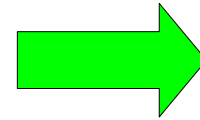


ラグスクリューを用いた木製ダム 接合部のせん断挙動

環境構造工学講座 09703 出井章裕



木製治山ダム(オールウッドダム)



ラグスクリュー

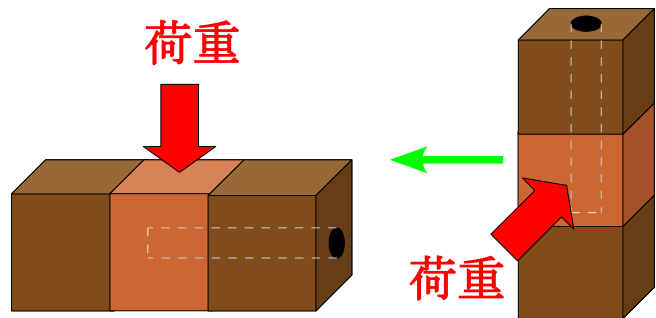


木材利用研究論文報告書9より

重要

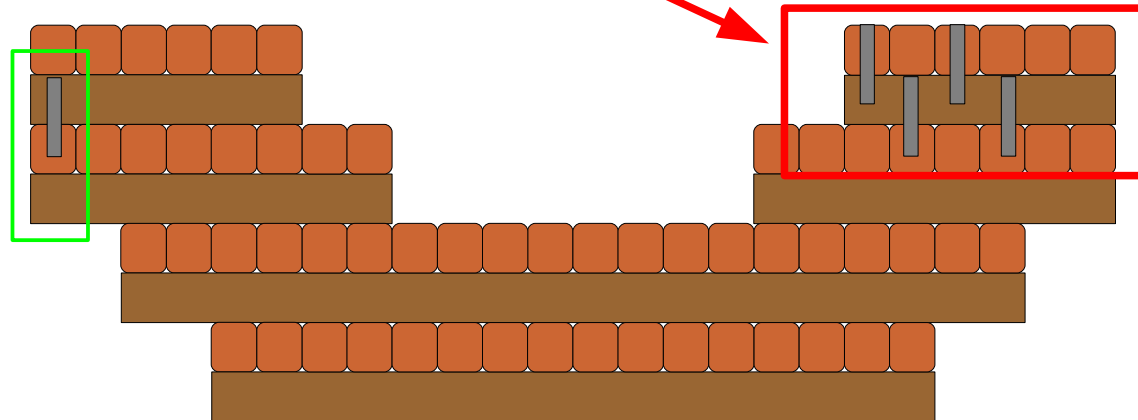
木材とラグスクリューの挙動を知る必要がある

試験体

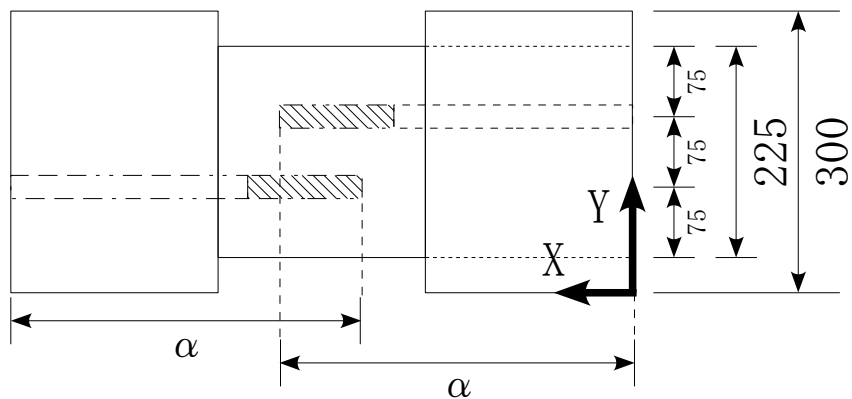


断面図

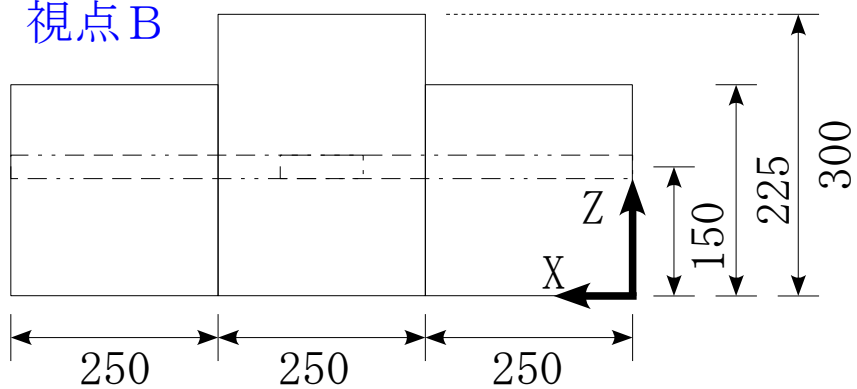
