

Outdoor Structure Building Guidelines: Chalet Line & Static Park Pavilions

1. General Overview & Introduction:

Outdoor pavilion exhibitors are responsible for their own pavilion design and construction. No outdoor pavilion construction elements or fittings will be provided by Tarsus F&E LLC Middle East. All outdoor pavilion designs must be approved by the Organisers before exhibitors will be allowed access to the site and permitted to commence build.

Outdoor pavilion working drawings (including all dimensions and elevations), risk assessment, method statement & insurance documentation must be submitted by 27th September 2019. Failure to submit outdoor pavilion designs by this date will result in USD250 late submission fee and may result in delays on-site.

No outdoor pavilion build will be permitted to commence without the Organisers' written approval.

It is the responsibility of the exhibitor or their appointed contractor to examine the area allocated to them in order to avoid costly adjustments to outdoor pavilion structures. Where possible the Organisers will provide, on request detailed outdoor pavilion plots however; please be aware that minor obstructions or height restrictions cannot always be indicated on these plans. Due to the nature and scale of the Dubai Airshow site, each outdoor pavilion area is subject to differing restrictions, it is imperative that exhibitors and their contractors contact our operations team directly to ensure they are aware of any and all restrictions applicable to their particular site. Please contact the Operations Team at operations@dubai.aero

Outdoor pavilion fitting regulations contained within this guide must be observed when planning outdoor pavilion 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 outdoor pavilion plan that they deem to be:

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

No major structural or design changes will be permitted to the outdoor pavilion once approval has been given. Note there will be a charge for the independent engineers approval set at USD700 per pavilion design.

Pavilion Construction Categories:

Please note there are two areas where pavilion self build construction is permitted:

- The chalet line.
- The static park.

The construction regulations and timings vary dependant upon which area the pavilion is located in. Therefore, it is vital that you read the following sections carefully.

Chalet Line Pavilion Specifications:

Construction of chalet line pavilions can commence on **Sunday 27th October 2019** only when permission has been granted by the Organisers.

The height restriction for chalet line pavilions is **9.0mtrs**; under no circumstances may construction exceed this height. Should you need to secure the structure to the site, your contractor must submit scale drawings with the exact fixing position, before permission will be granted. Any damage to the site incurred through securing the structure must be repaired after the show at the exhibitor's expense.

All double storey structures must provide exterior fire escape staircases. Fire extinguishers must be provided by your contractor, a minimum of 1 extinguisher per 100sqm is required. Fire exits must be clearly indicated on all plans submitted and internationally recognised signs must be used.

If you require a crane or heavy lifting equipment during construction, these must be ordered from the Organisers' official handling agent Airlink International/ GT Exhibitions. No other contractor will be able to operate cranes or heavy lift machinery during the build-up or breakdown.

Notice of the intended requirements of this equipment must be received by the Organisers no later than **Friday 27th September 2019**.

There is no provision of mains electricity on the chalet line for pavilions, power is supplied by generators. All generators must be ordered through the Organisers at operations@dubai.aero by **22nd September 2019**. Failure to do so by this date will incur a 30% surcharge. Please also note the electrical requirements section in this document for further details.

Height Restrictions

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.

- Static Park Pavilions: A Maximum height of 4m
- Chalet Line Pavilions: A Maximum height of 9.0m, (**dependant on location**). Please contact operations@dubai.aero if you require assistance.

Static Park Pavilions Specifications:

Construction of static park pavilions can commence on **Sunday 27th October 2019**, only when permission has been granted by the Organisers

The height restriction for static park pavilions is **4.0mtrs**; under no circumstances may construction exceed this height. The structure may not occupy any space in excess of that contracted for, this includes all air conditioning units but does not include generators. No fixing to the static park surface is allowed under any circumstance.

There is no provision of mains electricity on the static park. Power is supplied by generators. All generators must be ordered through the Organisers at operations@dubai.aero by **22nd September 2019**. Failure to do so by this date will incur a 30% surcharge.

Exhibitors must order a generator that can run their exhibit for a full exhibition day as refuelling of generators is not permitted during the day on exhibition show open days. Fire extinguishers must be provided by your contractor, a minimum of 1 extinguisher per 100sqm is required. Fire exits must be clearly indicated on all plans submitted and internationally recognised signs must be used.

2. Documentation Required For Design Submission: *Important - Please note that pavilion 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 pavilion designs submitted for approval must include:

- Heights of pavilion/structure
- Widths of pavilion/structure
- Lengths of pavilion/structure
- Full visuals of pavilion/structure, inside and outside including details of all stairways if required
- Emergency evacuation routes highlighted
- Risk Assessment (RA)
- Method Statement (MS)
- Contractors Insurance PLI (Public Liability Insurance) copy to the value of USD 2,000,000
- STAAD files to accompany the steel work frame structure
- Full Structural Calculations: load bearing & wind, working to the venue codes. Refer to section 7 below.

