

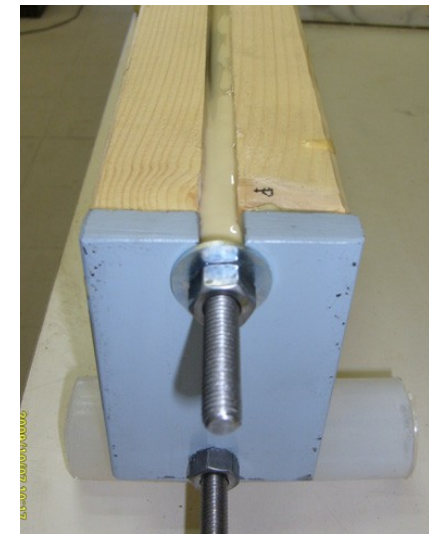
# 鋼棒を挿入接着した集成材梁の強度特性



かりこぼうず大橋



鋼板



鋼棒



曲げ破壊



せん断破壊

曲げたわみ    せん断たわみ

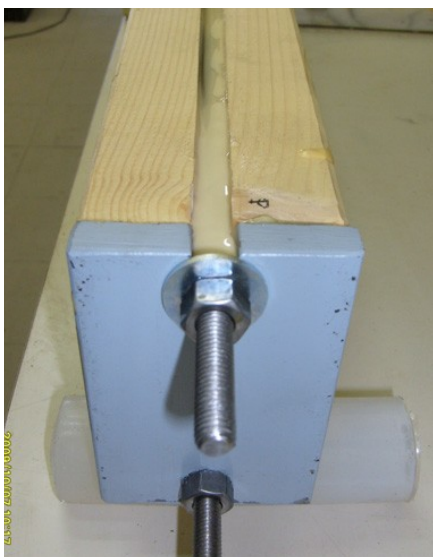
