



Black T Stage System

Technical Summary

Key Benefits

Traditional “stick-built” stage construction is an outdated relic of the past, it is highly labour-intensive, slow, and critically vulnerable to human error on-site. The Black T Stage System shifts construction complexity from the unpredictable field to a highly controlled factory environment.

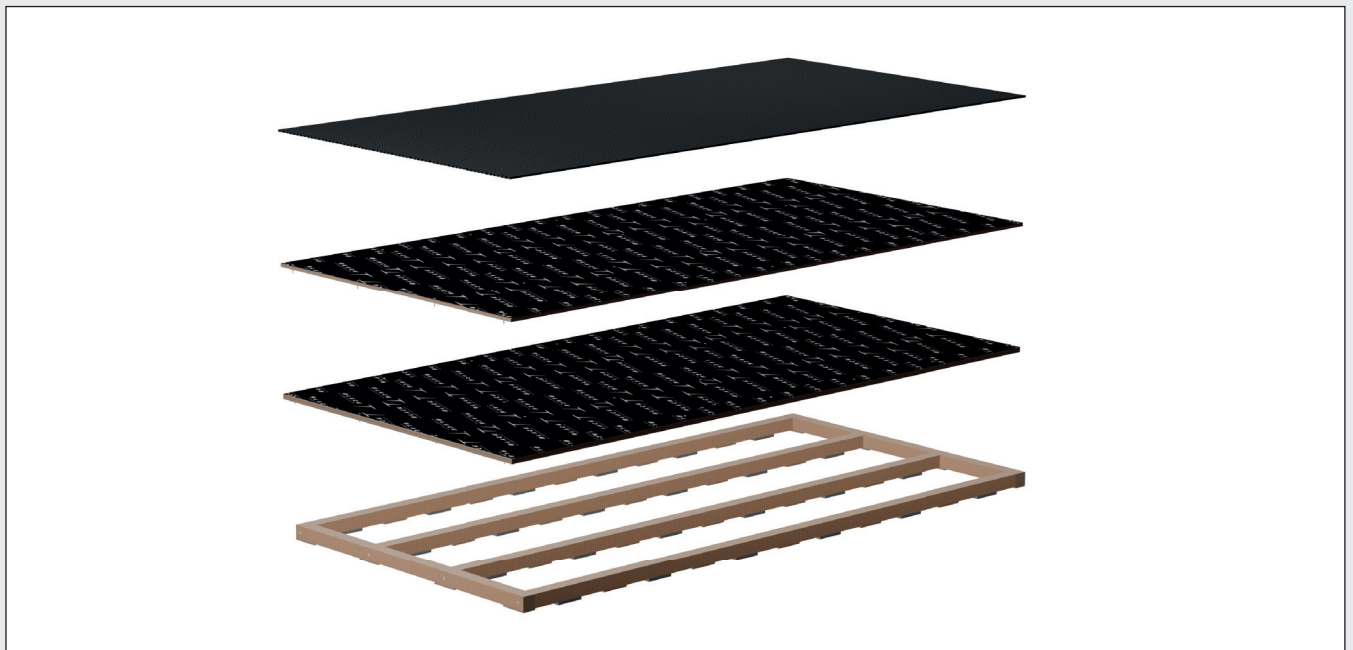
By utilising advanced CNC machining, the Black T Stage System delivers dimensional stability, increased structural integrity, and faster installation times. This modern, precision-engineered design utilises stage-grade plywood box-frames providing greater structural stiffness and vertical load-bearing capacity while reducing joist twisting and rolling. Replacing generic industrial pads with high-performance, acoustic isolation pads ensures uniform theatrical acoustic isolation.

The result is a compression of the on-site handover schedule, delivering immediate commercial and logistical advantages. Economically, any initial capital expenditure premium for these modular components is balanced by the reduction in on-site program hours, minimising travel, hotel, and daily subsistence overheads for installation teams. This creates an efficient, high-performance, and cost-effective delivery model for modern performance venues.

Key advantages over traditional methods

Traditional methods require carpenters to manually measure, cut, plane, and adjust every single element on-site. This modernised approach eliminates those inherent field inefficiencies through a smart, prefabricated design workflow.

The Black T Stage System utilises a prefabricated stage-grade plywood batten framework to eliminate repetitive site measurements and cutting, relying on pre-engineered components designed for immediate, precise assembly. To establish a high-performance substrate, the pre-manufactured frames employ a cross-directional, dual-layer layout with the second plywood layer rotated 90 degrees and offset from the first to create a rigid, monolithic floor structure. Factory-routed CNC demarcation notches guarantee the precise, rapid placement of acoustic isolation pads and deflection limiters, while pre-countersunk fixing points ensure flush, secure screw installation without requiring secondary on-site drilling.

