

## **Indoor Structure Building Guidelines: Complex Build & Double Deck**

### **1. General Introduction & Overview:**

Space only exhibitors are responsible for their own stand design and construction. No stand fittings or carpet is provided by Tarsus F&E LLC Middle East on space only sites. All space only stand designs must be approved by the Organisers before exhibitors & contractors will be allowed access to the site and permitted to commence build. Please submit your stand designs through Order Form by **27<sup>th</sup> September 2019**. An administrative fee of USD250 will apply if you submit your stand plans past the deadline date.

It is the responsibility of the exhibitor to examine the area and site allocated to them in order to avoid costly adjustments to stand structures. Where possible the Organisers will provide on request detailed stand plots indicating the position of service ducts and pillars. Minor obstructions or height restrictions cannot always be indicated on the plans of the exhibition. Stand fitting regulations contained within this section must be observed when planning stand design and layout. We are pleased to offer advice and guidance where required. Please feel free to contact the Operations Team with any enquiries.

Please note the Organisers have the right to reject any stand plan that they deem to be:

- a) Structurally unsafe
- b) Considered to be too complex to be completed in the time specified
- c) Does not conform to the specifications listed in the manual
- d) Likely to unreasonably affect nearby exhibitor's sites in any way

No major structural changes will be permitted to the stand once approval has been given.

### **Complex Structures & Stand Plan Submissions**

A complex structure is any form of construction of any height, which would normally be designed by an engineer and/or has, through a risk assessment, been found to provide significant risk. Structures that are 4 metres in height or above, multi-level stands, raised platforms and all suspended items are considered to be complex structures at Dubai Airshow 2019.

For all stands exceeding 4m in height, with two-storeys, with a platform exceeding 600mm in height, or deemed by us to be complex structures, drawings must be submitted by the deadline on **27<sup>th</sup> September 2019**. These may be submitted electronically as JPEG or PDF format through the relevant form.

All calculations of loading and strength must be in English, and all drawings must be to scale. All stand designs will be subject to the resident & independent engineer's inspection with an administration fee of USD\$700 for all complex stands.

All complex structures are subject to a pre-show plan approval and on-site inspection by Tarsus F&E LLC Middle East appointed H&S structural engineers.

In the case of particularly complex stands the Organisers may require additional structural calculations, method statements or technical detail in order to process the stand approval. It is the responsibility of individual exhibitors and their appointed contractor to provide this additional information upon request and any associated costs will be charged to the exhibitor.

Please note permission to enter the exhibition premises and commence construction will not be permitted without the full approval of the structural engineer and receipt of signed contractors undertaking form.

Stand build progress will be monitored continually by on-site Health & Safety officers who reserve the right to halt stand build progress should any Health or Safety issues arise. The Organisers reserve the right to deny access and prevent work being carried out by, or on behalf of, any exhibitor who has not submitted stand design drawings in accordance with these regulations.

### **Double Storey Stands**

Written application for permission to design stands of two-storeys must be made directly to the Operations Team and must have been booked and paid for directly with the relevant Sales Manager. Such stands may be built to a maximum height of 6m (including any name sign or trade mark). No foundations may be drilled into the floor and suitable anchorage must be installed. **Double storey stands are only permitted on island sites.**

In the interests of the exhibition as a whole we reserve the right to determine the position of any two-storey structure within a stand.

All two storey stands are classified as complex structures and must abide by the same regulations.

All stand designs will be subject to the resident engineer's inspection with an administration fee of US\$ 700 for double decker stands.

### **Space Only**

You will be expected to produce a professionally built custom stand with a high level of finish and safety compliance and one that is in line with the high-quality, professional nature of the event. Space Only as an option works very well for companies as a whole and adds an extra level of brand re-enforcement. However, if you feel that the Space Only option is more than you are prepared to commit to, then please get in touch with your Sales Manager without delay to discuss changing to shell scheme if practical. If you need help with sourcing a professional stand contractor that can work according to the quality and health and safety standards that we expect to see at our events, we can recommend our Official Partner GES. For further information contact: [das@ges.com](mailto:das@ges.com)

### **IMPORTANT:**

- Please make sure you receive your stand approval before the **27<sup>th</sup> September 2019**.
- Space only stands do not receive carpet and walls.
- To enable visitors to find your stand properly, it is compulsory that you include a stand number on your stand.
- Please return the Health & Safety Organiser.

