



Second Public review comment summary
BSR E1.4-2, Entertainment Technology—Statically Suspended Rigging Systems
Entertainment Services and Technology Association

Referenced document: BSR E1.4-2, Entertainment Technology - Statically Suspended Rigging Systems (document Rig/2015-2023r4f)

ANSI public review period: 03 May through 17 June 2019

Question: BSR E1.4-2, Entertainment Technology - Statically Suspended Rigging Systems (document number Rig/2015-2023r4f), is being offered for its second public review. Do you feel that the requirements in it are adequate and reasonable, and therefore recommend its acceptance as an American National Standard?

Please indicate "Yes" (accept it), "Yes with comments," or "No with reasons" (don't accept it).

Name	Representing	Yes	Yes with comments	No with reasons	Comments only
Brandon Creel	Starlite			X	
Stephan Wood	Tait			X	

(Comments, sorted by referenced clause)

#	Commenter	Section	Comment	Proposed resolution
1.	BC	1.3	Change "...audio enclosures..." to "...audio equipment, loudspeakers..."	Accept
2.	BC	1.5	Exclusions: Add fall arrest systems, fall restraint systems, and curtain attachment to traverse track carriers.	Accept in principal: Section 1.3 Application does not make any reference to personnel safety equipment and 1.5.2 does not allow for dynamic loads. A4.4.4 was modified to be more detailed about curtains and traverse track carriers.

BSR E1.4-2 – 201x, second public review comment summary with approved resolutions

#	Commenter	Section	Comment	Proposed resolution
3.	BC	2	Definitions: Add Peening	Accept. Added definition for Peening: An intentional use of a punch, chisel or other tool to slightly deform or foul the machined surface (e.g., threads on a bolt or nut) preventing the fastener from completely loosening.
4.	BC	4.1.4.2	change "...equivalent rating." to "...equivalent grade or rating."	Accept
5.	BC	4.2.2.1.2	Does "...use a mechanical locking...clamp." intend to cover a double flange beam clamp with a single bolt and nut? I propose to change the wording to "All double flange beam clamps shall have an adjustable style tensioner or use a bolt and nut with a thread locking method."	Reject. The intent of the document is to maintain performance based standard and this wording would be too descriptive and possibly limiting alternative design solutions.
6.	BC	4.2.2.1	Bridling from single flange clamps is a bad idea. I propose to strike this clause. If rejected, then I suggest adding the following, "...only be used when the resultant load bears into the beam and a retaining strap is installed."	Reject. The qualified person designing is required to consider the single point failure hazard. A retaining strap maybe installed to reduce the hazard in a particular design but should not be required.
7.	BC	4.2.5.2	I'm not aware of any shackle manufacturer providing any documentation (or guidelines) on how to provide a redundant fixing means. So how can we perform it in accordance with the manufacturers? I propose to strike "The fixing method shall be performed in accordance with the manufacturer's recommendations." For an installation, I expect the manufacturer to direct designers/users/installers to their bolt-type shackles.	Accept. The second sentence has been removed.
8.	BC	4.3.1.5.4	I believe the intent here is to requires all parties to use swage fittings that retain 100% of the strength of the wire rope, where aluminum swage fittings do not. Add wording to say so, for example, "...by the manufacturer to retain 100% of the strength of the wire rope."	Accept in principal: Harmonized with E1.4-1 for clarity. "Swage-type wire rope fittings shall be selected and applied in accordance with the fitting manufacturer's recommendations, based on the rope material, construction type and environmental considerations." There is no intent to require swage fittings to retain 100% of the strength of the wire rope.

