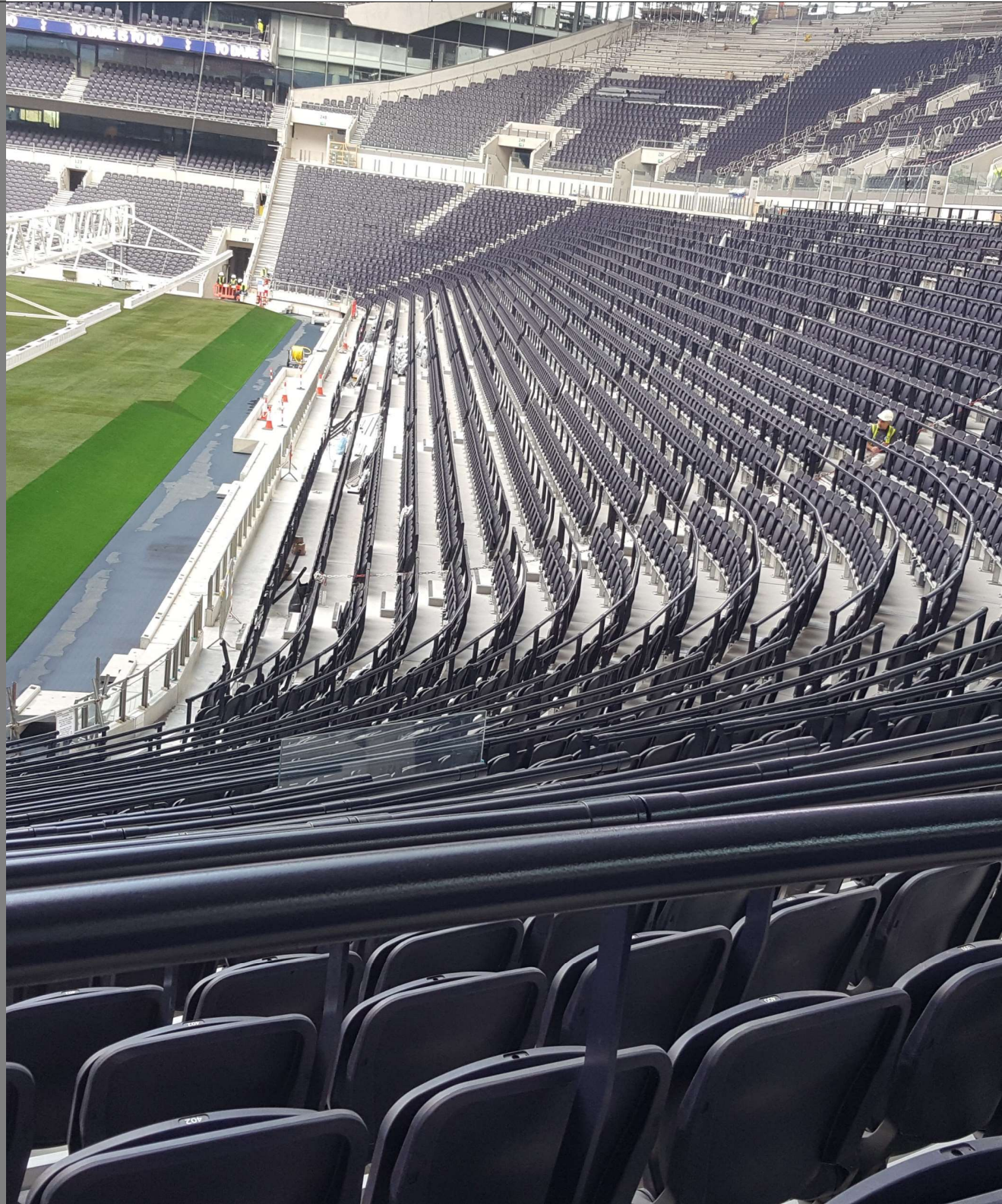


bluecube³

crowd management / safety



When Tottenham Hotspur Football Club celebrated the opening of their New Spurs Stadium last week, they not only set the benchmark in terms of stadia design but also became the first Premier League club to operate areas of rail seating in their stadium.

Following two successful test events, **Spurs** home match against **Crystal Palace** on 3 April 2019 marked the official opening of the new stadium and with it the first use of seats incorporating barriers in an English top-flight ground.

The club has been able to do this, as the official safety authority view on such seating has changed. Since the launch in November of the new **Green Guide**, the safe stadia 'bible', the use of seats incorporating barriers has been permitted in all-seater stadia.