### **Why do plans and documentation need to be submitted and inspected?**

The Organisers have a legal and moral duty of care to ensure the health and safety of everyone in the halls. Events in general have previously had a relatively poor record of health and safety and therefore plans must be submitted so that their proposed structural integrity may be assessed and issues dealt-with prior to arrival at site. Therefore, Stand Plan Inspections are required for each stand at the event and it is mandatory for these checks to be completed before construction starts.

Please note also, that receipt of a Permission to Build is only an authorisation to start building the stand - regular checks will be made on each stand to ensure the appropriate use of materials, structural integrity, etc. If our safety advisors are concerned about the above in any way, we reserve absolute right to terminate any stand construction.

### **What do we need to submit?**

You will need to submit your stand plans for approval before **27<sup>th</sup> September 2019**. 'Scalable' plans including:

- **Plan view**, showing clearly all dimensions, walling and major exhibits.
- **Elevation views**, showing clearly all dimensions, graphics etc. for each open side.
- **Details of materials & fire protection** measures.

- **Stand number clearly displayed in the final design** and also onsite actually placed on your stand where clearly visible for the visitors
- **Demonstration that electrical installations are to be carried out by 'competent' electricians.** For the avoidance of doubt, a competent person is one that is qualified, experienced and insured. You may be asked to provide proof of competency for your contractors on site, so please ensure that any qualifications and insurances are available for inspection in advance and also on site.
- **Further information** - the above list is not exhaustive and you may be asked for further information as required, depending on the nature of your stand construction and exhibits.

**PLEASE NOTE THAT IT IS NOT ALLOWED TO FIX YOUR BACK WALLS INTO NEIGHBOURING STAND WALLS**

'Scalable' means that all items on drawings conform to a scale that is clearly marked on the plan. Failure to supply drawings to scale will mean that the drawing will be immediately rejected. The scale of the plans should not be smaller than 1:50. All plan calculations and documentation must be in English and should clearly state the Exhibiting Company's name, the stand number and the name and contact number of the responsible contractor.

**Please remember that as well as plans and details of stand construction, you will also need to submit:**

- The Health & Safety form.  
Risk Assessment & Method Statement
- Public Liability Insurance certificates from all contractors and other individuals working on your stand(s). Both with the PLI insurance to the value of US\$2,000,000.
- Details of any exhibits with moving parts, together with how they are to be guarded against causing injury.

Space only exhibitors are responsible for their own stand design and construction. No stand fittings or carpet is provided by Tarsus F&E LLC Middle East on space only sites. All space only stand designs must be approved by the Organisers before exhibitors will be allowed access to the site and permitted to commence build. Please submit your stand designs through Order Forms – Stand Design on the Online Exhibitor Manual by **27<sup>th</sup> September 2019**. An administrative fee of USD250 will apply if you submit your stand plans pass the deadline date.

It is the responsibility of the exhibitor to examine the area and site allocated to them in order to avoid costly adjustments to stand structures. Where possible the Organisers will provide on request detailed stand plots indicating the position of service ducts and pillars. Minor obstructions or height restrictions cannot always be indicated on the plans of the exhibition.

Stand fitting regulations contained within this section must be observed when planning stand design and layout.

We are pleased to offer advice and guidance where required. Please feel free to contact the Operations Team with any enquiries.

Please note the Organisers have the right to reject any stand plan that they deem to be:

- a) Structurally unsafe.
- b) Considered to be too complex to be completed in the time specified.
- c) Does not conform to the specifications listed in the manual.
- d) Likely to unreasonably affect nearby exhibitor's sites in any way.

No major structural changes will be permitted to the stand once approval has been given.