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9.	SW	4.3.1.5.4	Delete 'and' in "Swage fittings shall be installed in a manner and as specified by the manufacturer."	Accept in principal: The sentence was changed to harmonize with E1.4-1.
10.	SW	4.3.1.5.4	Delete the last sentence, " Aluminum swage fittings shall not be permitted for overhead use. " I think this sentence should either be omitted or qualified in an annex note listing any particular hazards associated with this material selection. The overhead use of aluminum ferrules in turn back eyes is widespread, particularly in Europe (in accordance with EN13411-3:2004), the Middle East and Asia. Additionally, some rope manufacturers would recommend the use of aluminum when terminating certain rope constructions.	Accept in principal: Harmonized with E1.4-1 "Swage-type wire rope fittings shall be selected and applied in accordance with the fitting manufacturer's recommendations, based on the rope material, construction type and environmental considerations."
11.	BC	4.3.2.3	As stated above in "2 Definitions", define peening. Also, add "thread locking adhesive" to the list of thread locking methods.	Accept: See 4.2.3.3 & 4.3.5.3 Fixed numbering error at 4.2.3.3 & 4.2.3.4
12.	BC	4.3.2.5	Loading along minor axis shall not be permitted (e.g. Chain run over a hard edge) - Provide period at end of statement. - Chain slings in the rigging industry are often used. Standards and manufacturer's permit this usage as long as the chain is protected from the hard edge, or adequately sized (and engineered) for the purpose. We often use alloy chain slings around building c-channel. Other clamps and hardware types don't work well with c-channel but chain slings designed and specified with sufficient load rating do work well. I propose changing the statement to, "Loading along minor axis shall be avoided whenever possible unless protection is provided (e.g. chain run over a hard edge) or chain has been selected with sufficient excess capacity to support derating. A registered design proposal should review such applications."	Accept: Provided a period at end of the statement. Accept in principal: Created an annex note A4.3.2.5 Supplemental protection to the hard edge may be appropriate to increase the D:d ratio to an acceptable level.

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13.	BC	4.3.2.7	Proof coil chain is not marked with the manufacturer's identification or grade. I suggest rewording to, "All chain shall be carbon or alloy steel. Alloy steel shall permanently marked with the manufacturer's identification and grade."	Accept in principal: The wording has been changed to: 4.3.2.7 All chain shall be carbon or alloy steel. 4.3.2.8 All chain shall be permanently marked with the manufacturer's identification and grade or as specified in section 6.2 of this document.
14.	BC	4.3.5.3	As stated above in "2 Definitions", define peening. Also, add "thread locking adhesive" to the list of thread locking methods. Also, strut beam clamps, like P2785 use a bent bolt that is low strength (grade 2 or ungraded). And strut nuts are low strength and the standard suggests mixing with Grade 5 bolts. I propose changing the wording and adding an exception as follows, "Hardware used for the attachment of load bearing components shall be grade 5 or better and incorporate a thread locking method (e.g. jamb nut, lock washer and nut, peening, or thread locking adhesive). Exception: Strut manufacturer's hardware (i.e. beam clamps, strut nuts) are acceptable."	Accept in principal: Changed the wording of 4.3.5.3. 4.3.5.3 Bolts used for the attachment of load bearing components shall be a minimum grade 5 and incorporate a thread locking method (e.g. jamb nut, lock washer and nut, thread locking adhesive or peening) unless otherwise specified by the manufacturer.
15.	BC	4.3.6.4	I'm not aware of any turnbuckle manufacturer providing any documentation (or guidelines) on how to provide a redundant fixing means. So how can we perform it in accordance with the manufacturers? I propose to strike "The fixing method shall be performed in accordance with the manufacturer's recommendations."	Accept. The second sentence has been removed.
16.	BC	4.3.7.2	Change "...with the load path oriented on the major axis." to "...with the load path resulting on the major axis, according to manufacturer's recommendations."	Accept
17.	BC	4.4.6.1	Italicize the standard reference.	Accept
18.	BC	7.3.1	Make sure the inspection complies with the (maybe) soon to be published E1.47.	Accept: Reviewed E1.47. No contradictions were found.

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19.	BC	A3.11	Add "d) Mark with bright or reflective paint."	Accept in principal: example b) had been modified to "Specific hazards should be identified with bright or reflective markings."