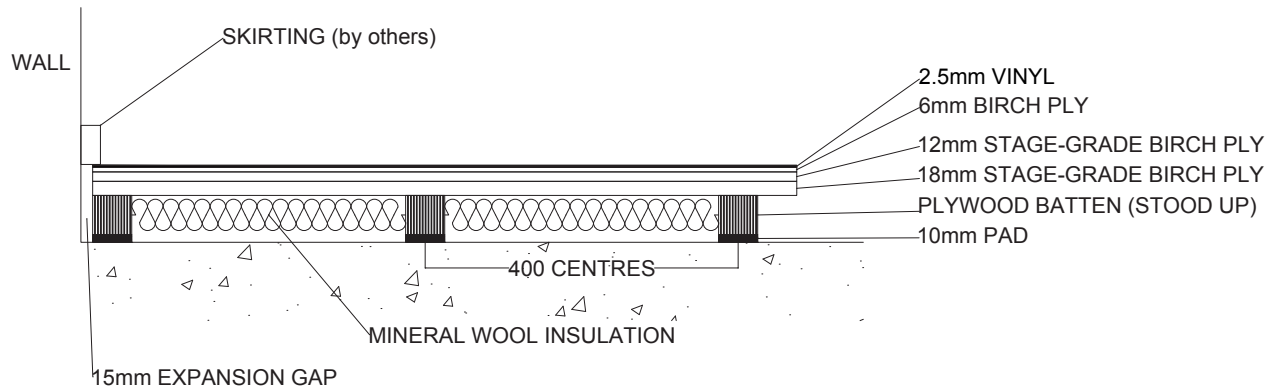




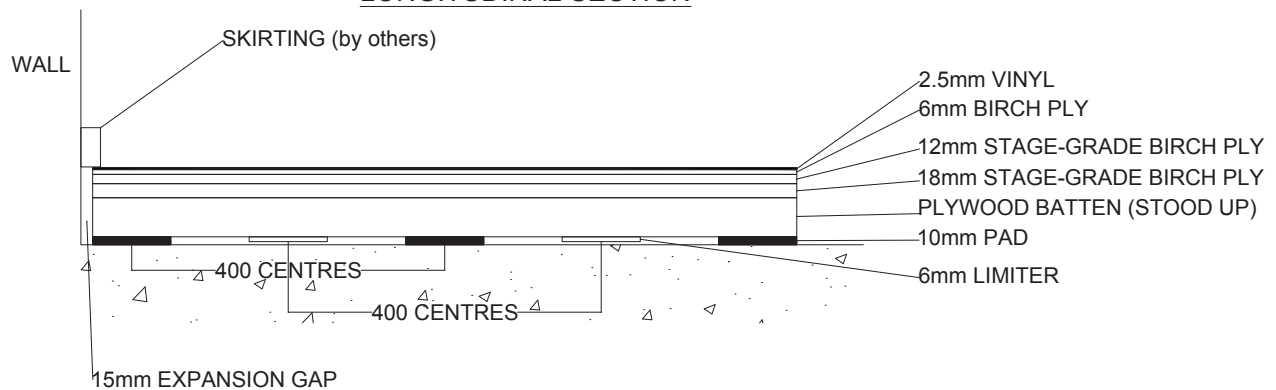
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Stage Floor Typical Detail

TRANSVERSE SECTION



LONGITUDINAL SECTION



Layer 1 Top Surface

Three options are available:

Stagefast

2.5 mm matt black vinyl, highly durable, slip-resistant stage surface

Stagesure

Matt black polymer composite panel pre-drilled and countersunk (6 mm x 2.4 m x 1.2 m)

Stagegrip

Premium, resin-coated anti-slip stage-grade birch plywood with mesh texture panel pre-drilled and countersunk (6 mm x 2.4 m x 1.2 m)

Layer 2

6mm birch plywood (only required for Stagesure top surface)

Premium flooring grade substrate directly below the vinyl finish. Features an exterior glue bond equal to EN314-2 Plywood-Bonding Class 3, face veneers with a minimum thickness of 0.75mm before sanding (2.5 times thicker than standard plywood products) and zero overlapping veneers for a highly robust substrate that can accept skim coat, which is essential for a quality vinyl installation. Laid at 90 degrees relative to the upper core structural distribution layer.

Layer 3

12mm stage-grade plywood

Upper core structural distribution layer. Laid at 90 degrees relative to the lower core layer to maximise structural stability. (Will be replaced with a second layer of 18mm stage-grade plywood if a Stagesure or Stagegrip top surface is selected.)