**Enclosed Stands**

The inclusion of large enclosed areas within a stand can only be permitted with the Organisers' prior written permission, please also refer to the 'Height Restriction' section.

**Dividing Walls**

On divided sites, you are responsible for erecting and decorating side and back walls facing onto your stand areas to a height of 2.5m. Walls above this height must be clad and decorated on both sides, with the reverse side being decorated from 2.4m upwards by the exhibitor who has them erected. Such walls overlooking adjoining stands must be finished in a neutral plain colour only. The minimum height for dividing walls is 2.5m.

**The maximum height for dividing walls of single-storey stands is 4m**

**Walling in on Open Sides**

Long runs of walling along open perimeters of stands are not permitted.

Only 30% of any open side is permitted to be a solid wall. Where long runs of walling are present along open sides they must be relieved by display items and not left in plain colours – if perimeter walling is more than 1m high, it must not occupy more than one-third of any one side. If long runs of walling are essential they must be recessed by 0.5m from the perimeter of the site and will be subject to written approval by the organisers.

**Electrical Installations**

Mains supply to space only sites is not included and must be ordered prior to the exhibition.

Mains supply to space only sites is not included within the space rental charge, only the cost of power consumed is included. The official contractor appointed by the Organisers are the only individuals permitted to carry out electrical installations. Please refer to the official contractor list for the official contractor's contact details. Orders must be placed via the relevant form on the online manual prior to the exhibition. Please note that your order will not be processed until payment is received.

When completing the Electrical Order Form the location of the items should be clearly marked by uploading a grid plan illustration, if you haven't submitted a grid plan your electrics will be placed at the discretion of the electricians, if you require these to be relocated you will be charged.

**Orders received after the due date or placed on-site will be subject to a 20% surcharge.**

Exhibitors installing their own power connections to their displays for general lighting and power sockets must ensure that:

- The main cable is connected to a suitable type distribution box
- The main switch should be an ELCB
- All wire joints are in connectors and concealed in junction boxes. No twisted wire joints are permitted
- All wires in exposed areas are protected in PVC trunking. Running wires under the carpet or across open areas is not permitted.

If the power supply ordered is to be connected to machines and equipment exhibitors must ensure that:

- A suitable type of isolator or ELCB is provided between the main cable and the cable from the machine / equipment
- If the machine / equipment has its own isolator, then the main cable can be directly connected to it

Exhibitors installing their own power connections to their displays must also ensure such installations conform to the IEE Regulations and will be subject to inspection and approval by the official electrical contractor before connections to the mains supply.

**The Organisers reserve the right to disconnect any installation that, in their opinion, is dangerous or likely to cause annoyance to visitors or other exhibitors.**

The standard supplies of electrical current available in the exhibition halls are:

Single phase 220 volts 50HZ  
Three phase 415 volts 50Hz

The provision of a single phase mains supply terminal by suitable switchgear is included only in the shell scheme contract. Three phase supplies and 24 hour connection will be an extra charge and can be ordered on the relevant form through the online manual. Prices for fitting will cover power consumption, installation, maintenance and removal at the close of the exhibition.

General lighting is provided in the halls but is not powerful enough to provide adequate stand illumination. Exhibitors are advised that specific illumination of their stands is considered essential to achieve an effective display. Lighting is available and can be ordered online.

Please note that electrics to stands are switched off 30 minutes after the exhibition closes, please contact the Organisers to arrange 24 hour power, should you need it.

#### **Compressed Air & Air-conditioning**

Air-conditioning units may only be placed on stands when they are being used to cool an enclosed area or IT equipment. Under no circumstances must the units exhaust system expel hot air into the halls. The Organisers reserve the right to have units removed if they are considered to interfere with the cooling system in the hall. Locations of the units must be clearly marked on all drawings submitted for approval.

Exhibitors may not have generators or compressed air units on their stands. If compressed air is required it must be applied for through the online form, no later than the deadline and only through GES our official supplier.