ラグスクリーンの配置



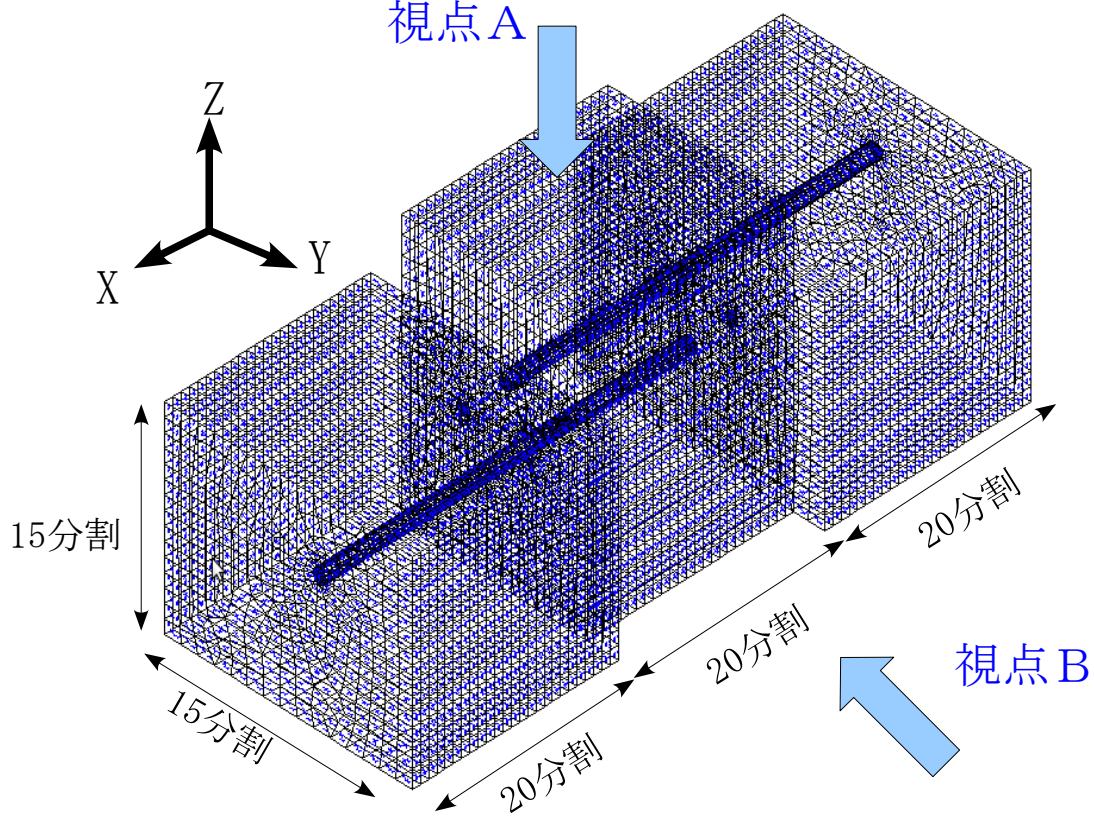
視点A



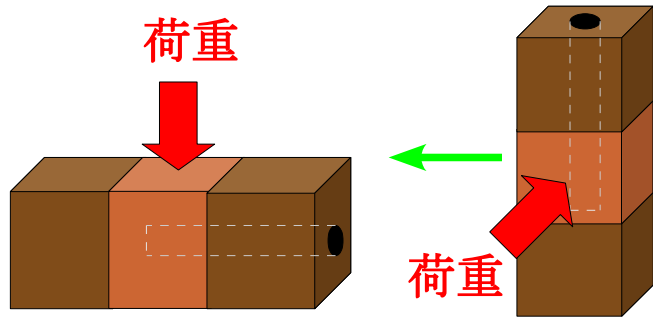
視点B



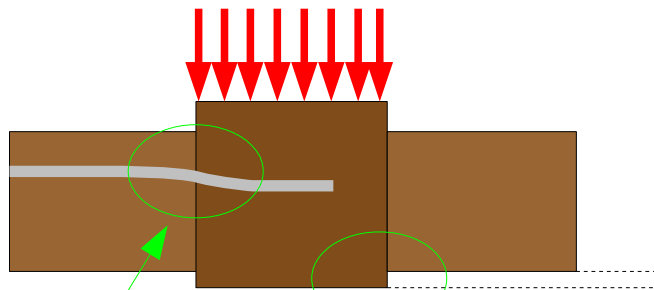
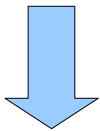
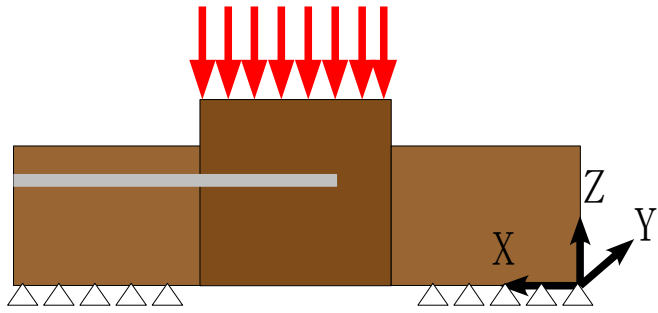
視点A



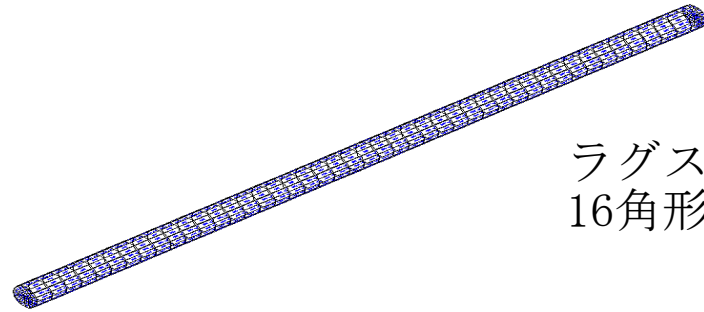
解析方法 (MSC/MARC. MENTAT)



