

bluecube³

multi deck





‘Drop in’ seating Optus stadium, Perth Australia

Application case study

The multi-purpose Optus Stadium is a world-class venue with the flexibility to host AFL, Cricket, soccer, rugby league and rugby union without compromising the fan experience.

The commitment to a ‘fans first’ stadium has resulted in an innovative design ensuring an exceptional event atmosphere and home ground advantage that can only be experienced by being there.

Central to achieving this goal Bluecube were given the challenge to supply demountable seating stands that bring 5,000 additional seat places closer to the action for ‘rectangular sports’. Our ‘**multi deck**’ stands are erected on all four sides of the pitch boundary and all equipment is stored inside the facility. The transformation to ‘rectangular’ mode can be completed overnight, making **multi deck** one of the fastest build temporary grandstand solutions available.

Our [centura](#) seating modules were chosen to match the aesthetics of the permanently fixed seating within the bowl



*Turf protection in place as **multi** deck components are laid out for build.*

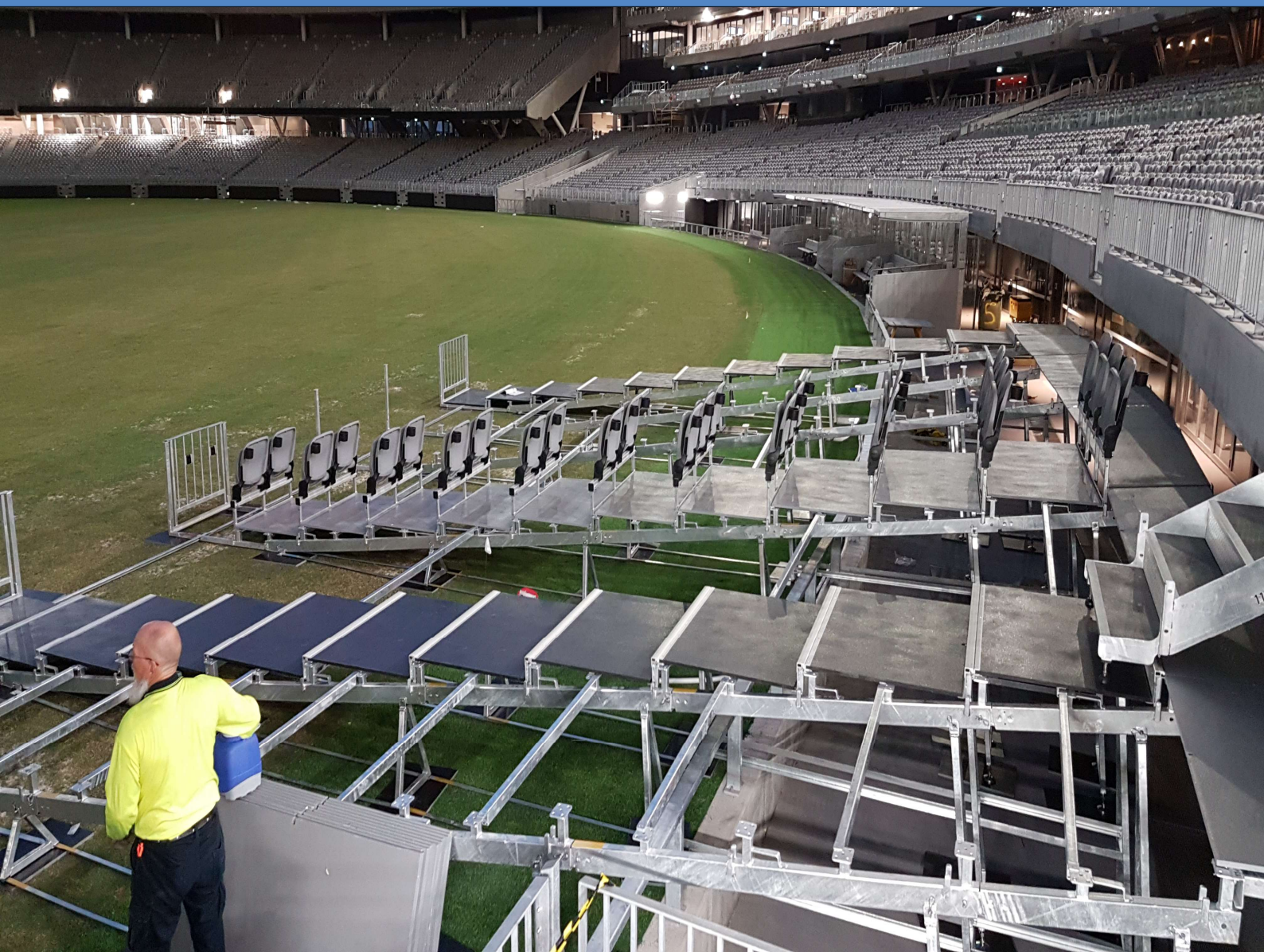


Completed 'drop in' stands for a rectangular event

multi deck is a modular system of superstructure that forms a temporary grandstand, the system can be elevated on 2 types of sub-structure which is dependant on the height of lift. Both options are covered later in this document.

The system principally comprises of two load bearing members which are arranged on either a 2.0M or 2.5M grid, a 'spine beam' that runs longitudinally, and transverse 'riser frames' that connect the spines at intervals. The resulting structure supports decking panels which are then locked securely into position. Guardrails or 'edge protection' are fitted to complete the grandstand super structure.