Please note due to the limited supply available in the hall we highly recommend that you book your compressed air by the deadline in order to avoid disappointment. We cannot guarantee to meet your exact requirements on orders issued after this date.

#### **Columns**

If you have a column on your stand and wish to clad it you must ensure the cladding is self-supporting and that access is available to any services on the column. We highly recommend that you conduct a site visit prior to finalisation of your designs.

#### **Fabrics Used In Displays**

Textile fabrics used for interior display purposes on the stand must be FIRE RETARDANT or purchased already treated by use of approved chemicals. Certain fabrics need not be fire proofed, i.e., wool, twill or felt. Textile fabrics used for interior decorative purposes within stands must be fixed taut and or in tight pleats (not draped) to a solid backing and secured 3 inches above floor level and not touching any light fittings. Cellulose paints are flammable and must not be used for stand dressing. Water based paints must be used.

#### **Flooring**

Space only sites are not carpeted by the Organiser - exhibitors must provide their own floor covering.

**All Space Only stands of 150sqm and above at Dubai Airshow 2019 are obliged to use Eco Flooring as part of their build plan. For further information, please contact [operations@dubai.aero](mailto:operations@dubai.aero)**

Exhibitors with adjoining blocks of stands will not be permitted to place their own carpet in the gangways unless prior permission is given in writing by the Organisers. Nothing may be structurally attached to the floor of the Exhibition premises. Carpet may only be fixed to the venue floor with approved carpet tape.

Only the following brands of double sided carpet adhesive tapes are recommended:

- EUROTAP
- EUROCEL
- ADVANCE TAPE

All carpet tape must be removed and any charges for the removal of carpet tape left on the floor at the end of breakdown will be passed direct to exhibitors.

#### **Floor Markings**

Stand locations will be clearly marked on the floor, it is the responsibility of the exhibitor or their appointed contractor to ensure their stand is built to the correct floor markings. Please check with the Organisers' office if you are in any doubt regarding your allotted floor space.

#### **Floor Loading Restrictions**

The hall floors are concrete. Please contact the Operations Team with details of heavy exhibits, as special arrangements may need to be made. The exhibition hall and site floor must not be damaged in any way. There is a maximum distributed weight loading of 350 kgs per m2.

If you are exhibiting any heavy items please inform the operations team as soon as possible to arrange delivery.

**Heavy Exhibits & Oversized Items**

7<sup>th</sup> & 8<sup>th</sup> November 2019 is the time designated for the movement and installation of heavy or oversized items. Exhibits in excess of 2000kg or measuring more than 2.5m in length, width or height will need to be positioned during this time period. It is the exhibitor's responsibility to make provision to ensure that these items are on-site and positioned during this time. Please liaise with the official freight handling contractor - Airlink International / GT Exhibitions Ltd for further details.

Any heavy or oversized items arriving on-site after this time will not be permitted entrance into the halls. This is for the safety of the exhibitors and contractors working in the halls during the build-up period.

**Height Limit**

The overall height of stand fitting for single-storey stands including cladding of columns is 4m from the floor level and any stand of 4m or above is considered a complex build.

**The stated height restrictions apply to the structures themselves and any items within the designated area. Please be aware that areas of stand build above these height limits will be subject to the Organiser's structural engineer's approval and will incur additional charges.**

The overall height of stand fitting for double-decker stands is 6m. Please note that these must have been booked and paid for directly with the relevant sales manager. Exhibitors who have not booked a double-decker stand will not be permitted to build double-decker stands or exceed the 4m height limit without the operations team's approval.

**Signage**

Signage and graphics are not permitted to overlook other stands where there is a dividing wall or to overhang in the gangways.

Where illuminated fascia boards are used on stands, the lighting of them must be of sufficient power to light the fascia board only, and must not cause any spill of light onto neighbouring stands. No flashing lights will be permitted. We reserve the right to disconnect the electrical supply to any illuminated fascia, which, in our opinion, is causing a nuisance to any other exhibitor.