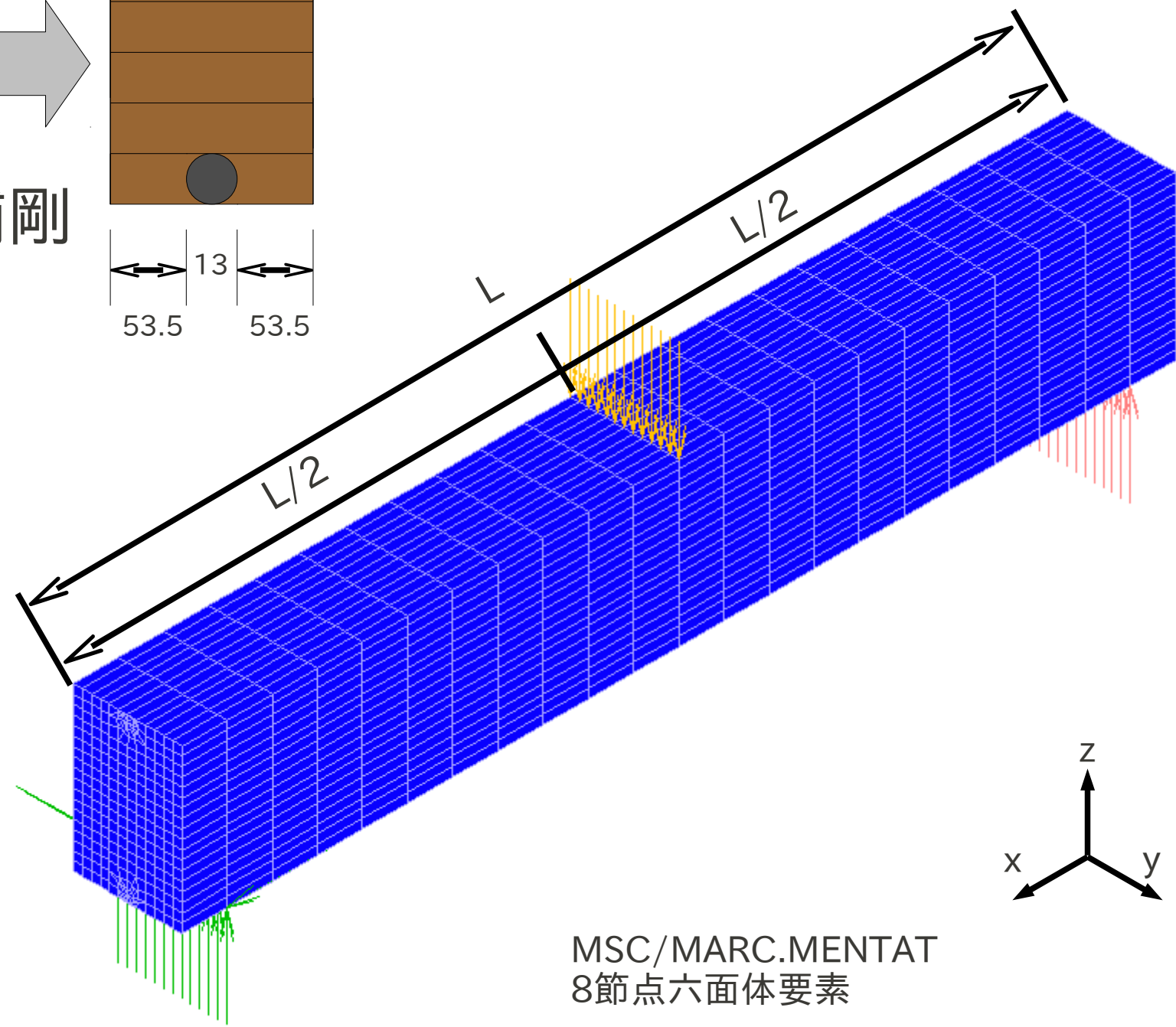
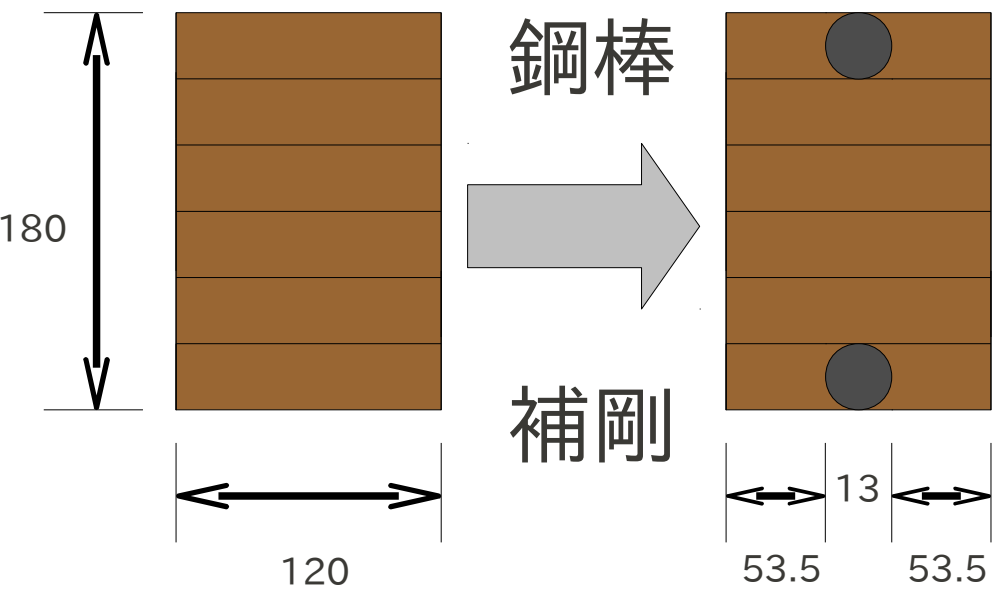
ティモシェンコ梁 
$$V = \frac{Pl^3}{48EI} + \frac{Pl}{4kGA}$$

