



ESTA Standards Watch

December 2017

Volume 21, Number 23

Table of Contents

| | |
|--|--------------------|
| Four ESTA Draft/Proposed Standards in Public Review..... | 1 |
| Mandatory OSHA 10/30 Courses for the Entertainment Industry in Nevada..... | 2 |
| FCC Seeks Comment on Spectrum Policy Recommendations..... | 3 |
| Hang Out with Riggers in March..... | 3 |
| ... and with Architects and Engineers in June..... | 3 |
| SMPTE Publishes ST 2110 Standards for Professional Media Over Managed IP Networks..... | 3 |
| WTO Technical Barrier to Trade Notifications..... | 4 |
| Taiwan Economy Notification TPKM/272/TPKM (TPKM/272)..... | 4 |
| Botswana Notification BWA/78..... | 4 |
| India Notification IND/71..... | 4 |
| Brazil Notification BRA/763..... | 5 |
| Saudi Arabia Notification SAU/1028..... | 5 |
| Bolivia Notification BOL/7..... | 6 |
| ANSI Public Review Announcements..... | 6 |
| Due 8 January 2018..... | 6 |
| Due 15 January 2018..... | 7 |
| Due 22 January 2018..... | 7 |
| Due 6 February 2018..... | 8 |
| BSI Public Review Announcements..... | 8 |
| Due 15 January 2018..... | 8 |
| CSA Public Review Announcements..... | 8 |
| Due 13 January 2018..... | 8 |
| Due 28 January 2018..... | 8 |
| Due 29 January 2018..... | 8 |
| Due 4 February 2018..... | 8 |
| Due 5 February 2018..... | 9 |
| New ANS Projects..... | 9 |
| Final Actions on American National Standards..... | 11 |
| Draft IEC & ISO Standards..... | 12 |
| Recently Published IEC & ISO Documents..... | 13 |
| TSP Meeting Schedule..... | 15 |
| TSP Donors Who Have Made Long-Term, Multi-Year Pledges..... | 16 |
| Investors in Innovation, supporters of ESTA's Technical Standards Program..... | 17 |

Four ESTA Draft/Proposed Standards in Public Review

Four documents are available for public review at http://tsp.esta.org/tsp/documents/public_review_docs.php. and the review is free. In order of comment closing date they are:

BSR E1.4-2, Statically Suspended Rigging Systems

This draft standard addresses statically suspended rigging systems (dead-hung battens and grids) permanently installed in performances spaces, places of assembly, and other areas used for entertainment purposes. People have tried to apply the batten specifications from the E1.4 standard for manual counterweight systems to dead-hung battens and grids, but that's not an obvious or simple translation of requirements. This new standard should help. Comments are due no later than 25 December 2017.

BSR E1.4-3, Entertainment Technology—Manually Operated Hoist Rigging Systems

This draft standard applies to permanently installed, human-powered manually operated hoists used as part of rigging systems for raising, lowering, and suspension of scenery, properties, lighting, and similar loads. This is for systems that don't use counterweights, only muscle-power. This is another new standard. Comments are due no later than 15 January 2018.

BSR E1.35, Lens Quality Measurements for Pattern Projecting Luminaires Intended for Entertainment Use

This is a public review of an existing standard, ANSI E1.35 – 2013. The standard describes a method for measuring stage and studio luminaire lens quality with particular emphasis on contrast and perceived sharpness. It also offers a way for presenting these results on a datasheet in a format that is readily understood by a typical end-user. Comments are due no later than 15 January 2018.

BSR E1.51, The Selection, Installation, and Use of Single-Conductor Portable Power Feeder Cable Systems for Use at 600 Volts Nominal or Less for the Distribution of Electrical Energy in the Television, Film, Live Performance and Event Industries in Canada

E1.51 is intended to offer guidance, in the context of applicable standards and regulations in Canada, on how to select, install, use, and maintain single-conductor portable feeder cables used to supply power for television, film, live performance, and special events in Canada. This is a new standard. Comments are due no later than 15 January 2018.

Mandatory OSHA 10/30 Courses for the Entertainment Industry in Nevada

The Governor of Nevada recently signed Assembly Bill 190 requiring OSHA 10 and 30 hour training for the entertainment industry. Starting 1 January 2018 the State of Nevada will require specific workers in the entertainment industry to complete an OSHA 10 hour (non-supervisory employee) or an OSHA 30 hour (supervisory employee) safety and health general industry course and receive a completion card within 15 days of hire.

The specific workers are ones whose primary occupation on site falls into one of these categories:

- Theatrical scenery, rigging, or props
- Wardrobe, hair or makeup
- Audio, camera, projection, video, or lighting equipment
- Any other items or parts which are related to or components of the items described in 1, 2, or 3 and that are used for or in conjunction with the presentation or production of:
 - Live entertainment
 - Filmmaking or photography , including without limitation, motion pictures
 - Television programs, including, without limitation, live broadcasts, closed-circuit broadcasts or videotape recordings and playback
 - Sporting Events
 - Theatrical performances

This requirement will not apply to volunteers or any other persons who are not paid to perform work on a site.