**Banners**

Exhibitors wishing to display hanging signs or banners above their stands must illustrate these on their stand designs uploaded via the online manual. Please ensure that the design, artwork, dimensions and location of the banner in relation to the stand perimeter is illustrated.

All rigging within Dubai Airshow site must be carried out by the Official Rigging Contractor. Please order rigging requirements by emailing [denis.bramhall@unsuralrigging.com](mailto:denis.bramhall@unsuralrigging.com) ; [joie.salazar@unsuralrigging.com](mailto:joie.salazar@unsuralrigging.com) and ensure that images illustrating the banner specifications are uploaded to ensure that the rigging requirements ordered are suitable.

Please note that banners must not project on to the aisles or a neighbouring stand it must be hung within the perimeter of your stand.

All Rigging orders must be placed by 30 September 2019. A 50% surcharge will be added to any late orders. PLEASE NOTE THAT THE TRIM HEIGHT FOR ALL HANGING ITEMS IS 6M. The underside of all rigged items must be hung at 6m.

**Please note there will be an exposure fee of \$80 per sqm, with minimum fee of \$500 in addition to the rigging charges.**

**Rigging and Suspended items**

Please be aware that all rigging within DWC Airshow site must be carried out by the Official Rigging Contractors. It will not be possible for exhibitors or their contractors to carry out their own rigging.

Exhibitors wishing to rig banners/hanging signs or lighting above their stands must email rigging requirements to [denis.bramhall@unsuralrigging.com](mailto:denis.bramhall@unsuralrigging.com)/[joie.salazar@unsuralrigging.com](mailto:joie.salazar@unsuralrigging.com) by 30<sup>th</sup> September 2019. Adequate drawings showing the design, dimensions and location of the suspended item must be attached to this order to ensure that it is suitable. All Rigging orders must be placed by 30th September 2019.

The trim height for all hanging items is 6m across the show site and will be strictly enforced. The underside of all rigged



items must be hung at 6m. Direct support and suspension of structures to the hall roof structure is NOT permitted. All suspended items including lighting rigs and suspended ceilings are permitted provided they do not exceed the permitted load of the venue's roof beams.

All rigging must be an integral part of the stand design and should be confined within the limits of your stand area. Please note that banners and hanging signs must not project on to the aisles or a neighbouring stand and they must be within the perimeter of your stand.

### **Storage**

NO excess stock, literature or packing cases may be stored around or behind your stand, due to the materials being a fire risk.

If you require storage on-site, you should contact Airlink International / GT Exhibitions, who have storage facilities available. If you need a place to store empty cartons, boxes, literature etc. please contact Airlink International, who will collect these from your stand, store them and deliver them back to you during breakdown.

Alternatively, you need to make the provision to build a store room into your stand design.

### **Maintenance**

Under no circumstances will maintenance work be permitted on stands during the exhibition open hours.

If at any time during the exhibition open days you need to carry out maintenance work on your stand after the exhibition has closed please apply to the Organisers by 14:00 on the same day for authorisation.

### **Working at Height**

Ground access to areas in the vicinity of any work at height must be controlled to prevent persons walking or working directly beneath the area in question. Ground workers in the vicinity must not work directly underneath and wear suitable PPE including head protection (e.g. hard hats)

Ladders must be footed or tied off and used in accordance with construction regulations. The use of domestic ladders and steps is strictly forbidden.

### **Work Equipment and Tools**

Exhibitors and contractors have a duty to ensure that all tools are fit for purpose and safe to use.

All dangerous moving parts such as circular saws must be guarded with controls to prevent unauthorised use.

The use of battery powered tools is strongly encouraged to reduce trailing cables and risk of electrical hazards. Those using mains powered tools must ensure that cables are not trailed across aisles.

**2. Documentation Required For Design Submission:** Important - Please note that complex stand designs submitted for approval at Dubai Airshow 2019 will not be considered or approval process started, unless/until all the below requirements and documentation are fulfilled and received by organisers who then send on for independent structural review.

