | 355 | 353 | 359 | 368 | 378 | 0 | 436 | 352 | 355 | 353 | 359 | 368 | 378 | 0 |
| | 90 | HR250 | 555 | 464 | 466 | 478 | 482 | 492 | 504 | 0 | 532 | 464 | 466 | 478 | 482 | 492 | 504 | 0 | 532 | 464 | 466 | 478 | 482 | 492 | 504 | 0 |
| | | HR150 | 473 | 378 | 375 | 373 | 376 | 383 | 392 | 0 | 460 | 378 | 375 | 373 | 376 | 383 | 392 | 0 | 460 | 378 | 375 | 373 | 376 | 383 | 392 | 0 |
| | 100 | HR250 | 621 | 539 | 512 | 524 | 530 | 534 | 543 | 0 | 584 | 539 | 512 | 524 | 530 | 534 | 543 | 0 | 584 | 539 | 512 | 524 | 530 | 534 | 543 | 0 |
| | | HR150 | 532 | 442 | 414 | 415 | 413 | 416 | 423 | 0 | 507 | 442 | 414 | 415 | 413 | 416 | 423 | 0 | 507 | 442 | 414 | 415 | 413 | 416 | 423 | 0 |
| | 105 | HR250 | 653 | 576 | 535 | 545 | 555 | 557 | 563 | 0 | 610 | 576 | 535 | 545 | 555 | 557 | 563 | 0 | 610 | 576 | 535 | 545 | 555 | 557 | 563 | 0 |
| | | HR150 | 560 | 474 | 434 | 437 | 432 | 434 | 439 | 0 | 529 | 474 | 434 | 437 | 432 | 434 | 439 | 0 | 529 | 474 | 434 | 437 | 432 | 434 | 439 | 0 |
| | 110 | HR250 | 687 | 616 | 561 | 568 | 580 | 582 | 586 | 0 | 639 | 616 | 561 | 568 | 580 | 582 | 586 | 0 | 639 | 616 | 561 | 568 | 580 | 582 | 586 | 0 |
| | | HR150 | 591 | 508 | 455 | 457 | 454 | 454 | 457 | 0 | 555 | 508 | 455 | 457 | 454 | 454 | 457 | 0 | 555 | 508 | 455 | 457 | 454 | 454 | 457 | 0 |
| | 115 | HR250 | 720 | 655 | 585 | 591 | 601 | 607 | 609 | 0 | 665 | 655 | 585 | 591 | 601 | 607 | 609 | 0 | 665 | 655 | 585 | 591 | 601 | 607 | 609 | 0 |
| | | HR150 | 620 | 541 | 476 | 476 | 476 | 473 | 475 | 0 | 578 | 541 | 476 | 476 | 476 | 473 | 475 | 0 | 578 | 541 | 476 | 476 | 476 | 473 | 475 | 0 |
| | 120 | HR250 | 752 | 694 | 610 | 614 | 623 | 633 | 634 | 0 | 691 | 691 | 610 | 614 | 623 | 633 | 634 | 0 | 691 | 691 | 610 | 614 | 623 | 633 | 634 | 0 |
| | | HR150 | 649 | 575 | 498 | 496 | 499 | 494 | 494 | 0 | 602 | 575 | 498 | 496 | 499 | 494 | 494 | 0 | 602 | 575 | 498 | 496 | 499 | 494 | 494 | 0 |
| | 130 | HR250 | 818 | 773 | 677 | 662 | 668 | 677 | 685 | 0 | 746 | 746 | 677 | 662 | 668 | 677 | 685 | 0 | 746 | 746 | 677 | 662 | 668 | 677 | 685 | 0 |
| | | HR150 | 707 | 644 | 555 | 537 | 539 | 538 | 534 | 0 | 650 | 644 | 555 | 537 | 539 | 538 | 534 | 0 | 650 | 644 | 555 | 537 | 539 | 538 | 534 | 0 |
| | 140 | HR250 | 884 | 853 | 755 | 712 | 716 | 722 | 731 | 0 | 801 | 801 | 755 | 712 | 716 | 722 | 731 | 0 | 801 | 801 | 755 | 712 | 716 | 722 | 731 | 0 |