All calculations of loading and strength must be in English, and all drawings must be to scale. All pavilion calculations will be subject to an independent engineer's review & inspection with an administration fee of USD\$700 payable by the exhibitor.

All complex structures are subject to a pre-show plan approval 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 pavilion the Organisers may require additional structural calculations, method statements or technical detail in order to process the pavilion 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.

Pavilion 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 pavilion design drawings in accordance with these regulations.

3. Hot-Working (Grinding & Welding):

Hot-Working within the existing Dubai Airshow 2019 chalets is strictly forbidden as this is a breach of the venue health & safety policy. Anyone found carrying out this practice will be asked to leave the venue by the organisers immediately.

Hot-working on temporary structures/pavilions 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 will result in suspension of work until the 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. Electrical Requirements (Outside Structures):

No private or outside generators shall be permitted for use at Dubai Airshow 2019 only those hired through the official supplier. All these gen-sets are then subject to final inspection on site by the H&S team prior to energising.

All temporary installation and distribution must be inspected and tested in accordance with the *UAE Fire & Life Safety Policy* by a competent person. A suitable testing and inspection result sheet may need to be produced on request by the venue and organisers

Note: With specialist consultation, it is recommended that as a minimum an inspection and test sheet model as in accordance to BS7909 would be accepted as evidence of this policy and procedure. A sample sheet will be available on request.

The following arrangements shall also apply as applicable:

No person shall work on any electrical system unless they are proved competent to do so.

Contractors may be required to provide written method statements before work commences, or conform to permit to work (PTW) systems as part of the agreed work method.

Electrical distribution cabling, leads and tails must be terminated in the correct method with safeguards against direct contact. All outdoor cabling be resistant to water ingress with the correct IP rated connection and fittings.

Temporary installations from a generator must first be installed into a distribution board that is protected by the main switch rated with a 30mA RCD and each locally distributed circuit protected by a suitably rated MCB, it is not permissible to connect items directly to any industrial generator or any other source of electrical distribution which is not protected by a suitably rated RCD.

Any main switch or deviation from this will need to be reviewed and approved by the organiser and venue.

Portable electrical equipment must be in good order and be fit for purpose, only authorised and trained staff will be allowed to use this equipment with evidence of suitable (PAT) portable appliance test available on request.

Portable equipment that is used at Dubai Airshow 2019 must be tested with an approved (PAT) portable appliance tester as indicated below and indicate tested date with a sticker on each appliance

Outdoor use – 3 monthly

Indoor use – 6 monthly

Dangerous equipment or those that are deemed to be unsafe will be removed from the site and if necessary, destroyed by the organisers or the venue.

Portable distribution boards and ancillary equipment provided by the venue, exhibitor, exhibitors principle contractor or subcontractor including, cabling and plugs are the responsibility of their appointed technical electrician; no person may interfere with or attempt any repair of electrical equipment. Interference or attempted repair of electrical equipment by anyone other than their licensed technical electrician is reportable as a criminal offence.

If a fault is suspected in any circuit or apparatus e.g. because of a repeated blowing fuse, the organisers should be contacted, the appointed technical electrician be called and the appliance taken out of use.

Circuit breakers must be used and sockets must never be overloaded. All structures must be earth bonded prior to installation of electrical items, this must be inspected prior to use by the venue/organisers technical H&S team.

Emergency lighting and fire alarms within all complex structures must have been installed and tested in accordance to the UAE Fire & Life Safety Policy prior to the event.

Cables that run above head height must be tied neatly and secured to anchor points where they cannot impede emergency exits or cause injury. Cables must be at least 2m high. Cable ramps must be used wherever cables will cross floors.

6. 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 per hour (USD140) per structure per day from (18:00-22:00) will apply and no work can continue after 22:00 hrs. 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 must be adhered to:

- Adequate power supply ordered to carry out work
- Temporary light rigs installed 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.

7. Structural Performance Specifications 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. 14th 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	- Self weight of all components - Weight of roof cladding and side walls - Any additional permanent loads.
Live Load	- ASCE 7-05 - Areas of Public Assembly : Uniform load = 4.79 KN/m ² - Minimum roof live load/ sand = 0.6 KN/m ²
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 ² 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	
<p>Danger of falling objects or overhead work taking place</p>	<p>A hard hat should be worn to protect the head if an object falls from a height</p> <p>General recommendation: EU approved to class EN397</p>	Hard hat	
<p>Person working at a height</p>	<p>Persons working at height where there are no guard rails should be clipped on via a lanyard or wearing fall arrest equipment.</p> <p>General recommendation: EU approved to class EN361 (full body harness)</p>	Lanyard/fall arrest equipment	
<p>Contact with hazardous chemicals</p> <p>Contact with human fluids</p> <p>Dirty workplace</p> <p>Handling sharp objects</p> <p>Objects being moved (trapping)</p>	<p>Protect hands from harm using appropriate type of gloves (consider glove material, dexterity needs, performance)</p> <p>General recommendation: EU approved to class EN388 (mechanical) and EN 374 (chemical)</p>	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	