Layer 4 18mm stage-grade plywood

Lower core structural distribution layer. Installed with an offset pattern relative to the underlying plywood batten framework.

Layer 5 Stage-grade plywood batten

Heavy-duty structural stage-grade birch plywood structural framing oriented vertically and spaced at 400mm centres. Pre machined to project specific height.

Layer 6 10mm acoustic isolation pad

Specialised acoustic isolation pad providing essential acoustic isolation and dynamic energy absorption.

Layer 7 6mm deflection limiter

Integrated directly into the longitudinal framing section to mechanically control maximum deflection reducing overall deflection to 4mm.

Cavity and perimeter details

To optimise acoustic performance, internal framing cavities are filled with mineral wool insulation to mitigate the “drum effect” and control hollow reverberation within the stage deck. A dedicated 15mm perimeter expansion gap is maintained at all wall boundaries to safely accommodate environmental movement, concealed by a perimeter wall detail.

Engineered strength

Unlike traditional methods where framing timber is often laid horizontally to save vertical profile height, the Black T Stage System plywood battens are stood on edge. Orienting the plywood vertically maximises the section modulus, giving superior load-bearing capacity and higher bending stiffness, resulting in negligible deflection under heavy rolling or point loads. By cross-laying two layers of stage-grade birch plywood, we neutralise the directional weak-axis penalty inherent to all flat-laid plywood. This creates a balanced, bi-directional structural plate that uniformly distributes heavy theatrical point loads across the stage eliminating localised deck deflection.

High-humidity environmental protection

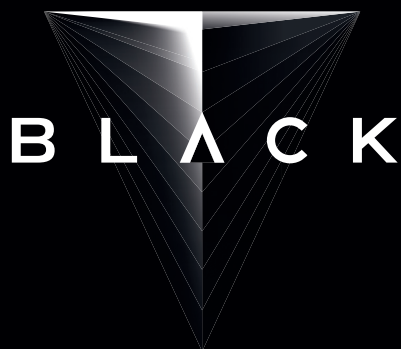
Stage environments globally are notoriously prone to fluctuating microclimates. External geographic challenges are compounded by localised factors such as fast-track building methods, rapid storage-to-stage transitions, and intense HVAC cycling. To combat moisture ingress, warping, and delamination across all global territories, both the structural battens and the core stage-grade plywood layers feature a factory-applied phenol coating. This protective barrier hermetically seals the timber, guaranteeing long-term dimensional stability and structural longevity.

Unmatched system versatility

The Black T Stage System is engineered as a universal sub-structure, which can support a range of different top surfaces. If Black T Stagefast is selected the 18mm lower core layer is topped with a 12mm stage-grade plywood upper core layer and a 6mm birch plywood substrate directly below the vinyl top surface. For alternative top surfaces (such as Black T Stagesure or Black T Stagegrip) the 12mm and 6mm plywood layers are omitted and replaced with a second 18mm stage-grade plywood structural layer. This configuration will match the original system height.

Financial and programme considerations

A critical component of this precision-engineering evaluation is the balance between upfront procurement costs and overall project delivery costs. Conventional stick-built construction utilising loose, raw materials significantly extends the on-site schedule, directly compounding non-productive project overheads. The Black T Stage System compresses this timeline through off-site CNC prefabrication. By streamlining installation this system optimises the critical path for the overall auditorium handover, enabling high-value downstream trades (including audio, lighting, rigging, and scenic installation) to commence work ahead of schedule substantially reducing the risk of overall project delays.



Precision engineered performance

The future of stage building starts here

Black T design, engineer and install next-generation stage flooring systems for the world's most demanding performance spaces. It is our single focus, and our specialists have few equals.

The name is new. The reputations behind it are not. We bring decades of experience working alongside the biggest names in stage flooring, in theatres and opera houses across Europe, the United States, Australia and Asia.

We work globally, but every relationship is personal. We understand our clients' needs because we are part of their world, combining technical precision, practical insight and a passion for performance in every project we take on.

Black T designs, manufactures and installs high performance stage flooring systems. Every system is designed using advanced CAD software and precision manufactured off-site, reducing the number of components, simplifying installation and ensuring exceptional quality and accuracy.

This approach significantly reduces installation time, minimises disruption, lowers project risk and helps avoid costly downtime.

Black T delivers fully integrated turnkey solutions tailored to the specific requirements of each venue. Working closely with architects, consultants, principal contractors and venue operators, we provide expert advice and technical support throughout every stage of the project.

The result is a stage floor engineered to deliver exceptional durability, reliable long-term performance and the flexibility to meet the evolving demands of today's performance spaces.



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