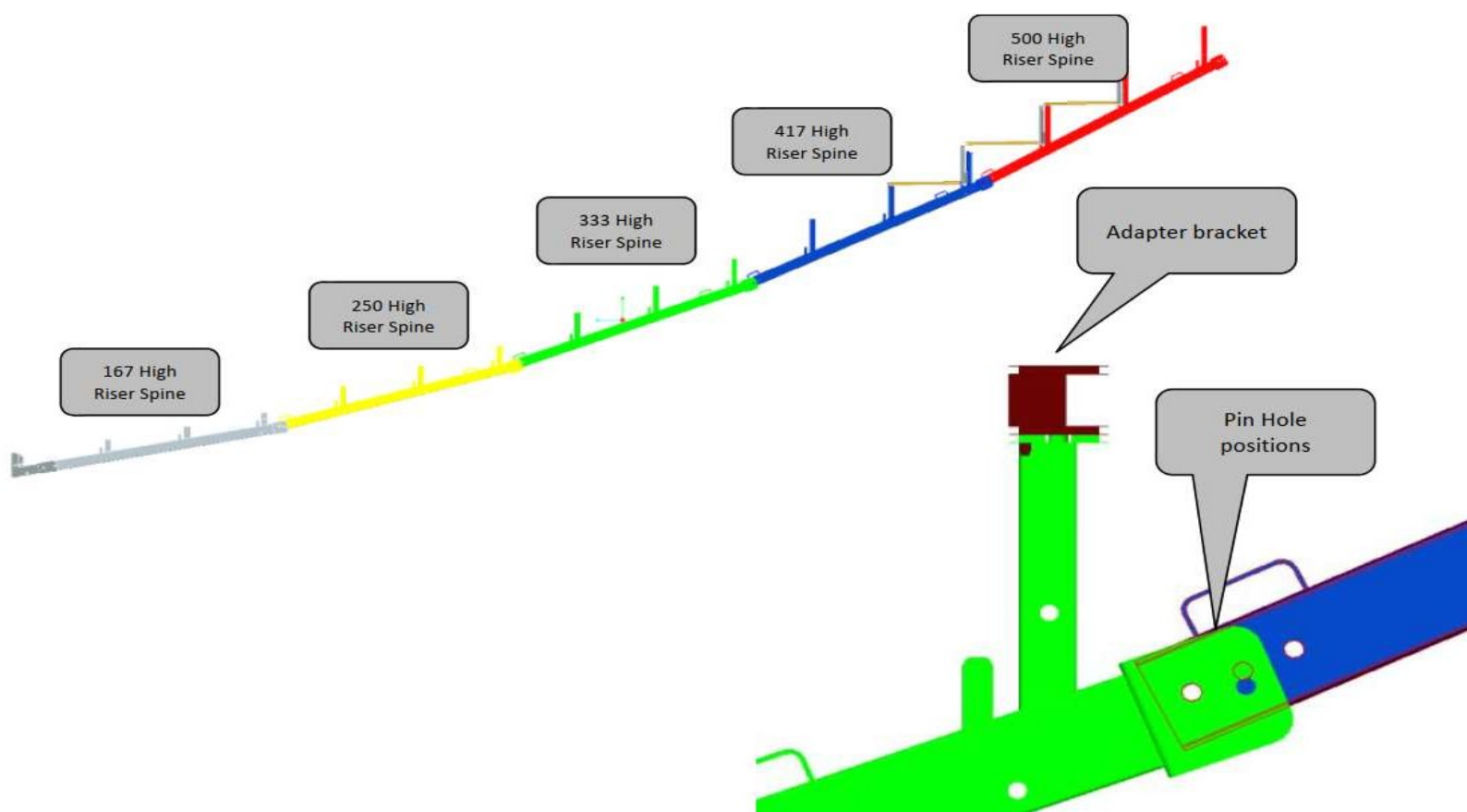
multi deck – the superstructure



multi deck can create either a straight spine with equal riser heights, or with a selection of spines that can be interconnected to create a parabolic stand. This improves 'C' Values and lowers the height of structure required to achieve desired sight lines.

There are a choice of 5 spines with varying row rises. Each spine constitutes 3 rows of seating.

multi deck – *parabolic superstructure*





multi deck – ‘A frame’ substructure.

When elevated on A frame, **multi deck** can be seated with a choice of any seat module from the bluecube range, with the exception of **nomad** which is designed for use on **multi deck** 'smart track' risers.



multi deck – 'A frame' substructure.



Elevated on our 'A frame' substructure; **multi deck** is the simplest and fastest build system on the market! Seating is arranged on 'ladder beam' risers which serve as a seating rail and transverse structural brace, whilst also supporting the front and rear of each deck. The system reduces install time and labour, allowing seats to be compactly stored into stackable stillages. [See our time lapse build video.](#)

The system is suited to applications whereby a maximum of 20 rows of seating are required, for example at pitch side or event where seating rows start at ground level.



multi deck – Scaffold substructure.

Temporary buildings and major events often require seating stands to be elevated to heights exceeding 10 meters. For these applications **multi deck** can be elevated on a 2.0M or 2.5M grid proprietary scaffold system such as Layher. The front row can be elevated at any height, and vomitory's and stairs can be added for access and egress.

The system includes a structural riser which we call 'smart track', this has been designed specifically for the application of our [nomad](#) temporary seat and other accessory's.

