

The New Blue Book

National Exhibition Centre

Self-Regulating Process Handbook

Contents and Introduction

The New Blue Book

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Introduction - Use of NEC Guidance Notes

The guidance documents (*Approved Documents*) contained in this handbook have been approved by Solihull Council.

Approved Documents may give guidance in more than one form. They may describe particular methods of construction, give reference to other publications, or specify acceptable levels of performance.

Approved Documents are intended to provide guidance for some of the more common situations that may arise during the course of planning and running an exhibition or event. The guidance contained in an Approved Document relates only to the particular requirements of the regulations which that document addresses. The guidance does not constitute a set of statutory requirements, but will be taken into account when considering whether work at the design stage, or during construction and use, complies with the particular regulatory requirement.

The use of NEC Guidance Notes is considered best practice at all NEC Group Venues.

There is a legal presumption that following the guidance is evidence tending to support compliance with the relevant legislation. If you choose not to follow the guidance, then you will be asked to demonstrate by other means that you have satisfied the regulations.

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Self-Regulating Process Handbook

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Section 1 – Regulations and Guidelines

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1. General

- a. Where it is intended to organise or manage an exhibition the responsible person shall submit plans to the Event Manager not less than 3 months prior to tenancy. If for any reason the organiser cannot submit layout plans for the exhibition by the required time, the Event Manager must be notified in writing.
- b. In most instances organisers will wish to submit their layout plans before the required time, in order for the layout to be approved before stand space is sold for the exhibition.
- c. Work shall not commence in the Halls until the Event Manager has given written approval of the layout plans.
- d. Not later than one month prior to the first day of tenancy, the organiser is to issue to the Event Manager layout plans showing the entire hall areas to be used including stand identification numbers and names of exhibiting companies.
- e. Drawings will be reproduced in a clear and intelligible format not less than 1:200 scale. Each hall layout must show the size and position of each exit from the exhibition, the width and position of each gangway; the location of all vehicle entry doors and under-floor service ducts, the size and position of each stand, feature or void area.
- f. Where hall entrances are utilised for registration or ticket checking purposes a minimum of 50% of the overall width must be available for emergency egress. (See Guidance Note 11 – 11.2 Hall Entrances)
- g. All fire alarms, fire shutters, extinguishers, fire hydrants, sprinkler system valves, house telephones and sliding smoke doors between the Halls together with their control switches, shall be kept clear and accessible at all times.
- h. Consideration must be given to the location of the under-floor ducts to ensure that the termination of stand services can be adequately accommodated within all stand areas. The contractor providing the stand fittings must make sure that any cables within the stand area are located safely and to the satisfaction of the Event Manager or the mains supply will not be provided. Ramping of such services in gangways is prohibited.
- i. The Event Manager will arrange for the marking out of the perimeter of all stands and feature areas onto the floor of the halls. For this purpose, the organiser must issue to the Event Manager final layout plans, showing dimensions of all stands and feature areas, the widths of gangways between the stands and feature areas, the dimensions and datum points between the frontages of the stands and the hall columns and walls and stand identification numbers. These plans are in addition to the copies mentioned above and shall be issued not later than one month prior to the first day of tenancy, unless otherwise agreed by the Event Manager.
- j. The show organiser is to check the marking out prior to the erection of stands and feature areas and any discrepancies between the drawing and the marking out are to be notified to the Event Manager immediately.
- k. The NEC will accept no responsibility for incorrect marking out if this procedure is not followed or if the plans issued to the Event Manager vary from layout plans issued by the organiser to others.

2. Means of Escape

The maximum number of persons that may be accommodated at any one time within the centre or any part thereof shall not exceed the number which the Venue, having regard to the layout and number of exits available, shall, for each exhibition, specify in writing.

3. Design Stage

- a. The arrangement of each gangway shall be such that alternative routes of escape are provided.
- b. The superficial area allocated to gangways in each hall shall not be less than one half of the superficial area allocated to stands.

4. Layout and Dimensions of Gangways.

- a. A gangway shall be provided from each exit door on the perimeter of the hall to the centre line of that hall. Each such gangway must have a width of not less than 3.0m and, to allow safe egress, shall have a clear area not less than 5.0m deep across the entire width of each emergency exit door.
- b. Where a stand or feature area is not enclosed, has no raised platform and contains an unobstructed area in line with a gangway that is of the required height and width with suitably defined edges or floor covering of a different shade/colour, that area of the stand or feature may be deemed to be a gangway.
- c. A gangway on the perimeter of a hall (or if there is no gangway on the perimeter, the gangway nearest to the perimeter) shall have a width of not less than 3.0m.
- d. Any other gangway shall have a width of not less than 2.0m and a length not exceeding 45.0m. Any gangway within a stand shall have a width of not less than 1.0m. For the comfort of visitors at high attendance shows, no gangway should be less than 3.0m wide.

