

Structural Performance Specifications

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. 15th edition, 2017.
3. AISI "Cold-Formed Steel Design Manual American Iron and Steel Institute. edition 2017
4. AISC 360-16 "Specification for Structural Steel Buildings".
5. AISC 303-16 "Code of Standard Practice for Steel Buildings and Bridges".
6. Research Council on Structural Connections (RCSC) "Specification for Structural Joints Using High Strength Bolts. edition 2014.
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 DI.1/D1.1M-2010" 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 authorised to practice in the jurisdiction where the 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

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

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

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

1. Loads:

Dead Load	<ul style="list-style-type: none"> • Self-weight of all components • Weight of roof cladding and side walls • Any additional permanent loads.
Live Load	<ul style="list-style-type: none"> • ASCE 7-05 • Areas of Public Assembly: Uniform load = 4.79 KN/m² • Minimum roof live load/ sand = 0.6 KN/m²

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

2. Load Combinations:

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

3. Serviceability:

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

Minimum vertical natural frequencies:

A- 3 HZ for floors

B- 5 HZ for stairs

4. Ceiling Rigging:

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

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

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

5. Proprietary Outdoor Tents:

Submit technical data sheets of any proprietary outdoor tent with full details pertaining to structural design and performance. Structural calculations of tent overall stability and required ballasts/counterweights shall be submitted for review and approval.

Tent use shall be in strict compliance with corresponding technical manual and design limitations. Example: Parapet walls shall not be added to a proprietary tent structure not designed with such provision. The fabricator is responsible for selecting and completing details of structural-steel connections required to withstand specific design loads and submit for approval. An experienced steel detailer and qualified professional engineer shall select and complete the design of elements and connections.