| | | HR150 | 766 | 714 | 621 | 580 | 579 | 581 | 578 | 0 | 699 | 699 | 621 | 580 | 579 | 581 | 578 | 0 | 699 | 699 | 621 | 580 | 579 | 581 | 578 | 0 |
| | 150 | HR250 | 948 | 933 | 833 | 763 | 764 | 768 | 775 | 0 | 855 | 855 | 833 | 763 | 764 | 768 | 775 | 0 | 855 | 855 | 833 | 763 | 764 | 768 | 775 | 0 |
| | | HR150 | 824 | 783 | 688 | 624 | 620 | 621 | 624 | 0 | 747 | 747 | 688 | 624 | 620 | 621 | 624 | 0 | 747 | 747 | 688 | 624 | 620 | 621 | 624 | 0 |

**Table 2.44: Maximum Shear (lb.) - Wind Exposure C Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| C | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| ROOFS >45° TO 55° | 85 | HR250 | 55 | 209 | 309 | 380 | 434 | 482 | 526 | 0 | 53 | 209 | 309 | 380 | 434 | 482 | 526 | 0 | 53 | 209 | 309 | 380 | 434 | 482 | 526 | 0 |
| | | HR150 | 47 | 170 | 247 | 296 | 338 | 376 | 410 | 0 | 46 | 170 | 247 | 296 | 338 | 376 | 410 | 0 | 46 | 170 | 247 | 296 | 338 | 376 | 410 | 0 |
| | 90 | HR250 | 53 | 204 | 304 | 380 | 434 | 482 | 526 | 0 | 50 | 204 | 304 | 380 | 434 | 482 | 526 | 0 | 50 | 204 | 304 | 380 | 434 | 482 | 526 | 0 |
| | | HR150 | 45 | 166 | 244 | 296 | 338 | 376 | 410 | 0 | 44 | 166 | 244 | 296 | 338 | 376 | 410 | 0 | 44 | 166 | 244 | 296 | 338 | 376 | 410 | 0 |
| | 100 | HR250 | 48 | 195 | 294 | 374 | 434 | 482 | 526 | 0 | 46 | 195 | 294 | 374 | 434 | 482 | 526 | 0 | 46 | 195 | 294 | 374 | 434 | 482 | 526 | 0 |
| | | HR150 | 42 | 160 | 238 | 296 | 338 | 376 | 410 | 0 | 40 | 160 | 238 | 296 | 338 | 376 | 410 | 0 | 40 | 160 | 238 | 296 | 338 | 376 | 410 | 0 |
| | 105 | HR250 | 47 | 191 | 290 | 369 | 434 | 482 | 526 | 0 | 44 | 191 | 290 | 369 | 434 | 482 | 526 | 0 | 44 | 191 | 290 | 369 | 434 | 482 | 526 | 0 |
| | | HR150 | 40 | 157 | 235 | 296 | 338 | 376 | 410 | 0 | 38 | 157 | 235 | 296 | 338 | 376 | 410 | 0 | 38 | 157 | 235 | 296 | 338 | 376 | 410 | 0 |
| | 110 | HR250 | 45 | 186 | 285 | 364 | 432 | 482 | 526 | 0 | 42 | 186 | 285 | 364 | 432 | 482 | 526 | 0 | 42 | 186 | 285 | 364 | 432 | 482 | 526 | 0 |
| | | HR150 | 39 | 154 | 231 | 293 | 338 | 376 | 410 | 0 | 36 | 154 | 231 | 293 | 338 | 376 | 410 | 0 | 36 | 154 | 231 | 293 | 338 | 376 | 410 | 0 |
| | 115 | HR250 | 43 | 182 | 280 | 360 | 428 | 482 | 526 | 0 | 40 | 182 | 280 | 360 | 428 | 482 | 526 | 0 | 40 | 182 | 280 | 360 | 428 | 482 | 526 | 0 |
| | | HR150 | 37 | 151 | 228 | 290 | 338 | 376 | 410 | 0 | 35 | 151 | 228 | 290 | 338 | 376 | 410 | 0 | 35 | 151 | 228 | 290 | 338 | 376 | 410 | 0 |