“Site” is defined as a theater where live entertainment is performed, a sound stage, a showroom, a lounge, an arena, or a remote site which has been designated as a location for the production of a motion picture or television program.

“OSHA 10 or 30-hour course” is a course of general industry safety and health hazard recognition and prevention developed by the Occupational Safety and Health Administration of the United States Department of Labor.

The Federal OSHA training page is at <https://www.osha.gov/dte/index.html>. It notes that “outreach training courses,” which are the courses resulting in 10-hour or 30-hour cards, are basic hazard awareness classes for workers delivered by OSHA-authorized trainers. They are not required by OSHA, but some localities and employers require them. Nevada now is part of that group. The page also has links to other resources, including a book explaining the training requirements in OSHA standards, which is available at <https://www.osha.gov/Publications/osh2254.pdf>.

FCC Seeks Comment on Spectrum Policy Recommendations

The Federal Communications Commission's Office of Engineering and Technology is seeking comments on spectrum policy recommendations that the FCC's Technological Advisory Council has made to the FCC through its Chairman and in more detail through several white papers. The TAC's Spectrum and Receiver Performance Working Group has developed recommendations to address the increasing challenges of efficient and fair allocation of spectrum in congested RF environments, and in particular, the challenges of finding a balance between the rights and responsibilities of transmitters and receivers. More recently, the TAC has recommended that the FCCmission adopt a policy statement, setting forth spectrum management guidance and principles based on TAC recommendations.

Comments are due 31 January 2018, with reply comments due 15 February. More information and instructions on how to comment are available at <https://www.fcc.gov/document/comment-sought-tech-advisory-councils-spectrum-recommendations>.

Hang Out with Riggers in March

ESTA and USITT have announced the New World Rigging Symposium, taking place 13-14 March 2018 in conjunction with the USITT Conference and Stage Expo 2018 in Ft. Lauderdale, FL. The Symposium will provide an opportunity for riggers and those interested in the live entertainment rigging industry to network, discuss current issues and new technologies, and help shape the future of the industry. In **ten sessions** over two days, participants will be given a wide range of opportunities to further their technical knowledge, keep up to date with codes and standards, and learn what it's like to work as a rigger in other segments of the entertainment industry. Attendees will also hear from experts in related fields such as structural engineering and risk management. The Symposium will carry ETCP education renewal credits for re-certification. More information is available at <http://www.esta.org/rigging-symposium>.

. . . and with Architects and Engineers in June

The fifth edition of the International Theatre Engineering and Architecture Conference, ITEAC 2018, will be presented 3-5 June 2018 at the Institution of Engineering and Technology, Savoy Place, London. More information is at <http://www.iteac.co.uk/#>.

SMPTE Publishes ST 2110 Standards for Professional Media Over Managed IP Networks

SMPTE has announced the publication of the first four standards within SMPTE ST 2110, Professional Media Over Managed IP Networks. This is a standards suite that specifies the carriage, synchronization, and description of separate elementary essence streams over professional internet protocol (IP) networks in real-time for the purposes of live production, playout, and other professional media applications.

The following documents are now available in the SMPTE digital library at <http://library.smpte.org/>:

- SMPTE ST 2110-10/-20/-30 (three parts), addressing system concerns and uncompressed video and audio streams
- SMPTE ST 2110-21, specifying traffic shaping and delivery timing of uncompressed video

WTO Technical Barrier to Trade Notifications

The U.S. Department of Commerce's service, Notify U.S., recently has announced WTO Technical Barrier to Trade notices that may be of interest to *Standards Watch* readers. If you have a problem with the TBTs, you can protest through your representative to the WTO. See "Guidance for Comment Submissions by U.S. Industry on TBT Notifications" at <http://tsapps.nist.gov/notifyus/data/guidance/guidance.cfm> or <http://ec.europa.eu/enterprise/tbt/> for advice on filing objections.

Taiwan Economy Notification TPKM/272/TPKM (TPKM/272)

Date issued: 30 November 2017

Corrigendum type: Addendum

Correction type: Correction with full text

Corrigendum: The Separate Customs Territory of Taiwan, Penghu, Kinmen and Matsu would like to notify that the "Legal inspection requirements for chargers and secondary lithium batteries for electrical bicycles and electrical assisted bicycles" as per G/TBT/N/TPKM/272 on 16 May 2017, was promulgated on 5 October 2017 and will come into effect on 1 January 2019. For further information, please contact:

WTO/TBT Enquiry Point Bureau of Standards, Metrology and Inspection Ministry of Economic Affairs

No.4, Sec. 1, Jinan Rd. Zhongzheng Dist.