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- e. For the purpose of this regulation a gangway may be divided into lengths by other gangways situated at an angle greater than 60° thereto and any measurement of gangway length shall be between centres of gangways.
- f. The minimum height of a gangway shall in no case be less than 2.3m throughout.

5. Feature Areas (Live Action and Public Participation etc.)

Please also refer to Guidance Note No.5 Audio Visual Displays & Films

- a. Full details of special feature arrangements must be submitted at the same time as the overall floorplans, together with a method statement and risk assessment detailing how such areas will be managed including queuing areas and any necessity to control noise levels or fumes.
- b. Any materials brought onto site such as soil, sawdust, straw and hay etc. must be clean and free from contamination from previous usage (e.g. chemicals). All such materials must be removed at the end of the show
(See Guidance Note 11 - 11.4 End of Tenancy and 11.11 Waste Disposal).

6. Build Up Period

- a. The Event Manager will issue an Emergency Gangway Plan to the organiser, prior to the tenancy commencing.
- b. The organiser will communicate this plan to their contractors and exhibitors.
- c. The organiser is to manage the build by maintaining the Emergency Gangways as they form part of an evacuation route and provide access for emergency vehicles.
- d. The organiser and their contractors are responsible for the monitoring of gangways during the build period to maintain a clear route to ensure clear access and egress is available.
- e. The organiser and/or their lifting contractor are to deliver build material in such a manner to maintain access and egress.
- f. The venue is responsible for the removal of waste and in order to do so require access for the cleaning tractors. Refer to Guidance Note 18 Cleaning and Waste Disposal.
- g. During the build period the Event Manager will monitor the gangways and may request that gangways have to be cleared to ensure a clear route is maintained. The organisers, their contractors and exhibitors will ensure they adhere to such requests.

7. Show Open Period

- a. Any gangway shall be maintained unobstructed and available at all times and shall comply with the following requirements insofar as they are relevant –
 - i. No part of any stand, exhibit, fitting or furniture shall project beyond the boundary of the stand and no door or window on the stand shall open outwards on to a gangway.
 - ii. Where an exhibition space is not provided with a platform, the space shall be clearly defined and the exhibits shall be so arranged as to maintain uniform gangway width.
 - iii. Where raised platforms are provided the corners of the stands at gangway junctions shall be rounded off or splayed or otherwise protected so as to ensure clear passage.
 - iv. Any floor covering to a gangway shall be of a non-slippery and even surface and shall be so secured and maintained so as not to be a source of danger.
 - v. While the exhibition is open to visitors, no motor vehicle shall traverse the gangways and no hand trolley, truck or mobile shop shall be left unattended.
 - vi. No stand building or dismantling shall take place during the time an exhibition is open to visitors.
 - vii. Any night sheets used in conjunction with a stand shall be secured in a rolled up position so as not to cause an obstruction.
- b. Notwithstanding the requirements above the following are permitted –
 - i. Hanging curtains, provided that they can be parted at the middle, readily drawn aside, do not trail on the floor, do not conceal any regulatory notice and are made from material that is flame proofed in accordance with BS 5438 (Class 1).
 - ii. Apparatus or equipment for the purpose of taking photographs, films or the making of broadcasts or sound recordings provided that the means of escape is not obstructed and the apparatus or equipment is not left unattended.
 - iii. Rope or chain type barriers, fitted with automatic catches or slip connections and arranged so as not to trail on the floor when parted and with fittings that do not project into any gangway.

