Timber in Infrastructure: Hybrid Systems, Stations and Buildability

Glulam and CLT at Colindale Station, Northern Line

Jess Pearce – Contracts and Project Delivery Manager, Buckland Timber

Installer: Mint Construction
Principal Designer: Atkins Realis

Main Contractor: Morgan Sindall
Client: TfL – London Underground

The timber package

- Colindale redeveloped to add capacity as the area grows, with step-free access a key objective
- Our package: main ticket hall roof and northern canopy — long-span glulam with CLT decking
- Six 25 m arches, purlins, CLT decking and a larch bullnose edge, installed in a live station – 200m^3 of timber, 60 tones of embodied carbon
- Lifting windows of 3.5 hours 1am-4.30am. In January.
- Install split into two phases - Northern Canopy (November – closed station). Main Roof (January – Live station)
- Design was blast loaded
- Pre-fit steel feet and tie bars and a steel angled section inside the outermost curves
- Fire Treatment with NT Deco Clear (Now known as Treet Nord Flam W101)

Why glulam and CLT

THE CASE FOR ENGINEERED TIMBER

Passenger experience

A warmer, more welcoming station space than the usual steel-and-concrete approach — while still meeting the practical demands of a busy underground station.

Structural performance

Long spans and curved geometry are exactly where engineered timber earns its place. The arches are structure and finished architecture at the same time.

Quality and carbon

Factory quality control, low-carbon construction, and close coordination between structural design, fabrication and installation from day one.

Logistics

- Arches around 25 m long and 1.2 m deep — abnormal loads, not standard deliveries
- Restricted access, urban traffic, the rail environment and almost no space to store material
- Just-in-time sequencing: each beam arriving in the right order, at the right time, in the right condition
- Close coordination between Buckland Timber, hauliers, the installation team (Mint), the crane team and Morgan Sindall



Four hours, once a night

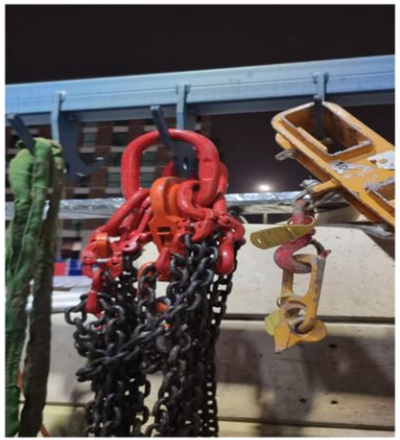
PROGRAMME PRESSURE

- The window had to absorb mobilisation, briefings, safety checks, crane set-up, the lift, fixing, securing and demobilisation
- A missing bolt, bracket or drawing at 2am is time you cannot recover
- Planning, repetition and clarity: lifts rehearsed on paper, clear roles, simple communication routes, a realistic fixing sequence
- Every night's success was built days and weeks beforehand