Taipei City 100, Taiwan

Tel: +(886 2) 2343-1813

Fax: +(886 2) 2343-1804

E-mail: tbteng@bsmi.gov.tw

Full text: https://members.wto.org/crnattachments/2017/TBT/TPKM/17_4634_00_x.pdf,

https://members.wto.org/crnattachments/2017/TBT/TPKM/17_4634_00_e.pdf

Botswana Notification BWA/78

Date issued: 30 November 2017

Agency responsible: Botswana Bureau of Standards

National inquiry point: Botswana Bureau of Standards

Products covered: Projectors and similar appliances

Title: 14. BOS IEC 60335-2-56:2002+AMD1+AMD2:2014, Household and similar electrical appliances - Safety - Part 2-56: Particular requirements for projectors and similar appliances (68 pages, in English)

Description of content: This Standard deals with the safety of electric projectors and similar appliances for household and similar purposes, their rated voltage being not more than 250 V. Appliances not intended for normal household use, but which nevertheless may be a source of danger to the public, such as appliances intended for use by laymen in schools, offices, shops and similar locations are within the scope of this standard.

Objective and rationale: Consumer information, labelling; Protection of human health or safety; Quality requirements

Relevant documents: This clause of Part 1 is applicable

Proposed date of adoption: 22 December 2017

Proposed date of entry into force: 22 December 2017

Final date for comments: 22 December 2017

India Notification IND/71

Date issued: 7 December 2017

Agency responsible: Department of Consumer Affairs, Ministry of Consumer Affairs, Food and Public Distribution

National inquiry point: International Relations and Technical Information Services Department, Bureau of Indian Standards (BIS)

Products covered: All pre-packaged commodities

Title: The Legal Metrology (Packaged Commodities) Amendment Rules, 2017 (14 pages, English and Hindi)

Description of content: The Legal Metrology (Packaged Commodities) Amendment Rules, 2017 are for pre-Packaged Commodities. The said amendment is made for increasing the size of letters and numerals for making declaration, so that consumer can easily read the same and the net quantity checking is made more scientific etc.

Objective and rationale: The Legal Metrology (Packaged Commodities) Rules, 2011 are amended to include some additional declarations in the interest of consumers and is applicable for indigenous and imported pre-packaged commodities.

Relevant documents: . The Legal Metrology Act, 2009; The Legal Metrology (Packaged Commodities) Rules, 2011; The Legal Metrology (Packaged Commodities) Amendment Rules, 2017 (GSR 629E dated 17 June 2017)

Proposed date of adoption: 1 January 2018

Proposed date of entry into force: 1 January 2018

Final date for comments: 15 December 2017

Full text: [https://tsapps.nist.gov/notifyus/docs/wto_country/IND/full_text/pdf/IND71\(english\).pdf](https://tsapps.nist.gov/notifyus/docs/wto_country/IND/full_text/pdf/IND71(english).pdf) (Hindi and English. The English is at the back.)

Brazil Notification BRA/763

Date issued: 5 December 2017

Agency responsible: National Institute of Metrology, Standardization and Industrial Quality (INMETRO)

National inquiry point: TBT/WTO Enquiry Point (INMETRO)

Products covered: Electric transformers (HS 8504)

Title: Draft Ordinance 398/GM, 10 October 2017 (9 page(s), in Portuguese)

Description of content: It approves the Targets Program that addresses the Energy Efficiency Indexes for Electric transformers complementing the Specific Regulations of Electric transformers, contemplated in the Interministerial Ordinance MME/MCTIC/MDIC 104, 22 March 2013, in compliance with the provisions of art. 2, of Law 10.295, 17 October 2001, that the maximum levels of specific energy consumption to machines and appliances manufactured or marketed in the country based on the relevant technical indicators.

Objective and rationale: Consumer information; Quality requirements.

Relevant documents: (1) Brazilian Official Journal (Diário Oficial da União) N° 197, 13 October 2017, section 1, page 54/56; (2) MME Ordinance 398/GM/2017 (Portaria 398/GM 2017); Law 10.295, 17 October 2001; Decree 4.059, 19 December 2001; Interministerial Ordinance MME/MCTIC/MDIC 104, 22 March 2013; (3) Brazilian Official Journal; (4) Not Stated.

Proposed date of adoption: Not given by country

Proposed date of entry into force: Not given by country

Final date for comments: 19 December 2017

Full text: [https://tsapps.nist.gov/notifyus/docs/wto_country/BRA/full_text/pdf/BRA763\(portuguese\).pdf](https://tsapps.nist.gov/notifyus/docs/wto_country/BRA/full_text/pdf/BRA763(portuguese).pdf)

Saudi Arabia Notification SAU/1028

Date issued: 28 November 2017

Agency responsible: Saudi Arabia Standards Organization (SASO)

National inquiry point: Saudi Arabia Standards Organization (SASO)

Products covered: Lighting products

Title: Energy efficiency, functionality and labelling requirements for lighting products - Part 2 (58 page(s), in English)

Description of content: Specifies energy efficiency, functionality, marking information, energy efficiency labelling and hazardous substances for lamps and luminaires with a luminous flux above 60 lumens, incandescent lamps with a luminous flux above 12000 lumens, Halogen lamps with a luminous flux above 12000 lumens, Compact fluorescent lamps with integrated ballast (CLFi) with a luminous flux above 12000 Lumens, Compact fluorescent lamps without integrated ballast (CFLni), fluorescent Lamps (all types), high Intensity Discharge Lamps and LED Lamps (including 'retrofit LED lamps' with a luminous flux above 12000 Lumens).