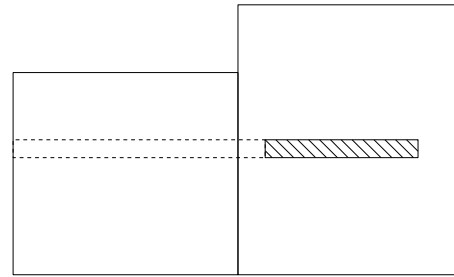
荷重P : 0~20000N



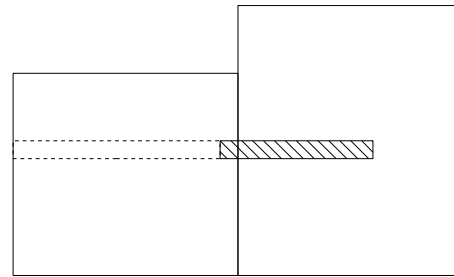
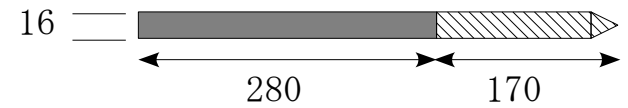
せん断応力 たわみ



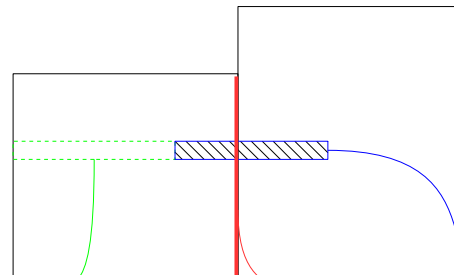
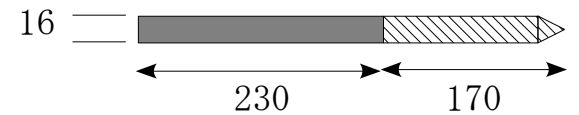
ラグスクリューのモデル化
16角形