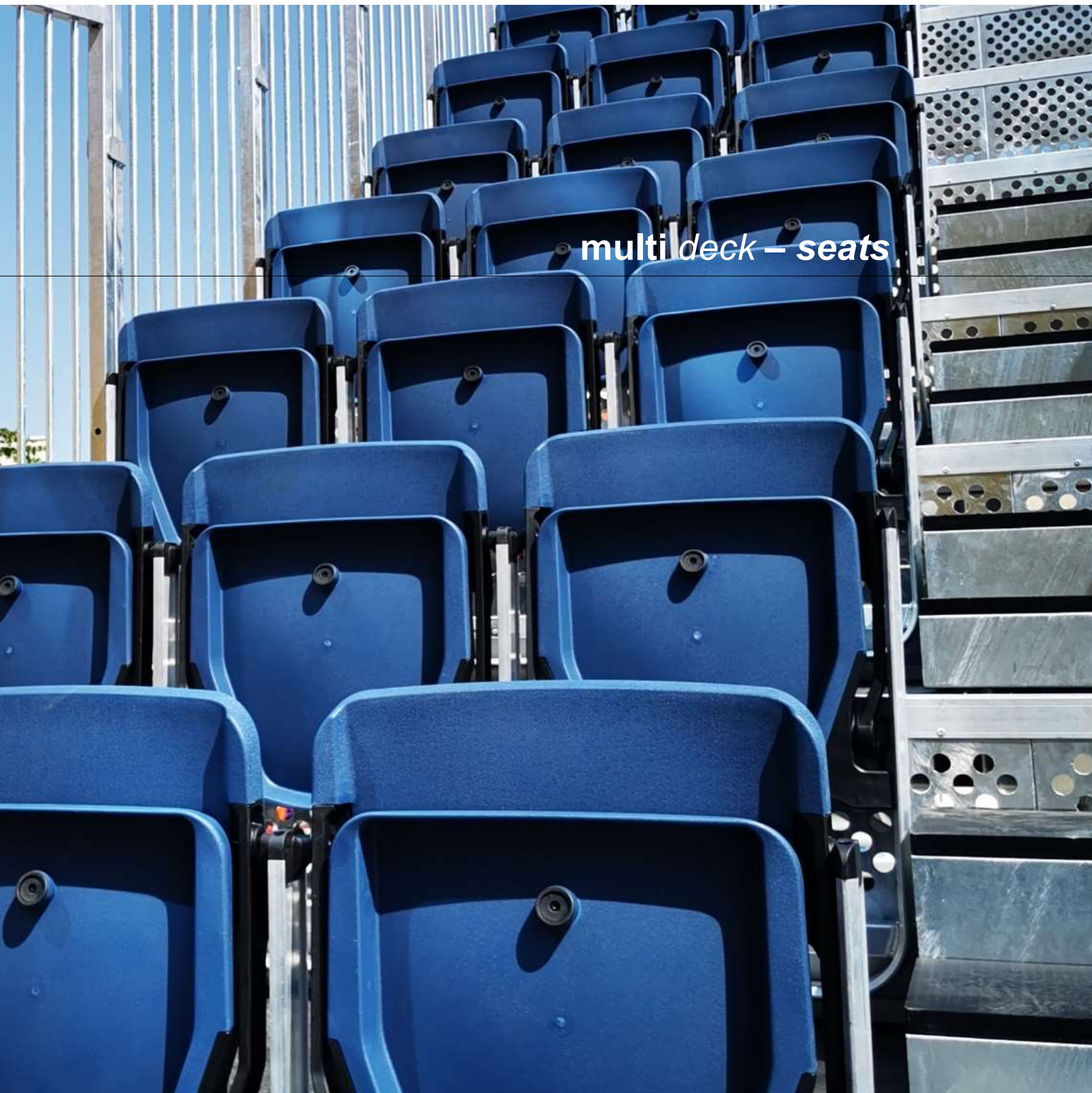
multi deck conforms to the standard EN13200-6 Demountable (temporary) Stands.

multi deck – 'Scaffold' substructure.



Our [nomad](#) seating range is designed specifically for use on **multi deck** 'smart track'. The [nomad](#) folding geometry and frame design allows seats to be stacked and stored without the need for complex stillages. The seat stacks into a 75mm space giving an unrivalled storage and transportation density.

[centura](#), and [luxx](#) seating lines can also be fitted to 'smart track' risers. The 'smart track' allows seat rail support brackets to be fitted at appropriate centres dependant on the desired seating layout.



multi deck – seats



multi deck 'smart track' riser has inbuilt intelligence allowing [nomad](#) seat units to be installed in seconds with no tools.

The structural extruded aluminium 'smart track' riser profile ensures convenient and easy installation of seats, steps and other accessories. The 'smart track' runs the entire length of each riser providing a secure attachment for ancillary decking modules such as [tech deck](#) and media desks.

[nomad](#) locked into 'smart track'

multi deck – 'smart track' riser

Step unit locked into 'smart track'





multi deck – ‘smart track’ riser



multi deck ‘smart track’ riser has an extruded aluminium nosing with anti slip grip and eco glow strip.

Wind is a hazardous element both during the build of an outdoor grandstand and for the duration of the event. **multi deck** flooring panels are securely locked into position by a rotating flange designed into the nosing. This front lock feature also greatly improves safety during the build, as the deck panels can be located into the channel at the rear of the ‘smart track’ riser, and dropped into final location before the flange is lowered to capture the front edge of the panel. The flange has a spring loaded safety catch which must be retracted to release the panel



multi deck can accommodate internal staircases though the scaffold sub-structure or alternatively peripheral stair cases. Deck material options include marine grade plywood with a phenolic anti slip face or extruded aluminium.