| | 120 | HR250 | 42 | 178 | 275 | 355 | 423 | 482 | 526 | 0 | 38 | 178 | 275 | 355 | 423 | 482 | 526 | 0 | 38 | 178 | 275 | 355 | 423 | 482 | 526 | 0 |
| | | HR150 | 36 | 148 | 225 | 287 | 338 | 376 | 410 | 0 | 33 | 148 | 225 | 287 | 338 | 376 | 410 | 0 | 33 | 148 | 225 | 287 | 338 | 376 | 410 | 0 |
| | 130 | HR250 | 39 | 170 | 266 | 345 | 413 | 474 | 526 | 0 | 35 | 164 | 266 | 345 | 413 | 474 | 526 | 0 | 35 | 164 | 266 | 345 | 413 | 474 | 526 | 0 |
| | | HR150 | 34 | 142 | 218 | 280 | 333 | 376 | 410 | 0 | 31 | 142 | 218 | 280 | 333 | 376 | 410 | 0 | 31 | 142 | 218 | 280 | 333 | 376 | 410 | 0 |
| | 140 | HR250 | 36 | 163 | 257 | 335 | 403 | 464 | 519 | 0 | 33 | 153 | 257 | 335 | 403 | 464 | 519 | 0 | 33 | 153 | 257 | 335 | 403 | 464 | 519 | 0 |
| | | HR150 | 32 | 136 | 212 | 273 | 326 | 373 | 410 | 0 | 29 | 133 | 212 | 273 | 326 | 373 | 410 | 0 | 29 | 133 | 212 | 273 | 326 | 373 | 410 | 0 |
| | 150 | HR250 | 34 | 156 | 248 | 326 | 394 | 454 | 509 | 0 | 31 | 143 | 248 | 326 | 394 | 454 | 509 | 0 | 31 | 143 | 248 | 326 | 394 | 454 | 509 | 0 |
| | | HR150 | 30 | 131 | 205 | 267 | 320 | 367 | 409 | 0 | 27 | 125 | 205 | 267 | 320 | 367 | 409 | 0 | 27 | 125 | 205 | 267 | 320 | 367 | 409 | 0 |

**Table 2.45: Maximum Span Length (in.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 86 | 73 | 61 | 53 | 47 | 42 | 38 | 0 | 82 | 73 | 61 | 53 | 47 | 42 | 38 | 0 | 82 | 73 | 61 | 53 | 47 | 42 | 38 | 0 |
| | | HR150 | 73 | 59 | 49 | 41 | 36 | 33 | 30 | 0 | 71 | 59 | 49 | 41 | 36 | 33 | 30 | 0 | 71 | 59 | 49 | 41 | 36 | 33 | 30 | 0 |
| | 90 | HR250 | 82 | 71 | 60 | 53 | 47 | 42 | 38 | 0 | 78 | 71 | 60 | 53 | 47 | 42 | 38 | 0 | 78 | 71 | 60 | 53 | 47 | 42 | 38 | 0 |
| | | HR150 | 70 | 58 | 48 | 41 | 36 | 33 | 30 | 0 | 67 | 58 | 48 | 41 | 36 | 33 | 30 | 0 | 67 | 58 | 48 | 41 | 36 | 33 | 30 | 0 |
| | 100 | HR250 | 75 | 67 | 58 | 51 | 46 | 42 | 38 | 0 | 70 | 67 | 58 | 51 | 46 | 42 | 38 | 0 | 70 | 67 | 58 | 51 | 46 | 42 | 38 | 0 |
| | | HR150 | 65 | 56 | 47 | 41 | 36 | 33 | 30 | 0 | 61 | 56 | 47 | 41 | 36 | 33 | 30 | 0 | 61 | 56 | 47 | 41 | 36 | 33 | 30 | 0 |
| | 105 | HR250 | 72 | 66 | 57 | 50 | 46 | 42 | 38 | 0 | 67 | 66 | 57 | 50 | 46 | 42 | 38 | 0 | 67 | 66 | 57 | 50 | 46 | 42 | 38 | 0 |
| | | HR150 | 62 | 54 | 46 | 41 | 36 | 33 | 30 | 0 | 58 | 54 | 46 | 41 | 36 | 33 | 30 | 0 | 58 | 54 | 46 | 41 | 36 | 33 | 30 | 0 |
| | 110 | HR250 | 70 | 64 | 56 | 50 | 45 | 42 | 38 | 0 | 64 | 64 | 56 | 50 | 45 | 42 | 38 | 0 | 64 | 64 | 56 | 50 | 45 | 42 | 38 | 0 |