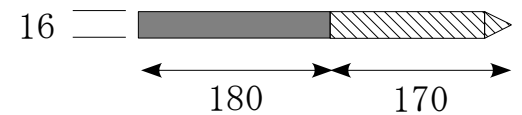
ラグスクリュー450mm



ラグスクリュー400mm



ラグスクリュー350mm

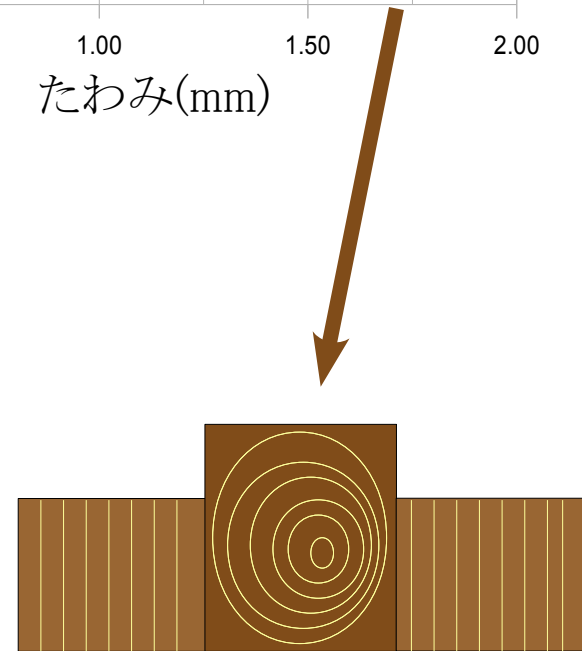
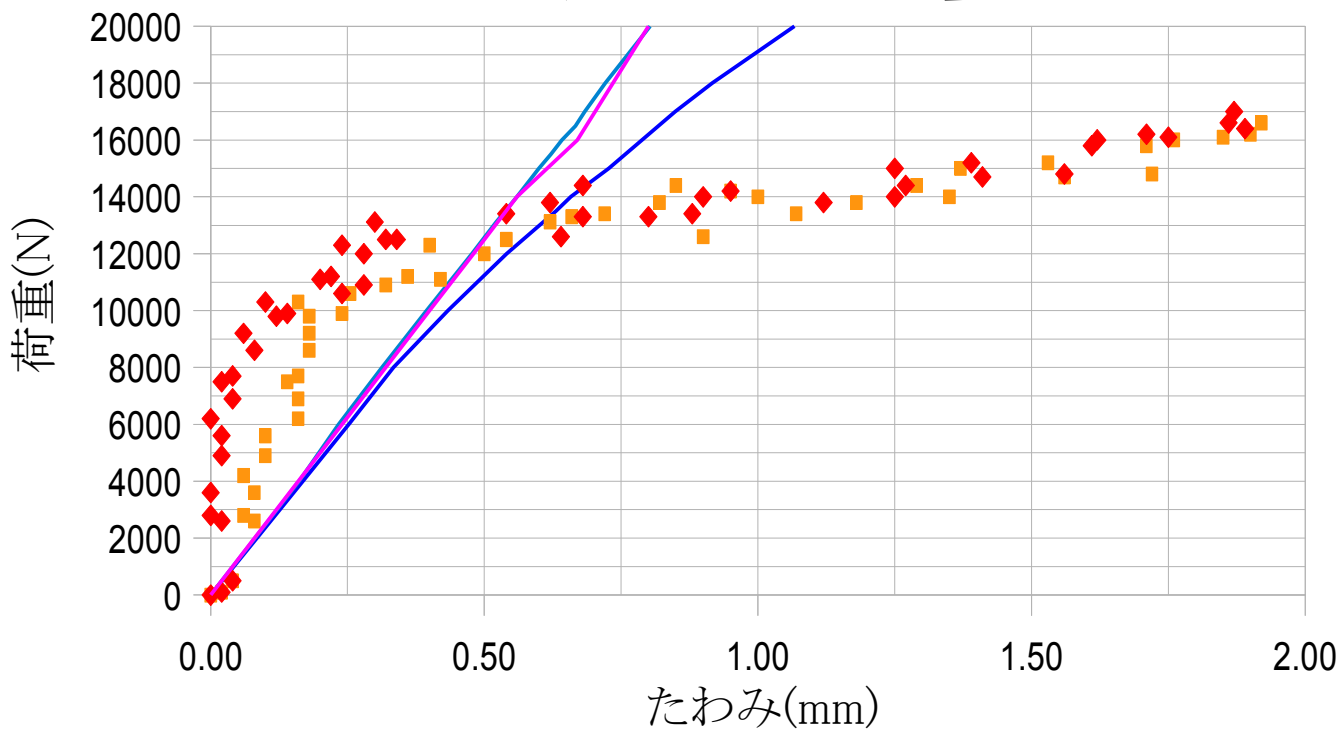
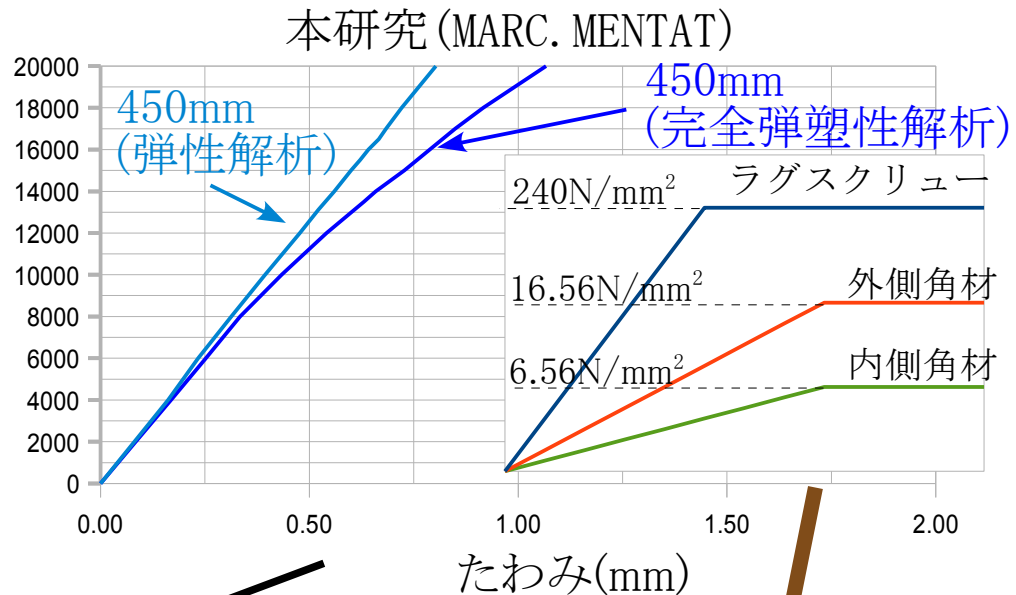
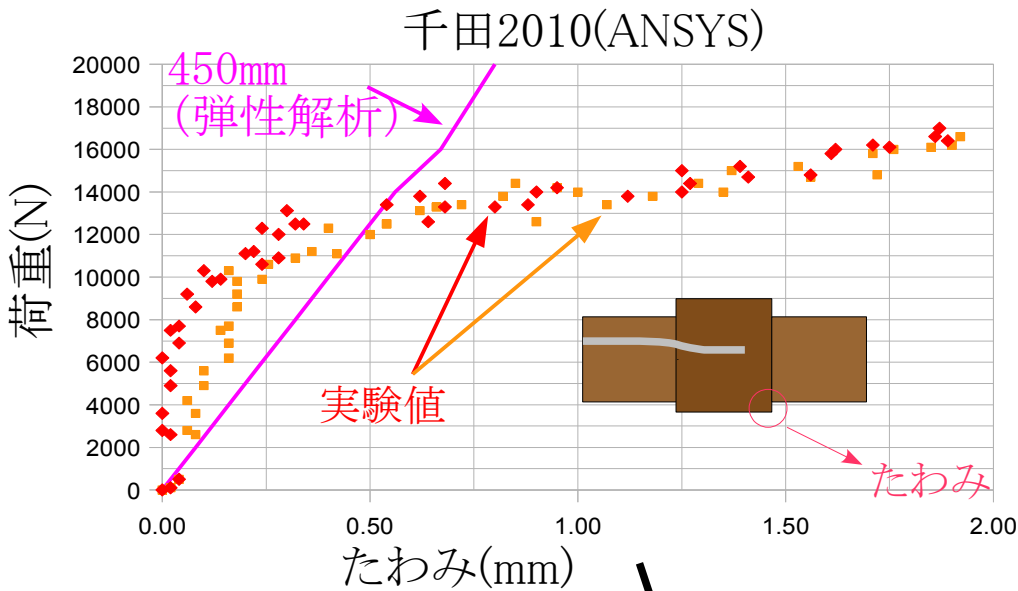