$$EI = E_{木}I_{木} + E_{鋼}I_{鋼}$$

$$GA \neq G_{木}A_{木} + G_{鋼}A_{鋼}$$

せん断で壊れる可能性

# モデル断面(mm)

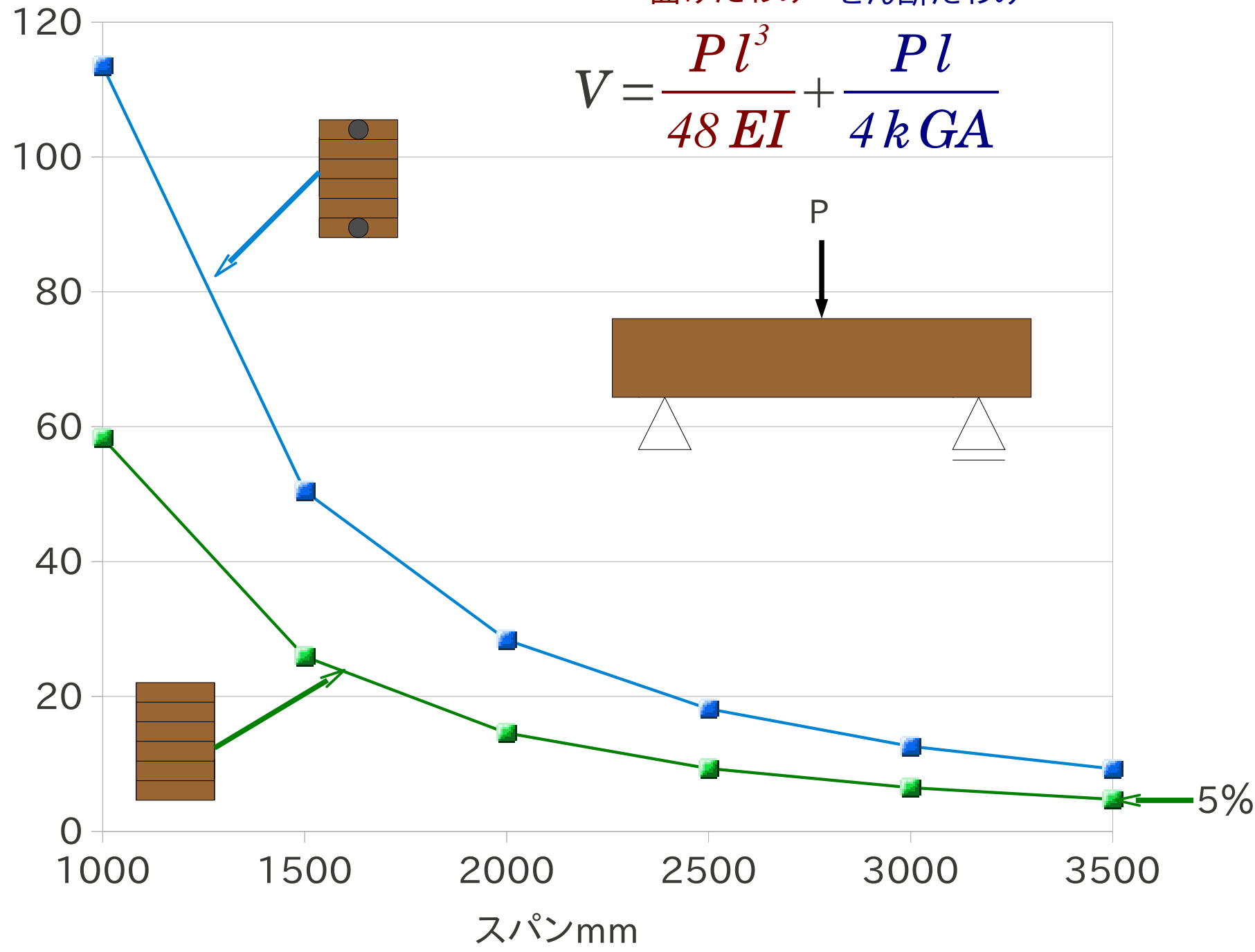


MSC/MARC.MENTAT  
8節点六面体要素

せん断たわみ  
曲げたわみ (%)