8. Exits and Entrances.

- a. Any exit shall be maintained completely unobstructed on both sides and available at all times and shall comply with the following requirements insofar as they are relevant –
 - i. Every entrance and exit door shall be available for use while an exhibition is open to visitors and shall not be secured closed by means of any fastening other than panic bolts.
 - ii. Any removable fastenings shall be removed before visitors are admitted.
 - iii. Any collapsible gates or rolling shutters and any inward opening doors or gates shall be opened to the full width and necessary height before visitors are admitted and shall be kept locked in that position until the exhibition is closed to visitors.
 - iv. No temporary barriers other than rope or chain type barriers shall be provided.
 - v. Rope or chain barriers shall be fitted with automatic catches or slip connections and shall be so arranged as not to trail on the floor when parted and the fittings shall not project into any gangway.
- b. The entrances, foyers, vestibules and other circulation spaces shall not be used for the accommodation of stands or other material or structure likely to impede the circulation of visitors.
- c. Where a hall foyer/entrance area is used solely for exiting purposes the following will apply:
 - i. Walls may be clad up to ceiling height without damaging the sprinkler heads.
 - ii. Removable panels or curtains must be incorporated into the cladding to allow easy access to permanent services, telephones and control panels located behind the cladding.
 - iii. Where sprinklers are evident areas behind cladding can be used for storage.
 - iv. Gangways running through the area are required to have a combined minimum width of 50% of the overall width of the entrance area and must be kept entirely clear.
 - v. Ceilings must be water permeable i.e. muslin or sharks-tooth gauze.
 - vi. Under no circumstances may exhibitors trade from stands in the entrance area.
 - vii. Standfitting, barriers etc must not be erected beneath the line of the fire shutter.
- d. Carpet should be cut back from the edge of the hall entrance door channel so that the doors can be easily opened and closed.
- e. No vehicle, trolley, refuse container, hand cart or material shall be placed outside the exit doors of the centre in such a manner as to impede the means of escape.
- f. Notwithstanding the requirements of these Regulations, no exhibition shall be opened to visitors until all gangways and exits are clear of obstructions. Not less than one hour before the scheduled opening time of an exhibition, an authorised representative of the NEC may request that the opening time be deferred until any such obstruction has been removed. This request shall be in writing and shall be served on the responsible person who shall take steps to either clear such obstruction to the satisfaction of the NEC or prevent entry to the exhibition until the obstruction has been cleared.

9. Miscellaneous

- a. Cavities and spaces between or behind stands shall be sealed off and shall not be used for any purpose other than the passage of services. Suitable traps shall be provided to give access to these services and such traps shall be fixed flush with the floor or wall and be maintained unobstructed.
- b. No empty crates, cartons, boxes, shavings or other packaging material shall be stored on, in, under or behind any stand but shall be removed when unpacking has been complete. Material to be used for re-packing shall not be returned to the stand until the exhibition has closed.
- c. If stands, decorations or exhibits obstruct exit notices, NEC shall provide additional notices, as required by the Authorities. NEC will carry out the provision and fixing of these additional notices at the expense of the show organiser.

10. Breakdown Period

- a. Following the closure of an exhibition, there may be a delay before the commencement of breakdown to ensure that the public have left the halls. The Event Manager, in conjunction, with the client will ensure that the hall has been cleared and that it is safe for the breakdown to commence.
- b. The breakdown arrangements are agreed during the tenancy but on the actual day are subject to change.
- c. The venue has the final decision as to when the VE doors are opened for contractor access and raised for forklift or any other access.
- d. The organiser is to manage the breakdown by maintaining the Emergency Gangways as they form an evacuation route and provide access for emergency vehicles.

1. General

- c. All work must be carried out in conformity with the requirements of the Rules and Regulations of the National Exhibition Centre.
- d. It is the duty of all services providers, irrespective of size, to take reasonable steps to ensure that people (visitors) with disabilities are able to access and make use of those services.
- e. All stand structures, signs, notices, etc, must be confined within the area allocated and must not project into or over the gangways.
- f. Suspension from the roof of the halls or fixing to the structure of the building may only be carried out by NEC.

2. Materials

Any materials used in the erection or construction of an exhibition or stand shall be of a suitable nature and quality in relation to the purposes and conditions in which they are used, adequately mixed or prepared and applied used or fixed so as adequately to perform the functions for which they are designed.

- a. All timber less than nominal 25mm (1") in thickness and plywood, hardboard, blockboard and chipboard less than 18mm (3/4") must be rendered flame resisting by a recognised process to a Class 1 standard when tested in accordance with BS 476 Part 7. Ply-hard and pulp boards which have been rendered flame resisting in a manner approved shall be branded with a recognised mark.
- b. The use of plastic of a grade less than Class 1, BS 476 Part 7, whether in stand construction or display arrangements is prohibited. Limited amounts of plastic materials of a grade better than Class 3 can be permitted providing the details are submitted and approved prior to construction. Artificial plants and flowers must not be used for stand dressing. Silk type flowers must be marked to indicate conformity to BS 5438.
- c. Textile fabric and other decorative material used for stand dressing must be flame proofed and comply with BS 476 Part 7 Class 1. Any fabric – unless incombustible – may not be used for partitioning stands, forming offices or the back or sides of stands, except that treated fabric may be permitted as a ceiling, to single storey stands, where not exposed to the risk of fire from lighted articles dropped from above. When used for decorative treatment of such portions, the fabric must be backed with materials similar to that required for the construction of the stands. They shall be fixed taut to the backing board and secured at floor level by a skirting board not less than 75mm deep. Curtains on exit routes must hang not less than 75mm clear of the floor and be parted in the centre.
- d. Upholstered seating must meet the pass criteria for smouldering ignition source 0, flaming ignition source 1 and crib ignition source 5 when tested in accordance with BS 5852 1990
- e. All painting must be carried out in water paint. Finishes having oil or cellulose base are not permitted to be applied on site.
- f. Paint Spraying is permitted subject to the following conditions:
 - i. Only water based paints are used.
 - ii. Adequate arrangements are made by the operator to ensure that no paint is spilt on the hall floors or sprayed or splashed on the walls, columns or other parts of the building structure or equipment.
 - iii. The operation of the sprayer shall not cause a nuisance to other persons in the vicinity of the operation.
 - iv. Any paint deposited on the building structure, floors, or equipment, in the course of decorating or by spillage or any other means, will be removed by the NEC at the expense of the Show Organiser.
 - v. Carpets and other textile floor-coverings must comply with BS 4790 and shall be secured and maintained so as not to cause a hazard. Only the NEC recommended carpet tapes may be used directly onto the exhibition floors.
 - vi. All glazing must comply with current UK Building Regulations including BS 6206 and BS 6262. Any large areas of clear glazing shall be indicated with warning stripes or dots etc. Overhead glazing shall be of wired glass, laminated glass or be otherwise adequately protected from shattering.