摩擦係数:0.01

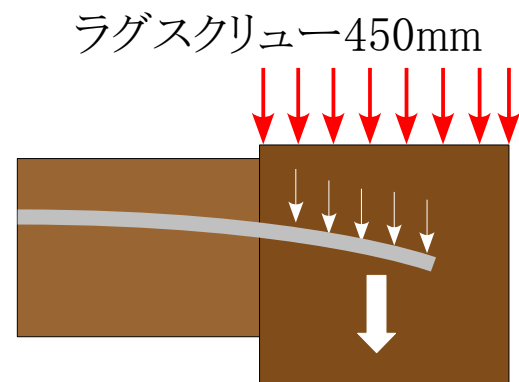
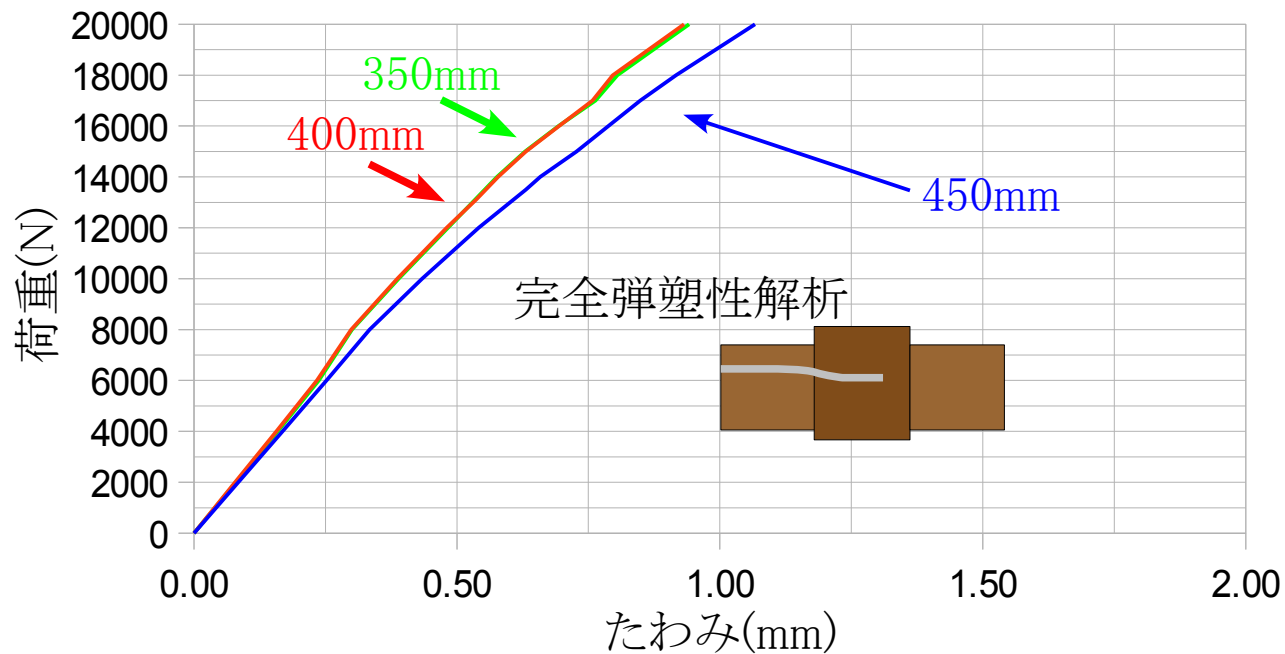
摩擦係数:0.35