Spurs make 'safe standing' history

In a statement given to the **Press Association**, the **Sports Ground Safety Authority (SGSA)** said: **Our focus is on the safety and enjoyment of fans. Spurs have recognised the risk of persistent standing in seated areas and taken pre-emptive steps to address this with the introduction of seats incorporating safety bars in some areas of the ground. The seating and safety bar at the ground meet the requirements of the Guide to Safety at Sports Grounds (Green Guide).**

Indeed, where such grounds have areas in which fans stand persistently, the recommendation is now that clubs consider installing such seats in order to mitigate the safety risk seen as being inherent in spectators standing at conventional seats.

The **New Spurs Stadium** has two areas of seating with barriers: around 6,000 such seats at the foot of the imposing 17,000-capacity South Stand and a further 1,500 or so for visiting fans in the away section. Pending any change in all-seater policy and/or ground regulations both areas will be operated as seated accommodation and the approach to the management of standing in the two areas can be expected to be in line with existing practice in other all-seater grounds.

Jon Darch of the **Safe Standing Roadshow** added:

Important, of course, to stress that while this form of seating with barriers works well at providing added spectator safety on spacious seating rows, on narrower rows it could lead to a capacity reduction. On such rows seats with a much smaller closed depth are required.



Combination Terraces

Seating AND Standing

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Straight or angled layouts

Our system has been designed and engineered to accommodate either scenario. Using our 'universal connector', horizontal guard rails are connected to the steel support posts. The 'universal connector' can accommodate angle variants of between 0 and 15 degrees.

At row ends adjacent to evacuation aisles, capping ferrules give the system an 'architectural' finish and provide safety during peak crowd movement.

Just a barrier rail?

No; a complete system!

In principal standings rails might seem simple, it's a just railing right? No; its way more than railing! Why?

There are some key things to consider;

1. How to cope with angled layouts, typically in the corners of the building?
2. How do you install on parabolic terraces without making unique parts for every row?
3. How to deal with crowd segregation?
4. How do you expand and contract crowd segregation spaces to maximise safety and revenue?
5. How do you transform the layout to adapt to different operational modes?

This document will answer and explain all these questions.

Parabolic stands (dotted line compared to solid)

Our system has been designed and engineered to accommodate parabolic stands. On parabolic stands the row rise changes incrementally throughout the terrace to improve sight lines. Without the ability to compensate for these small differences each rail would differ in height. Our combination (chair rail and standing rail support bracket) solves this problem by providing justification adjustment, meaning standardised parts are used throughout the system.



Just a barrier rail?

No; a complete system!





Crowd Segregation Barriers

Crowd segregation barriers allow venues to provide a physical secure separation between home and away fans, they are typically used to 'fence' both sides of a clear space, we call this the 'segregation band'. The segregation band is created by the removal of seats running from the top to the bottom of the terrace.

For matches where fanatical rivalry's run deep, that physical separation needs to be increased along with the number of crowd control stewards who ensure safe and fast access for emergency services.