3. Platforms

- g. Platforms are not essential even with floor electrical or plumbing services. Where a platform is to be provided it is necessary to make proper provision for access for disabled persons. The general height may not exceed 120mm but areas may be super-elevated for display purposes. Details of super-elevated platforms, above the height of 600mm to which persons have access are regarded as a multi-storey structure and must be submitted with proof of structural integrity to the Show Organiser for approval.
- h. The flooring must not be less than a nominal 25mm thick. Flooring must, in any case be laid with close joints. Wood chipboard or blockboard used for a floor shall be of minimum thickness of 18mm. Platforms must be of a strength and stability sufficient to carry and distribute the weight of the stand fitting, stand personnel and visitors and exhibits having regard to the loading limits of the floors.

4. Building Columns

- i. Where these fall wholly or partially within the area of allocated space, the Exhibitor may encase them.

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- j. The casing must be self-supporting and may not be fastened to the column. Only the face of the casings (not the column) that fall within the allocated space may be used for display of photographs or other pictorial matter.

5. Partitions

- k. Partitions separating stands may be erected up to 4m (13'0") high, but where a wall abuts an adjoining stand and projects above the partition, it must be clad and decorated.
- l. It is the responsibility of Exhibitors who have taken "SPACE ONLY" sites to supply, erect and decorate freestanding single clad partitioning to the periphery of their sites where they adjoin an adjacent stand.
- m. The minimum height of the partitioning must be 2.50m (8'3") with the maximum height of 4m (13'0) of which the area above 2.50m (8'3") must be of double sided cladding and decorated to the choice of colour and material as agreed by the adjacent exhibitor.

6. Multi-storey Stands and Standfitting exceeding 4.0m in height

- n. Multi-storey stands; elevated gangways and stairways and standfitting exceeding 4.0m in height must be constructed to the requirements of the NEC Ltd. **Details of multi-storey stands etc., must be submitted to the show organisers, with structural calculations and a completed Certificate of Integrity by the deadline date set down by the Exhibition Organiser.**
- o. Ceilings, other than to the topmost storey shall be of solid construction of an inherently non-flammable fabric, except that treated fabric may be permitted to single storey portions of stands where not exposed to the risk of fire from lighted articles dropped from above.
- p. Cupboards formed beneath the staircase shall be lined throughout with non-combustible material.
- q. Adequate means of escape must be provided from the upper storeys of any stand. Stairways shall be at least 1m wide and if not subdivided by a central handrail, no more than 1.8m wide. There shall be not fewer than 3 or more than 12 risers per flight and the going of the landing shall not be less than the width of the stairway. Each step shall have an available tread, measured on plan, of 280mm, the risers between steps shall be infilled and shall not exceed 170mm. Any handrail(s) or balustrades must have vertical railings not more than 100mm apart or solid infills. *(Refer to NEC Guidance Note 1 - Stepped access, ramps & balustrades)*
- r. Staircases shall discharge to the ground floor at a point where unimpeded access to a public gangway is achieved. If the occupants of the upper storey have no choice but to exit by way of a single escape stair, the travel distance from any part of the storey to that stair must not exceed 12m.
- s. In all cases, calculations proving the strength and stability of structures will be required to demonstrate the following requirements of the National Exhibition Centre Regulations. In this context, the word "structure" means either a multi-storey stand or any part of a stand higher than 4m.
 - i. A loading analysis assuming an imposed load on upper floors of 5 KN per sq.m. Dead loads should be individually assessed for each floor.
 - ii. A stability check assuming a lateral load equal to 2.5% of the total vertical load applied at upper deck level.
 - iii. Stress and deflection checks for all structural members.
 - iv. Details of connections, bracing members and floor carcasing.
 - v. In all cases a wind load of 0.15 KNm² shall be accommodated.**Note: In certain circumstances when an upper area is not freely accessible to general exhibition visitors and the number of persons shall not exceed 1.5 sq m per person, a minimum imposed load of 3.5 kNm² will be accepted. On such occasions the stand-holder will be required to demonstrate a robust system of controlling access onto the upper area to avoid exceeding the stipulated number of persons.**
- t. Base plates must be designed to limit the compressive stress on the floor of the building to a maximum 20t (200KN) per sq m unless the total load on a base plate is 5t (50KN) or less, in which case a minimum size 300mm square plate may be used; bolts are not acceptable as a means of preventing uplift of bases.