Objective and rationale: To ensure energy efficiency, functionality, marking information, energy efficiency labelling and hazardous substances for lamps and luminaires with a luminous flux above 60 lumens, incandescent lamps with a luminous flux above 12000 lumens, Halogen lamps with a luminous flux above 12000 lumens, Compact fluorescent lamps with integrated ballast (CLFi) with a luminous flux above 12000 lumens, Compact fluorescent lamps without integrated ballast (CFLni), fluorescent Lamps (all types), high

Intensity Discharge Lamps and LED Lamps (including 'retrofit LED lamps' with a luminous flux above 12000 lumens).

Relevant documents: <http://www.saso.gov.sa/en/eservices/tbt/Pages/default.aspx>

Proposed date of adoption: Not given by country

Proposed date of entry into force: Not given by country

Final date for comments: 27 January 2018

Full text: [https://tsapps.nist.gov/notifyus/docs/wto_country/SAU/full_text/pdf/SAU1028\(english\).pdf](https://tsapps.nist.gov/notifyus/docs/wto_country/SAU/full_text/pdf/SAU1028(english).pdf)

Bolivia Notification BOL/7

Date issued: 1 December 2017

Agency responsible: Ministry of Productive Development and the Plural Economy

National inquiry point: Viceministerio de Industria y Comercio Interno ; Instituto Boliviano de Normalización y Calidad (IBNORCA)

Products covered: Fire extinguishers, whether or not charged (HS 842410)

Title: Reglamento de Extintores Portátiles de Polvo Químico Seco Contra Incendios (Regulations on portable dry chemical powder fire extinguishers) (24 pages, in Spanish)

Description of content: The notified draft Technical Regulation applies to portable low-pressure dry chemical powder fire extinguishers that are rechargeable or non-rechargeable, have a capacity between 0.5 kg and 12 kg, and are either domestically manufactured or imported. It sets out general requirements for extinguishers' external cylinder characteristics and their parts and components, and specific requirements for their physical characteristics, functioning and resistance, and the information that must appear on markings and labels.

Objective and rationale: The draft Technical Regulation establishes requirements for portable dry chemical powder fire extinguishers, with a view to protecting human safety and preventing practices likely to mislead users. Its objective is to inform consumers, regulate labelling, prevent misleading practices, protect consumers, and protect human health and safety.

Relevant documents: Proposal and basic document: Regulations on portable dry chemical powder fire extinguishers

Proposed date of adoption: Not given by country

Proposed date of entry into force: Not given by country

Final date for comments: 1 March 2018

ANSI Public Review Announcements

The following documents have been announced for public review by ANSI. Please send your comments before the deadline to the person indicated and to ANSI's Board of Standards Review at psa@ansi.org.

Due 8 January 2018

BSR/APA PRS 610.1-201x, Standard for Performance-Rated Structural Insulated Panels in Wall

Applications (revision of ANSI/APA PRS 610.1 -2013)

This standard covers manufacturing, qualification, quality assurance, and trademarking requirements for structural insulated panels used in wall applications.

Single copy price: Free

Order from and send comments to: Borjen Yeh, borjen.yeh@apawood.org

BSR/CTA-2042.3-201x, Methods of Measurement for Efficiency and Standby Power of Wireless Power Systems (new standard)

The scope of this document is to establish common test methodology for power transfer efficiency and standby power for consumer electronic devices that utilize wireless power transfer.

Single copy price: \$58.00

Order from and send comments to: Veronica Lancaster, vlancaster@cta.tech

BSR/NFSI B101.1-201x, Test Method for Measuring the Wet SCOF of Hard-Surface Walkways (revision of ANSI/NFSI B101.1-2009)

This test method specifies the procedures and devices used for both laboratory and field-testing to measure the wet static coefficient of friction (SCOF) of hard-surface walkways.

Single copy price: \$59.95

Obtain an electronic copy from: Laura Cooper laurac@nfsi.org

Send comments to: Russell Kendzior, russk@nfsi.org

BSR/RESNET/ICC 380-201X, Standard for Testing Airtightness of Building, Dwelling Unit and Sleeping Unit Enclosures, Airtightness of Heating and Cooling Air Distribution Systems, and Airflow of Mechanical Ventilation Systems (revision and redesignation of ANSI/RESNET/ICC 380-2016)

This standard is applicable to all dwelling units and sleeping units in residential and commercial buildings. The standard defines procedures for measuring the airtightness of building, dwelling unit and sleeping unit enclosures, the airtightness of heating and cooling air distribution systems, and the airflow of mechanical ventilation systems. The standard complements and references other American National Standards.