| | | HR150 | 60 | 53 | 45 | 40 | 36 | 33 | 30 | 0 | 56 | 53 | 45 | 40 | 36 | 33 | 30 | 0 | 56 | 53 | 45 | 40 | 36 | 33 | 30 | 0 |
| | 115 | HR250 | 67 | 63 | 55 | 49 | 45 | 42 | 38 | 0 | 61 | 61 | 55 | 49 | 45 | 42 | 38 | 0 | 61 | 61 | 55 | 49 | 45 | 42 | 38 | 0 |
| | | HR150 | 58 | 52 | 45 | 40 | 36 | 33 | 30 | 0 | 53 | 52 | 45 | 40 | 36 | 33 | 30 | 0 | 53 | 52 | 45 | 40 | 36 | 33 | 30 | 0 |
| | 120 | HR250 | 65 | 61 | 54 | 48 | 44 | 41 | 38 | 0 | 59 | 59 | 54 | 48 | 44 | 41 | 38 | 0 | 59 | 59 | 54 | 48 | 44 | 41 | 38 | 0 |
| | | HR150 | 56 | 51 | 44 | 39 | 36 | 33 | 30 | 0 | 51 | 51 | 44 | 39 | 36 | 33 | 30 | 0 | 51 | 51 | 44 | 39 | 36 | 33 | 30 | 0 |
| | 130 | HR250 | 60 | 58 | 52 | 47 | 43 | 40 | 38 | 0 | 54 | 54 | 52 | 47 | 43 | 40 | 38 | 0 | 54 | 54 | 52 | 47 | 43 | 40 | 38 | 0 |
| | | HR150 | 52 | 49 | 42 | 38 | 35 | 32 | 30 | 0 | 47 | 47 | 42 | 38 | 35 | 32 | 30 | 0 | 47 | 47 | 42 | 38 | 35 | 32 | 30 | 0 |
| | 140 | HR250 | 56 | 55 | 50 | 45 | 42 | 39 | 37 | 0 | 51 | 51 | 50 | 45 | 42 | 39 | 37 | 0 | 51 | 51 | 50 | 45 | 42 | 39 | 37 | 0 |
| | | HR150 | 49 | 47 | 41 | 37 | 34 | 32 | 30 | 0 | 44 | 44 | 41 | 37 | 34 | 32 | 30 | 0 | 44 | 44 | 41 | 37 | 34 | 32 | 30 | 0 |
| | 150 | HR250 | 52 | 52 | 48 | 44 | 41 | 38 | 36 | 0 | 47 | 47 | 47 | 44 | 41 | 38 | 36 | 0 | 47 | 47 | 47 | 44 | 41 | 38 | 36 | 0 |
| | | HR150 | 46 | 45 | 40 | 36 | 33 | 31 | 29 | 0 | 41 | 41 | 40 | 36 | 33 | 31 | 29 | 0 | 41 | 41 | 40 | 36 | 33 | 31 | 29 | 0 |

ROOFS >45° TO 55°

**Table 2.46: Maximum Uplift (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | -547 | -462 | -387 | -339 | -296 | -267 | -245 | 0 | -649 | -575 | -482 | -422 | -369 | -332 | -305 | 0 | -649 | -575 | -482 | -422 | -369 | -332 | -305 | 0 |
| | | HR150 | -467 | -377 | -311 | -264 | -231 | -208 | -191 | 0 | -562 | -470 | -388 | -328 | -287 | -259 | -237 | 0 | -562 | -470 | -388 | -328 | -287 | -259 | -237 | 0 |
| | 90 | HR250 | -588 | -507 | -428 | -377 | -334 | -300 | -275 | 0 | -692 | -631 | -532 | -469 | -415 | -374 | -343 | 0 | -692 | -631 | -532 | -469 | -415 | -374 | -343 | 0 |
| | | HR150 | -504 | -416 | -345 | -297 | -260 | -234 | -215 | 0 | -600 | -517 | -430 | -370 | -324 | -291 | -267 | 0 | -600 | -517 | -430 | -370 | -324 | -291 | -267 | 0 |
| | 100 | HR250 | -672 | -601 | -514 | -456 | -414 | -374 | -343 | 0 | -778 | -747 | -639 | -567 | -515 | -465 | -426 | 0 | -778 | -747 | -639 | -567 | -515 | -465 | -426 | 0 |
