STOP THE DROP - DESIGN

WAH Aspects of Design

Good design is important when considering working at height. This includes consideration of the structures to be built, the layout of the floorplan to allow space for access and safe working and the design of the task itself.

A designer is an organisation or individual whose work involves preparing or modifying designs for construction projects, or arranging for, or instructing, others to do this. Designers include parties who plan the stand or areas to be constructed, engineers, or the organiser who creates the show floor plan.

Designers make decisions that can significantly reduce work at height risk during both the construction, use and the dismantling phases of a show. A key factor to consider when designing a structure to be built may be the time available for this, as it may be limited.

In specifying the design of a structure, the designer should understand how the structure can be constructed, used and dismantled safely.

Safety Considerations

Safety considerations should be part of the design process. Designers should take into account the general principles of prevention when preparing designs- considering risk elimination and reduction.

Considerations should include:

- A review of each design feature/option to determine any associated construction hazards and risks, considering generally the methods that might be used by a contractor in the construction/execution of each option (see appendix 1 template to record safety related design decisions)
- A systematic approach to "design out" those risks that can be avoided.
- An assessment of residual risks (ie those that remain after controls applied) and then mitigate them by methods (referred to in hierarchy of prevention) other than Personal Protective Equipment (which should be used as the last resort).

The consideration to remove the safety and health risks from the design is not to limit designers in terms of their creativity but to ensure that the designer, in preparing a design, avoids foreseeable risks to the safety and health of those who carry out construction work including dismantling or who visit or work within the structure during the event.

RAG lists are practical aids to designers on what to eliminate, avoid and encourage. Appendix 2 RAG list identifies some aspects of work at height that should be taken into account at the design stage.

Typical WAH Design Considerations

- Can the need to work at height be removed?
- Can materials that are easier to handle be specified? e.g. lighter weight components
- Consider the work process and the equipment required for heavy lifting.
- Can edge protection or other features that increase the safety of access and construction be designed and installed?
- Can anchor points for installation of life-line or safety harnesses be mounted where work platforms cannot be installed?
- Can floor openings, if any, be minimised?
- Can adverse weather conditions affect the ability to safely construct e.g. rain or wind during work on outdoor structures
- Can there be early installation of access to 2nd storey, such as stairs, to reduce the use of ladders or scaffolds?

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Contractor Considerations

While designers should have a reasonable understanding of construction methods, they may not have expertise in regard to the particular means, methods and procedures of construction that the builder must possess; the role of the contractor therefore is to plan to execute the construction safely by assessing the risks posed and preparing a safe method of work for workers to follow.

The designer should provide sufficient information to the building contractor to enable a reasonable standard of performance by a competent contractor. There is no "right or wrong" way for designers to provide information to others. It will depend upon what the information is, and to whom it is being addressed.

Notes on drawings are good, but will the person who will end up using the drawing be able to understand them in that format?

Providing a sequence of construction may assist others. The designer may also be a contractor too, carrying out the work of their own design with their own employees. At the end of the day, the information should be project specific, and concentrate on the significant risks.

Any residual risks highlighted at the design stage should be documented and brought to the attention of the contractor commissioned to carry out the works.

The organiser is likely to be the party with responsibility for creating the floorplan for the show and working at height needs should be incorporated into the process of floorplan development.

The detailed, comprehensive identification of hazards and control of risks on site is the responsibility of the contractor(s).

Examples Of Design Features That May Affect Safety Risk Levels:

- Adequate aisle width built into the floorplan to allow safe access for WAH equipment and working tasks.
- Structural frames: minimize connections at height by facilitating off-site and/or ground level assembly.
- Structural frames should take into account the loading that will be applied after construction eg hanging heavy exhibits.
- Structural designs should facilitate as far as reasonably practicable the incorporation of guardrails or similar edge protection.

SEE STOP THE DROP GALLERY FOR IMAGES OF GOOD DESIGN EXAMPLES - www.stop-the-drop.co.uk/gallery

APPENDIX 1 - AN EXAMPLE OF A TEMPLATE FOR A DESIGNER TO RECORD DECISIONS TAKEN IN RELATION TO SAFETY RISK LEVELS DURING CONSTRUCTION

DESIGNERS ASSESSMENT OF SAFETY DURING CONSTRUCTION AND DISMANTLING			
Company Name:	Project: Ref:	Designer	Date
Design Stage			
Hazard reference no.	Hazards identified	Risk reduction action	
Items to be drawn to the attention of the contractor/s			

APPENDIX 2 - RAG LIST FOR WORKS AT HEIGHT

RAG lists are working at height practical aids for parties on what to eliminate, avoid and encourage when working at a show.

Red lists:

Hazardous aspects that should be eliminated from the project.

- Structures that require more construction/dismantling time than currently available
- Structures whose construction requires equipment that cannot be used or made available at the work site
- Processes giving rise to large quantities of dust (such as dry cutting, sawing, sanding)
- Structures that involve temporary instability during erection or dismantling.

Amber lists:

Aspects to be illiminated or reduced as far as possible and only allowed if unavoidable.

- Stand components that are not pre-constructed
- Heavy construction components which cannot be handled using mechanical lifting devices (because of access restrictions/floor loading).
- Site layout that does not allow adequate room for delivery, use and storage of working at height equipment.
- Lifting large and heavy glass panels.
- Stand structures above 4m

Green Lists:

Aspects to be positively encouraged.

- Provision of edge protection where there is a foreseeable risk of falls from a height.
- The use of engineering controls to minimise the use of personal protective equipment.
- Practical and safe methods of painting tall structures
- Decking and erection of handrails of 2nd storey lifted into place already constructed
- Off-site fabrication and prefabricated elements to minimise on site hazards.