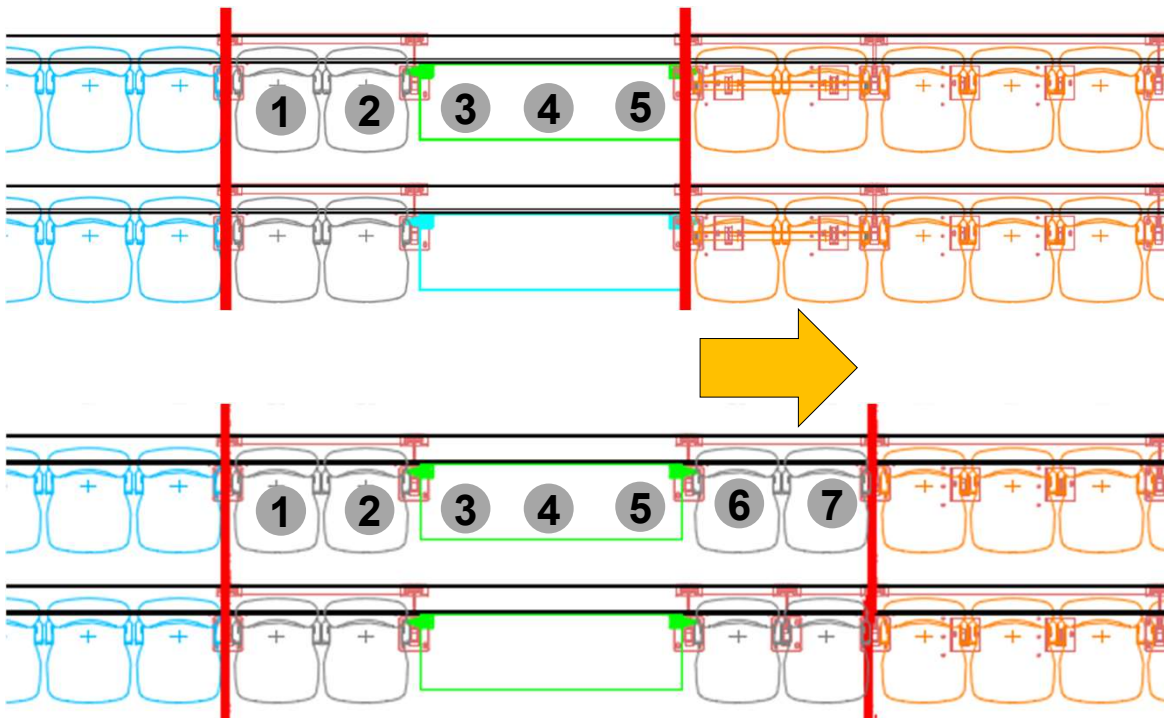
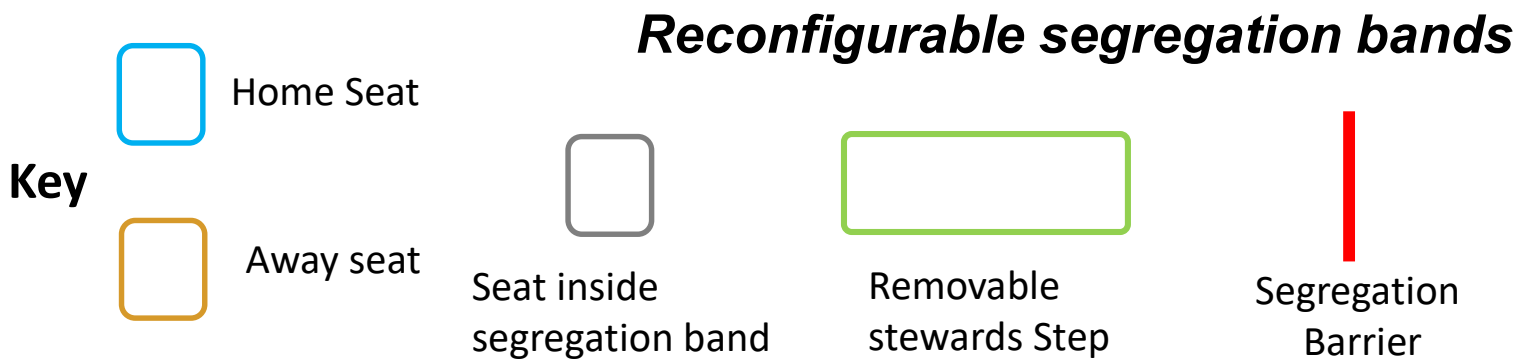
Dependant upon the match, 3, 5 and 7 seat separation are usual, with the bowl returning to capacity when separation is unnecessary.