Single copy price: \$55.00

Obtain an electronic copy from: <http://www.resnet.us/blog/resnet-consensus-standards/>

Submit comments via online form: <http://www.resnet.us/blog/resnet-consensus-standards/>

Due 15 January 2018

BSR/PGMA G300-201x, Safety and Performance of Portable Generators (revision of ANSI/PGMA G300-2015)

This standard applies to 15 kW or smaller; single-phase; 300 V or lower; 60 Hz; gasoline, liquefied petroleum gas (LPG) and diesel engine-driven portable generators intended for multiple use and intended to be moved, though not necessarily with wheels. Permanent stationary generators, 50 Hz generators, marine generators, trailer-mounted generators, generators in motor homes, generators intended to be pulled by vehicles, engine-driven welding power sources and portable generators with AC output circuits that are not compatible with NEMA receptacles are not covered.

Single copy price: Free!

Order from and send comments to: Joseph Harding, jharding@thomasamc.com

Due 22 January 2018

BSR/APA PRG 320-201x, Standard for Performance-Rated CrossLaminated Timber (revision of ANSI/APA PRG 320-2017)

This standard covers manufacturing, qualification, quality assurance, design, and installation requirements for performance-rated cross-laminated timber products.

Single copy price: Free

Order from and send comments to: Borjen Yeh, borjen.yeh@apawood.org

BSR/AWS D16.6M/D16.6-201x, Specification for Robot Arc Welding Training and Testing Cell (new standard)

This document specifies the recommended design, integration, installation, and use of robotic arc welding systems used to train and certify operators and technicians under the AWS Certified Robotic Arc Welding (CRAW) program. Robotic and automatic arc welding systems consist of an arc welding power source, arc welding torches and accessories, robot/manipulator, shielding gas delivery system, welding electrode feeding equipment, welding circuit, communication control wiring, and system grounding. This document assumes that the robot training and testing will utilize GMAW or FCAW processes.

Single copy price: \$48.00

Order from and send comments to: Peter Portela, pportela@aws.org

BSR/AWS D16.1M/D16.1-201x, Specification for Robotic Arc Welding Safety (revision of ANSI/AWS D16.1M/D16.1-2004 (R2016))

The requirements of this standard apply to industrial robot systems that are used to perform the gas metal arc welding (GMAW), metal cored arc welding (MCAW), and flux cored arc welding (FCAW) processes. The purpose of this standard is to establish minimum safety requirements with respect to the design, manufacture, maintenance, and operation of arc welding robot systems and ancillary equipment. It is also designed to help identify and minimize hazards involved in maintaining, operating, and setting up of arc welding robot systems. This standard includes principles that may be applied to robotic systems with other arc welding processes.

Single copy price: \$48.00

Order from and send comments to: Peter Portela, pportela@aws.org

Due 6 February 2018

BSR/ASME PTC 19.6-201x, Electrical Power Measurements (new standard)

It is the purpose of this standard to give instructions and guidance for the accurate determination of electrical power quantities that are commonly needed in support of the ASME Performance Test Codes.

Single copy price: Free!

Obtain an electronic copy from: <http://cstools.asme.org/publicreview>

Send comments to: Donnie Alonzo, dalonzo@asme.org

BSI Public Review Announcements

BSI Standards has announced draft documents for public review that might be of interest to *Standards Watch* readers. BSI documents may be commented on at <https://standardsdevelopment.bsigroup.com/>. BSI has transitioned from their old website, <http://drafts.bsigroup.com/>.

Due 15 January 2018

BS EN 131-4 Ladders. - Part 4: Single or multiple hinge-joint ladders

This European Standard specifies the requirements, tests and marking of hinged combination ladders with one or several hinge joints. This European Standard is not applicable to hinge-joints of combination and standing ladders as defined by EN 131-1. This part of the standard is intended to be used in conjunction with EN 131-1, EN 131-2 and EN 131-3.

CSA Public Review Announcements

The CSA Group has announced a draft document for public review that might be of interest to *Standards Watch* readers. To participate in the public review please visit: <http://publicreview.csa.ca/>.

Due 13 January 2018

C22.2 NO. 89 Swimming-Pool Luminaires, Submersible Luminaires and Accessories (amendment)

This is an Amendment to C22.2 NO. 89 - Swimming-Pool Luminaires, Submersible Luminaires and Accessories .

Due 28 January 2018

CSA Z797 Code of practice for access scaffold (new edition)

This Standard applies to the erection, use, and inspection of access scaffold that is supported on a surface.

Due 29 January 2018

S37 Antennas, towers, and antenna-supporting structures (new edition)

This Standard applies to structural antennas, towers, antenna-supporting structures, and roof- and wall-mounted structures, including their components, such as guys and foundations. It covers the structural design, fabrication, and erection of new structures and the modification of existing structures.

Due 4 February 2018

C22.2 NO. 62841-2-1 Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery - Safety - Part 2-1: Particular requirements for hand-held drills and impact drills (new standard)

This International Standard deals with the safety of electric motor-operated or magnetically driven:

- HAND-HELD TOOLS (IEC 62841-2);
- TRANSPORTABLE TOOLS (IEC 62841-3);
- LAWN AND GARDEN MACHINERY (I EC 62841-4).

