

## Double Deck Stands – Additional Rules & Guidelines

Double Story stand must be booked and paid for directly with the relevant Account Manager. Any double-deck stands constructed without prior approval and found not to be within the standard health and safety regulations will not be permitted to open until the stand has been made safe.

No foundations may be drilled into the floor and suitable anchorage must be installed. Double storey stands may be allowed in a neighbouring block / stand provided all Health & Safety regulations is observed and prior approval from the Organisers is obtained. All double deck stands are classified as complex structures and must abide by the same regulations.

- Second floors must be a minimum of **25sqm** (or up to the total sqm contracted on the ground floor) if recess is not required.
- If adjoining another stand, the top floor must be recessed to 1m away from the neighbouring stand (ground floor wall ruling remains the same)
- Stand walls that exceeds the height of an adjacent / neighbouring stand must dress & paint the rear surface of their wall in a neutral plain colour only.
- All space only stands: it is mandatory to cover and dress the top of the stands including the innerside of a fascia or any rigged structure.

It is the responsibility of the Stand Contractor to make any amendments to the stand build onsite, and at the expense of the Exhibitor / Stand Contractor, that they feel deviates from the below guidelines, rules & regulations and standard health & safety policies.

A suitable anchorage / platform must be installed with prior permission received from the venue and the Organisers. Please note that only a minimum of 400mm x 400mm x 12mm Mild Steel Plates will be accepted.

### Additional mandatory requirements to be submitted for Double Deck stands:

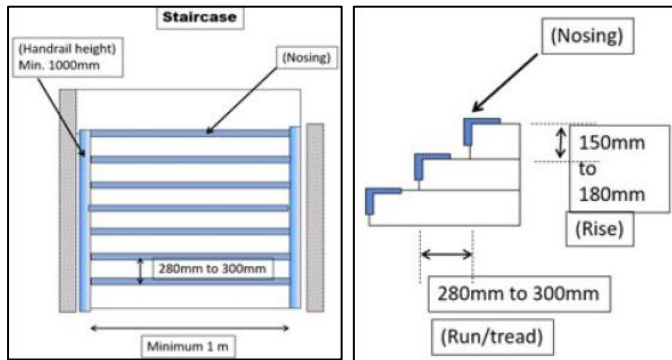
- STAAD files to accompany the steel work frame structure.
- Full Structural Calculations: load bearings, beams & columns working to the venue codes in Structural Calculation/Performance Specifications for complex stands section.
- Complete structural drawing for the proposed stand is to be submitted including its beam-column connection details, base plate details, cantilever details (if applicable).
- For the Mezzanine floor, upper-level partitions, canopy, fascia are to be added in the analysis report.
- Minimum lateral loads are to be applied in the analysis
- Sufficient counterweight is to be added as per analysis and design report
- Stiffener plates are to be added at the connection joints as per the support reactions. A minimum base plate size 400x400x12mm are to be used
- Steel member sizes are to be used as per the proposed submitted drawing
- It's NOT permitted to make any anchorage at the venue floor.
- Staad analysis file, soft copy is to be submitted
- Reinforce the upper-level canopy with metal tubes to avoid any deflection
- For the rigging structure, it's recommended to brace the structure with metal frame having sufficient size to withstand the load

**Maximum height permitted for double deck stands is 6 metres** – Structural calculations MUST be submitted for any structural part of the stand exceeding 4 metres in height. Important: A clearance of 1.5 meters from the venue ceiling to the top of the stand must be observed.

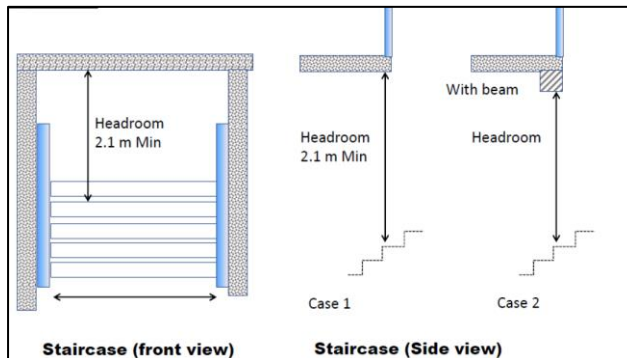
**Fire regulation:** all closed meeting rooms and storage room requires portable battery-operated smoke detector.