7. Exits from stands

- a. The exit from any stand (or if there is more than one exit, each exit) shall not be less than 1.0m wide (nominal) and shall discharge to a gangway.
- b. The maximum travel distance from any part of a stand to a gangway shall not exceed 12m. unless there is an escape route in the opposite direction. *(Where provision is made for a closely seated audience refer to NEC Guidance Note 6)*
- c. No floor shall be constructed having a slope in excess of 1 in 12.
- d. Each exit shall be indicated by an exit notice as follows –
 - ii. All exit notices shall be sited in conspicuous positions above or adjacent to all exit doors and openings and directional signs and notices shall be provided and sited to indicate the route of escape.
 - iii. The size of letters of exit notices shall not be less than 125mm.
 - iv. In any part of the centre or on any stand where the normal lighting may be dimmed or extinguished while the public are present, exit notices shall be illuminated internally and conform to the relevant British Standard.
- e. Doors and gates forming part of an escape route shall be provided with a vision panel of clear glazing at sight level and must be hung to open in the direction of escape, clear of any steps, landings or gangways. Where necessary doors must be recessed so as not to open onto or obstruct the required width of any gangway or

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other escape route. Such doors shall be free from fastenings other than panic bolts in accordance with BS EN 1125.

8. Night Sheets

It is recommended that only night sheets made of netting or transparent material should be used. These must be flameproofed to BS 476 Class 1. Arrangements must be made for the storage of the night sheets within the area of the stand during the hours the show is open. They may not be left, although rolled, in any position where they will cause an obstruction or interrupt line of sight.

9. Rubbish Removal (See Guidance Note 11 – 11.11 Waste Disposal)

The exhibitor or its contractor must remove any packing material or other litter brought into the site and all debris arising from the construction or dismantling of standfittings, etc, from the premises. Escape gangways must be kept clear of obstructions at all times.

All Temporary Demountable Structures erected and or installed at the NEC/ICC/NIA shall comply with The Institution of Structural Engineers - Temporary Demountable Structures Guidance (Second edition March 1999).

Available from: The Institution of Structural Engineers, 11 Upper Belgrave Street, London SW1X 8BH

1. Introduction and scope of the guide

- a. The Guide is concerned with the structural safety and adequacy of demountable structures, also the overall planning and management of events.
- b. Demountable structures are used for a variety of functions; some may carry substantial numbers of persons.
- c. Demountable structures are often required at short notice making it necessary for decisions to be made relatively quickly.
- d. The client is the person or organisation who procures a demountable structure for use at an event; this may be the owner of the venue, site or building where an event takes place but is not necessarily the event organiser who promotes and manages an event.
- e. The achievement of safety requires judgment based on experience. It is not merely a matter of the rigid application of standards.
- f. The approach to risk management should always be one of flexibility and judgment.
- g. An objective assessment by a competent person is required.
- h. A person shall be regarded as competent where they have sufficient training and experience to take responsibility for an identified task. It is important that they have a detailed knowledge of the type of structure, and particularly of those matters that are essential for its structural reliability. A competent person will have an awareness of the limitations of their own experience and knowledge.

2. Principal responsibilities

- a. Responsibility for the safety of persons attending an event lies with the client. The client cannot pass on the responsibility for safety to any third party.
- b. The client must make sure that competent persons are employed to design, supply and erect the temporary demountable structures.
- c. Evidence of the design process being carried out should be available. Where structures are intended for repetitive use, a standard design is acceptable provided that evidence of the original design is available.
- d. An independent design check of a standard system must be carried out by a chartered engineer. A check of the design of any special or non-standard arrangement of elements must be carried out by a chartered engineer.
- e. It is the responsibility of all those concerned with temporary demountable structures to exercise care in their work and in all matters relating to the safety of the people who may be using them.
- f. A competent person is required to confirm that a structure has been erected in accordance with the original design.
- g. A completion certificate is required to confirm that the appropriate independent erection checks have been carried out and that a temporary structure has been erected in accordance with the design.
- h. A competent person representing the event organiser must be responsible for implementing a safety plan.
- i. A documented safety plan must be prepared identifying the hazards and associated risks relating to the temporary demountable structure for the proposed event, setting out responsibilities for managing the risks.

