TIMBER STRUCTURE CALCULATIONS

Code: *EN 1995-1:2004/A1:2008*

Type: 4423719 - Domeo 2

LOADS

Roof covering	**0,04 kN/m²**
Roof boards, d=18mm	**0,09 kN/m²**

WIND AND SNOW LOADS:

Ground snow load s_k = 1,50 kN/m²
Reference wind g_{ref} = 0,32 kN/m²

Governing Load Case: 4 uls (1+2)*1.20+3*1.50

MATERIAL: C24

gM = 1.30	f m,0,k = 24.00 MPa	f t,0,k = 14.00 MPa	f c,0,k = 21.00 MPa
f v,k = 2.50 MPa	f t,90,k = 0.40 MPa	f c,90,k = 5.30 MPa	E 0,moyen = 11000.00 MPa
E 0,05 = 7400.00 MPa	G moyen = 690.00 MPa	Service class: 1	Beta c = 0.20

SECTION PARAMETERS: 44x140

ht=14.0 cm

bf=4.4 cm	Ay=41.07 cm2	Az=41.07 cm2	Ax=61.60 cm2
tw=2.2 cm	Iy=1006.13 cm4	Iz=99.38 cm4	Ix=318.8 cm4
tf=2.2 cm	Wy=143.73 cm3	Wz=45.17 cm3	

STRESSES

Sig_m,y,d = MY/Wy= 1.91/143.73 = 13.31 MPa
Tau z,d = 1.5*-0.00/61.60 = -0.00 MPa

ALLOWABLE STRESSES

f m,y,d = 14.97 MPa
f v,d = 1.54 MPa

Factors and additional parameters

kh_y = 1.01 kmod = 0.80 Ksys = 1.00 kcr = 0.67

lef = 2.62 m Lambda_rel m = 0.89
Sig_cr = 30.46 MPa k crit = 0.89

LATERAL BUCKLING PARAMETERS:

Sig_m,y,d/f m,y,d = 13.31/14.97 = 0.89 < 1.00 (6.11)
Sig_m,y,d/(kcrit*f m,y,d) = 13.31/(0.89*14.97) = 0.99 < 1.00 (6.33)
(Tau z,d/kcr)/f v,d = (0.00/0.67)/1.54 = 0.00 < 1.00 (6.13)

VERIFICATION FORMULAS:

u fin,y = 0.0 cm < u fin,max,y = L/200.00 = 1.5 cm
Governing load case: (1+0.6)*1 + (1+0.6)*2 + (1+0*0.6)*3
u fin,z = 1.1 cm < u fin,max,z = L/200.00 = 1.5 cm
Governing load case: (1+0.6)*1 + (1+0.6)*2 + (1+0*0.6)*3

Section OK !!!