### Staircase

- A single staircase shall not exceed 1.8m in width, if exceeded, middle handrails will be required.
- Width should not be less than 1m
- Number of risers – maximum of 16 risers/steps
- Steps run and rise are the same throughout the whole flight
- Nosing for stairs steps or anti-slip for slippery surface are in place



### Headroom Limit

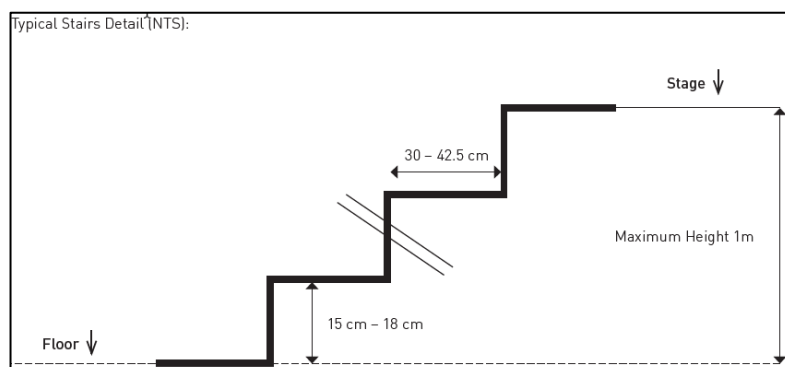


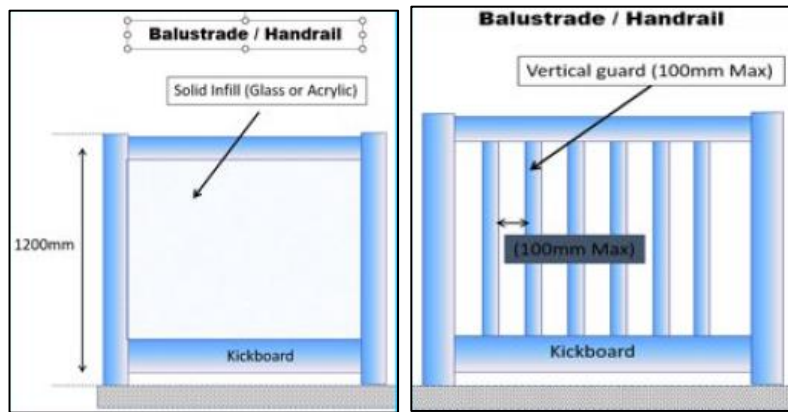
### Spiral staircases are not permitted (for the reasons detailed below).

- Spiral stairs wind around a newel (also the central pole). They typically have a handrail on the outer side only, and on the inner side just the central pole.
- A squared spiral stair assumes a square stairwell and expands the steps and railing to a square, resulting in unequal steps (larger where they extend into a corner of the square).
- Spiral stairs have the disadvantage of being very steep –only if they are tight or are otherwise not supported by a center column thereby the circumference of the circle at the walk line will be so small

### Balustrade & Handrails

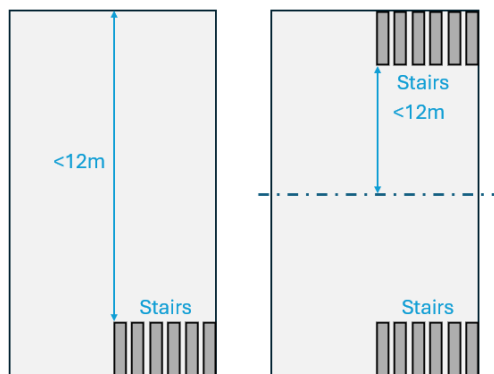
- Balustrade height should be 1.2 m high minimum with solid infill.
- Balustrade should be stable with solid infill installed or 100mm vertical guard
- A continuous handrail must be provided where there are three or more risers.
- Every flight of stairs must be provided with a handrail on each side. The handrail should be non-climbable and have a solid infill.
- Double width staircases shall have a central handrail.
- Handrails shall be continued as necessary around landings.
- The height of a handrail shall be measured vertically from the centre of the steps and landings to its upper surface and shall be a minimum of 900mm and a maximum of 1 meter.
- Handrails shall not project more than 100mm on to the required width of the staircase.