3. Hazards and risks relating to demountable structures

- a. All employers are required under the Management of Health and Safety at Work Regulations 1992 to carry out an assessment to identify hazards and risks that could cause injury to the employees or the public.
- b. A structural means of providing a safe route from any part of a demountable structure to either a place of safety or a final exit (means of escape) is essential.
- c. Crowds may impose significant vertical and horizontal loads on temporary structures; crowd behavior in emergencies is also an important consideration.
- d. A plan for managing all risks should be prepared. The most important aspects of a safety plan are its actions and the management of these actions.
- e. It is particularly important that proper consideration is given at the design stage to providing good sightlines.

4. Statutory control

Venue owners and event organisers are principally responsible, in law, for complying with public safety legislation while the structure is in use.

5. Procurement and use

- a. The client should provide the contractor for the demountable structure with a written technical specification of requirements.
- b. Last minute changes cause the majority of problems and must be avoided.
- c. It is the client's responsibility to provide temporary structures (and exits) that are safe for their users.
- d. The client should make sure that competent persons are employed to design, erect, inspect and dismantle the structure.
- e. Design documentation must be provided by the designer of a temporary structure that enables the basis of design to be clearly understood and the design criteria to be verified. May include drawings, calculations, certificates, statements of loading, etc.

6. Ground and site conditions

- a. Designers should be aware that the performance of the ground under short-term loading can be significantly different from that when the loading is applied for a considerable period.
- b. Clients should give basic information on ground conditions but it is likely that a competent person will be required to determine the allowable bearing capacity. Local knowledge is invaluable.

7. Erection, inspection and dismantling

- a. The critical erection stages for temporary demountable structures should be identified during the design process. An erection method statement, together with drawings, is necessary for this purpose.
- b. A risk assessment must be carried out by a competent person to identify the hazards associated with the design, construction or operation of a temporary demountable structure, determining the level of risk for people constructing or using the structure, and assessing the likelihood and consequences of an incident.
- c. The structure should be erected safely in accordance with the erection method statement and drawings provided.
- d. Bracing should be arranged to provide stability at all stages of erection.
- e. Inspection is essential to maintain the safety and integrity of a demountable structure.
- f. An inspection of a temporary structure must be made by a competent person after every erection of the structure. Where the erection check is carried out by a member of the erection team, evidence of that person's competence should be made available. The results of this inspection should be recorded on the completion certificate.
- g. Damaged or defective components should be clearly marked and removed from the site as soon as possible.
- h. The repeated use of demountable structures will inevitably lead to general wear and tear in addition to damage or distortion that may occur during handling, transportation, assembly and dismantling.

8. Wind loading

- a. The design wind speed must accommodate the maximum wind speed that a temporary structure is designed to withstand.
- b. Contractors and suppliers of temporary demountable structures should have access to a reliable local weather forecasting service if wind speed monitoring is to be carried out during an event.

9. Grandstands

- a. Design of temporary grandstands and seating must be the responsibility of a competent person. Before assembly, the design should be independently checked by a chartered engineer.
- b. Demountable framed structures must be designed to form a robust and stable three-dimensional structural arrangement that will support the design loadings for the required period with an adequate margin of safety.
- c. Demountable structures must possess sufficient transverse and longitudinal stiffness and strength to resist wind loads, notional horizontal loads and other dynamic loads induced by spectator movements.
- d. Dynamic loads will only be significant when any crowd movement is synchronised and periodic. If the synchronised movement excites a natural frequency of the structure, resonance will occur which can greatly amplify its response.

NOTE: - The design must include provision for emergency lighting of escape routes.

Combustible materials must not be stored underneath raised areas.

10. Stages and barriers

- a. Temporary stages and barriers must be assembled in accordance with plans and specifications drawn up by a competent person. The calculations involved in drawing up the plans and specifications should be independently checked by a chartered engineer.
- b. Design of any temporary staging system is essentially a consideration of the balance between weight, strength, fabrication cost and deployment cost of the individual components. In such a consideration, safety must not be compromised. All such structures must be certified as fit for purpose by a competent person.
- c. Lack of handrails and poor stairs are the biggest causes of stage-related accidents indoors.
- d. The area immediately in front of a stage presents particular hazards for a standing audience.