$$\frac{12EI}{l^2 kGA}$$

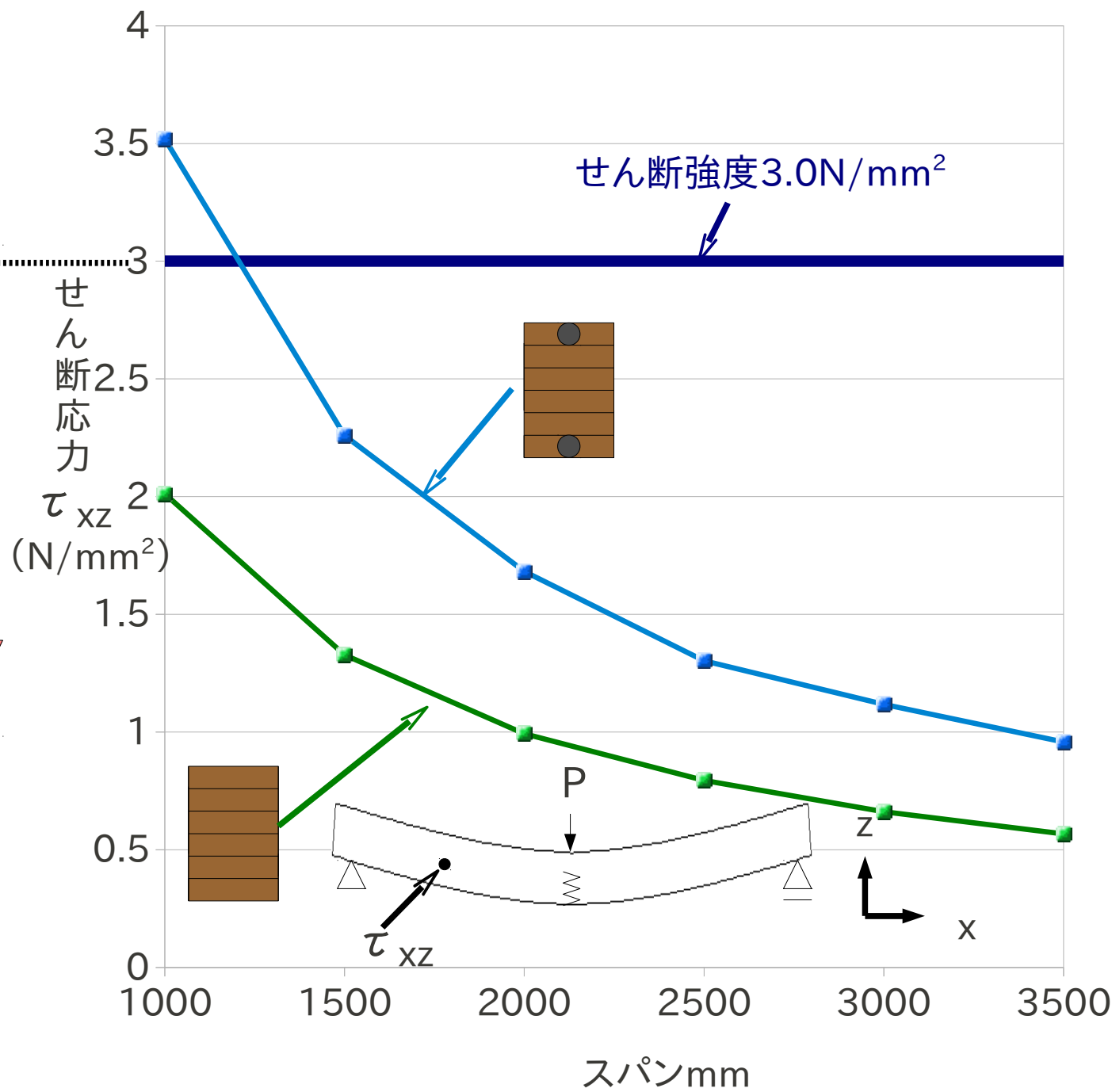
$$V = \frac{Pl^3}{48EI} + \frac{Pl}{4kGA}$$