The above listed categories are hereinafter referred to as "tools" or "machines". The RATED VOLTAGE is not more than 250 V for single-phase a.c. or d.c. tools, and 480 V for three-phase a.c. tools. The RATED INPUT is not more than 3 700 W. The limits for the applicability of this standard for BATTERY tools are given in K.1 and L.1. This standard deals with the hazards presented by tools which are encountered by all persons

in the NORMAL use and reasonably foreseeable misuse of the tools. Tools with electric heating elements are within the scope of this standard.

Due 5 February 2018

C22.2 NO. 33 Construction and Test of Electric Cranes and Hoists (New Edition)

This Standard applies to all types of electric cranes and hoists for vertical lifting and lowering of freely suspended load for voltages of 750 V and less between conductors. The equipment specified in this standard is intended for installation in accordance with CSA C22.1 Canadian Electrical Code, Part I. Note: Examples of electric overhead traveling cranes are: single and double girder, gantry, semi-gantry, portal cranes, jib cranes, monorail systems, hoists, trolley.

This standard applies to the following cranes and hoists electrification systems:

- Bare non-rigid and rigid contact conductors, collector shoes and wheels, associated fittings.
- Insulated conductor bar assemblies, collector trolley assemblies, associated fittings such as: splices, power feeds, hangers, end caps, and similar.

This standard applies to equipment for general industrial and commercial application, in nonhazardous locations for indoor and outdoor locations. This standard applies to equipment for installation in an ambient temperature not exceeding 40°C. This standard applies to wireless control equipment used in conjunction with electric cranes and hoists.

This standard does not apply to:

- (a) Elevators
- (b) Dumbwaiters
- (c) Stairway hoists
- (d) Tower cranes
- (e) Manually operated chain driven cranes
- (f) Mobile cranes
- (g) Draglines
- (h) Mine hoists
- (i) Guided loads
- (j) Below the hook attachments
- (k) Construction Cranes and Hoists

New ANS Projects

ANSI has announced the following new projects that might materially affect *Standards Watch* readers—or at least be interesting to them. Contact the developer if you (a) want to be involved in the project, or (b) object to the project and wish it to be abandoned, or (c) if you would like to point out that its scope is covered by an existing standard, thereby possibly making the project redundant or conflicting.

BSR ASA S12.14-201x, Methods for the Field Measurement of the Sound Output of Audible Public Warning Devices Installed at Fixed Locations Outdoors (revision of ANSI ASA S12.14-1992 (R2012))

Describes relatively simple procedures for measuring and reporting properties of sounds produced by audible public-warning devices. Methods are given for measurement of C-weighted sound level, for determining the 1/3 octave band containing the fundamental frequency of tonal warning sounds produced by such devices at a distance of 30.5 m from the device and at the mounted height of device, and for measuring the maximum level of sound from a warning sound source at heads of bystanders on ground.

Contact: Neil Stremmel, nstremmel@acousticalsociety.org

BSR ASA S12.78-201x, Small Unmanned Aerial Systems - Determination of Airborne Acoustic Emission - Anechoic Chamber Method (new standard)

Describes a procedure for measurement of sound power emission from unmanned aerial systems (UAEs) under 55 lbs in an anechoic chamber. Data from this measurement would give sufficient information for an overall sound power level for item under test. The data can be used as input for sound propagation modeling to predict ground-level sound pressure levels. The sound power level may be used to generate product noise rating and

labeling that may provide consumers an informed choice in purchase of small UAEs.

Contact: Neil Stremmel, nstremmel@acousticalsociety.org

BSR E1.21-201x, Entertainment Technology - Temporary Structures Used for Technical Production of Outdoor Entertainment Events (revision of ANSI E1.21-2013)

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 standard is being opened for revision to clarify and reorganize OMP information, guidance, and content.

Contact: Karl Ruling, standards@esta.org

BSR E1.47-201x, Entertainment Technology - Recommended Guidelines for Entertainment Rigging System Inspections (revision of ANSI E1.47-2017)

The standard offers guidance on inspecting entertainment rigging systems, which are systems used to lift and support scenery, luminaires, and other equipment overhead in entertainment venues, such as theatres, video/film studios, amphitheatres, and arenas used for live performances or special events.

Contact: Karl Ruling, standards@esta.org

BSR E1.62-201x, Minimum specifications for mass-produced portable platforms, ramps, stairs, and choral risers for live performance events (new standard)

The standard would cover serially manufactured portable platforms, stair units and ramps used with those platforms, and choral risers. It would also cover railings provided as fall protection accessories for these units. It would not cover custom platforms or complete stage systems. It would give minimum payload and sideways force handling specifications. Project Need: There is no American National Standard that unambiguously covers the products within this proposed standard's scope. The IBC gives a minimum distributed load rating for portable platforms, but does not provide a point load rating, a sideways load specification, or deflection criteria, and it is not an American National Standard. DIN 15921 covers much of this material, but it is in German, and has a fairly low force specification for railings, below that for an OSHA "standard guardrail."