Guardrails / edge protection meet with requirements of the green guide and EN13200-6.

multi deck – *stairs and vomitory's*





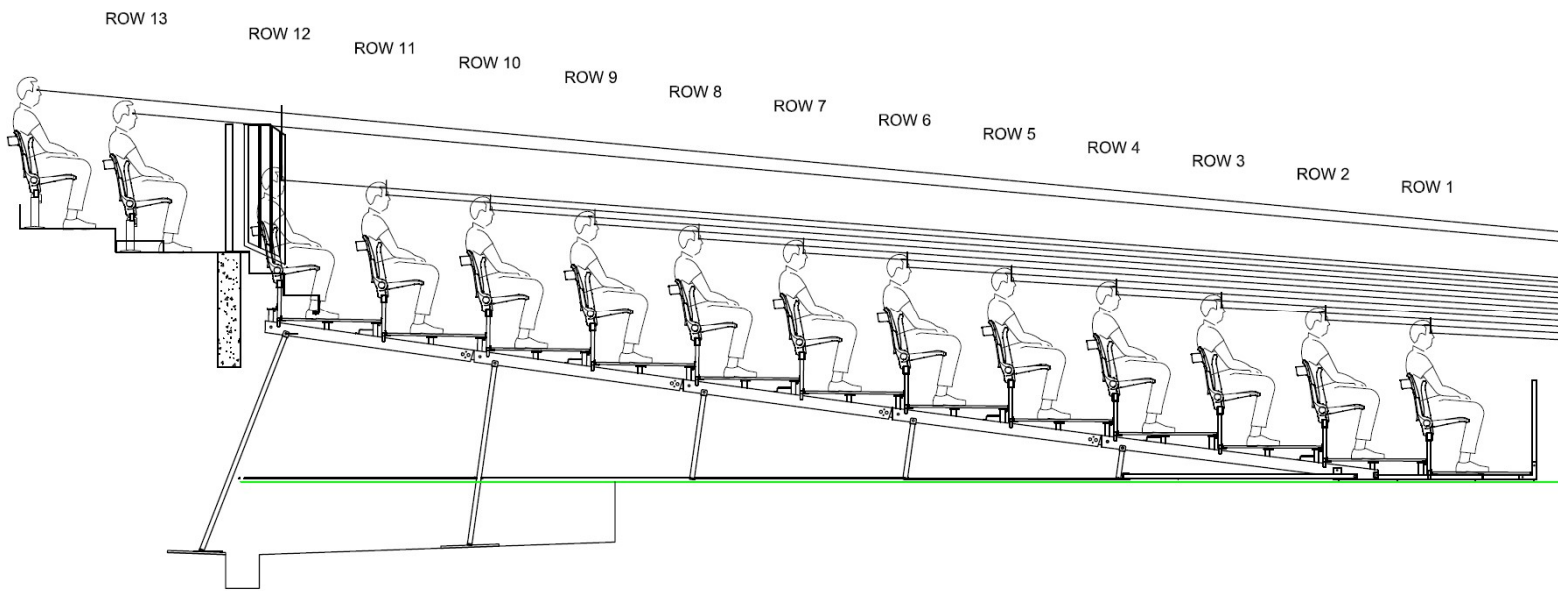
multi deck – storage and transportation



All the components of the **multi deck** substructure have been designed with easy handling and compact storage density as first principals.

