

Nordic Lam Decking

CHECKLIST: Nordic Lam Decking

To verify that the Decking Selection Tables are appropriate for the structure being designed, the following questions should be asked (the appropriate adjustment factor is given in brackets):

1. Is load duration "normal" (C_D)?

C_D is a load duration factor. The tables are based on a normal duration of loading ($C_D = 1.0$), which includes the effects of dead loads plus live loads due to use and occupancy, and snow loads. For other durations of loading, the tabulated values w_C shall be multiplied by the appropriate factor permitted by the code.

2. Is the service condition "dry" (C_M)?

C_M is a wet service factor. The tables are based on dry service conditions ($C_M = 1.0$). For wet service conditions, multiply the values by the following factors:

$$C_M = 0.80 \text{ for } w_C$$

$$C_M = 0.833 \text{ for } w_\Delta$$

3. Is glulam loaded parallel to the wide face of the laminations (C_{fu})?

C_{fu} is a flat use factor. The tables are based on flat use, where $C_{fu} = (12/d_y)^{1/9}$. When glulam is loaded parallel to the wide face of the laminations and the member dimension parallel to the wide face of the laminations is less than 12 in., multiplying the reference bending design value for loading parallel to the wide faces of the laminations, $F_{b_{yy}}$, by the flat use factors, C_{fu} , shall be permitted.

4. Is glulam loaded perpendicular to the wide face of the laminations (C_V)?

C_V is a volume factor. The tables are based on flat use ($C_V = n/a$). When glulam is loaded perpendicular to the wide face of the laminations, reference bending design values for loading perpendicular to the wide faces of the laminations, $F_{b_{xx}}$, shall be multiplied by the volume factor.

5. Is L/240, based on live load, the applicable deflection limitation (C_Δ)?

C_Δ is a deflection factor. The table L/240 is based on a deflection limit of span/240 ($C_\Delta = 1.0$) under design live load. Decking may also be checked for a deflection limit for design total load. For other deflection limits, multiply the w_Δ values of Table L/240 by the following:

$$C_\Delta = 1.33 \text{ for span/180}$$

$$C_\Delta = 0.67 \text{ for span/360}$$

6. Is the decking laid in continuous spans (C_{span})?

C_{span} is a factor for deflection depending on the pattern in which the decking is laid. The tables are based on continuous spans ($C_{span} = 1.0$). For simple spans, multiply w_Δ values by the following factor:

$$C_{span} = 0.76 \text{ for single span}$$

7. Is the loading of a uniform nature?

The tables are based on uniform loads. In some applications, decking may have to be designed for a concentrated live load (as defined in article 1607.4 of the 2012 IBC) or other non-uniform loading. In these cases refer to NDS-2012.

If the answer to any of these questions is no, refer to the description of modification factors above and make the necessary adjustments to the tabulated values. Otherwise, the Decking Selection Tables may be used directly. The selection tables provide the allowable uniform loads w_C (based on capacity only) and w_Δ (based on deflection) that may be applied to a two- or more-span continuous decking to ensure that the design criteria are met. When decking is used in normal duration of loading and dry service conditions, the capacity table check may be omitted (deflection governs the design). The tables do not consider any criterion to limit the effects of floor vibrations.

Note: The tables are based on standard depths for bending on flat (loaded parallel to wide face of laminations). The decking self weight has not been considered in the calculation of maximum loads (i.e. it shall be included in the specified total load). The decking is available in widths of 8, 12, and 16 in. and lengths up to 60 ft. Consult Nordic for other options.

Decking Selection Table

Nordic Lam 20F-ES/CPG

Span (ft)	Thickness (in.)				
	1 1/2	1 3/4	2 1/8	2 1/2	3 1/2
3,0					
3,5					
4,0					
4,5	373				
5,0	302	405			
5,5	250	334			
6,0	210	281			
6,5	179	239	345		
7,0	154	206	298		
7,5	134	180	259	353	
8,0	118	158	228	310	
8,5	105	140	202	275	
9,0	93,3	125	180	245	
9,5	83,8	112	162	220	
10,0	75,6	101	146	198	375
10,5	68,6	91,7	132	180	340
11,0		83,6	121	164	310
11,5		76,5	110	150	283
12,0		70,2	101	138	260
12,5			93,4	127	240