Contact: Karl Ruling, standards@esta.org

BSR/AWS D9.1M/D9.1-201x, Sheet Metal Welding Code (revision of ANSI/AWS D9.1M/D9.1-2018)

This code covers the arc- and braze-welding requirements for nonstructural sheet-metal fabrications using the commonly welded metals available in sheet form. Requirements and limitations governing procedure and performance qualification are presented, and workmanship and inspection standards are supplied. The informative annexes provide useful information on materials and processes.

Contact: Jennifer Molin, jmolin@aws.org

BSR/CTA-2074-201x, Intensity Metrics: Physical Activity Monitoring (new standard)

This standards creates definitions and performance criteria for consumer technology that measures intensity of physical activity and related measures.

Contact: Veronica Lancaster, vlancaster@cta.tech

BSR/IES DG-25-18-201x, Design Guide for Hospitality Lighting (new standard)

Quality lighting is of the utmost importance to business travelers who work in their rooms and/or in the conference facilities. Effective, well designed lighting will make their stay pleasurable and productive; entice them to return; and provide positive word-of-mouth references, which are excellent advertising. All these factors reinforce the brand and are critical to the success of the property.

Contact: Patricia McGillicuddy, pmcgillicuddy@ies.org

BSR/IES TM-33-201x, Standard Format for the Electronic Transfer of Luminaire Optical Data (new standard)

This document specifies an electronic (XML-based) data format for the transfer of luminaire optical data useful for lighting design and analysis. With the introduction of solid-state lighting with colorchanging capabilities, there is a need to include spectral-power distributions in data representations.

Contact: Patricia McGillicuddy, pmcgillicuddy@ies.org

BSR/IES TM-34-201x, Technical Memorandum for Recommendations for Measuring Tunable White Solid-State Lighting Products (new standard)

This document describes the parameters for measuring photometric and electrical characteristics of tunable white solid-state lighting products - including lamps, luminaires, and light engines - as covered by IES LM-79. It also describes a method for interpolating between measured data to obtain specified characteristics, including CCT range, Duv range, lumen output range (at full intensity control as color changes), efficacy at maximum output, efficacy range, color rendition range (CIE Ra, CIE R9, IES Rf, IES Rg, IES Rcs,h1), and chromaticity coordinates (x, y, u', v').

Contact: Patricia McGillicuddy, pmcgillicuddy@ies.org

BSR/NFPA 160-201x, Standard for the Use of Flame Effects Before an Audience (revision of ANSI/NFPA 160-2016)

This standard shall provide requirements for the protection of the audience, support personnel, performers, the operator, assistants, and property where flame effects are used.

Contact: Dawn Michele Bellis, dbellis@nfpa.org

BSR/NFPA 475-201x, Recommended Practice for Organizing, Managing, and Sustaining a Hazardous Materials/Weapons of Mass Destruction Response Program (revision of ANSI/NFPA 475-2017)

This recommended practice provides the minimum criteria for organizing, managing, and sustaining a hazardous material response program (HMRP) based on the authority having jurisdiction's (AHJ) function and assessed level of risk. A review of the laws, regulations, consensus standards, and guidance documents in addition to guidance for risk assessment, HMRP planning, resource management, staffing, training, health and medical issues, financial management, programs influences, and developing relationships are covered in this recommended practice.

Contact: Dawn Michele Bellis, dbellis@nfpa.org

BSR/NFPA 102-201x, Standard for Grandstands, Folding and Telescopic Seating, Tents, and Membrane Structures (revision of ANSI/NFPA 102-2016) This standard addresses the following: (1) The construction, location, protection, and maintenance of grandstands and bleachers, folding and telescopic seating, tents, and membrane structures, and (2) Seating facilities located in the open air or within enclosed or semi-enclosed structures such as tents, membrane structures, and stadium complexes. Contact: Dawn Michele Bellis, dbellis@nfpa.org

Final Actions on American National Standards

The documents listed below have been approved by the ANSI Board of Standards Review or by an ANSI-Audited Designator on the date noted.

ANSI/ASME B31P-2017, Standard Heat Treatment for Fabrication Processes (new standard): 15 November 2017

ANSI/ASME HST-1-2017, Performance Standard for Electric Chain Hoists (revision of ANSI/ASME HST-1-2012): 17 November 2017

ANSI/AWC NDS-2018, National Design Specification for Wood Construction (revision of ANSI/AWC NDS-2015): 16 November 2017

ANSI/BICSI 008-2018, Wireless Local Area Network (WLAN) Systems Design and Implementation (new standard): 4 December 2017

ANSI/IAPMO UMC 1-2018a, Uniform Mechanical Code (revision of ANSI/IAPMO UMC 1-2015): 15 November 2017

ANSI/IAPMO UPC 1-2018, Uniform Plumbing Code (revision of ANSI/IAPMO UPC 1-2015): 15 November 2017