摩擦係数:0.7

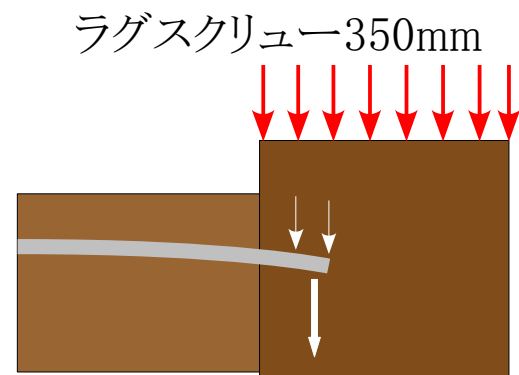
解析結果



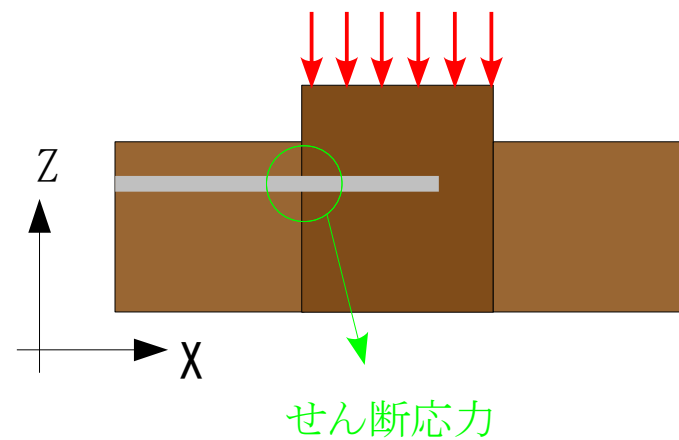
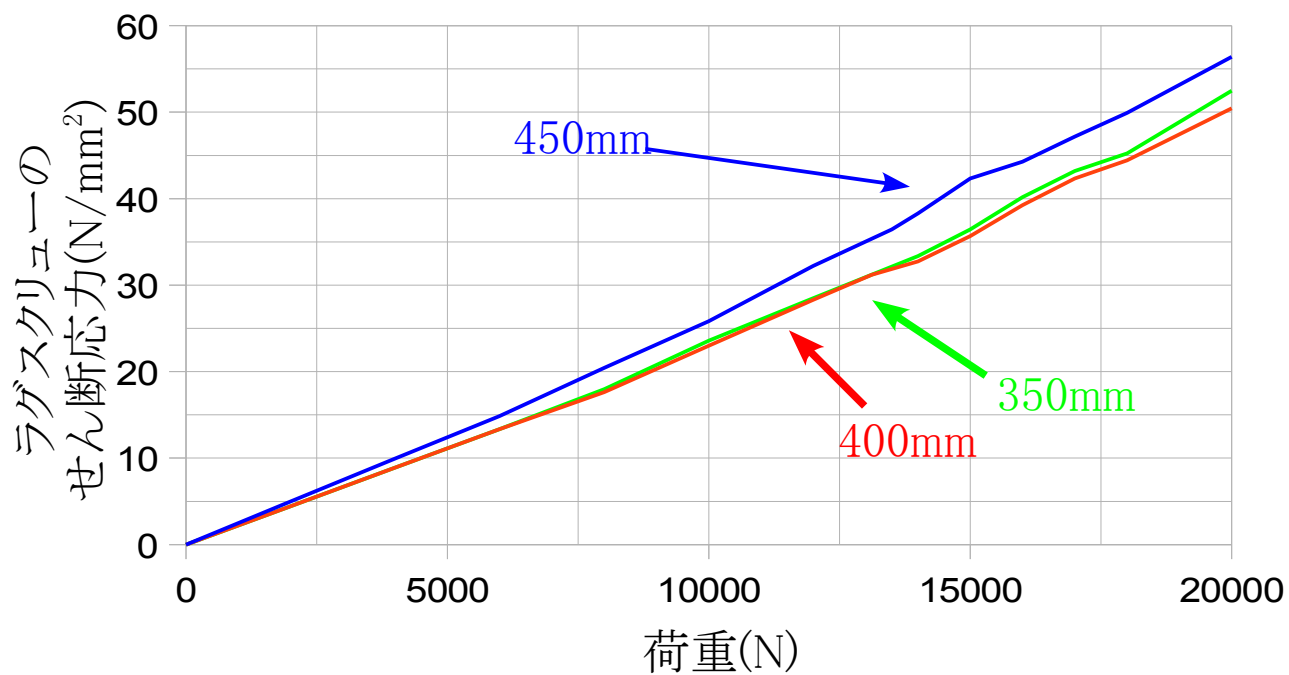
木目の向きによって
降伏点異なる