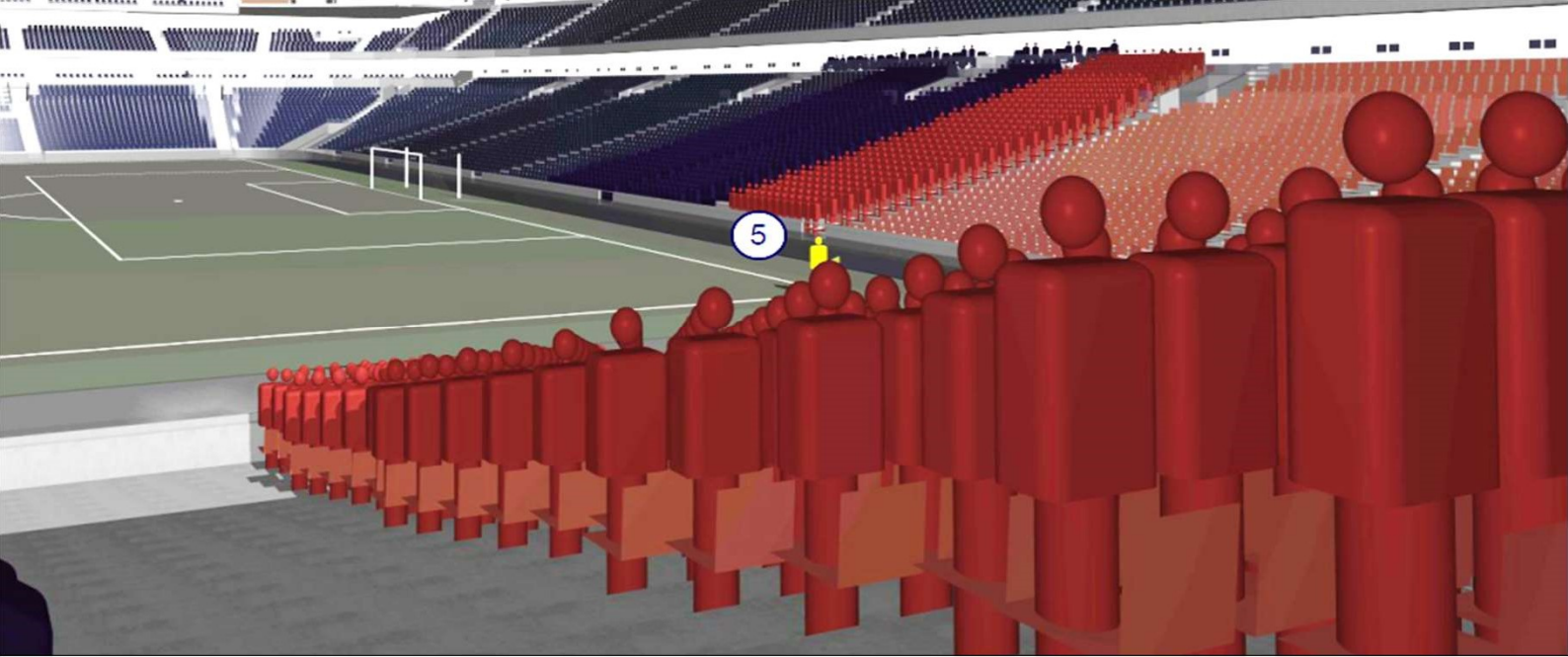


Case study - segregation areas at the new Tottenham Hotspurs Stadium

The North East Stands (lower middle and Upper tiers) can be segregated so that the away crowd seating allocation can expand or contract.

For example, on the lower tier, the capacity can be changed from 4000 to 3000 to 2000 to 1500 by moving the segregation barriers. In this scenario as shown below, the segregation band can be changed from 5 to 7 seats increasing or decreasing the width of the 'segregation band'





①

View point

②

Away crowd (red)

③

Away wheelchairs and comps

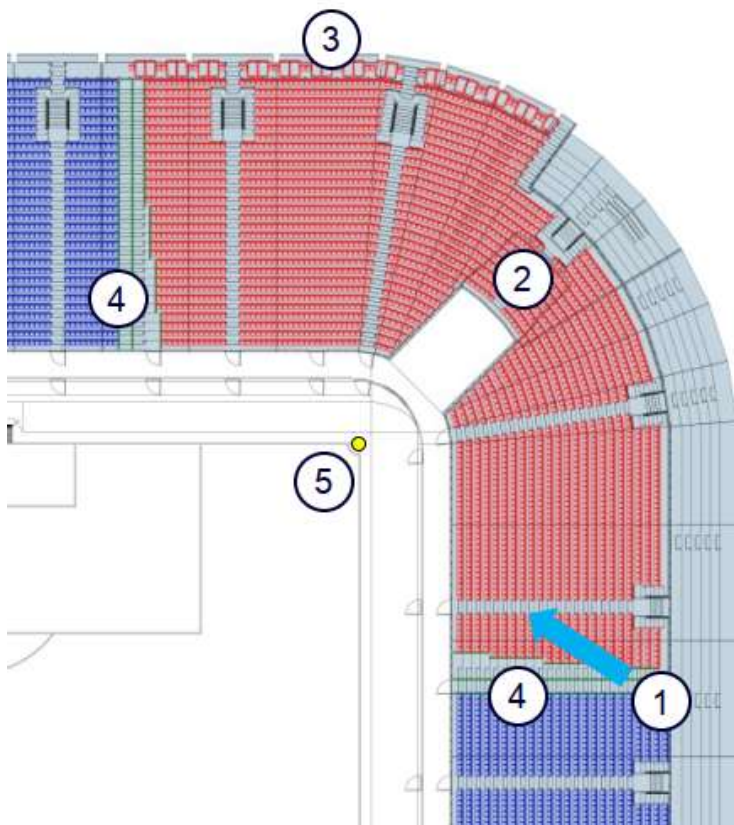
④

Staggered segregation line

⑤

Player in corner spot

Staggered Segregation



Our system allows segregation set up to be arranged in a 'staggered' line (as opposed to straight)