Span (ft)	Thickness (in.)				
	1 1/2	1 3/4	2 1/8	2 1/2	3 1/2
3,0					
3,5	414				
4,0	277	441			
4,5	195	309			
5,0	142	226	404		
5,5	107	169	303		
6,0	82,2	131	234	381	
6,5	64,7	103	184	299	
7,0	51,8	82,2	147	240	
7,5	42,1	66,8	120	195	
8,0		55,1	98,6	161	441
8,5		45,9	82,2	134	367
9,0		38,7	69,2	113	309
9,5			58,9	95,9	263
10,0			50,5	82,2	226
10,5			43,6	71,0	195
11,0				61,8	169
11,5				54,0	148
12,0				47,6	131
12,5				42,1	115

For capacity only

Decking Selection Table

Nordic Lam 20F-ES/CPG

W_{Δ}

Serviceability, $L/180$ deflection
Allowable uniform load w_{Δ} (psf)

Span (ft)	Thickness (in.)				
	1 1/2	1 3/4	2 1/8	2 1/2	3 1/2
3,0					
3,5					
4,0	370				
4,5	260	413			
5,0	189	301			
5,5	142	226	405		
6,0	110	174	312		
6,5	86,2	137	245	399	
7,0		110	196	320	
7,5		89,1	160	260	
8,0			131	214	
8,5			110	178	
9,0			92,3	150	413
9,5			78,5	128	351
10,0				110	301
10,5				94,7	260
11,0				82,3	226
11,5					198
12,0					174
12,5					154

W_{Δ}

Serviceability, $L/360$ deflection
Allowable uniform load w_{Δ} (psf)

Span (ft)	Thickness (in.)				
	1 1/2	1 3/4	2 1/8	2 1/2	3 1/2
3,0	438				
3,5	276	438			
4,0	185	294			
4,5	130	206	369		
5,0	94,7	150	269	438	
5,5	71,1	113	202	329	
6,0	54,8	87,0	156	254	
6,5	43,1	68,4	123	200	
7,0		54,8	98,1	160	438
7,5		44,6	79,8	130	356
8,0		36,7	65,7	107	294
8,5			54,8	89,2	245
9,0			46,2	75,2	206
9,5			39,3	63,9	175
10,0				54,8	150
10,5				47,3	130
11,0				41,2	113
11,5					98,9
12,0					87,0
12,5					77,0

Nordic Lam Decking (continued)

EXAMPLE: Roof decking

Roof decking

Design dead load = 30 psf (including panel self weight)
 Design snow load = 20 psf
 Purlin spacing (span) = 6.5 ft
 Dry service condition, untreated lumber
 Deflection limitations: L/240 based on live load, L/180 based on total load
 Double span pattern

Calculation

Design live (snow) load $w_L = 20$ psf
 Design total load $w = 30 + 20 = 50$ psf

From Decking Selection Tables, select 1-1/2-inch thickness:

$w_C = 179$ psf > 50 psf	✓	Table w_C (optional check)
$w_\Delta = 64.7$ psf > 20 psf for L/240 deflection (live load)	✓	Table w_{Δ} , L/240 deflection
$w_\Delta = 86.2$ psf > 50 psf for L/180 deflection (total load)	✓	Table w_{Δ} , L/180 deflection

Use 1-1/2-inch thick 20F-ES/CPG grade decking.

Note: Where decking is used to support roof loads, the allowable spans for decking may be limited by the IBC concentrated live load requirements (refer to article 1607.4 of the 2012 IBC).

EXAMPLE: Floor decking

Floor decking

Design dead load = 30 psf (including panel self weight)
 Design live load = 40 psf
 Purlin spacing (span) = 9.5 ft
 Dry service condition, untreated lumber
 Deflection limitations: L/360 based on live load, L/240 based on total load
 Double span pattern

Calculation

Design live load $w_L = 40$ psf
 Design total load $w = 30 + 40 = 70$ psf

From Decking Selection Tables, select 2-1/2-inch thickness:

$w_C = 220$ psf > 70 psf	✓	Table w_{FR} (optional check)
$w_\Delta = 63.9$ psf > 40 psf for L/360 deflection (live load)	✓	Table $w_{\Delta R}$, L/360 deflection
$w_\Delta = 95.9$ psf > 70 psf for L/240 deflection (total load)	✓	Table $w_{\Delta R}$, L/240 deflection

Use 2-1/2-inch thick 20F-ES/CPG grade decking.

Note: A complete design shall include among other things the verification of a concentrated live load (if applicable), bearing resistance, effect of vibrations, and fire safety requirements.