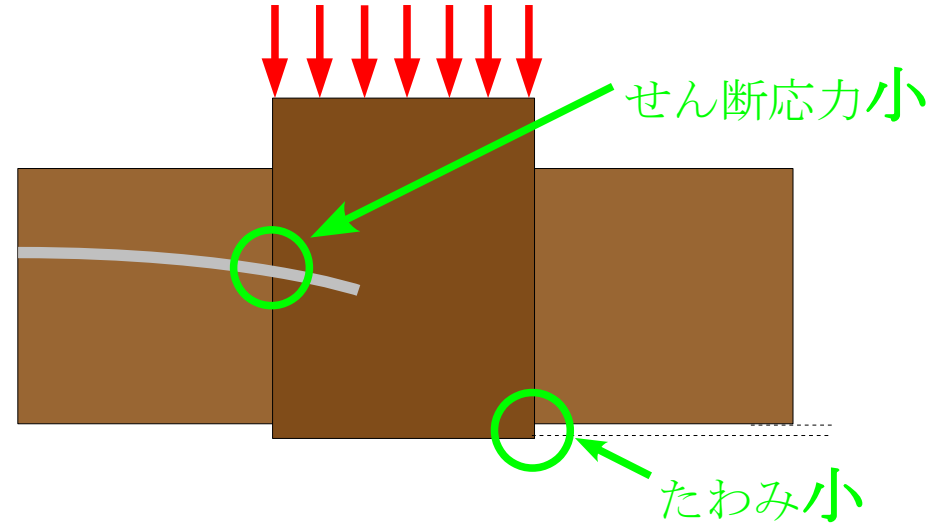
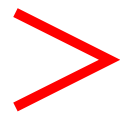
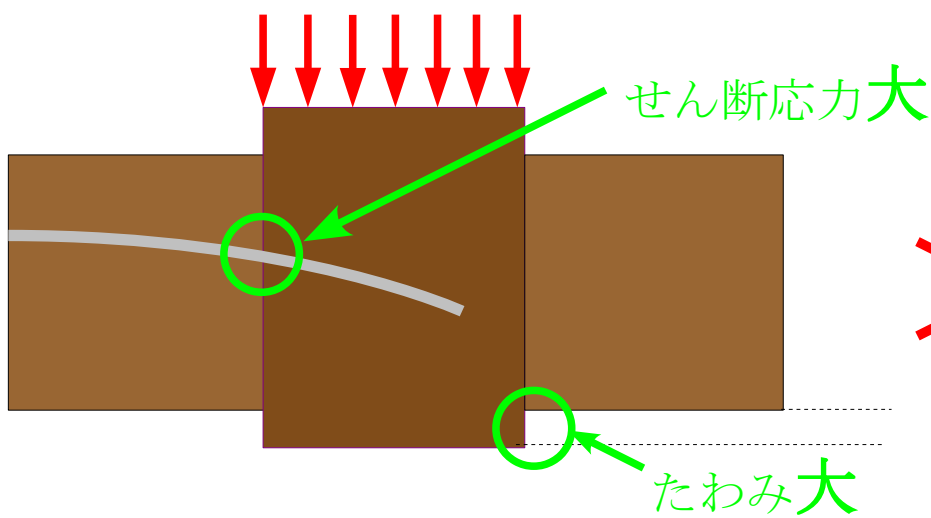
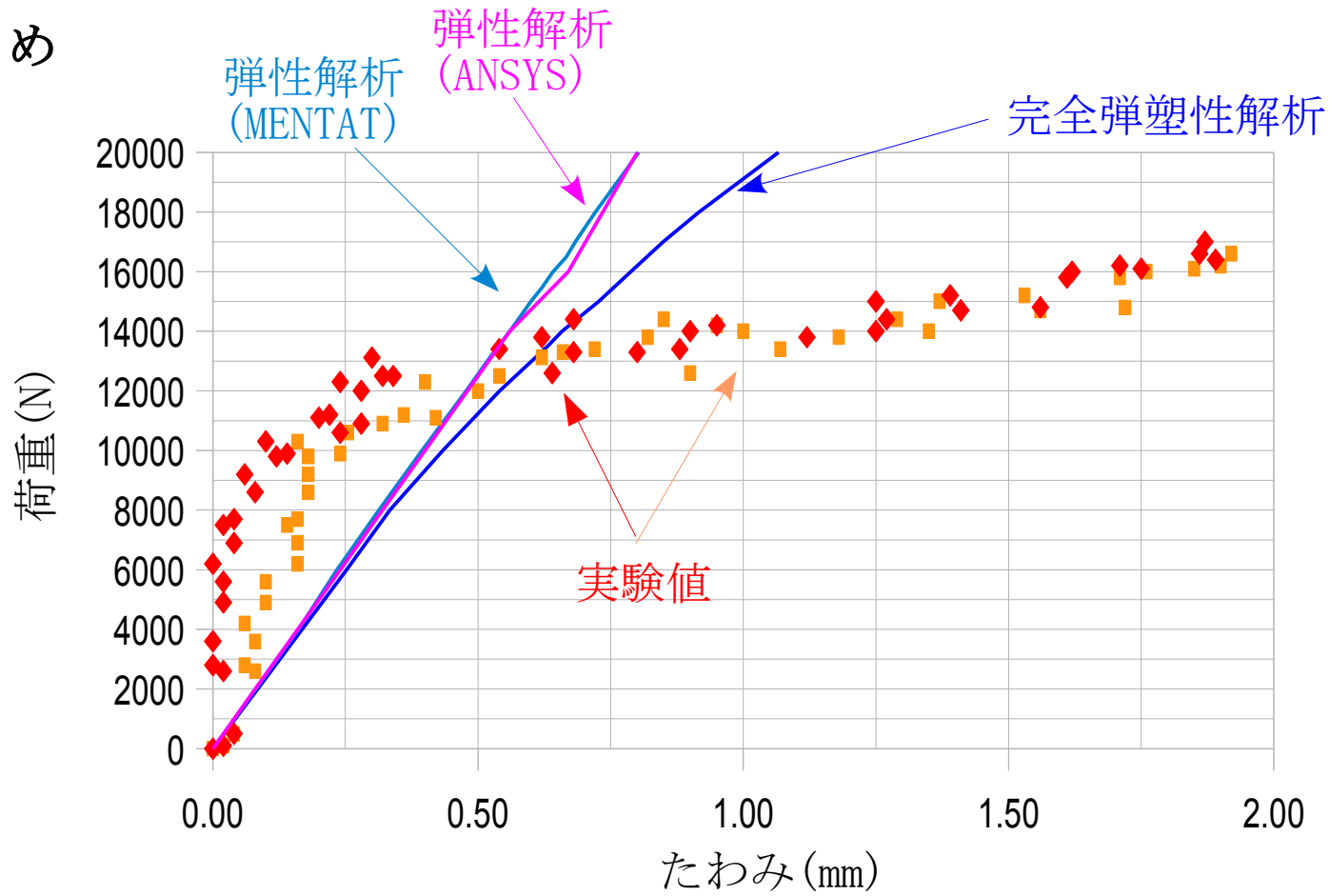
モーメント大