Some points of note

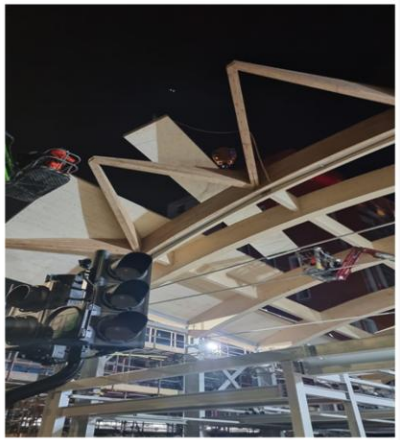
Every strap, every lift…



Steel shoes pre-fitted – agreed tolerance



Safe access to connect – control

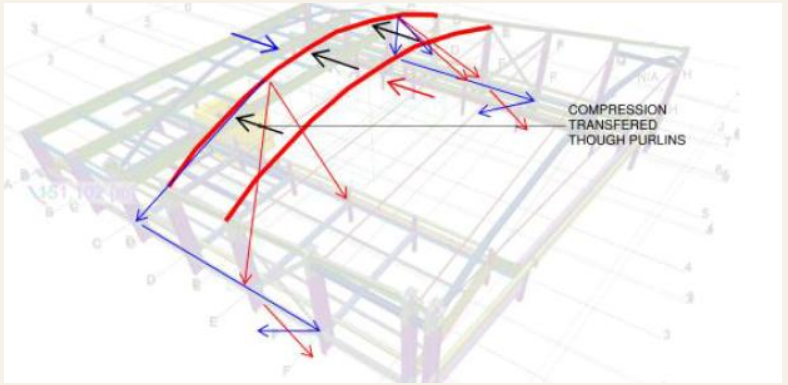


Sigha Pick









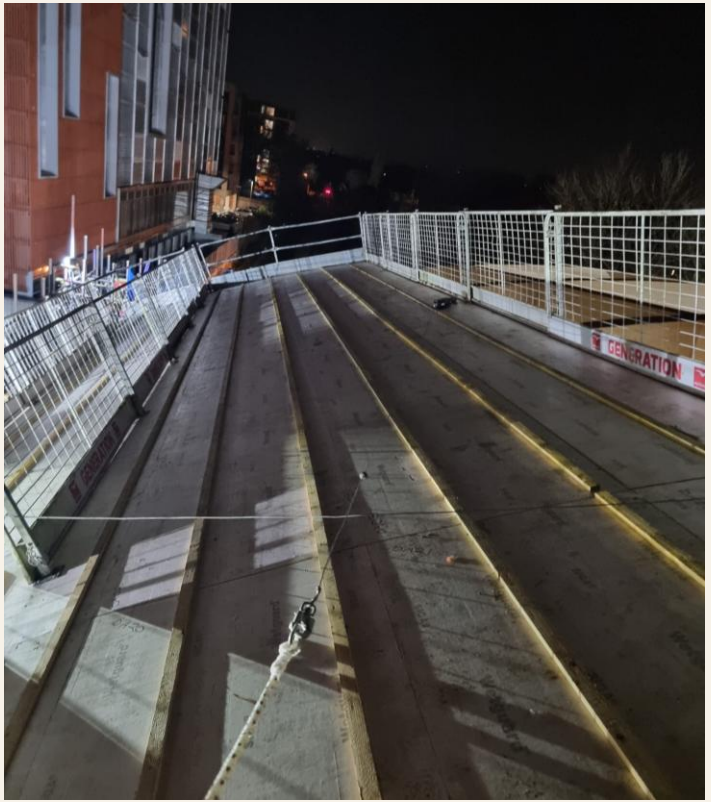
Colindale Station | Buckland Timber

Temporary Works

A practical example: battening over the CLT

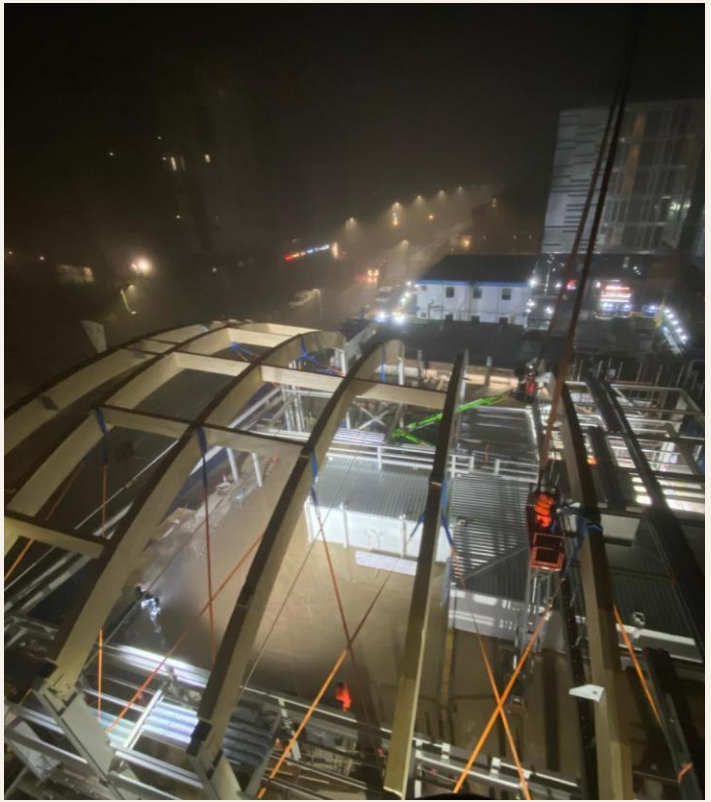
SIGA Wetguard had been applied to protect the CLT. In cold weather that surface became slippery, so the team laid extensive battening to create safer walking routes and working areas

