

Entertainment Services and Technology Association



American National Standard E1.2 - 2006 Entertainment Technology Design, Manufacture and Use of Aluminum Trusses and Towers

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American National Standard E1.2 - 2006 Entertainment Technology Design, Manufacture and Use of Aluminum Trusses and Towers Rig/2002-2019r5

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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, PLASA, 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 as Accredited Standards Committee E1, Safety and Compatibility of Entertainment Technical Equipment and Practices.

The Technical Standards Committee (TSC) was established by ESTA's Board of Directors to oversee and coordinate the Technical Standards Program. Made up of individuals experienced in standards-making work from throughout our industry, the Committee approves all projects undertaken and assigns them to the appropriate working group. The Technical Standards Committee employs a Technical Standards Manager to coordinate the work of the Committee and its working groups as well as maintain a "Standards Watch" on behalf of members. Working groups include: Camera Cranes, Control Protocols, Electrical Power, Floors, Fog and Smoke, Photometrics, and Rigging.

ESTA encourages active participation in the Technical Standards Program. There are several ways to become involved. If you would like to become a member of an existing working group, as have over two hundred people, you must complete an application which is available from the ESTA office. Your application is subject to approval by the working group and you will be required to actively participate in the work of the group. This includes responding to letter ballots and attending meetings. Membership in ESTA is not a requirement. You can also become involved by requesting that the TSC develop a standard or a recommended practice in an area of concern to you.

The Rigging Working Group, which authored this standard, consists of a cross section of entertainment industry professionals representing manufacturers, consultants, dealers, and end-users. ESTA is committed to developing consensus-based standards and recommended practices in an open setting. Future Rigging Working Group projects will include updating this publication as changes in technology and experience warrant, as well as developing new standards and recommended practices for the benefit of the entertainment industry.

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Foreword *(This foreword contains no mandatory requirements and is not part of E1.21)*

There are no specific American National Standards that cover the design, manufacture and use of aluminum trusses in the entertainment industry. It should be noted that other ANSI Standards may be relevant, depending on the application and intended use. In an attempt to improve safety and standards in the industry, the Entertainment Services and Technology Association (ESTA) convened a series of meetings to prepare a draft standard.

Columbus McKinnon Corporation kindly hosted these meetings at their facilities in Buffalo, New York and Abingdon, Virginia,

It is the intention of ESTA that this standard be put forward as the basis for an American National Standard to the American National Standards Institute.

The preparation of the standard was entrusted to the Truss Team working as part of the Rigging Work Group for the Technical Standards Committee (TSC) of ESTA. The Truss Team is generally comprised of manufacturers and their structural engineering advisors.

It has been assumed in the drafting of this standard that the execution of its design provisions are entrusted to appropriately qualified and experienced people, and that the fabrication and use is carried out by qualified and suitably experienced people and organizations.

This standard presents a coordinated set of rules that may serve as a guide to government and other regulatory bodies and municipal authorities responsible for the guarding and inspection of the equipment falling within its scope. The suggestions leading to accident prevention are given both as mandatory and advisory provisions; compliance with both types may be required by employers of their employees.

Safety codes and standards are intended to enhance public safety. Revisions result from 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.

1 Scope

This document describes the design, manufacture and use of aluminum trusses, towers and associated aluminum structural components such as head blocks, sleeve blocks, bases, and corner blocks in the entertainment industry. This does not cover individual, separate rigging hardware such as 1/2 couplers and shackles.

The standards described herein are for a variety of uses that are confined to the entertainment industry and apply to a range of structures subjected to normal atmospheric conditions.

The standards described herein do not cover aerospace alloys, the detail design of castings, curved shell structures or structures subjected to severe thermal or chemical conditions. They are not intended to be used for the design of containment vessels, airborne structures or vessels, or for any application where a specific standard exists.

If "truss" is referred to in a particular clause in this standard, then it shall equally apply to 'tower' and vice versa. It shall also apply to associated aluminum hardware.

2 Definitions

2.1 Definitions

abrasion: loss of material due to wear.

allowable load: maximum static equivalent load imposed on truss / tower in addition to the self-weight.

ancillary: supplementary.

AWS: American Welding Society.

bent member, truss or tower: permanent inelastic deviation from the intended center line.

bolted connection: a connection of two truss modules using bolts.

camber: intended vertical deviation of a truss, usually radiused.

chord: the element of the truss or tower module that carry axial forces associated with flexure or axial loading.

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.

components: parts of a whole.

connecting plates: plates welded to the ends frames of a truss or tower module that are used to connect adjacent modules together.

consumables: items that require regular replacement with use.

CPL - central point load: a load that is applied to the center of the truss.