

Member Calculations

Bending

M_d :	901.4 ft*lb		
f_b :	1430.31 psi		
Load Duration Factor (C_d):	1.15		
Stability Factor (C_L):	1		
Wet Service Factor (C_M):	1		
Temperature Factor (C_T):	1		
Size Factor (C_F):	1.3		
Flat Use Factor (C_{fu}):	1		
Incising Factor (C_i):	1		
Repetitive Member Factor (C_r):	1.15		
F_b :	900 psi		
F'_b :	1547.33 psi	1430.31 <= 1547.33	OK in Bending

Shear

V_d :	260.21 lb		
f_v :	47.31 psi		
Load Duration Factor (C_d):	1.15		
Wet Service Factor (C_M):	1		
Temperature Factor (C_T):	1		
Size Factor (C_F):	1.3		
Flat Use Factor (C_{fu}):	1		
Incising Factor (C_i):	1		
F_v :	180 psi		
F'_v :	207 psi	47.31 <= 207	OK in Shear

Deflection

Live Load Deflection (Δ_L):	0.66 in	L/250	OK in Live Load Deflection
Total Load Deflection (Δ_T):	0.94 in	L/178	OK in Total Load Deflection

Uplift Calculation

Tributary Square Footage on Component:	10.83 ft ²
Uplift Pressure:	-27.66 psf
Uplift per Lag:	-299.64 lbs
Lag Screw Diameter:	5/16 in
Allowable Withdrawal per Inch:	490.99 lbs/in
Minimal Screw Penetration:	0.61 in

Install 5/16" diameter lag screws @ 48 on center with minimum penetration of 2" into rafter.