| Shape | W21× | | | | | |
|---|---|---|---|---|---|---|
| lb/ft | 50 | | 48[f] | | 44 | |
| | $M_{nx}/\Omega_b$ | $\phi_b M_{nx}$ | $M_{nx}/\Omega_b$ | $\phi_b M_{nx}$ | $M_{nx}/\Omega_b$ | $\phi_b M_{nx}$ |
| | Available Flexural Strength, kip-ft | | | | | |
| | ASD | LRFD | ASD | LRFD | ASD | LRFD |
| 0 | 274 | 413 | 265 | 398 | 238 | 358 |
| 6 | 257 | 387 | 265 | 398 | 221 | 332 |
| 7 | 245 | 368 | 256 | 385 | 210 | 315 |
| 8 | 233 | 350 | 246 | 370 | 198 | 298 |
| 9 | 221 | 332 | 236 | 355 | 187 | 281 |
| 10 | 209 | 314 | 226 | 340 | 176 | 264 |
| 11 | 197 | 295 | 217 | 326 | 165 | 248 |
| 12 | 184 | 277 | 207 | 311 | 154 | 231 |
| 13 | 172 | 259 | 197 | 296 | 142 | 214 |
| 14 | 157 | 236 | 187 | 282 | 125 | 188 |

## Design of Flexural Members

Figure 4 illustrates a magni ed portion of a sample page from Table 6-2 with available exural strengths listed on the right-hand side of the page.

Again, all W-sections are listed in the table, including those that may not be ordinarily used as beams but may be appropriate for certain situations.

Values of the available exural strength listed in Table 6-2 meet the appropriate provisions of Chapter F of the *S i i* and account for compact/noncompact/slender-element section provisions of Section B4. Therefore, there is no need for width-to-thickness ratio checks of the selected W-section. Further, appropriate AISC equations have been used in developing the tabulated values with respect to the unbraced length of the beam relative to limiting unbraced lengths and . Thus, no additional check of the unbraced length is needed when using this table.

The procedures for design of a exural member using Table 6-2 is similar to design for compression members described above. The designer enters the table with the unbraced length of the beam and selects a W-section from the desired nominal depth with available exural strength equal to or greater than the required strength. Note that exural strengths are listed on the right half of the butter y formatted page. The left and right halves of the table are clearly labeled at the top to avoid confusion.

As an example, per Figure 4, an A992 W21×48 with an unbraced length of 10 ft has an available exural strength of 226 kip-ft and 340 kip-ft based on the ASD and LRFD methods, respectively. Remember that a W21×48 of ASTM A992 is a noncompact beam section. However, Table 6-2 already accounts for this classi cation and there is no need to check the width-to-thickness ratio of the compression elements of this beam section. Also, there is no need to compare the unbraced length to and , though values of and are listed at the bottom of the page for convenience.

**ASD Method:**

$P$ = 100 kips (compression), ( ) = = 15 ft,
($M$ ) = 150 kip-ft, ($M$ ) = 30 kip-ft

Obtain the following from Table 6-2:

For ( ) = 15 ft, $P$ /Ω = 489 kips
For = 15 ft, $M$ /Ω = 254 kip-ft
$M$ /Ω = 123 kip-ft

B90 5.94 ause