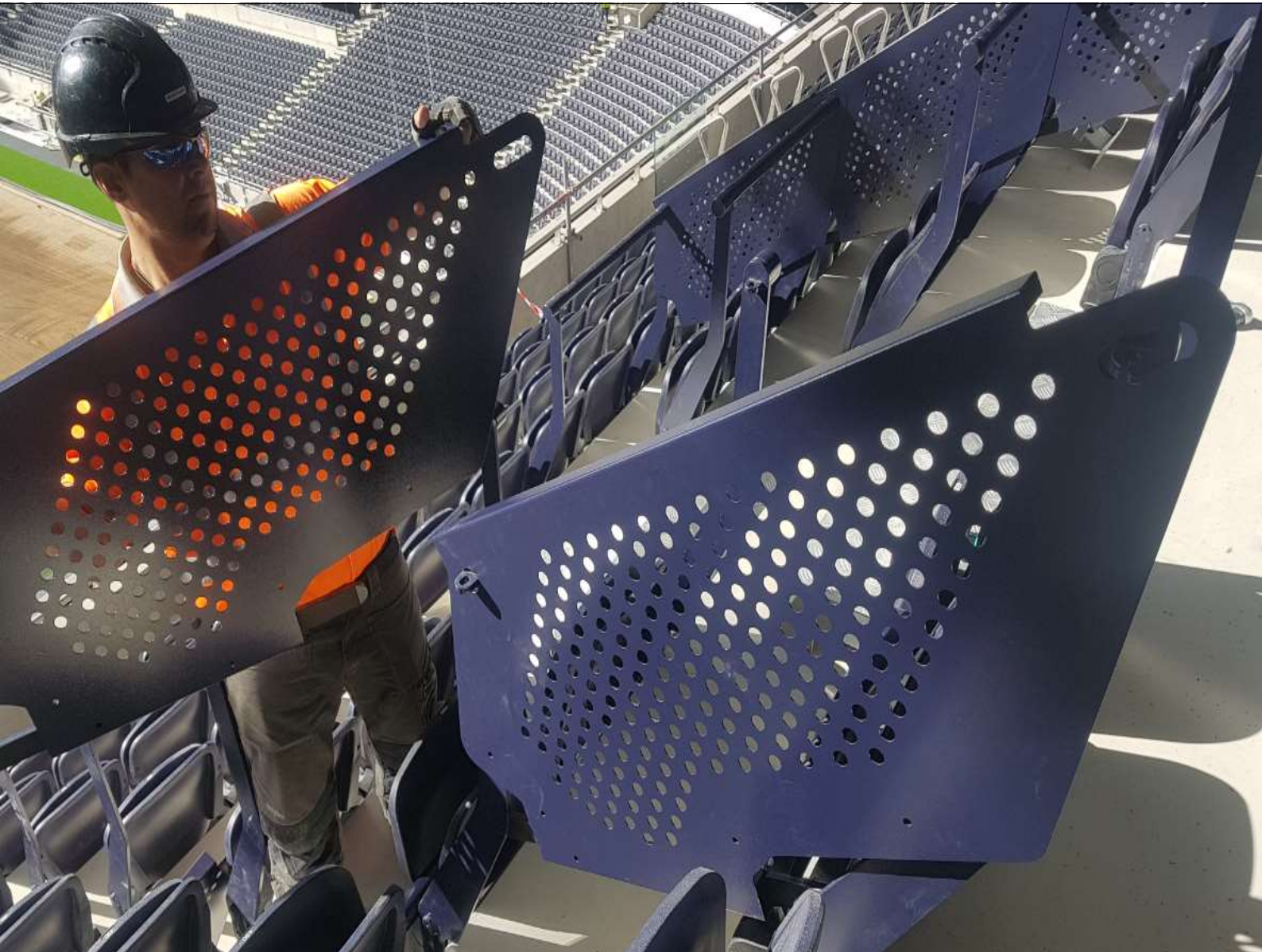
This is often critical in elimination of restricted views and improving sight lines.

The above picture shows a modelling simulation of the 'away fans' standing. By 'staggering' the segregation line the corner is still visible from the rear row of home fan at position 1 in the adjacent diagram.



