



Rigging Working Group

**BSR E1.2 - 202x, Entertainment Technology - Design, Manufacture and Use of Aluminum Trusses and Towers
Public Review 1 Comment Resolutions**

Reference document: BSR E1.2 - 202x, *Entertainment Technology - Design, Manufacture and Use of Aluminum Trusses and Towers* (Document number Rig/2019-2022r4a)

ANSI Public review period: 08 August 2025 through 22 September 2025

Question: In your opinion, do you think the requirements of BSR E1.2 - 202x, *Entertainment Technology - Design, Manufacture and Use of Aluminum Trusses and Towers* (DCN Rig/2019-2022r4a) are reasonable, and adequately address the intended subject matter?

Please answer the question using one of the options below. Select “Yes”, “Yes, but...” (provide comments to support your opinion), or “No, with reasons” (the document’s requirements are unacceptable or unreasonable). Note that you are offering your opinion, which is in no way construed as a vote of acceptance or approval.

Responses:

Richard Nix	No, with reasons
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Individual Comments:

No.	Ref. section	Comment	Resolution
1	1 – Scope (3 rd para):	Clarify the meaning of “curved shell structure”, because many truss structures are comprised of curved truss modules that should meet the same requirements of non-curved truss modules.	Agree in principle. Revise for clarity.
2	1 – Scope (3 rd para):	Clarify the specific thresholds for “severe thermal or chemical conditions.” Many truss structures are installed in extreme climate conditions with temperatures below freezing or exceeding 130-degrees F – is that considered a severe thermal condition?	Reject. The ranges described in this comment are not typical for structures in the entertainment industry. Use in those conditions would come with an expectation that additional review would go into the project before installation.
3	1 – Scope (3 rd para):	Rewrite to state (bracketed text to be addressed as deemed appropriate for the two previous comments): <i>The <u>standards requirements</u> described herein do not cover the detail design of castings, [curved shell structures, or to structures subjected to severe thermal or chemical conditions]. This These requirements standard is not intended to be used for do not cover the design of containment vessels, airborne structures or vessels, or for any <u>truss</u> application where a other <u>specific standards</u> exists.</i>	. Agree in principle. Language changed for clarity. The requirements described herein do not cover the detail design of castings, hard-clad curved shell structures or structures subjected to severe thermal or chemical conditions. These requirements do not cover the design of containment vessels, airborne structures or vessels or for any application where other specific standards exist.
4	3.2.2	Rewrite as follows: <i>Truss structure design shall meet the</i>	. Agree in principle.

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		<i>requirements of 3.2.2.1 through 3.2.2.7, as applicable to the intended conditions of use. Note, there is a growing trend to avoid phrases such as “include the following”, because the demarcation of where “the following ends” is often unclear, and arguments have been made that <u>everything</u> following - to the end of the document – applies.</i>	Truss structure design, at a minimum, shall meet the requirements of 3.2.2.1 through 3.2.2.7 as applicable.
5	3.2.2.2	Verify the most current reference for these standards (correlate with my comment re: 4.3.1).	Accept.
6	3.2.2.6	Suggest referencing ES1.19 and E1.39 as “most current version” because they are, or will soon be in revision. Alternatively, mark a placeholder to update the current reference year if they are approved before this document is approved.	Reject. We are unable to predict what could be added to future versions, which could nullify portions of this standard.
7	3.2.3	The requirement reads as if it is permissible interchange between LRFD and ASD methodologies during the design process. Is it appropriate to require choosing between either LRFD or ASD throughout the design process, (pick one or the other, without mixing methodologies), and allowing physical testing anytime the chosen methodology is inappropriate?	Agree in principle. Add clarity to the need to not intermix analysis methods. 3.2.3 All conditions of use considered in design shall be outlined in the engineering documentation. Design strength may be established using either Load Factor Resistance Design or Allowable Stress Design methods. Additionally, design strength may be developed by physical testing as outlined in ADM-2020.
8	3.4.3	Change “and/or” to “and”.	Accept in principle – changed and modified clause to add clarity 3.4.3 Engineering calculations, design notes and test results as applicable that demonstrate compliance with this standard for the intended load conditions and uses shall be developed and maintained.
9	4.3.1	Rewrite as follows: <i>All welders involved in producing modules through manual welding processes shall be certified in the processes described in AWS Standards D1.1/D1.1M:2020 for steel, and D1.2/D1.2M:2014 for aluminum, each as applicable to the weld forms used in the module production, or shall be certified in accordance with an equivalent assessment and certification program. All robotic welding operators shall meet the requirements set forth in AWS D16.4M/D16.4:2025, Specification for the Qualification of Robotic Arc Welding.</i> Welders are certified by Certified Welding inspectors, not by D1.1/D1.2. The requirement is ambiguous as written, because neither D1.1 nor D1.2 “certify” per se – rather, they are the weld specifications that must be demonstrated in order to be certified by a Certified Weld Inspector who has been certified in accordance with QC1:2016-AMD1 - <i>Specification for AWS Certification of</i>	Accept in principle. We believe that the information contained within the welding standards spell out the qualifications and requirements for certification. Clause has been updated to clarify the standards to which qualification information will be drawn. 4.3.1 All welders involved in producing modules through manual welding processes and all robotic welding operators shall be certified in accordance with the requirements in AWS Standards listed in 3.2.2.2.