| | | HR150 | -578 | -495 | -417 | -367 | -324 | -291 | -267 | 0 | -676 | -616 | -519 | -456 | -402 | -362 | -332 | 0 | -676 | -616 | -519 | -456 | -402 | -362 | -332 | 0 |
| | 105 | HR250 | -714 | -648 | -558 | -497 | -453 | -413 | -379 | 0 | -821 | -807 | -695 | -619 | -564 | -514 | -472 | 0 | -821 | -807 | -695 | -619 | -564 | -514 | -472 | 0 |
| | | HR150 | -615 | -536 | -454 | -401 | -358 | -322 | -295 | 0 | -714 | -667 | -565 | -499 | -445 | -401 | -368 | 0 | -714 | -667 | -565 | -499 | -445 | -401 | -368 | 0 |
| | 110 | HR250 | -755 | -696 | -603 | -539 | -492 | -455 | -417 | 0 | -861 | -861 | -747 | -668 | -610 | -564 | -517 | 0 | -861 | -861 | -747 | -668 | -610 | -564 | -517 | 0 |
| | | HR150 | -651 | -577 | -492 | -436 | -394 | -355 | -325 | 0 | -750 | -715 | -609 | -540 | -488 | -439 | -403 | 0 | -750 | -715 | -609 | -540 | -488 | -439 | -403 | 0 |
| | 115 | HR250 | -796 | -744 | -648 | -582 | -533 | -494 | -457 | 0 | -905 | -905 | -806 | -723 | -662 | -614 | -568 | 0 | -905 | -905 | -806 | -723 | -662 | -614 | -568 | 0 |
| | | HR150 | -688 | -618 | -530 | -471 | -429 | -389 | -356 | 0 | -788 | -768 | -659 | -586 | -533 | -483 | -443 | 0 | -788 | -768 | -659 | -586 | -533 | -483 | -443 | 0 |
| | 120 | HR250 | -838 | -792 | -695 | -626 | -574 | -534 | -499 | 0 | -946 | -946 | -861 | -776 | -712 | -662 | -619 | 0 | -946 | -946 | -861 | -776 | -712 | -662 | -619 | 0 |
| | | HR150 | -724 | -660 | -569 | -508 | -463 | -424 | -389 | 0 | -825 | -819 | -706 | -630 | -574 | -526 | -482 | 0 | -825 | -819 | -706 | -630 | -574 | -526 | -482 | 0 |
| | 130 | HR250 | -920 | -889 | -788 | -715 | -659 | -615 | -578 | 0 | -1030 | -1030 | -976 | -885 | -816 | -761 | -716 | 0 | -1030 | -1030 | -976 | -885 | -816 | -761 | -716 | 0 |
| | | HR150 | -797 | -745 | -649 | -583 | -534 | -495 | -458 | 0 | -899 | -899 | -804 | -722 | -661 | -613 | -567 | 0 | -899 | -899 | -804 | -722 | -661 | -613 | -567 | 0 |
| | 140 | HR250 | -996 | -984 | -880 | -804 | -745 | -697 | -657 | 0 | -1113 | -1113 | -1091 | -997 | -923 | -864 | -814 | 0 | -1113 | -1113 | -1091 | -997 | -923 | -864 | -814 | 0 |
| | | HR150 | -866 | -827 | -729 | -658 | -605 | -563 | -529 | 0 | -972 | -972 | -903 | -816 | -750 | -698 | -656 | 0 | -972 | -972 | -903 | -816 | -750 | -698 | -656 | 0 |
| | 150 | HR250 | -1072 | -1072 | -977 | -897 | -835 | -784 | -741 | 0 | -1196 | -1196 | -1196 | -1111 | -1034 | -970 | -917 | 0 | -1196 | -1196 | -1196 | -1111 | -1034 | -970 | -917 | 0 |
