

## Summary of Third Public Review of BSR E1.62 with Comment Resolutions

**Referenced document:**

BSR E1.62, Minimum specifications for mass-produced portable platforms, ramps, stairs, and choral risers for live performance events (document number FL/2017-8012r7)

**ANSI public review period:** 22 February through 8 April 2019

**Question:** Do you recommend that the standards committee accept BSR E1.62, Minimum specifications for mass-produced portable platforms, ramps, stairs, and choral risers for live performance events (document number FL/2017-8012r7), as an American National Standard, that its requirements are not too lax, too onerous, or too vague, nor that it would unreasonably negatively impact materially affected parties in the entertainment industry? Please indicate "Yes" (accept it), "Yes with comments," or "No with reasons" (don't accept it).

Person	Representing	Yes	Yes with comments	No with reasons	Comments only
William Gorlin (WG)	McLaren Engineering Group			X	
Barton Breisch (BB)	McLaren Engineering Group			X	

**Comment summary with resolutions. The resolutions were approved at the 18 July 2019 Floors Working Group meeting.**

No.	Clause	Commenter	Comment	PROPOSED Resolution
1	6.2; Surface finish.	BB	<p>"The walking and standing surfaces of Portable Units shall have a coefficient of friction of 0.6 for horizontal walking and standing surfaces and 0.8 for ramps."</p> <p>A source should be included specifying how to ensure the coefficient of friction is satisfied. A coefficient of friction measures the resistance offered between two materials, and only the platform surface is known here. It could be interpreted that this value may be obtained by considering the platform surface against the sole of a shoe (rubber) or possibly against itself. I assume that the reader should instead be pointed towards a document such as ANSI A137.1. Better still, values for common materials may be presented in the Appendix as access to the testing materials required within ANSI A137.1 may be difficult, costly, and unnecessary to procure.</p>	<p>Change the requirement to simply require slip resistance. Add an appendix note suggesting a test procedure and some COFs that may be appropriate</p> <p>ANSI A137.1 is a standard for ceramic tile. The 2012 edition offers a multi-step testing procedure using a BOT 3000 device and tile that is dry and tile that is wet with soapy water. It does not seem appropriate for portable staging platforms and seating risers.</p> <p>ESTA has its own standard for testing floor slipperiness, and we will reference it as a suggested way of determining the coefficient of friction.</p>

No.	Clause	Commenter	Comment	PROPOSED Resolution
2	6.2 Surface Finish	WG	<p>My comment pertains to the last one sentence paragraph "The walking and standing surfaces of Portable Units shall have a coefficient of friction of 0.6 for horizontal walking and standing surfaces and 0.8 for ramps."</p> <p>This provision is taken from an old IBC reference that does not suitably address slip resistance.</p> <p>I recommend the following change to the paragraph. "The walking and standing surfaces of Portable Units shall achieve slip resistance stipulated by the IBC for level walking and standing surfaces."</p> <p>I also recommend adding an Annex note as follows: "A6.2 The determination of slip resistance typically requires a physical test under prescribed conditions in accordance with a recognized standard. IBC-2012 references slip testing per ANSI A137.1 using a specified pendulum test meter under wet conditions on a level surface in order to achieve a coefficient of friction of at least 0.42. OSHA requires 'walking-working surfaces are kept in a clean, orderly, and sanitary condition ' but does not stipulate any specific requirements for slip resistance.</p>	<p>Section 1003, General means of egress, of the 2018 IFC says:</p> <p><b>1003.4 Slip-resistant surface.</b> Circulation paths of the means of egress shall have a slip-resistant surface and be securely attached.</p> <p>Section 1012 Ramps, says:</p> <p><b>1012.7.1 Ramp surface.</b> The surface of ramps shall be of slip-resistant materials that are securely attached.</p> <p>The IBC replicates these requirements.</p> <p>We will require that the surfaces be slip-resistant, as specified by the 2018 IFC and IBC, but without the reference to those standards. (It seems pointless to specify slip-resistance per standards that require no specific slip-resistance.) An appendix note will suggest a test procedure and some COFs that may be appropriate.</p>

No.	Clause	Commenter	Comment	PROPOSED Resolution
3	7.1.2	BB	<p>"Stair units shall be able to support a minimum point load of 1000 pounds anywhere on the walking surface on an area 2 inches by 2 inches..."</p> <p>This load should not be applied over a 2"x2" square as this is sure to fail any plywood surface. Per the IBC, a single tread is only required to support a 300 lbs point load. I would imagine that this load may instead be considered uniformly distributed on the stair stringers.</p>	<p>Change the requirement to 500 pounds applied to an area 4" by 4".</p> <p>The 1000 pound specification was drawn from 29 CFR 1910.25(b)(6). However, "stairs serving floating roof tanks, stairs on scaffolds, stairs designed into machines or equipment, and stairs on self-propelled motorized equipment," are exempt from that requirement. Portable platforms are not among the exemptions, but the exemptions make it clear that 1910.25(b)(6) does not apply to everything, although the 1000-pound specification is still worth considering.</p> <p>DIN 15921:2015, clause 4.3.1, requires stairways to withstand a point load of 1.5 kN (337 pounds) on a surface of 100 mm × 100 mm, which is roughly 4" by 4".</p> <p>It seems reasonable to specify a point load of 500 pounds in an area 4" square. This is a bit more than the DIN standard requires, but is a specification that portable stair manufacturers in North America already meet.</p>
4	8.3.1 Standard Guardrail design load	WG	<p>The guardrail design load of 50 plf is included in ICC-300 and IBC for guards used to protect the general public. However, CFR 1910.29 does not contain the 50 plf design load for guardrails. All of these standards include the 200 lbs point load.</p> <p>I recommend omitting the 50 plf requirement for Standard Guardrails to be consistent with CFR 1910.29, and to avoid overly burdensome requirements for equipment suppliers.</p>	<p>Make no change. While the Standard Guardrail in this standard is different from the Audience Guardrail, the difference is primarily in the spacing of the bars. It is anticipated that in a performance, particularly an amateur production, several people might be leaning against the guardrail (as can be expected with audience guardrails) and the combined load along the length of a rail might exceed 200 pounds of force.</p> <p>This standard does not require manufacturers to meet its requirements. Manufacturers are free to make weaker units and accessories, as long as no claim of compliance with E1.62 is made.</p>