11. Ancillary special structures

- a. Some of these structures differ in that during an event they are located in the middle of a venue and are surrounded by the audience.
- b. As with other temporary structures, an independent design check by a chartered engineer should be carried out.
- c. It is paramount that the design of the structure is appropriate for the situation and that the structure is built strictly in accordance with the design.
- d. All activities relating to the structure must conform to the requirements of The Work At Heights Regulations 2005. In particular with respect to guard rails, toe boards, barriers and similar collective means of protection.

12. Tents and marquees

- a. Tents and marquees should be capable of withstanding all forces that they may reasonably be expected to encounter. Of these, wind is the most important from a design point of view.
- b. The design of new large marquees should be carried out by a competent person and subject to an independent check by a chartered engineer.
- c. Particular attention should be given to the strength and soundness of guy ropes and anchors, including the anchorage in the ground.
- d. Anchors are a critical aspect of marquee structures.
- e. After erection and before use, a tent or marquee should be thoroughly inspected by the supplier.

Note – The NEC has specific requirements in addition to The Institution of Structural Engineers - Temporary Demountable Structures Guidance Document.

Please refer to NEC Guidance Note No. 10 Temporary Demountable Structures Specification

NEC Safe Exhibition Process - NAA Guidance for Rigging (Overview)

Good quality information submitted within a reasonable period before an event is the key to forward planning and efficient, safe operation on site. It cannot be over-stressed that accurate, timely information is a major factor in improving safety and reducing conflict on site.

Introduction

This rigging guidance has been produced by members of the National Arenas Association for use in UK venues. Its purpose is to provide:

1. Guidance to venue operators on a wide range of safety matters relating to rigging, in order to ensure the health, safety and welfare of anyone working in or visiting the venue.
2. Advice to riggers and rigging companies on general venue requirements relating to rigging and associated activities.
3. Advice and guidance on the use of personal protective equipment (PPE) and commonly used rigging equipment.

1. Legislation

- 1.1 Health & Safety legislation, Approved Codes of Practice, guidance and general "good practice" apply to rigging operations. The overall aim is to secure the health, safety and welfare at work of employees, the self-employed and all other persons who may be affected by work activities (e.g. audiences).
- 1.2 There are requirements under Local Government legislation, Conditions of License etc. that vary from venue to venue. Consultation with the venue is essential.
- 1.3 The Venue reserves the right to inspect all rigging, working methods and equipment to ensure compliance with legislation and codes of practice, and prohibit the use of non-compliant equipment and working methods.

2. Responsibilities

2.1 Employers/client responsibilities

Effective communication between all employers is paramount. An employer has a duty to ensure the health, safety and welfare of his employees and that the activities being undertaken do not affect the safety of others.

The Client cannot absolve himself of the principle duties outlined above by contractually deferring them to his contractor or sub-contractors.

2.2 Employees / Self-Employed responsibilities

These individuals carry a responsibility for ensuring that all equipment being used has been properly maintained and inspected; whether this equipment is owned by the individual or by a third party.

3. Competency

Rigging operations shall be undertaken by competent persons who are qualified by training and experience. A rigging company should have an authorised person to advise on rigging issues. Ground riggers should have a level of knowledge to enable them to undertake the inspection of chains and other equipment to prepare them for lifting.

4. General Safety Precautions

4.1 Working underneath rigging operations

Where possible, all personnel should be excluded from beneath areas where overhead rigging or lifting operations are taking place.

4.2 Working at height

Duty Holders must avoid work at height where they can, use work equipment or other measures to prevent falls, use work equipment or other to minimise the distance and consequences of a fall.

4.3 Hours of work

Employers, Promoters, Production Managers and Venue Managers have a duty to ensure that Riggers and Rigging Supervisors get adequate rest periods.

5. Personal protective equipment

Personal Protective Equipment (PPE) for working at height must be provided by employers. PPE for rigging activities must be suitable for both work positioning and fall arrest. Venues should have in place a rescue plan.

6. Lifting equipment

All lifting equipment / lifting tackle shall comply with all current relevant legislation and shall be of sound material and construction, free from defects and fit for the purpose for which it is to be used. Rigging equipment should only be used by trained competent individuals, or under the supervision of such individuals.

7. Examination and Inspection of equipment

Examination and inspection of lifting equipment is covered under Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) and Provision and Use of Work Equipment Regulations 1998 (PUWER).