モーメント小



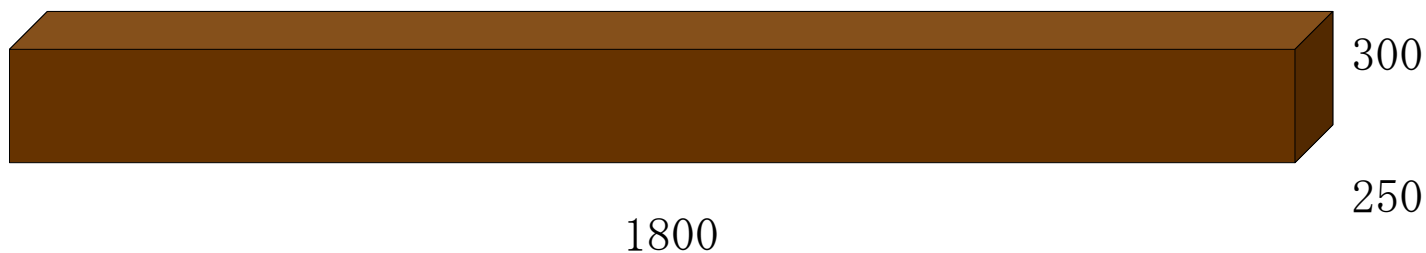
まとめ



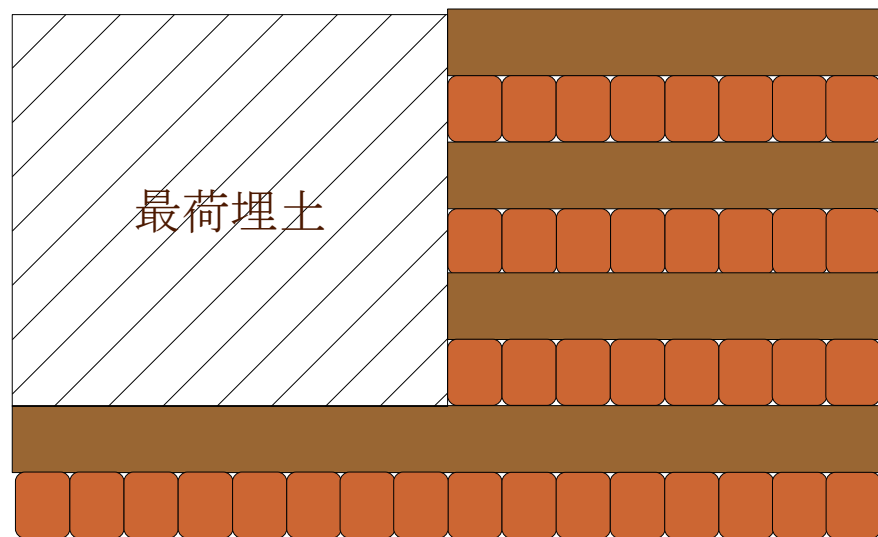
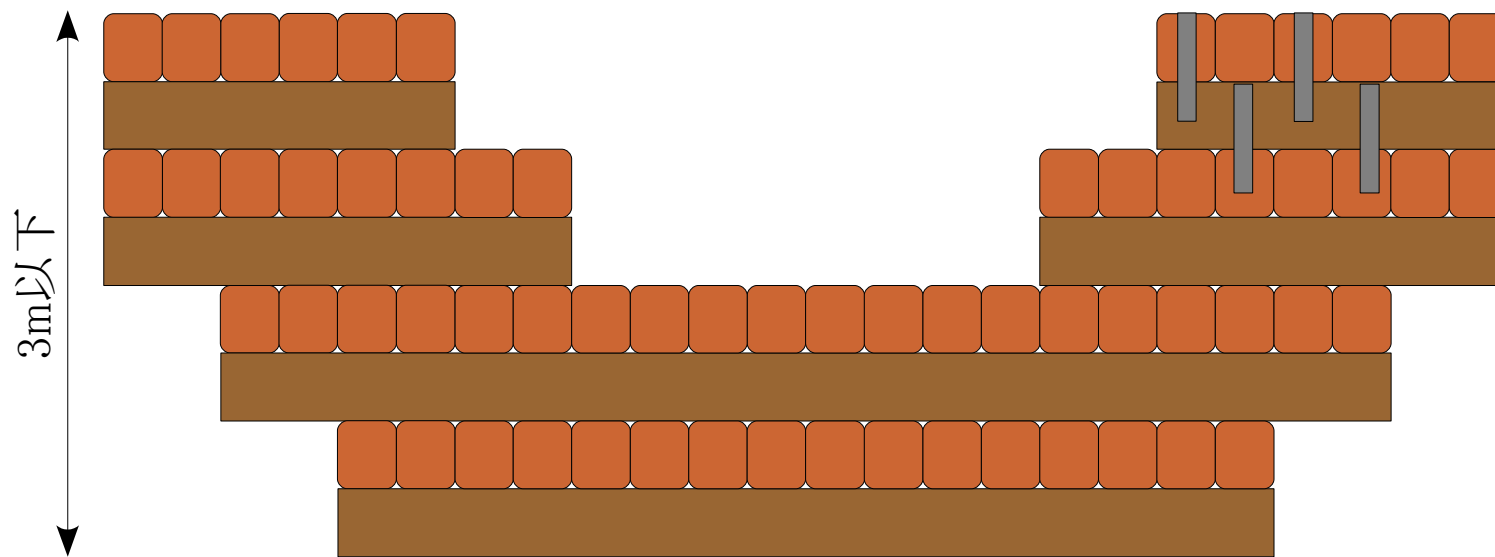
材料特性

	木材	ラグスクリュー
ヤング率(N/mm ²)	$E_y=7500$ $E_x=E_z=E_y/25=300$	$E_x=E_y=E_z=200000$
ポアソン比	$\nu_y=0.4$ $\nu_x=\nu_z=\nu_y/25=0.016$	$\nu_x=\nu_y=\nu_z=0.3$
せん断弾性係数 (N/mm ²)	$G_{xy}=G_{yz}=G_{zx}$ $=E_y/15=500$	$G_{xy}=G_{yz}=G_{zx}$ $=E_y/15=1333$
降伏強度(N/mm ²)	6.56(主材) 16.56(側材)	240

	スギ	ラグスクリュー
許容せん断応力 (N/mm ²)	0.5	120
許容引張応力 (N/mm ²)	3.5	160



秋田県の木製治山ダム



オールウッドタイプ 1 基当たりの木材使用量
平均150m³