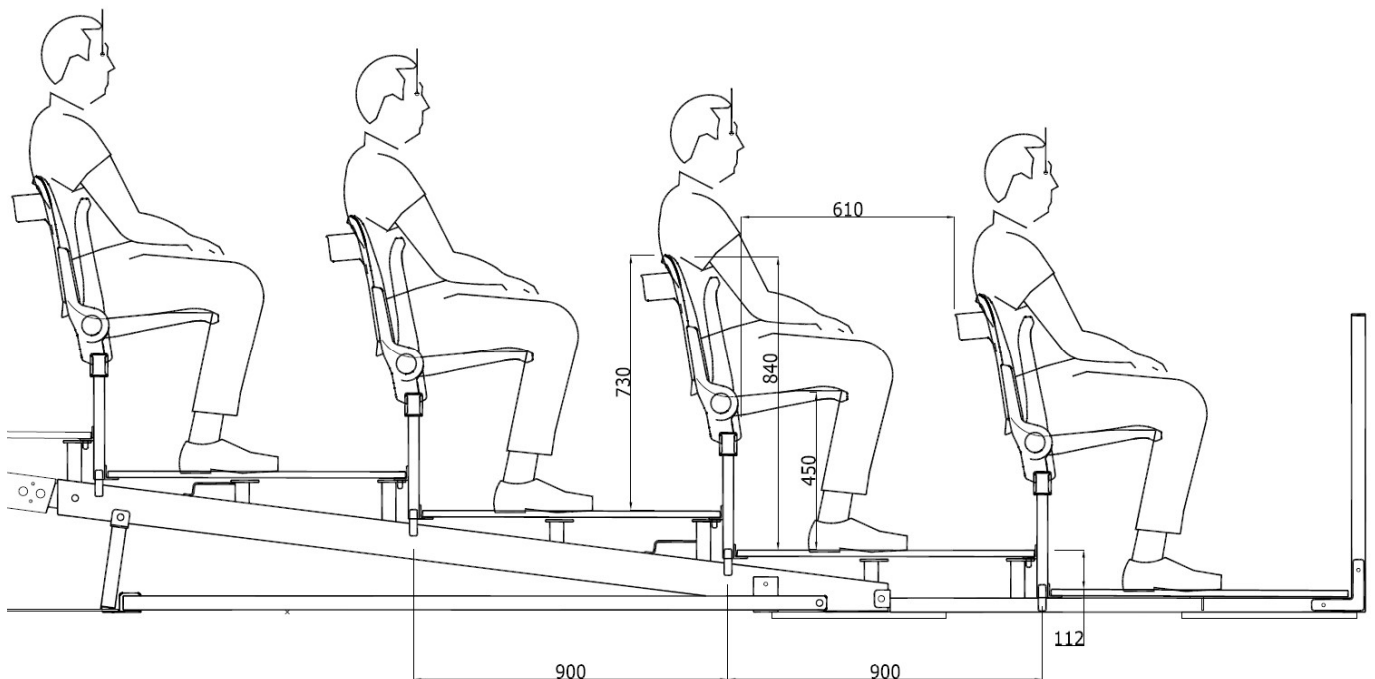
All components (with the exception of scaffold), are transported in galvanised steel stillages which can be stacked. These stillages have been sized to maximise both container and trailer loadings.

Where necessary, components are identified with component identification numbers that correspond with stillages.



multi deck on 'A frame' substructure

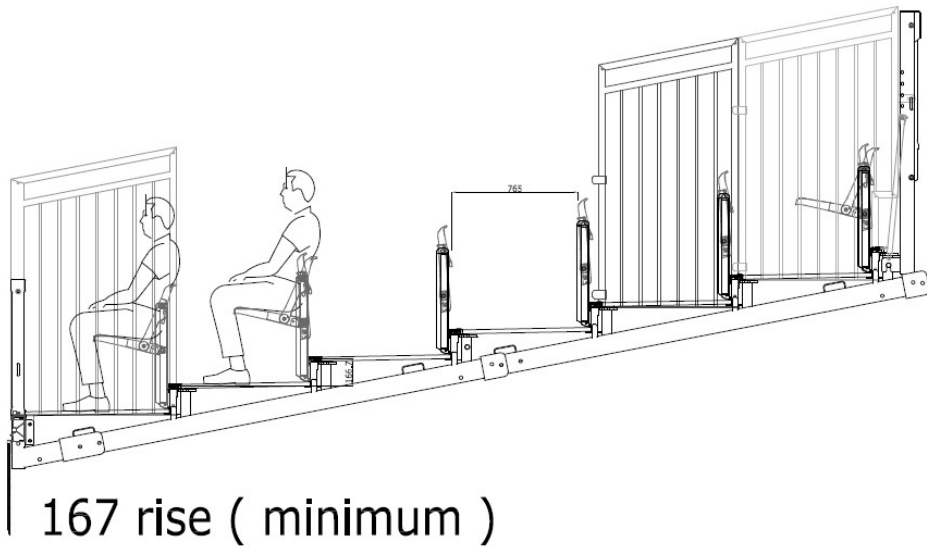
example section shows 11 row structure, 2.0 m high spanning over dugout zone with bridge access to fixed tiered seating



