ANSI E1.21 - 2020
Entertainment Technology—
Temporary Structures Used for Technical Production of Outdoor Entertainment Events

Rig/2010-2025r12

Approved by the ANSI Board of Standards Review on 23 March 2020

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Published by:
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The ESTA Technical Standards Program

The ESTA Technical Standards Program was created to serve the ESTA membership and the entertainment industry in technical standards related matters. The goal of the Program is to take a leading role regarding technology within the entertainment industry by creating recommended practices and standards, monitoring standards issues around the world on behalf of our members, and improving communications and safety within the industry. ESTA works closely with the technical standards efforts of other organizations within our industry, including USITT and VPLT, as well as representing the interests of ESTA members to ANSI, UL, and the NFPA. The Technical Standards Program is accredited by the American National Standards Institute.

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The Rigging Working Group, which authored this Standard, consists of a cross section of entertainment industry professionals representing a diversity of interests. ESTA is committed to developing consensus-based standards and recommended practices in an open setting.
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Interest category codes:
CP = custom-market producer  DE = designer
DR = dealer rental company    G = general interest
MP = mass-market producer    U = user
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FOREWORD

Prior to the inception of this standard, there were essentially no rules, regulations, guidelines or recommended practices for the design, installation or dismantling, operation or use, and inspection of temporary special event structures. This standard presents a coordinated set of rules that may serve as a guide to government, municipal authorities and other regulatory bodies responsible for public safety in the context of special events. This standard was developed with the presumption that its provisions will be carried out by qualified persons and organizations, each with experience, competency and qualifications commensurate with the type of action described, so that safety is enhanced during all phases of the structure’s usable lifespan. This document contains many different types of statements to ensure safety. Some statements are suggested or advisory, while others constitute mandatory requirements. Compliance with both types may be required by workers and by their employers.

Safety codes and standards are intended to enhance public safety. Revisions are made as a result of committee consideration of factors such as technology advances, new data, and changing environmental and industry needs. Revisions do not imply that previous editions were inadequate.

Compliance with this Standard does not of itself confer immunity from legal obligations.

This document uses annex notes to provide additional reference information about certain specific section requirements, concepts, or intent. Subject matter with a corresponding annex note reference is identified by the asterisk (*) symbol, and the associated reference text is found in Appendix A, Commentary, identified with the referring text section number – e.g. an annex note to section 3.2 will be identified in Appendix A, Commentary as A.3.2. The annex notes are informational only, and do not add or subtract from the mandatory requirements of this standard.
1 Scope and intent

The temporary structures within the scope of this document shall be limited to those dedicated to the technical production of outdoor entertainment events. General public access temporary structures, such as food vendor tents, portable toilets, and other portable temporary structures for directly serving the audience or attendees at outdoor entertainment events, are not included in the scope of this standard. Custom temporary structures supporting performance platforms are included in the scope of this document. This document does not include pre-engineered, manufactured, modular staging systems used as platforms for performance, independent of other temporary structures.

This document establishes a minimum level of design and performance parameters for the design, manufacturing, use and maintenance of temporary ground-supported structures used in the production of outdoor entertainment events. The purpose of this guidance is to ensure the structural reliability and safety of these structures and does not address fire safety and safe egress issues.

The intent of this standard is to establish a reasonable standard for care by providing the minimum acceptable requirements at which temporary structures shall be designed and used.

2 Definitions

2.1 allowable load. The maximum load that can be safely supported by a component or temporary structure.

2.2 base plate. The component or part of the temporary structure that spreads load to the supporting substrate.

2.3 buckling. Lateral displacement of a compression member from the original centerline under axial load, usually sudden.

2.4 competent person. A person who is capable of identifying existing and predictable hazards in the workplace and who is authorized to take prompt corrective measures to eliminate them.

2.5 dead load. The self-weight of the temporary structure.

2.6 effective wind area. The surface area exposed to wind.

2.7 live load. The variable gravity load or weight supported by the temporary structure.

2.8 lock-off. Means of supporting the allowable load of a temporary structure in a fixed position, independent of the lifting device(s).

2.9 manufacturer. Person or company who fabricates components for the temporary outdoor structure.

2.10 MPH. Miles per hour.

2.11 payload. The equipment load or weight supported by the temporary structure.

2.12 qualified person. A person who, by possession of a recognized degree or certificate of professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve problems relating to the subject matter and work.

2.13 shall. Denotes a mandatory requirement.

2.14 superimposed load. Loads associated with wind, rain, snow, ice, seismic etc.

2.15 temporary. A period of time that is less than 180 days in duration.

2.16 tower. One or more components assembled vertically to support load.