All designs submitted for approval must include:

- Heights of structure.
- Widths of structure.
- Lengths of structure.
- Full final visuals of structure/stand.
- Staircase details including hand rails (double deck stands).
- Risk Assessment (RA).
- Method Statement (MS).
- Contractors Insurance PLI (Public Liability Insurance) copy to the value of USD2,000,000.
- Details of any exhibits with moving parts, together with how they are to be guarded against causing injury.
- STAAD files to accompany the steel work frame structure.
- Full Structural Calculations: load bearings, beams & columns working to the venue codes in section 6.

All calculations of loading and strength must be in English, and all drawings must be to scale. All structural calculations will be subject to an independent engineer's review & inspection with an administration fee of USD700 attached.

All complex structures are subject to a pre-show plan review and on-site inspection & monitoring by Tarsus F&E LLC Middle East appointed structural engineers and DAEP venue engineers.

In the case of particularly complex stands the Organisers may require additional structural calculations, method statements or technical detail in order to process the stand approval. It is the responsibility of individual exhibitors and their appointed contractor to provide this additional information upon request and any associated costs will be charged to the exhibitor.

Please note permission to enter the exhibition premises and commence construction will not be permitted without the full approval of the appointed independent structural engineer and receipt of signed contractors undertaking form.

Stand build progress will be monitored continually by on-site Health & Safety officers who reserve the right to halt stand build progress should any Health or Safety issues arise. The Organisers reserve the right to deny access and prevent work being carried out by, or on behalf of, any exhibitor who has not submitted stand design drawings in accordance with these regulations.

You will need to submit your stand plans for approval before 27<sup>th</sup> September 2019.

### **3. Hot-Working (Grinding & Welding):**

Hot-working on structures/stands although not encouraged onsite, is allowed if necessary and as an integral part of design. Before undertaking hot-work, a permit to work (PTW) will have to be applied for at least 24 hours in advance from the organisers office.

The PTW application will need to include the following information and below procedure must be met before work can be carried out:

- A risk assessment will have to be submitted to accompany the task carried out
- Up to date and valid certificates of the equipment to be used will have to be submitted for inspection
- The PTW will then be signed off by competent person undertaking the task & counter signed by a certified fire safety officer at both the start of work and completion
- All fire prevention methods will have to be adhered to (extinguishers & blankets supplied and all housekeeping in place)
- All correct hot-work PPE will have to be worn
- Task will then be monitored on site by fire watchman and/or an appointed safety officer from the organisers or venue

### **4. PPE (Personal Protection Equipment) Requirements:**

All health & safety guidelines and safe working practices must be adhered to at all times during Dubai Airshow 2019. Failure to do so and observed by our onsite H&S team will result in suspension of work until they (H&S team) are satisfied that control measures have been put in place for you to carry on.

The below PPE clothing and equipment are compulsory and must be used and worn at all times. Failure to do so will also lead to work being suspended.

### **5. Late Working (Extra Build Up Hours):**

If you require extra build up time to complete your structure safely and need to continue working outside the publicised build up hours, you will need to inform the Organisers Office situated on level one of the main exhibition hall by 14:00 hrs on that day. Sufficient H&S coverage from the organisers can then be assigned. You will need to supply the names of all employees working late and a main point of contact mobile number for the onsite supervisor.

A charge of AED 500 p/h (USD 140) per structure per day from (18:00-22:00) will apply and no work can continue after 22:00. Please note that all payments must be made in advance and a late working permit obtained before out of hours working can commence.

The following requirements will also need to be adhered to:

- Adequate power supply ordered to carry out work.
- Temporary light rigs (if required) to supply enough light to create a safe working environment.
- All personnel must adhere to the strict venue PPE ruling.
- Welfare breaks provided so workers have sufficient rest periods.

The organisers H&S team will monitor work onsite and can suspend work at any point if they feel a breach of H&S practice has occurred.

