Table 12.5.1A End Distance Requirements

Direction of Loading	End Distances: Minimum end distance for $C_\Delta = 0.5$	End Distances: Minimum end distance for $C_\Delta = 1.0$
Perpendicular to Grain	2D	4D
Parallel to Grain, Compression: (fastener bearing away from member end)	2D	4D
Parallel to Grain, Tension: (fastener bearing toward member end)		
for softwoods	3.5D	7D
for hardwoods	2.5D	5D

Table 12.5.1B Spacing Requirements for Fasteners in a Row

Direction of Loading	Spacing: Minimum spacing	Spacing: Minimum spacing for $C_\Delta = 1.0$
Parallel to Grain	3D	4D
Perpendicular to Grain	3D	Required spacing for attached members

Table 12.5.1C Edge Distance Requirements[1,2]

Direction of Loading	Minimum Edge Distance
Parallel to Grain:	
where $\ell/D \leq 6$	1.5D
where $\ell/D > 6$	1.5D or ½ the spacing between rows, whichever is greater
Perpendicular to Grain:[2]	
loaded edge	4D
unloaded edge	1.5D

1. The ℓ/D ratio used to determine the minimum edge distance shall be the lesser of:
   (a) length of fastener in wood main member/D = ℓ_m/D
   (b) total length of fastener in wood side member(s)/D = ℓ_s/D
2. Heavy or medium concentrated loads shall not be suspended below the neutral axis of a single sawn lumber or structural glued laminated timber beam except where mechanical or equivalent reinforcement is provided to resist tension stresses perpendicular to grain (see 3.8.2 and 11.1.3).

Table 12.5.1D Spacing Requirements Between Rows[1]

Direction of Loading	Minimum Spacing
Parallel to Grain	1.5D
Perpendicular to Grain:	
where $\ell/D \leq 2$	2.5D
where $2 < \ell/D < 6$	$(5\ell + 10D) / 8$
where $\ell/D \geq 6$	5D

1. The ℓ/D ratio used to determine the minimum spacing between rows shall be the lesser of:
   (a) length of fastener in wood main member/D = ℓ_m/D
   (b) total length of fastener in wood side member(s)/D = ℓ_s/D

Table 12.5.1E Edge and End Distance and Spacing Requirements for Lag Screws Loaded in Withdrawal and Not Loaded Laterally

Orientation	Minimum Distance/Spacing
Edge Distance	1.5D
End Distance	4D
Spacing	4D

Table C12.1.6.6 Recommended Minimum Spacing for Nails

	Wood Side Members: Not Prebored	Wood Side Members: Prebored
Edge distance	2.5D	2.5D
End distance		
- tension load parallel to grain	15D	10D
- compression load parallel to grain	10D	5D
Spacing between fasteners in a row		
- parallel to grain	15D	10D
- perpendicular to grain	10D	5D
Spacing between rows of fasteners		
- in-line	5D	3D
- staggered	2.5D	2.5D
	Steel Side Members: Not Prebored	**Steel Side Members: Prebored**
Edge distance	2.5D	2.5D
End distance		
- tension load parallel to grain	10D	5D
- compression load parallel to grain	5D	3D
Spacing between fasteners in a row		
- parallel to grain	10D	5D
- perpendicular to grain	5D	2.5D
Spacing between rows of fasteners		
- in line	3D	2.5D
- staggered	2.5D	2.5D