

TABLE DF-C5

DOUGLAS FIR - LARCH

GLUED LAMINATED TIMBER CONVERSION TABLES

Dry Service Conditions  
Simple Span, Uniformly Loaded

|                       |                       |                      |
|-----------------------|-----------------------|----------------------|
| Glulam Design Values: | F <sub>bx</sub> , psi | E <sub>x</sub> , psi |
|                       | 2,400                 | 1,800,000            |

DOUGLAS FIR - LARCH LUMBER & TIMBER CONVERSIONS

| 1997 NDS Lumber & Timber Design Values:  |  | F <sub>b</sub> , psi | E, psi                      |                |
|--|--|----------------------|-----------------------------|----------------|
| Dimension Lumber, 2 to 4 inches thick and 5 inches and wider:                  | Select Structural:                         | 1,500                | 1,900,000                   |                |
|  | No. 1:                                     | 1,000                | 1,700,000                   |                |
| Timbers – Beams & Stringers, having a least dimension of 5 inches or greater:  | Select Structural:                         | 1,600                | 1,600,000                   |                |
|  | No. 1:                                     | 1,350                | 1,600,000                   |                |
| DOUGLAS FIR - LARCH LUMBER & TIMBER SECTIONS NOMINAL SIZE<br>thickness x depth | GLULAM SECTIONS, width (in.) x depth (in.) |                      |                             |                |
|  | ROOF BEAMS                                 |                      | FLOOR BEAMS                 |                |
|  | SNOW LOAD Load Duration Factor = 1.15      |                      | Load Duration Factor = 1.00 |                |
|  | SELECT STRUCTURAL                          | No. 1                | SELECT STRUCTURAL           | No. 1          |
| DIMENSION LUMBER   |  |                      |                             |                |
| 3 x 8  | 3 1/8 x 6                                  | 3 1/8 x 6            | 3 1/8 x 7 1/2               | 3 1/8 x 7 1/2  |
| 3 x 10   | 3 1/8 x 7 1/2                              | 3 1/8 x 6            | 3 1/8 x 9                   | 3 1/8 x 9      |
| 3 x 12   | 3 1/8 x 9                                  | 3 1/8 x 7 1/2        | 3 1/8 x 12                  | 3 1/8 x 10 1/2 |
| 3 x 14   | 3 1/8 x 9                                  | 3 1/8 x 7 1/2        | 3 1/8 x 13 1/2              | 3 1/8 x 13 1/2 |
| 4 x 6  | 3 1/8 x 6                                  | 3 1/8 x 6            | 3 1/8 x 6                   | 3 1/8 x 6      |
| 4 x 8  | 3 1/8 x 7 1/2                              | 3 1/8 x 6            | 3 1/8 x 9                   | 3 1/8 x 7 1/2  |
| 4 x 10   | 3 1/8 x 9                                  | 3 1/8 x 7 1/2        | 3 1/8 x 10 1/2              | 3 1/8 x 10 1/2 |
| 4 x 12   | 3 1/8 x 10 1/2                             | 3 1/8 x 9            | 3 1/8 x 12                  | 3 1/8 x 12     |
| 4 x 14   | 3 1/8 x 12                                 | 3 1/8 x 10 1/2       | 3 1/8 x 15                  | 3 1/8 x 15     |
| 4 x 16   | 3 1/8 x 13 1/2                             | 3 1/8 x 10 1/2       | 3 1/8 x 16 1/2              | 3 1/8 x 16 1/2 |
| MULTIPLE PIECE LUMBER  |  |                      |                             |                |
| [2] 2 x 6  | 3 1/8 x 6                                  | 3 1/8 x 6            | 3 1/8 x 6                   | 3 1/8 x 6      |
| [2] 2 x 8  | 3 1/8 x 7 1/2                              | 3 1/8 x 6            | 3 1/8 x 7 1/2               | 3 1/8 x 7 1/2  |
| [2] 2 x 10   | 3 1/8 x 9                                  | 3 1/8 x 7 1/2        | 3 1/8 x 10 1/2              | 3 1/8 x 9      |
| [2] 2 x 12   | 3 1/8 x 9                                  | 3 1/8 x 7 1/2        | 3 1/8 x 12                  | 3 1/8 x 12     |
| [3] 2 x 8  | 5 1/8 x 7 1/2                              | 5 1/8 x 7 1/2        | 5 1/8 x 7 1/2               | 5 1/8 x 7 1/2  |
| [3] 2 x 10   | 5 1/8 x 7 1/2                              | 5 1/8 x 7 1/2        | 5 1/8 x 10 1/2              | 5 1/8 x 9      |
| [3] 2 x 12   | 5 1/8 x 9                                  | 5 1/8 x 7 1/2        | 5 1/8 x 12                  | 5 1/8 x 12     |
| [4] 2 x 8  | 5 1/8 x 7 1/2                              | 5 1/8 x 7 1/2        | 5 1/8 x 9                   | 5 1/8 x 7 1/2  |
| [4] 2 x 10   | 5 1/8 x 9                                  | 5 1/8 x 7 1/2        | 5 1/8 x 10 1/2              | 5 1/8 x 10 1/2 |
| [4] 2 x 12   | 5 1/8 x 10 1/2                             | 5 1/8 x 9            | 5 1/8 x 13 1/2              | 5 1/8 x 12     |
| TIMBERS  |  |                      |                             |                |
| 6 x 8  | 5 1/8 x 7 1/2                              | 5 1/8 x 7 1/2        | 5 1/8 x 7 1/2               | 5 1/8 x 7 1/2  |
| 6 x 10   | 5 1/8 x 9                                  | 5 1/8 x 7 1/2        | 5 1/8 x 10 1/2              | 5 1/8 x 10 1/2 |
| 6 x 12   | 5 1/8 x 10 1/2                             | 5 1/8 x 9            | 5 1/8 x 12                  | 5 1/8 x 12     |
| 6 x 14   | 5 1/8 x 12                                 | 5 1/8 x 10 1/2       | 5 1/8 x 13 1/2              | 5 1/8 x 13 1/2 |
| 6 x 16   | 5 1/8 x 13 1/2                             | 5 1/8 x 12           | 5 1/8 x 16 1/2              | 5 1/8 x 16 1/2 |
| 6 x 18   | 5 1/8 x 15                                 | 5 1/8 x 13 1/2       | 5 1/8 x 18                  | 5 1/8 x 18     |
| 6 x 20   | 5 1/8 x 18                                 | 5 1/8 x 16 1/2       | 5 1/8 x 19 1/2              | 5 1/8 x 19 1/2 |
| 8 x 10   | 6 3/4 x 9                                  | 6 3/4 x 9            | 6 3/4 x 10 1/2              | 6 3/4 x 10 1/2 |
| 8 x 12   | 6 3/4 x 10 1/2                             | 6 3/4 x 10 1/2       | 6 3/4 x 12                  | 6 3/4 x 12     |
| 8 x 14   | 6 3/4 x 12                                 | 6 3/4 x 12           | 6 3/4 x 13 1/2              | 6 3/4 x 13 1/2 |
| 8 x 16   | 6 3/4 x 13 1/2                             | 6 3/4 x 13 1/2       | 6 3/4 x 16 1/2              | 6 3/4 x 16 1/2 |
| 8 x 18   | 6 3/4 x 16 1/2                             | 6 3/4 x 15           | 6 3/4 x 18                  | 6 3/4 x 18     |
| 8 x 20   | 6 3/4 x 18                                 | 6 3/4 x 16 1/2       | 6 3/4 x 19 1/2              | 6 3/4 x 19 1/2 |
| 8 x 22   | 6 3/4 x 19 1/2                             | 6 3/4 x 18           | 6 3/4 x 22 1/2              | 6 3/4 x 22 1/2 |