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		<i>Welding Inspectors or B5.1:2025 - Specification for the Qualification of Welding Inspectors.</i>	
10	4.6.2	Rewrite as follows: 4.6.2 <i>The manufacturer shall <u>also</u> affix to each section of truss an <u>a unique</u> engraved or embossed marking which will provide permanent traceability of each module. This will be in addition to the requirements of 4.6.1.</i>	Reject. We do not feel this change adds any clarity to the clause as written and may add some additional confusion as it does not make clear that 4.6.1 is also required.
11	4.6.5	Add “The” to the beginning of the sentence: “ <u>The</u> user shall...”	Accept.
12	4.7.1	As per section 5.4.2, accordingly change the bulleted list to an alphanumeric list a) through l) . Rewrite the sentence as follows: <i>Manufacturers shall produce User Information Sheets or documentation for each type of truss and tower. At minimum, the documentation shall include the requirements of 4.7.1 (a) through (l).</i> This removes “the following list” wording. Consistently close each requirement with either a comma or a semi-colon, unless the requirement is a complete sentence, then close it with a full-stop (period). Generally, we prefer list items to be written in such a way that each list item is terminated the same way.	Accept
13	5.1 Intent	Remove the word “sufficient”. Providing [enough] information to ensure is already sufficient without being redundant.	Accept
14	5.2	Rewrite as follows: <i>The user shall obtain, read, and keep on file <u>the manufacturer’s User Information Sheets from the manufacturer required by Section 4.7.1, for each type and size of truss and tower. As specified in Section 4.7.1.</u></i>	Accept
15	5.3.2	Coordinate 5.3.2 with 4.7.1 (l) with respects to permissible powder coating.	Reject. 4.7.1 (l) requires information tied to a specific module be provided to the purchaser. 5.3.2 is guidance for the owner if they elect to have their truss powder coated.
16	5.4.1.1	Delete “and” from “and/or”.	Accept
17	5.4.2	Review each list item’s termination and use the same termination consistently.	Accept
18	5.6.1	Rewrite as follows: Proper-Layout drawings with showing anticipated design loads shall be prepared for each use of the system, and shall include the following minimum information required by 6.6.1 a) through d).	Accept in principle. Modified clause for clarity. 5.6.1* Layout drawings with anticipated design loads shall be prepared for each use of the system and shall include the following: a) accurate overall dimensions, b) the locations of applied loads, c) the locations of support points, d) the reactions at each support point with supporting calculations.

No.	Ref. section	Comment	Resolution
19	6 – User Inspection (2 nd para)	rewrite the first sentence as follows: <i>Inspection criteria listed in this document shall be used in conjunction with any manufacturer specified inspection items <u>and the inspection criteria required by section 4.7.2.</u></i>	Accept
20	6.1	Replace the word “will” with the word “shall”.	Accept