Reconfiguring the segregation band is simple and easy as all barrier components are identical. The barriers are made from lightweight folded steel and are secured by the same 'ferrule's' that finish the ends of the guardrails. The entire system can be reconfigured by the grounds management quickly and easily.

Reconfigurable segregation bands



Removable aluminium steps are required in segregation bands, this allows safety of movement for emergency services. They can be stored on a common storage stillage so that the stillage is never empty!



Storage Solutions

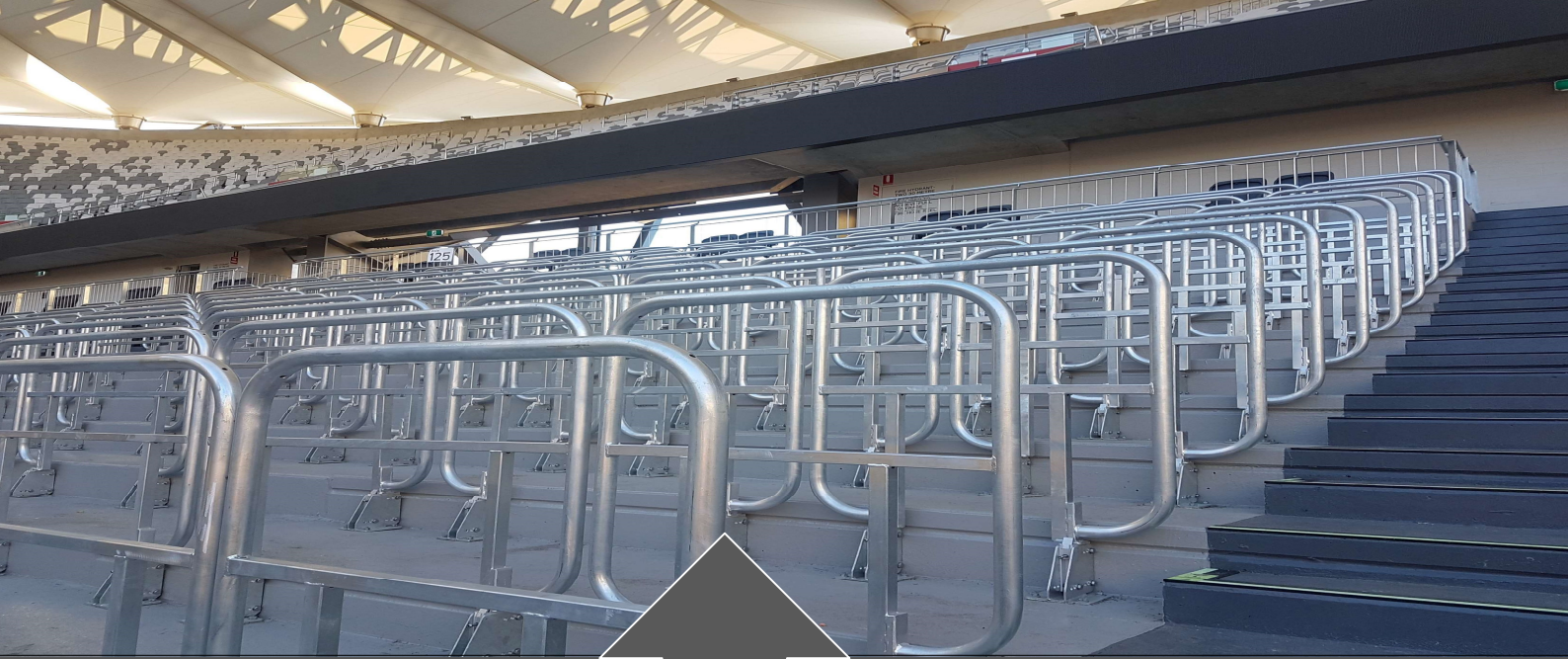
Steps OR Seats





Combination Terraces

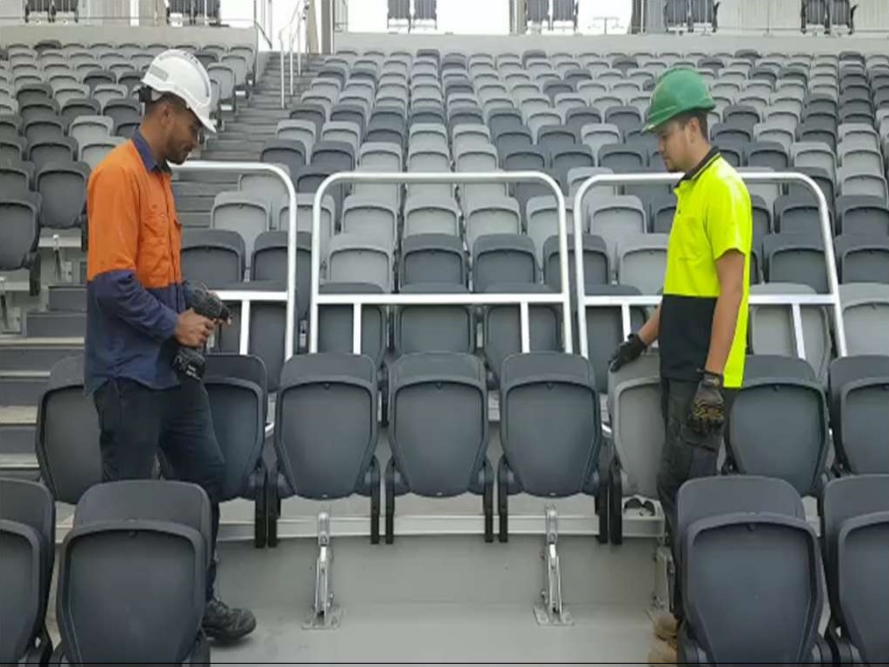




Combination Terraces

Seating OR Standing





fast latch System

Combination seating or standing

Some venues prefer combination stands where by the seating can be completely removed and replaced by rails (or vice versa) Our [fast latch](#) system makes that process simple and easy.

Seating is arranged on rails in 'banks' of 2, 3 or 4 seat places. Each 'bank' of seats or alternative standing rail then 'spigots' into the correctly spaced [fast latch](#) receptors.

The [fast latch](#) receptors are permanently affixed to the concrete and have a spring loaded latch which prevents either the seating or rails from being removed by anyone except operational staff. Each mechanism is fitted with an anti tamper devise.





Storage Solutions

Seats OR Rails





Bowl metalwork or seating package?

The opportunity cost.

Standing Rails – seating or bowl metalwork package?

Some aspects of the bowl metalwork package are not generally included in the scope of a seating supplier. This is often the single biggest factor that prevents us from providing intelligent solutions. Solutions that work and perform better because joint consideration has been given to the functional criteria and application engineering of what we consider ‘closely related ancillary items’ at design stage.

