high performance in high traffic

specifying cross laminated timber floors in commercial applications

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timber flooring | engineered

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introduction

When specifying flooring for commercial projects, there are many considerations that come into play. Commercial floors require a careful balance of performance and visual appeal in order to achieve a harmonious aesthetic while providing a safe, durable surface. High traffic areas such as hospitality, retail or offices require a particular focus on wear resistance and strength.

Timber has been a popular flooring material since the middle ages,[1] and has been coveted ever since for the sleek and luxurious, yet natural look it brings to a space. However solid timber has some material drawbacks that can restrict its effectiveness in commercial applications. Timber is prone to warping when exposed to water - problematic in highly trafficked areas near doors for example, where the footsteps of many people can bring rainwater inside. This is also problematic in spaces that serve food as regular spillages may begin to soak into the floors. The surface of solid timber can be easily scuffed, scratched or dented - again, problematic in applications where significant foot traffic is likely. This can leave the floor looking worn before its time, or require resanding and refinishing at great cost. In addition, timber expands with humidity, meaning that if not installed correctly with enough gap between planks to account for this expansion, they can push up against each other leading to buckling and crowning, creating an uneven surface.[2]

Engineered timber floors, however, utilise innovative multi-ply construction in order to reduce many of the technical deficiencies of solid timber. Generally created by combining multiple planks together with a solid hardwood top layer, engineered timber flooring can provide the right balance of durability and aesthetic in commercial applications. A newcomer in the engineered timber space, Cross Laminated Timber (CLT) can provide even greater stability than other forms of engineered timber.

This whitepaper will provide an in-depth look at Cross Laminated Timber flooring and how it can provide a high-performance option in commercial applications. It will look at how engineered timber is constructed and cover a number of other practical aspects for specifiers' consideration.

clt flooring: engineered for success

Modern engineered timber flooring consists of two or more sawn timber layers adhered to form a single plank. It is then topped with a thin wear layer or lamella - which is generally a hardwood and gives the engineered timber the luxurious aesthetic of a traditional solid timber plank floor. The history of engineered timber can be traced back to the creation of the first plywood roughly 120 years ago.[3] In that time it has been developed with many technological innovations in construction, treatment and adhesion processes to create the stable, durable product in use today.

Cross Laminated Timber is a comparatively recent innovation in the engineered wood space. It is made from timber planks cut and bonded together with non-toxic adhesive under heat and pressure in multiple layers. What sets it apart from the wider engineered timber products on the market is that with Cross Laminated Timber, the grain of each ply is perpendicular to the adjacent layer. This distributes the grain strength of the boards in multiple directions, giving CLT planks superior structural rigidity, while also negating the shrinkage and warping issues that can be prevalent in solid timber products. It is worth noting that the perpendicular construct applies to the core of the boards only, the top wear layers are still applied in parallel to give the sought-after finish of traditional hardwood flooring.

considerations for specifiers

durability in high traffic

The perpendicular-layered construct of CLT flooring makes it highly durable and far less susceptible to the technical drawbacks of solid timber flooring. This is especially valuable in high-trafficked commercial applications where lower-performance products can result in additional maintenance or earlier replacement, costing unnecessary time and money in the process. CLT flooring has an outstanding strength-to-weight ratio, with comparable strength to concrete, at a fraction of the weight.[4] The planks generally come prefinished with high-wear UV oil to better protect the integrity of the underlying plank. With regular cleaning they will perform well under the repeated stresses of high traffic commercial applications such as high heels, tables and chairs. CLT planks are also available with wear layers of different thicknesses depending on the specifics of the project. A thicker wear layer extends the lifespan of the board as it provides greater room for resanding and refinishing, if and when it is required.

CLT floors are far less susceptible than solid timber to expansion or shrinkage due to humidity. Whereas traditional timber can see expansion of up to 8%,[5] studies have shown shrinkage in CLT to be less than 1%.[6] This material stability provides specifiers with peace of mind that floors will perform as expected and not cause any unforeseen issues in varied use commercial environments.

easy to install

CLT planks are lightweight compared with solid timber and utilise a tongue and groove system to ensure that the planks can be easily fit together during installation. They can be installed either floating or using glue depending on the specifics of the project. In either case, however, it is recommended that a 10mm expansion gap be included at the floors' edge to account for the minor expansion that comes with any engineered wood product. Where suitable, floating floors are the easiest and fastest to install; simply locking together over the pre-prepared substrate. However, in commercial applications a glued installation is more likely to prevent any shifting of the floors under significant use. In these instances, the planks are adhered directly onto the concrete under-floor. While slightly more resource-intensive than floating floors, a glued installation is still a simple, cost-effective means of creating a strong CLT floor with a prolonged lifespan.

easy to maintain

Following from this, It goes without saying that regular cleaning is key to prolonging the lifespan of CLT flooring in commercial applications. Sand and grit can be easily walked inside which can scratch or damage the floors (even scratch resistant ones), as can moving tables or chairs, or scraping any other heavy or abrasive fitting along the floor's surface. CLT floors are easy to clean and require no special tools or products for maintenance. It is recommended that floors are washed regularly with a natural, Ph neutral soap and re-oiled with a product in line with manufacturer's recommendations.

sustainable and environmentally-friendly

CLT flooring provides a number of positive sustainability outcomes over other flooring materials. Specifiers should always ensure that the CLT flooring they are considering is made with wood sourced from ethically-managed forests, and request to see chain of custody credentials for any product they are considering. Through prefabrication, CLT floors reduce waste onsite and can be easily removed without excessive energy usage during demolition.

Constructed with non-toxic adhesives, CLT products do not emit Volatile Organic Compounds (VOCs), making them environmentally friendly and non-detrimental to people with respiratory conditions such as asthma. Ethically-sourced CLT planks can be made partially from recycled materials, be recycled themselves, and sequester carbon.

the aesthetic appeal of wood floors

One of the most desirable characteristics of any timber flooring product is the sleek, luxurious aesthetic for which wood has been coveted as a construction material for years. As CLT flooring uses a genuine hardwood lamella, it has the same visual appeal as solid timber flooring. This means it also comes with the same organic inconsistencies that are desirable in wooden flooring design. While there is overall consistency in colour and finish, there will always be some differences in spot colours, textures and knotting plank to plank. For this reason CLT floors should always be installed by an experienced professional in the field as they will be able to make the best design choices as to which aspects of the wood should be highlighted in prominent areas.

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plank Floors

Plank Floors are Australian market leaders in the supply of high-quality prefinished engineered timber flooring. The company prides itself on craftsmanship, sourcing the best materials available and investing time and resource to innovating across products, colours and textures. Plank Cross Laminated Timber products focus on European Oak while also offering Australian hardwoods such as Spotted Gum and Blackbutt.

All Plank floorboards are ethically sourced and have low-VOC emission products. They are available in a range of custom finishes, woodgrain tones, grades, sizes and thicknesses. They are also supported by maintenance programs and compatible cleaning products to enhance the lifespan of the flooring. In addition, all Plank floorboards are backed by a 25-year structural warranty, providing peace of mind for specifiers and clients alike.

Plank Floors are timber specialists and able to provide education, advice and recommendations to specifiers based on the individual needs of each project.

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