8. Working Practices

- 8.1 A competent rigger shall undertake all rigging work in a responsible manner. Riggers must ensure that they comply with venue specific requirements.
- 8.2 Riggers must ensure that they comply with venue specific requirements.
- 8.3 Care should be taken to protect building steelwork.
- 8.4 All equipment used shall have its SWL clearly marked and shall be suitable for the load to be applied. Applied loads should take account of the safe weight of the rigging and hoisting equipment.
- 8.5 In situations where bridling is unsuitable the use of spreader beams should be considered. Where standard truss systems are employed for this purpose, they shall be subject to a structural report, where specifically designed or manufactured beams are employed, a certificate of independent test and examination must be available for inspection.
- 8.6 All suspended truss systems should have independent structural certification and should only be used with certificated design parameters. Particular attention shall be paid to the assembly of truss sections to ensure that braces are aligned correctly as per manufacturers' recommendations and all connectors correctly fitted.
- 8.7 The slinging of suspended equipment shall be undertaken to manufacturers' recommendations and in accordance with the Code of Practice for the Safe Use of Lifting Equipment.
- 8.8 Main areas for rigging operations are to be clearly defined and access to such areas shall be restricted to competent personnel directly involved in the operation. Clear and adequate communication between persons working at high level and ground crew is to be maintained. This is particularly important when the actions of other personnel could endanger the safety of rigging personnel e.g. sound and lighting crews. When at the site of rigging operations, an area shall be designated for the temporary storage and assembly of rigging equipment. Safety signs provided by the venue shall be positioned at the entrance to all areas of access during build-up and breakdown operations.
- 8.9 Any signs supplied for rigging shall be checked to ensure they are fit for suspension. The suppliers of such signs shall be responsible for the integrity of the sign and its suspension fittings. Screw-in eyes are not acceptable for this purpose and the venue reserves the right to refuse to allow the suspension of any signs where the suspension fitting supplied is inadequate. Due to the flimsy nature of materials used, paper signs may only be suspended if constructed from 'Tyvec' or a similar approved material. Drop weighting to the bottom of banners may only take place when the weighting is completely sealed within the banner by positive means, such as stitching or vinyl welding. Provision of bottom drop weight pockets by gluing is not acceptable.

8.10 Due to the potential structural damage that can be caused by catenary wire, the rules for installation of catenary wires should always be checked with the venue management. Catenaries should never be installed when public are in the halls.

8.11 Secondary or "Safety" suspensions may be required in certain locations. When required, the secondary or safeties will be installed to bypass the mechanical lifting unit, as a minimum, in case of mechanical failure.

9. Insurance and public liability

The minimum level of liability cover required by rigging companies working within venues will be set by the venue's insurers and may be increased depending on the nature of the services to be supplied.

10. Access equipment

All access equipment shall be used in accordance with manufacturers' instructions and recommendations. The SWL of access equipment shall be permanently displayed on the equipment. It is the responsibility of the operator of the equipment to ensure that the carried weight does not exceed the SWL.

Special attention should be paid to the correct assembly and stability of ladders and other static forms of access equipment, including the use of outriggers where fitted.

Operators of Mobile Elevated Work Platforms (MEWPS) for use in rigging related operations are required to be in possession of a current valid certificate of Training Achievement and Competency of Operations. Daily checks, including fuel, are the responsibility of the operator. If different operators use the equipment during the course of the day then all operators must carry out a pre-use check.

Standing directly on forks, attachments or pallets, not intended for such applications, is strictly forbidden. Any accidents involving access equipment used for rigging purposes shall be reported to the venue immediately.

10.1 Truss/caving ladders to access flown truss structures must be used in conjunction with inertia type fall arrestors.

10.2 If it is necessary for an operative to leave a MEWP at high level, he / she must identify a secure point of anchorage for the safety harness lanyard. The lanyard shall be secured before leaving the platform. When returning to the platform, the operative must ensure the lanyard remains in position until the transfer to the carriage has been completed.

11. Planning and provision of information

The key to safe and successful rigging operations lies in effective forward planning and exchange of information. The Client should ensure that accurate information regarding the loads to be rigged is provided to the venue as soon as possible. This is irrespective of whether the rigging will be carried out by venue riggers, touring riggers or outside contractors. Information should also be provided on any moving loads, loads involving people or anything else out of the ordinary. In turn, the venue should highlight any problems, restrictions, regulations and other requirements.

11.1 Lifting Equipment Documentation

Under LOLER, certain information must be kept and made available for inspection. All lifting equipment must have appropriate documentation confirming that it has been inspected / examined in accordance with the provisions of LOLER.

11.2 Risk Assessment

LOLER refers specifically to the Management of Health and Safety at Work Regulations regarding the requirement to carry out a "suitable and sufficient" Risk Assessment of lifting operations. The Risk Assessment must be documented and available for examination.