This opportunity, to develop a better solution; is often negated by quantity surveyors who determine tender packages ahead of detailed specifications without informed sector specific knowledge. This results in; for example standing rails and P Rails being packaged with other venue barrier systems.

At Bluecube we trying to affect change by;

- 1. Informed innovation.** Working with architects, clients and professional teams at the earliest possible stage to understand detailed requirements and demonstrate where we add value and ensure that related items are included in our scope of works.
- 2. Intelligent design,** our recent work on several major projects has shown that; given the opportunity we can develop solutions that perform as systemised product, fewer parts, faster changeovers and easier handling and storage.



Bowl metalwork or seating package?

The opportunity cost.

Temporary access and seating platforms.

DDA platforms and other demountable / semi permanent platforms are commonly not included in the seating package. [bluecube](#) has often been placed in a position whereby we are required to install seating onto structures that are inappropriately designed to carry loads imposed by the seating system.

Clients and architects often believe that these need to be fabricated by localised steelwork firms, the results are rarely successful because the design approach is not modular and little thought is given to the application of seating, storage and attachment systems to the building.

[bluecube](#) has a modular decking system called [tech deck](#), which has been designed specifically for applications such as;

- Demountable tiering
- DDA platforms
- Row infills
- Step units and ramps

For more information see our specification cut sheet for [tech deck](#)



Seat Locking System



In combination areas seats are required to be locked when the area is in standing mode (meaning that they cannot be used)

Our Centura seat module can be fitted with a tamper proof lock that prevents the seat from being opened once it is activated by facilities management. The system is also Anti Vandal meaning that no matter how hard the vandal tries to break the seat open, it will not result in permanent damage to the seat or locking system.