multi deck on 'A frame' substructure

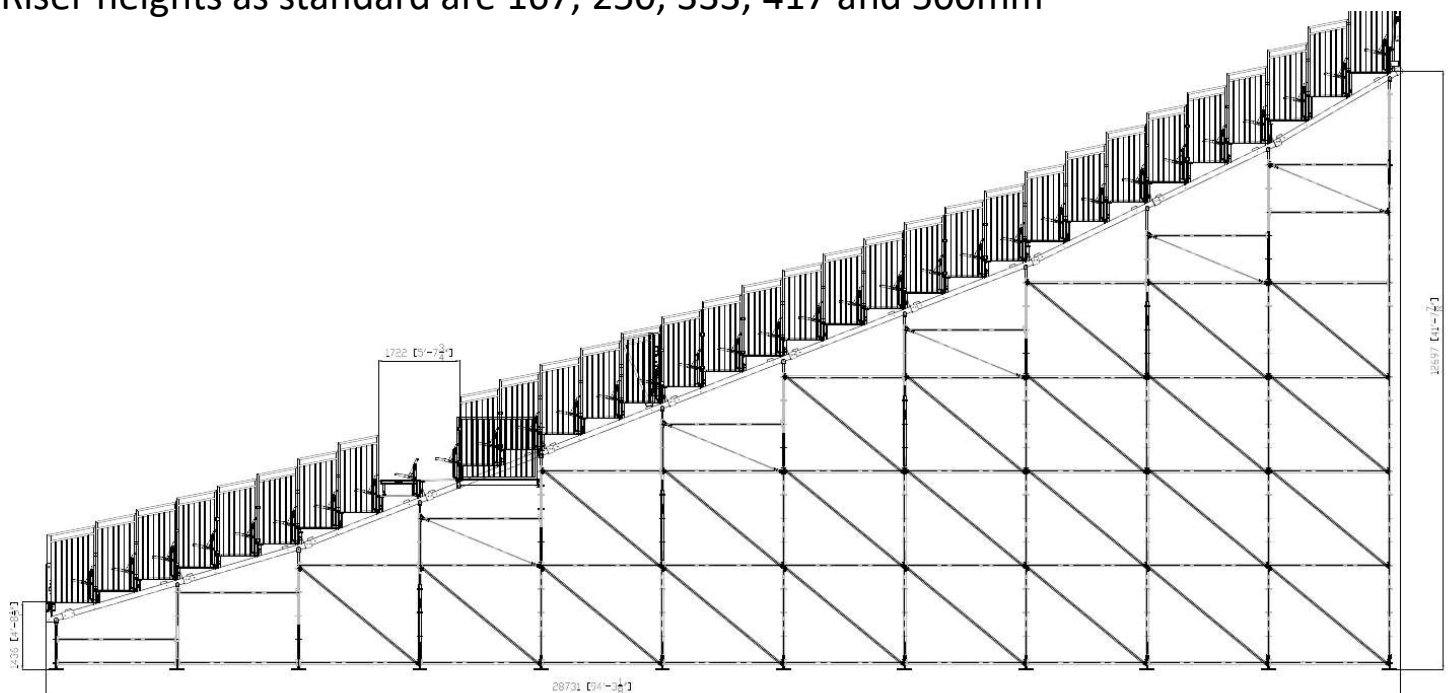
Minimum riser height 50mm to a maximum of 250mm

Maximum height at rear row is 3m



multi *deck* on scaffold substructure

Riser heights as standard are 167, 250, 333, 417 and 500mm



multi *deck* on scaffold substructure

example section is 33 rows high / 14m high



Strength and Durability

All systems have been designed in accordance with the following British Standards, Codes of Practice and guidance publications:

- BS 8118: Part 1 – Structural use of Aluminium
- BS 5950: Part 1 – Structural use of Steelwork in Building
- BS 6399: Part 1 – Loadings for Buildings (Dead and Imposed Loads)
- IstructE- Temporary demountable structures (guidance on procurement, design and use) April 2007
- SGSA Guide to safety at sports grounds (the green guide)
- EN13200-6 Demountable (temporary) Stands

All components are manufactured to the following standards:

- Welding to BS EN ISO 15614-12-2014 (weld penetration checks)
- Hot Dip Galvanising to ISO 1461 (elcometer thickness tests)
- Powder Coating to ASTM D-3359-02 (scratch test)