| | | HR150 | -936 | -913 | -812 | -738 | -681 | -636 | -598 | 0 | -1046 | -1046 | -1005 | -914 | -843 | -787 | -741 | 0 | -1046 | -1046 | -1005 | -914 | -843 | -787 | -741 | 0 |

ROOFS >45° TO 55°

**Table 2.47: Maximum Downforce (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 572 | 483 | 478 | 491 | 494 | 502 | 513 | 0 | 545 | 483 | 478 | 491 | 494 | 502 | 513 | 0 | 545 | 483 | 478 | 491 | 494 | 502 | 513 | 0 |
| | | HR150 | 488 | 394 | 384 | 383 | 385 | 391 | 400 | 0 | 471 | 394 | 384 | 383 | 385 | 391 | 400 | 0 | 471 | 394 | 384 | 383 | 385 | 391 | 400 | 0 |
| | 90 | HR250 | 608 | 524 | 503 | 515 | 520 | 526 | 535 | 0 | 575 | 524 | 503 | 515 | 520 | 526 | 535 | 0 | 575 | 524 | 503 | 515 | 520 | 526 | 535 | 0 |
| | | HR150 | 520 | 429 | 406 | 406 | 405 | 410 | 417 | 0 | 498 | 429 | 406 | 406 | 405 | 410 | 417 | 0 | 498 | 429 | 406 | 406 | 405 | 410 | 417 | 0 |
| | 100 | HR250 | 679 | 607 | 555 | 563 | 575 | 576 | 581 | 0 | 632 | 607 | 555 | 563 | 575 | 576 | 581 | 0 | 632 | 607 | 555 | 563 | 575 | 576 | 581 | 0 |
| | | HR150 | 584 | 501 | 450 | 453 | 449 | 449 | 453 | 0 | 549 | 501 | 450 | 453 | 449 | 449 | 453 | 0 | 549 | 501 | 450 | 453 | 449 | 449 | 453 | 0 |
| ROOFS >45° TO 55° | 105 | HR250 | 714 | 649 | 581 | 587 | 598 | 603 | 606 | 0 | 660 | 649 | 581 | 587 | 598 | 603 | 606 | 0 | 660 | 649 | 581 | 587 | 598 | 603 | 606 | 0 |
| | | HR150 | 615 | 536 | 473 | 473 | 472 | 470 | 472 | 0 | 574 | 536 | 473 | 473 | 472 | 470 | 472 | 0 | 574 | 536 | 473 | 473 | 472 | 470 | 472 | 0 |
| | 110 | HR250 | 752 | 693 | 610 | 614 | 622 | 633 | 633 | 0 | 692 | 692 | 610 | 614 | 622 | 633 | 633 | 0 | 692 | 692 | 610 | 614 | 622 | 633 | 633 | 0 |
| | | HR150 | 648 | 574 | 497 | 496 | 498 | 493 | 493 | 0 | 602 | 574 | 497 | 496 | 498 | 493 | 493 | 0 | 602 | 574 | 497 | 496 | 498 | 493 | 493 | 0 |
| | 115 | HR250 | 787 | 735 | 641 | 639 | 647 | 657 | 660 | 0 | 720 | 720 | 641 | 639 | 647 | 657 | 660 | 0 | 720 | 720 | 641 | 639 | 647 | 657 | 660 | 0 |
| | | HR150 | 679 | 611 | 524 | 518 | 520 | 516 | 514 | 0 | 627 | 611 | 524 | 518 | 520 | 516 | 514 | 0 | 627 | 611 | 524 | 518 | 520 | 516 | 514 | 0 |
| | 120 | HR250 | 822 | 778 | 682 | 665 | 671 | 680 | 689 | 0 | 749 | 749 | 682 | 665 | 671 | 680 | 689 | 0 | 749 | 749 | 682 | 665 | 671 | 680 | 689 | 0 |
| | | HR150 | 711 | 648 | 559 | 540 | 541 | 541 | 537 | 0 | 653 | 648 | 559 | 540 | 541 | 541 | 537 | 0 | 653 | 648 | 559 | 540 | 541 | 541 | 537 | 0 |