## **6. Structural Calculation/Performance Specifications for complex stands Dubai Airshow 2019:**

### **PART 1 - Quality Assurance**

A. Comply with applicable provisions of the following specifications and documents:

1. ASCE/SEI 7-05, Minimum Design Loads for Buildings and Other Structures, 2005"
2. AISC "Manual of Steel Construction American Institute of Steel Construction Inc. 14<sup>th</sup> edition
3. AISI "Cold-Formed Steel Design Manual American Iron and Steel Institute" edition 2008
4. AISC 360-10 "Specification for Structural Steel Buildings"
5. AISC 303-10 "Code of Standard Practice for Steel Buildings and Bridges"
6. Research Council on Structural Connections (RCSC) "Specification for Structural Joints Using ASTM A325 or A490 Bolts." edition 2009
7. ASTM A6 (ASTM A6M) "Specification for General Requirements for Rolled Steel Plates, Shapes, Sheet Piling, and Bars for Structural Use"
8. American Welding Society ANSI/AWS D1.1-2008" Structural Welding Code - Steel"
9. "AA-ADM 2015, Aluminum Design Manual, 2015 Edition"
10. "ANSI/AWC NDS-2015 National Design Specification (NDS) for Wood Construction"
11. BS 5974:1990 Temporarily installed suspended scaffolds and access equipment
12. BS 5975: 2008 Code of practice for temporary works procedures and the permissible stress design of falsework
13. BS EN 12811-1:2003 Temporary works equipment: Scaffolds - Performance requirements and general design

B. Professional Engineer Qualifications:

A professional engineer who is legally authorized to practice in the jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for projects with structural framing that are similar to that indicated for this Project in material, design, and extent.

### **PART 2 - Performance Requirements, Loads & Load Combinations**

A. Structural Performance:

Extent of the structural framing and, their connections work shown in the drawings required to be fully designed by the contractor to withstand design loadings indicated.

B. 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.






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	- ASCE 7-05– Exposure C – basic wind speed V=135 Km/hr (3 sec. Gust)
Temperature Variation	- Uniform -25 °C or +25 °C
Indoor Pressure	25Kg/m <sup>2</sup> minimum pressure

Load Combinations:

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

Hazard	Advice	PPE	Examples
<p>Slippery surfaces</p> <p>Nails and sharp objects on the floor</p> <p>Heavy items dropped during movement or fitting</p>	<p>Safe footwear should be worn to prevent slipping and foot injuries.</p> <p>Safe footwear is mandatory during the construction activities of build up/breakdown for ALL personnel entering the halls.</p> <p>General recommendation: EU Approved to class EN345 (safety footwear)</p>	Safe footwear	
<p>Moving vehicles</p> <p>Vehicle/pedestrian interaction</p> <p>Poor visibility</p>	<p>Hi-visibility vests have highly reflective properties or a colour that is easily discernible from any background.</p> <p>Wearing Hi-visibility vests is mandatory during the construction activities of build up/breakdown for ALL personnel entering the halls.</p> <p>General recommendation: EU approved to class EN 471</p>	Hi-Visibility jacket/ vest	

Danger of falling objects or overhead work taking place	A hard hat should be worn to protect the head if an object falls from a height  General recommendation: EU approved to class EN397	Hard hat	
Person working at a height	Persons working at height where there are no guard rails should be clipped on via a lanyard or wearing fall arrest equipment.  General recommendation: EU approved to class EN361 (full body harness)	Lanyard/fall arrest equipment	
Contact with hazardous chemicals  Contact with human fluids  Dirty workplace  Handling sharp objects  Objects being moved (trapping)	Protect hands from harm using appropriate type of gloves (consider glove material, dexterity needs, performance)  General recommendation: EU approved to class EN388 (mechanical) and EN 374 (chemical)	Safety gloves	
Inhalation of dust, gas or fumes	Protect the body from breathing or ingesting hazardous materials.  General recommendation: EU approved to class EN149	Respirator	
Impact with moving objects  Eye contact with chemicals	Protect eyes using suitable glasses  General recommendation: EU approved to class EN166	Safety glasses	
Loud noise	Protect ears from noise using appropriate type of device with correct attenuation.  General recommendation EU approved to class EN352-2 (earplugs)	Ear plugs	