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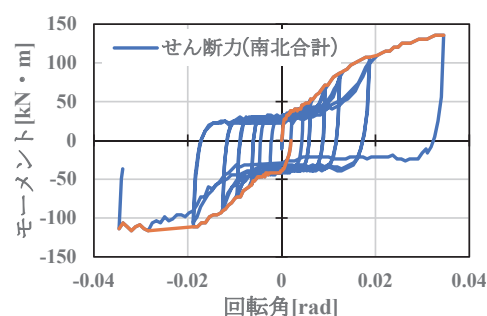
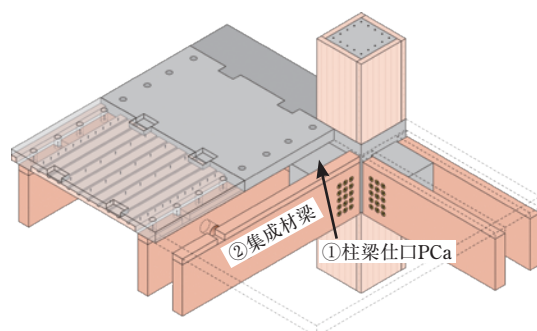
● 土木

集成材梁とプレキャストコンクリート仕口のボルト接合部に関する実験的研究

Experimental study on bolted joints between laminated timber beams and precast concrete brackets

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概要

本研究では木材とプレキャスト(以下、PCa)コンクリート部材を組み合わせた木-PCaハイブリッド構法を開発するために、PCa仕口と集成材の梁がボルト接合された梁端接合部について要素実験と実大加力実験を行った。

各実験により得られた知見を以下に示す。①集成材の表層ラミナのめり込み剛性は中間層より高かった。②めり込み剛性を木規準によるめり込み剛性と比較すると実験値は計算値を下回った。③ボルトのめり込みに対する降伏応力度を木規準とEurocode 5による基準支圧強度とすると繊維方向では実験値は計算値を上回った。繊維直交方向では木規準の計算値を上回ったがEurocode 5の計算値を下回った。④実大接合部の耐力は鋼板挿入型の接合部の式を準用して評価できた。⑤回転剛性の木規準式との対応を確認した。

In this study, for the development of a wood-PCa concrete hybrid construction method, element tests and full-scale loading tests were conducted on beam-end joints where laminated timber beams were bolted to precast (PCa) concrete brackets.

The findings obtained from each experiment are as follows:

- (1) The embedment stiffness of the surface laminate of the laminated timber was higher than that of the intermediate laminate.
- (2) When comparing embedment stiffness with the value calculated using the Japanese wood design standard, the experimental values were lower than the calculated values.
- (3) When taking the yield stress of the bolts against embedment as the reference bearing strength specified in the Japanese wood design standard and Eurocode 5, the experimental values in the fiber direction exceeded the calculated values. In the direction perpendicular to the fibers, the experimental values exceeded the computed values of the Japanese standard but were lower than those of Eurocode 5.
- (4) The strength of the full-scale joints could be evaluated by applying the formula for steel plate insertion-type joints.
- (5) The applicability of the Japanese wood design standard formula for rotational stiffness was confirmed.