

Grand Designs' County Down Barn:

Transforming a dilapidated agricultural building into a stunning four-bedroom house using cross-laminated timber



Architect Micah Jones has used cross-laminated timber (CLT) to transform a dilapidated agricultural building into a luxury interpretation of the farm buildings of Micah's rural County Down childhood.

The County Down Barn, which featured on Channel 4's Grand Designs last September, is a contemporary take on a traditional barn conversion formed of a one-storey CLT structure installed above the restored original stone building. The new home was built on a limited budget and timescale, and is located on a tight site with stunning views across the Mourne Hills of County Down. By using a complementary material palette of CLT, stone and concrete Micah has provided an elegant, yet comfortable and robust, home for his growing family.

There were several reasons for the specification of CLT, including the material's enhanced thermal and air tightness performance - a major benefit as all the insulation on the house is

external. Other key considerations were CLT's structural ability to achieve the clean, long spans that Micah was looking for and the material's high-quality finish, which was important because internally the CLT has been left exposed throughout.

The Barn is laid out as an upside-down house with the main living space on the first floor and the bedrooms and bathroom at ground floor level. The house is long and narrow, and Micah has designed the CLT upper floor to create a 'tunnel of timber' effect, formed of one long open span. This has been achieved by an 'over-truss' solution developed for the project by CLT specialist and TRADA member G-frame Structures, where the trusses are placed on top of the roof and the roof is 'hung' from them making only the tie beams visible internally.

CLT off-cuts from the windows and doors have been used to form the staircase which links the ground floor sleeping areas to the living space

above. A centrally located 'hub' on the first-floor landing provides a family room with a mezzanine play space above. To one side of this, at the top end of the house, is the open plan kitchen, dining space and living area or 'snug'. Another, quieter living space is located on the other side, from where the full length of the house can be seen with the surrounding landscape visible through the doors at the far end.

The Barn is Micah's first project using CLT and has pioneered this method of construction in Northern Ireland. "CLT is a new product in Northern Ireland, but I'd seen it on several architectural websites and I knew I really wanted to use it," he says. "I looked at other options, but I kept going back to CLT."

Micah contacted CLT manufacturer and TRADA member Stora Enso UK who introduced him to G-frame Structures, one of their UK delivery partners who also have an office in Ireland. "It was fantastic working with Stora Enso and G-frame," he says.

“ CLT is a fast, efficient method of construction - it took just five days and one delivery to install the CLT structure ”



Photography: © Micah T Jones Architects

“Stora Enso took me, my wife and the Grand Designs production team to their impressive Bad St. Leonhard’s CLT mill in Austria where I learned about the complete manufacture process.”

“I now have a deeper understanding of what can be achieved with CLT in terms of design and structure,” he continues. “CLT is a fast, efficient method of construction - it took just five days and one delivery to install the CLT structure. The G-frame team arrived on the Sunday and installed connectors, the CLT panels were delivered on the Monday morning, and by Friday the CLT structure was complete and the G-frame team packed up and left. Also, our site is up a long, winding lane with several sharp bends and these site constraints prove that with a little planning CLT can be used wherever the truck can get to.”

The County Down Barn is Northern Ireland’s first completed CLT building and has set a precedent with NI Building Control including a fire

engineered solution which allowed the CLT to be left exposed internally. “This was good news as the CLT creates an incredibly warm and welcoming space and we wanted to keep it totally natural internally,” says Micah. “The house isn’t a monument to architecture. It was more about building a home that could take the abuse of daily life and survive it. The wood is versatile and forgiving - if it’s stained from UV light, within a month it will return to its natural colour and, because it’s structural, we’ve been able to do things that would have been impossible otherwise, such as hanging a swing from a beam and slinging a large cargo net between a CLT floor slab and a beam. The kids love it.”

TRADA’s publication *Cross-laminated timber: Design and performance* demonstrates the versatility of CLT construction as an engineered timber solution. It provides clear and helpful recommendations to assist architects, engineers and their clients who are increasingly looking for sustainable, efficient structural solutions. ■

Key timber suppliers:

Cross-laminated timber (CLT):

Stora Enso Timber UK Limited

Siberian larch cladding:

Cranwood Industries

Cross-laminated timber

Design and performance



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