- Temporary works had to be adapted, not assumed fixed — the original plan was not automatically still the right plan.
- Manage the site conditions actually in front of you, and change the method when the risk profile changes



Winter night conditions

- Cold slows movement, reduces dexterity, surfaces are slippery and increases fatigue risk
- For timber it means careful attention to moisture protection, temporary exposure and treated surfaces
- Night shifts alongside daytime commitments — fatigue management became part of project planning
- Enough rest, clear handovers, realistic expectations and support from the wider business



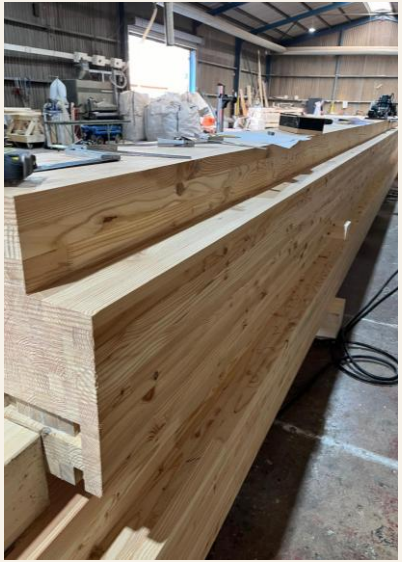
Fire treatment and the Bullnose

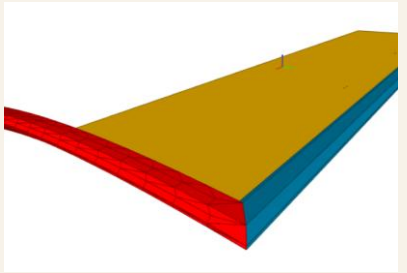
NT Deco Clear (Treet W101)

A clear flame-retardant treatment supporting the fire strategy while keeping the glulam and CLT visually expressive, rather than hidden behind finishes.

Bullnose detail

Mitered corner and curved in both planes. Dry fit and a lot of skill!