### Exits from Double-decker stands

The travel distance from any part of a double-decker stand to a staircase must be no greater than 12 meters. No fewer than two staircases, sited remotely from each other, shall be provided for each unless the double-decker is to accommodate fewer than 40 people.



### PERFORMANCE REQUIREMENTS

**A. Structural Performance:** Contractor shall engineer the extent of the structural framing and their connections work shown in the drawings required to be fully designed by the contractor to with- stand design loadings indicated in accordance with the codes and standards indicated in this section.

**B. Engineering Responsibility:** Contractor shall engage a qualified engineer to prepare calculations, Shop Drawings, and other structural data for structural members and connections.

**C. Design Calculations:** The contractor is to submit design criteria, reference codes and loads used, fully detailed computer analysis and design including input data file, analysis model, end restraints and the associated output diagrams of all straining actions, support reactions, stresses and code checking in addition to design calculations for all connections. Softcopy of all structural analysis and design models is mandatory for review

#### 1. Loads:

Dead Load	<ul style="list-style-type: none"> <li>Self-weight of all components</li> <li>Weight of roof cladding and side walls</li> <li>Any additional permanent loads.</li> </ul>
Live Load	<ul style="list-style-type: none"> <li>ASCE 7-05</li> <li>Areas of Public Assembly: Uniform load = 4.79 kN/m<sup>2</sup></li> <li>Minimum roof live load/ sand = 0.6 kN/m<sup>2</sup></li> </ul>

Wind Loads	<ul style="list-style-type: none"> <li>• ASCE 7-05</li> <li>• Basic wind speed <math>V=135 \text{ Km/hr}</math> (3 sec. Gust) to be used with a wind load factor of 1.6 for ASCE 7-05</li> <li>• Important factor <math>I=1.0</math></li> <li>• Exposure C</li> </ul>
Temperature Variation	<ul style="list-style-type: none"> <li>• Uniform <math>-25 \text{ oC}</math> or <math>+25 \text{ oC}</math></li> </ul>
Indoor Pressure	<ul style="list-style-type: none"> <li>• Minimum indoor lateral pressure of <math>25 \text{ Kg/m}^2</math> applied on one side of the indoor stand at a time.</li> </ul>

## 2. Load Combinations:

The load combinations are to be in accordance with ASCE 7-05

## 3. Serviceability:

In addition to strength, all serviceability limit states shall be considered in the design of the exhibition stands including but not limited to vertical deflection, lateral drifts and vibration. Refer to AISC design guides AISC DG3 'Serviceability Design Considerations for Steel buildings', and AISC DG11 'Vibration of Steel-Framed Structural Systems due to Human Activity' (both second editions).

Minimum vertical natural frequencies:

A- 3 HZ for floors

B- 5 HZ for stairs

## 4. Ceiling Rigging:

Ceiling rigging inside the Exhibition Hall is permitted and shall be coordinated with the venue.

Exhibitors shall be fully responsible for the structural integrity of any subframe support used in the hoisting system.

All Rigging loads (values and locations) shall respect the allowable loading criteria for the structure.

The Organisers require a safe and sensible approach to the use of ladders and step ladders at the venue.

### Step Ladders:

- Must be suitably sized so that standing on the top two rungs will not be necessary
- It is not permitted to stand on the top rung of a stepladder, even when held stable by another person
- Must be in good working condition. Ladders not maintained will not be permitted for use and may be removed without recourse
- Should be designed for use by one person only. Multiple person use is not permitted unless the step ladder is specially designed for such use
- Should not have material stored on the top which can alter the centre of gravity and create a risk of falling objects
- Home-made step ladders will not be permitted for use

### Ladders:

- Must be fixed firmly when in use. They should be tied or footed at the base by another person
- Should be used at an angle of 1 in 4 (75 degrees to the horizontal) to be suitably stable
- Should be used as a means of access rather than a working platform
- Must not be damaged and must be maintained. Ladders in poor condition will not be permitted for use
- Home-made ladders will NOT be permitted for use.