| | 130 | HR250 | 894 | 865 | 766 | 720 | 723 | 729 | 738 | 0 | 809 | 809 | 766 | 720 | 723 | 729 | 738 | 0 | 809 | 809 | 766 | 720 | 723 | 729 | 738 | 0 |
| | | HR150 | 775 | 724 | 631 | 587 | 585 | 587 | 585 | 0 | 706 | 706 | 631 | 587 | 585 | 587 | 585 | 0 | 706 | 706 | 631 | 587 | 585 | 587 | 585 | 0 |
| | 140 | HR250 | 964 | 952 | 852 | 779 | 776 | 780 | 787 | 0 | 869 | 869 | 852 | 779 | 776 | 780 | 787 | 0 | 869 | 869 | 852 | 779 | 776 | 780 | 787 | 0 |
| | | HR150 | 839 | 801 | 705 | 637 | 631 | 631 | 633 | 0 | 759 | 759 | 705 | 637 | 631 | 631 | 633 | 0 | 759 | 759 | 705 | 637 | 631 | 631 | 633 | 0 |
| | 150 | HR250 | 1030 | 1030 | 938 | 862 | 831 | 833 | 837 | 0 | 928 | 928 | 928 | 862 | 831 | 833 | 837 | 0 | 928 | 928 | 928 | 862 | 831 | 833 | 837 | 0 |
| | | HR150 | 899 | 877 | 780 | 709 | 678 | 675 | 676 | 0 | 812 | 812 | 780 | 709 | 678 | 675 | 676 | 0 | 812 | 812 | 780 | 709 | 678 | 675 | 676 | 0 |

**Table 2.48: Maximum Shear (lb.) - Wind Exposure D Condition**

| Exposure | Ultimate Wind Speed, V (mph) | Rail Type | Roof Wind Pressure Zone 1 | | | | | | | | Roof Wind Pressure Zone 2 | | | | | | | | Roof Wind Pressure Zone 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | | Roof Snow Load (psf) | | | | | | | |
| | | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 85 | HR250 | 52 | 202 | 302 | 380 | 434 | 482 | 526 | 0 | 49 | 202 | 302 | 380 | 434 | 482 | 526 | 0 | 49 | 202 | 302 | 380 | 434 | 482 | 526 | 0 |
| | | HR150 | 44 | 165 | 243 | 296 | 338 | 376 | 410 | 0 | 43 | 165 | 243 | 296 | 338 | 376 | 410 | 0 | 43 | 165 | 243 | 296 | 338 | 376 | 410 | 0 |
| | 90 | HR250 | 49 | 197 | 296 | 376 | 434 | 482 | 526 | 0 | 47 | 197 | 296 | 376 | 434 | 482 | 526 | 0 | 47 | 197 | 296 | 376 | 434 | 482 | 526 | 0 |
| | | HR150 | 42 | 161 | 239 | 296 | 338 | 376 | 410 | 0 | 40 | 161 | 239 | 296 | 338 | 376 | 410 | 0 | 40 | 161 | 239 | 296 | 338 | 376 | 410 | 0 |
| | 100 | HR250 | 45 | 187 | 286 | 365 | 433 | 482 | 526 | 0 | 42 | 187 | 286 | 365 | 433 | 482 | 526 | 0 | 42 | 187 | 286 | 365 | 433 | 482 | 526 | 0 |
| | | HR150 | 39 | 154 | 232 | 294 | 338 | 376 | 410 | 0 | 37 | 154 | 232 | 294 | 338 | 376 | 410 | 0 | 37 | 154 | 232 | 294 | 338 | 376 | 410 | 0 |
| | 105 | HR250 | 43 | 183 | 281 | 360 | 428 | 482 | 526 | 0 | 40 | 183 | 281 | 360 | 428 | 482 | 526 | 0 | 40 | 183 | 281 | 360 | 428 | 482 | 526 | 0 |