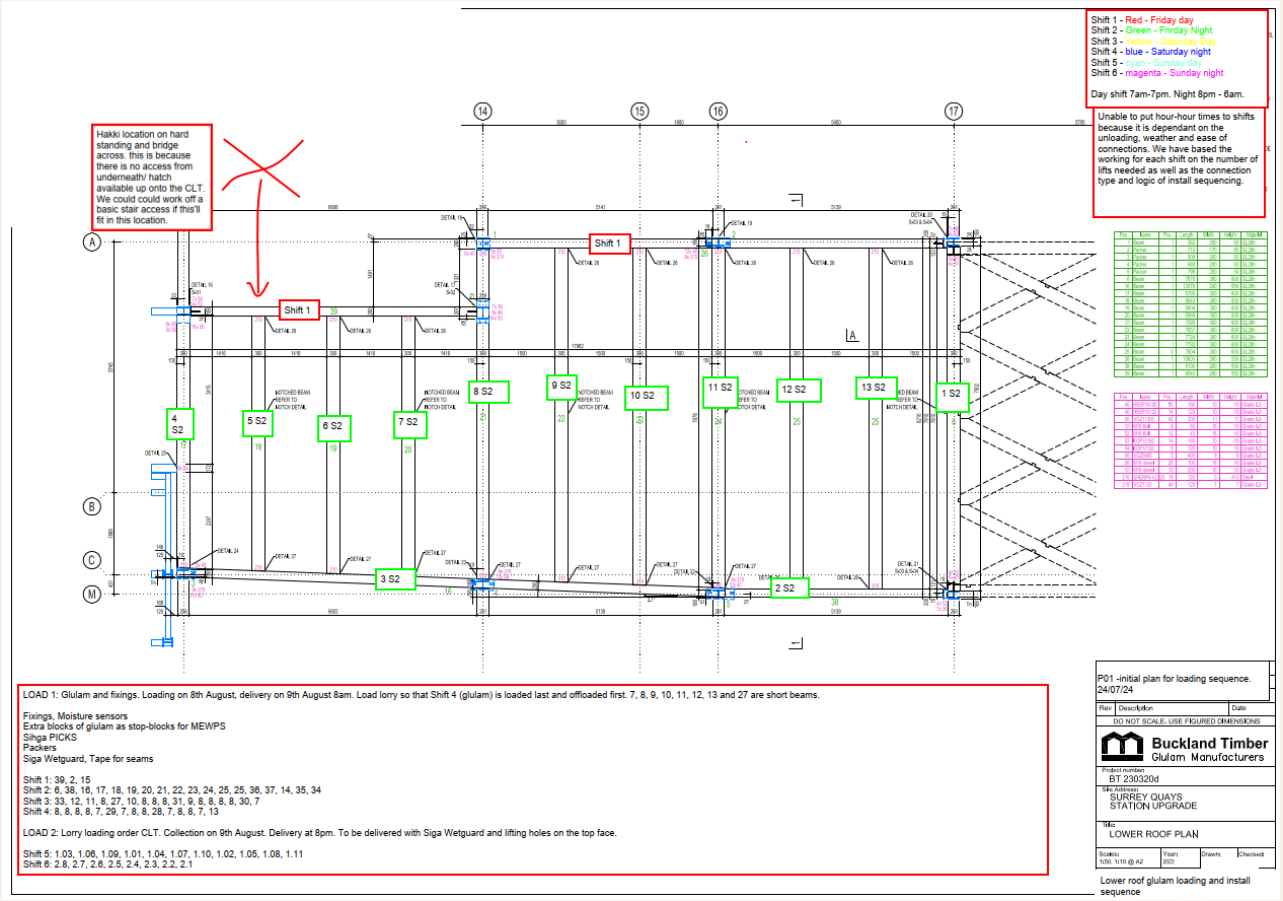
A note on Surrey Quays

- Dry fit in the factory (tenon and mortise joints and Sherpa’s)
- Zero tolerance
- Installed in a 52 hour weekend possession window
- Sigha Pick’s used on all beams and deck’s which speed things up
- Great success!





Pre planning was key



Collaboration makes it possible

WORKING WITH MINT CONSTRUCTION AND MORGAN SINDALL

What we needed

Morgan Sindall gave us clear access, timely information, realistic programme discussions and fast decisions when conditions changed.

Escalate fast

In time sensitive shift, trust matters most — issues have to be raised and resolved quickly

Problem-solving, not defending

A constructive relationship meant adjusted deliveries, refined lift sequences and weather disruption could be dealt with practically.

A positive H&S team

Engaged in the practical challenges and helped find safe, workable solutions

What made it work

LESSONS LEARNED

Early coordination and constant communication	Careful logistics	Quality-controlled manufacture	Relationships and trust
Robust fire-treatment process	Clear lifting plans	Fatigue and stress management	Vision and good design

The takeaway: glulam and CLT on projects like Colindale need good engineering — but they need good relationships just as much.
The timber has to be designed and made well; the project only works when people communicate, plan realistically and trust each other to deliver.