

## Technical Guidance Note

### March 2024

# Cross Laminated Timber for Structural Decks and Parapets

Cross-Laminated Timber (CLT) is a subcategory of engineered wood with panel product made from gluing together at least three layers of solid-sawn lumber (i.e., lumber cut from a single log).

These timbers have no natural defence against decay caused by sustained high levels of moisture, typically above the design threshold of 20% moisture content, and this high level of moisture may prohibit achieving a satisfactory bond of the waterproofing.

Cross Laminated Timber structures should not be subjected to high moisture either during transportation, storage or installation, as incorrect installation may create conditions for moisture to become trapped.

Every effort should be made to ensure high levels of moisture is not trapped within CLT structure including detailed plan for protection against both short- and long-term exposure to excessive moisture. It is recommended that a Moisture Control Plan will be required for the management and control of moisture on all projects.

Further guidance may be sought from:

**The Structural Timber Association publication:** STA Advice Note 14 titled 'Robustness of CLT Structures - Part 1: Key principles for moisture durability' provides guidance for the design, concept detailing and installation of panelised CLT building structures.

#### **NHBC technical guidance 6.2/06**

Flat roofs, balconies and parapets - High Risk: Detailing of these elements to exclude moisture in the long term is difficult to achieve in practice and their adequate construction cannot be guaranteed.

#### **IKO recommendations where CLT is being used for structural decks and parapets**

High levels of moisture in CLT have been seen to cause installation issues when applying Permateg hotmelt systems and Bituminous Air & Vapour Control Layers.

#### **Permateg Hotmelt Issues -**

During the initial application of the 1<sup>st</sup> coat of Permateg waterproofing, the heat of the hot compound raises the temperature of moisture at the surface of the CLT to above boiling resulting in formation of blows as the gases force its way through the first coat. This leaves the system prone to air blister formation between the 1<sup>st</sup> and second coat of Permateg compound.

#### **Bituminous Membranes –**

High levels of moisture in CLT are difficult to dry out as the use of a gas torch is not permitted on a combustible timber deck in accordance with NFRC Safe 2 Torch. These high levels of moisture therefore inhibit the adhesion of self-adhesive AVCL products and cause regular bond test failure.

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As a direct result of these concerns the IKO recommendation for all adhered waterproofing applications is to mechanically fasten a recovery board into the CLT substrate (minimum 35mm embedment) using a minimum 5 IKOfix Universal fixings with 82x40mm membrane pressure plates (HS) per board in accordance with IKO recommendations prior to the application of the IKO waterproofing.

Note - For exposed roof systems an IKO wind uplift calculation is required to advise the correct number of fasteners and pressure plates to withstand the calculated uplift pressures per m<sup>2</sup>.

Application of the IKO recovery board should be undertaken and made waterproof during each working day.

**IKO Recovery board:**

- IKO Protectoboard – for Reinforced Bitumen Membrane AVCLs
- IKO Permaguard-PB – for Permateg Hotmelt systems

The specified IKO waterproofing can be fully bonded directly to the IKO Protectoboard/Permaguard PB in accordance with the system installation instructions.

**Disclaimer**

Whilst every precaution is taken to ensure that the information given in this literature is correct and up to date it is not intended to form part of any contract or give rise to any collateral liability, which is hereby specifically excluded.

IKO reserve the right to amend and/or withdraw this document without notice.

Intending purchasers of our materials should therefore verify with the company whether any changes in our specification, application details, withdrawals or otherwise have taken place since this literature was issued.

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