| | | HR150 | 37 | 151 | 229 | 290 | 338 | 376 | 410 | 0 | 35 | 151 | 229 | 290 | 338 | 376 | 410 | 0 | 35 | 151 | 229 | 290 | 338 | 376 | 410 | 0 |
| | 110 | HR250 | 42 | 178 | 276 | 355 | 423 | 482 | 526 | 0 | 38 | 178 | 276 | 355 | 423 | 482 | 526 | 0 | 38 | 178 | 276 | 355 | 423 | 482 | 526 | 0 |
| | | HR150 | 36 | 148 | 225 | 287 | 338 | 376 | 410 | 0 | 33 | 148 | 225 | 287 | 338 | 376 | 410 | 0 | 33 | 148 | 225 | 287 | 338 | 376 | 410 | 0 |
| | 115 | HR250 | 40 | 174 | 271 | 350 | 418 | 478 | 526 | 0 | 37 | 170 | 271 | 350 | 418 | 478 | 526 | 0 | 37 | 170 | 271 | 350 | 418 | 478 | 526 | 0 |
| | | HR150 | 35 | 145 | 221 | 283 | 336 | 376 | 410 | 0 | 32 | 145 | 221 | 283 | 336 | 376 | 410 | 0 | 32 | 145 | 221 | 283 | 336 | 376 | 410 | 0 |
| | 120 | HR250 | 39 | 170 | 266 | 344 | 412 | 473 | 526 | 0 | 35 | 163 | 266 | 344 | 412 | 473 | 526 | 0 | 35 | 163 | 266 | 344 | 412 | 473 | 526 | 0 |
| | | HR150 | 33 | 141 | 218 | 280 | 333 | 376 | 410 | 0 | 31 | 141 | 218 | 280 | 333 | 376 | 410 | 0 | 31 | 141 | 218 | 280 | 333 | 376 | 410 | 0 |
| | 130 | HR250 | 36 | 162 | 256 | 334 | 402 | 462 | 517 | 0 | 33 | 151 | 256 | 334 | 402 | 462 | 517 | 0 | 33 | 151 | 256 | 334 | 402 | 462 | 517 | 0 |
| | | HR150 | 31 | 135 | 211 | 272 | 325 | 372 | 410 | 0 | 28 | 132 | 211 | 272 | 325 | 372 | 410 | 0 | 28 | 132 | 211 | 272 | 325 | 372 | 410 | 0 |
| | 140 | HR250 | 34 | 154 | 246 | 324 | 391 | 452 | 507 | 0 | 30 | 141 | 246 | 324 | 391 | 452 | 507 | 0 | 30 | 141 | 246 | 324 | 391 | 452 | 507 | 0 |
| | | HR150 | 29 | 130 | 204 | 265 | 318 | 365 | 408 | 0 | 26 | 123 | 204 | 265 | 318 | 365 | 408 | 0 | 26 | 123 | 204 | 265 | 318 | 365 | 408 | 0 |
| | 150 | HR250 | 31 | 146 | 237 | 314 | 381 | 441 | 496 | 0 | 28 | 131 | 234 | 314 | 381 | 441 | 496 | 0 | 28 | 131 | 234 | 314 | 381 | 441 | 496 | 0 |
| | | HR150 | 27 | 124 | 197 | 258 | 311 | 358 | 401 | 0 | 25 | 115 | 197 | 258 | 311 | 358 | 401 | 0 | 25 | 115 | 197 | 258 | 311 | 358 | 401 | 0 |

ROOFS >45° TO 55°

**Table 3.1: EZ, EZr, EZ Metal Rail Section Properties**

| | | HR250 | HR150 | (unit) |
|---|---|---|---|---|
| Cross Sectional Area (A) | | 0.7230 | 0.5660 | $in^2$ |
| Moments of Interia: | | | | |
| | Vertical (Ix) | 0.4860 | 0.3480 | $in^4$ |
| | Horizontal (Iy) | 0.0950 | 0.0600 | $in^4$ |
| Section Modulii: | | | | |
| | Vertical (Sx) | 0.3870 | 0.2990 | $in^3$ |
| | Horizontal (Sy) | 0.1900 | 0.1060 | $in^3$ |

| | |
|---|---|
| Material: | AL 6005-T5 |
| | Ultimate Tensile Strength: 38 ksi |
| | Yield Strength: 31 ksi |