C01 Black

C02 Brown

C03 Neutral Grey

C04 Signal Green

C05 Dark Green

C06 Light Blue

C07 Signal Blue

C08 Galaxy Blue

C09 Purple

C10 Burgundy

C11 Cardinal Red

C12 Orange

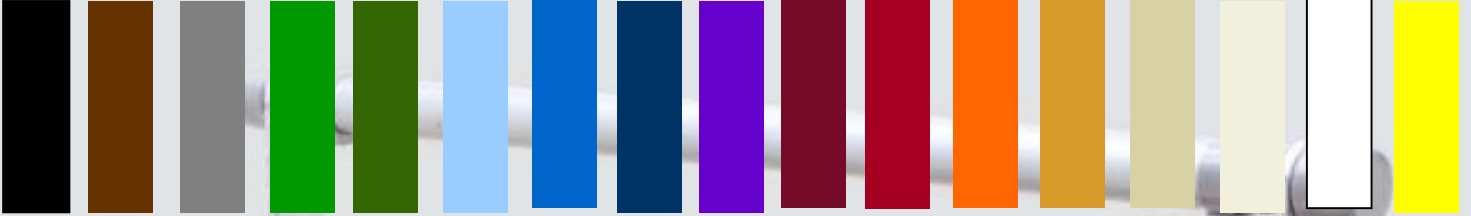
C13 Gold

C14 Beige

C15 Off White Sand

C16 White

C17 Signal Yellow



Strength and Durability

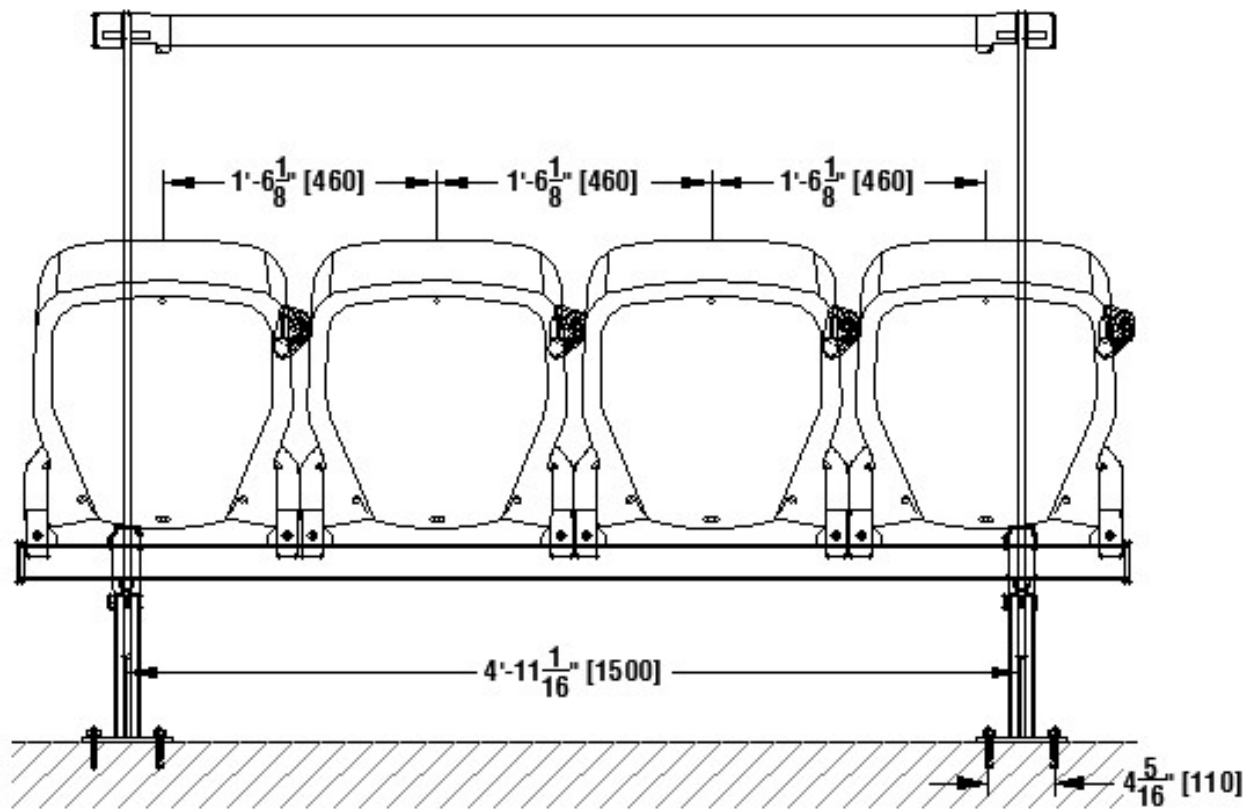


Strength & Durability

All systems in accordance with EN13200 and the Green Guide.

Weathering

All systems available in outdoor specification, in Hot Dip Galvanise as standard or alternatively in outdoor powder coat colour matched to standard seat colour options.



Typical Dimensions

