Job#: **2017-02**

Nail Calculator: Single and Double Shear

Lateral Analysis Method	Yield Limit Equations Table 11.3.1A			AWC NDS 2015
Main Member Type	DF	G = 0.50		
Main Member Thickness	1.5000 in.			
Side Member Type	PLY STR 1	G = 0.50		
Side Member Thickness	0.4688 in.		Fastener Geometry	
Nail Type	Common		D =	0.148 in.
Nail Size	10d		L =	3.000 in.

Adjustment Factors

			Connection Geometry	
Load Duration Factor	C_d =	1.00		
Wet Service Factor	C_m =	1.00	p_{min} =	0.888 in.
Temperature Factor	C_t =	1.00	p =	1.5000 in.
End Grain Factor	C_{eg} =	1.00	l_m =	1.5000 in.
Diaphragm Factor	C_{di} =	1.00	l_s =	0.4688 in.

Dowel Bending Yield Strength	F_{yb} =	90,000 psi		
Reduction Term	R_d =	2.200	k_1 =	1.067
Main Member Dowel Bearing Strength	F_{em} =	4,650 psi	k_2 =	1.092
Side Member Dowel Bearing Strength	F_{es} =	4,650 psi	k_3 =	1.803
F_{em} / F_{es}	R_e =	1.00		
L_m / L_s	R_t =	3.20		

Single Shear — Fastener length exceeds single shear connection thickness.

I_m	11.3-1	Z =	469.2 lbs
I_s	11.3-2	Z =	146.6 lbs
II	11.3-3	Z =	156.5 lbs
III_m	11.3-4	Z =	170.8 lbs
III_s	11.3-5	Z =	88.1 lbs
IV	11.3-6	Z =	117.6 lbs
Limiting Connection Yield Mode:		Z =	88.1 lbs

Double Shear

I_m	11.3-7	Z =	469.2 lbs
I_s	11.3-8	Z =	293.3 lbs
III_s	11.3-9	Z =	176.3 lbs
IV	11.3-10	Z =	235.2 lbs
Limiting Connection Yield Mode:		Z =	176.3 lbs

Adjusted ASD Capacity - Single Shear:

Z' = Z (Cd)(Cm)(Ct)(Ceg)(Cdi) **Z' = 88.1 lbs**

Adjusted ASD Capacity - Double Shear:

Z' = Z (Cd)(Cm)(Ct)(Ceg)(Cdi) **Z' = 176.3 lbs**

Length of penetration in side member is less than 6D, fasteners must be extend 3D beyond side member and be clinched.