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Short Report

Practical Recommendations for the Reduction of Stress Cracks in glued laminated cambered Beams

Glued laminated cambered beams are frequently used as this is a particularly economical construction method. The ability to manufacture load bearing parts easily in straight or curved forms in the factory means they can be adapted to the desired roof type and pitch. Under load tension stress perpendicular to the grain appear at the curved mean part of the roof truss. Keeping an adequate safety factor the strength of timber must not be exceeded.

The aim for this research-project is to give practical recommendations for the reinforcement of beams made of luminated timber in order to increase the reliability of these constructional parts in comparison to unstrengthend ones. Constructional reinforcements are proposed, which taking into account the essential factors can be calculated or can be taken from diagrammes.

In the last few years the insertion of reinforcements perpendicular to the grain in curved laminated timber beams has proven to be reliable. Primerally, thread rods are used as constructional measures, but glued scarfs of timber or veneered constructional plywood, or professionally fitted wood screws and other suitable measures can be used.

The reinforcement measures are to absorb the stress forces, which arise in the

curved load bearing area from external loads. It is not regarded as necessary that the reinforcements take up all of the stress forces. In the past fifteen years constructive reinforcements have been carried out on numerous cambered beams. The experience gained in this connection shows that the partial take-up of stress forces by reinforcement measures is sufficient to improve the required stability.

For the assessment of thread rods or glued scarfs considered to be appropiate for construction a computing procedure is provided. As an alternative to the formulas worked out, diagrammes have been developed, from which the necessary reinforcement can be taken.