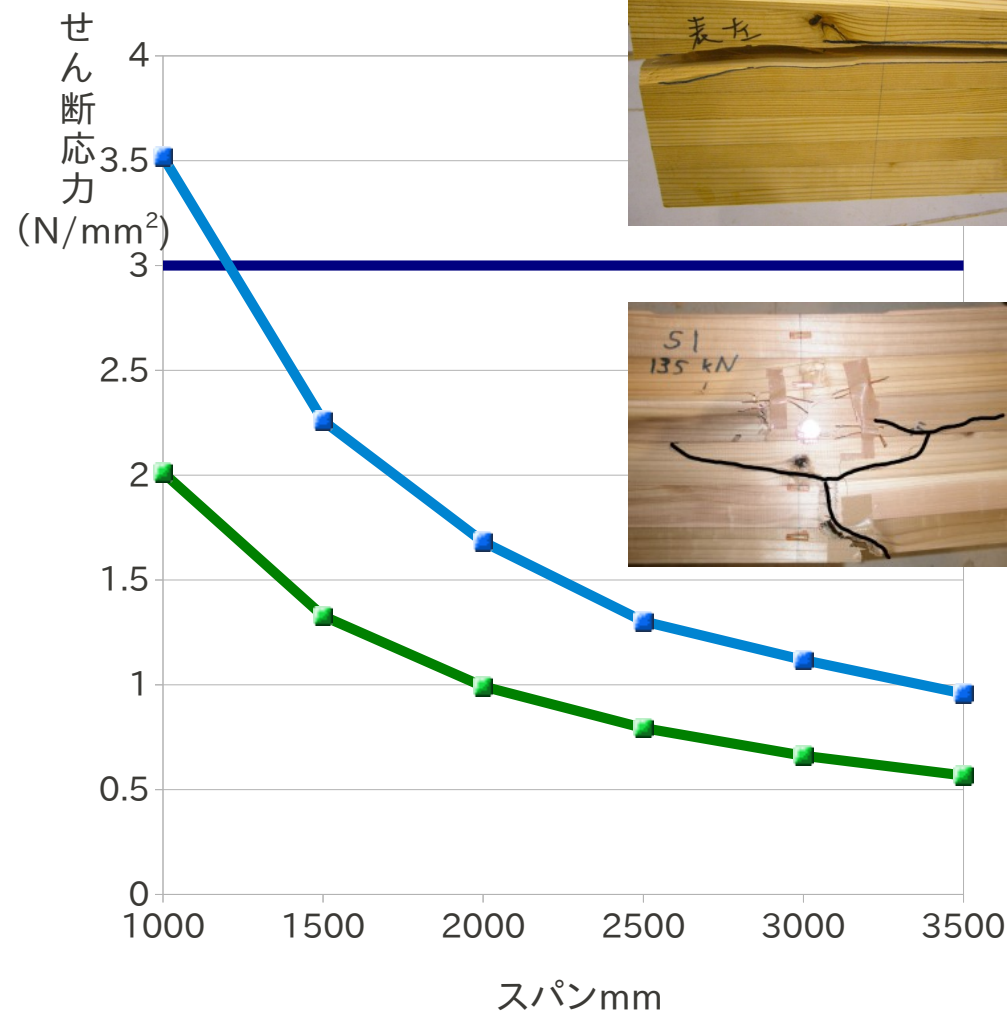
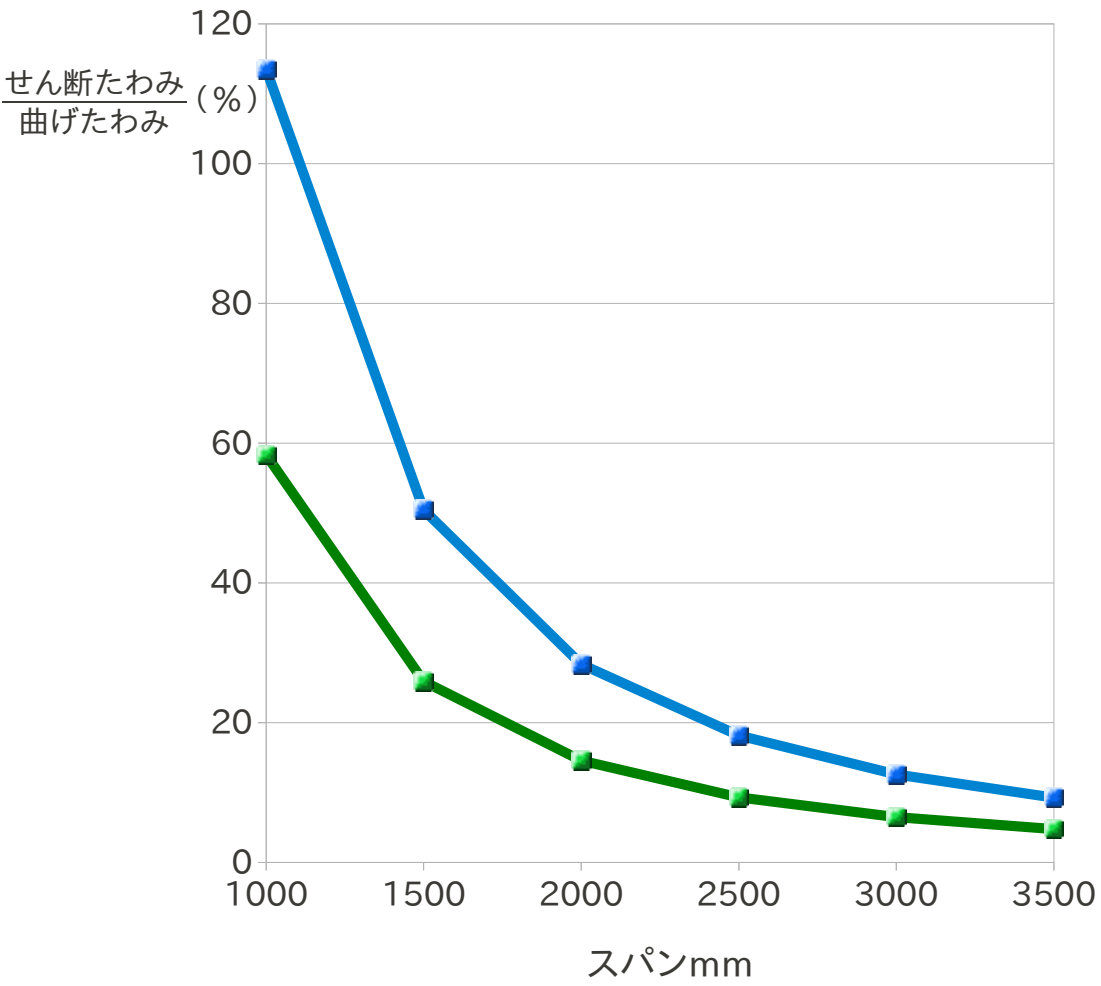
せん断破壊



曲げ破壊



# まとめ



2m程度以上なら曲げ破壊  
充分実用的