Table Specifications:

These sizes are for **dry service condition** of use.

**Roof beam sections** are compared on the basis of equivalent **bending resistance only**.

**Floor beam sections** are compared on the basis of equivalent **stiffness (EI) only**.

Glued laminated timber beam sizes are based on a **span to depth ratio, L/d, of 21**. When the span to depth ratio is different, sizes should be determined by engineering calculations.

Glulam sizes shown should also be checked for shear, deflection and other applicable strength properties and design considerations. For determining glulam roof beam sizes, the bending design value, F<sub>b</sub>, was adjusted by the volume factor. Minimum glulam sizes used in the table are 3-1/8 x 6 and 5-1/8 x 6.

For dimension lumber and timbers, size factors are applied in accordance with *National Design Specification for Wood Construction*.

While these design conversions have been prepared in accordance with recognized engineering principles and are based on accurate technical data available, conversions should not be used without competent professional examination and verification of the accuracy, suitability, and applicability by a design professional. AITC MAKES NO REPRESENTATION OR WARRANTY, EXPRESSED OR IMPLIED, THAT THE INFORMATION CONTAINED HEREIN IS SUITABLE FOR ANY GENERAL OR SPECIFIC USE OR IS FREE FROM INFRINGEMENT OF ANY PATENT OR COPYRIGHT. ANY USER OF THIS INFORMATION ASSUMES ALL RISK AND LIABILITY ARISING FROM SUCH USE.