ANSI/IAPMO UPC 1-2018a, Uniform Plumbing Code (revision of ANSI/IAPMO UPC 1-2015): 15 November 2017

ANSI/IEEE 1012-2016, Standard for System, Software and Hardware Verification and Validation (new standard): 4 December 2017

INCITS/ISO/IEC 13249-1:2016 [2017], Information technology - Database languages - SQL multimedia and application packages - Part 1: Framework (identical national adoption of ISO/IEC 13249 -1:2016 and revision of INCITS/ISO/IEC 13249-1:2007 [R2012]): 5 December 2017

INCITS/ISO/IEC 13249-3:2016 [2017], Information technology - Database languages - SQL multimedia and application packages - Part 3: Spatial (identical national adoption of ISO/IEC 13249-3:2016 and revision of INCITS/ISO/IEC 13249-3:2011 [2012]): 4 December 2017

INCITS/ISO/IEC 19776-1:2015 [2017], Information technology - Computer graphics, image processing and environmental data representation - Extensible 3D (X3D) encodings - Part 1: Extensible Markup Language (XML) encoding (identical national adoption of ISO/IEC 19776-1:2015 and revision of INCITS/ISO/IEC 19776 -1:2009 [2012]): 4 December 2017

INCITS/ISO/IEC 9075-1:2016 [2017], Information technology - Database languages - SQL - Part 1: Framework (SQL/Framework) (identical national adoption of ISO/IEC 9075-1:2016 and revision of INCITS/ISO/IEC 9075-1:2011 [2012]): 4 December 2017

INCITS/ISO/IEC 9075-11:2016 [2017], Information technology - Database languages - SQL - Part 11: Information and definition schemas (SQL/Schemata) (identical national adoption of ISO/IEC 9075-11:2016 and revision of INCITS/ISO/IEC 9075-11:2011 [2012]): 4 December 2017

INCITS/ISO/IEC 9075-13:2016 [2017], Information technology - Database languages - SQL - Part 13: SQL Routines and types using the Java programming language (SQL/JRT) (identical national adoption of ISO/IEC 9075-13:2016 and revision of INCITS/ISO/IEC 9075-13:2008 [R2013] and INCITS/ISO/IEC 9075-13-2008/Cor 1 -2012): 5 December 2017

INCITS/ISO/IEC 9075-14:2016 [2017], Information technology - Database languages - SQL - Part 14: XML-Related Specifications (SQL/XML) (identical national adoption of ISO/IEC 9075-14:2016 and revision of INCITS/ISO 9075-14:2011 [2012] and INCITS/ISO/IEC 9075-14:2011/Cor 1:2013[2014]): 5 December 2017

INCITS/ISO/IEC 9075-2:2016 [2017], Information technology - Database languages - SQL - Part 2: Foundation (SQL/Foundation) (identical national adoption of ISO/IEC 9075-2:2016 and revision of INCITS/ISO/IEC 9075-2:2011 [2012] and INCITS/ISO/IEC 9075 -2:2011/Cor 1:2013 [2014]): 4 December 2017

INCITS/ISO/IEC 9075-4:2016 [2017], Information technology - Database languages - SQL - Part 4: Persistent stored modules (SQL/PSM) (identical national of ISO/IEC 9075-4:2016] and revision of INCITS/ISO/IEC 9075-4:2011 [2012]): 4 December 2017

INCITS/ISO/IEC 9075-9:2016 [2017], Information technology - Database languages - SQL - Part 9: Management of External Data (SQL/MED) (identical national adoption of ISO/IEC 9075-9:2016 and revision of INCITS/ISO/IEC 9075-9:2008 [R2013] and INCITS/ISO/IEC 9075-9:2008/COR 1:2010 [2012]): 4 December 2017

Draft IEC & ISO Standards

This section lists proposed standards that the International Electromechanical Commission (IEC) or the International Organization for Standardization (ISO) are considering for approval. *Standards Watch* readers interested in reviewing and commenting on the document should order a copy from their national representative and submit their comments through them. Comments from US citizens on IEC and ISO documents should be

sent to Charles T. Zegers at czegers@ansi.org and Karen Hughes at isot@ansi.org respectively. Any prices, if shown, are for purchases through ANSI. The sort order is by due date then alphanumeric.

ISO/DIS 20498-1, Traditional Chinese medicine – Computerized tongue image analysis system - Part 1: General requirements, 23 December 2017, \$53.00

21A/644/CD, IEC 63115-1 ED1: Secondary cells and batteries containing alkaline or other non-acid electrolytes - Sealed nickel metal hydride rechargeable cells and modules for use in industrial applications - Part 1: Performance, 12 January 2018

21A/645/CD, IEC 63115-2 ED1: Secondary cells and batteries containing alkaline or other non-acid electrolytes - Sealed nickel metal hydride rechargeable cells and modules for use in industrial applications - Part 2: Safety, 12 January 2018

JTC1-SC41/21/CD, ISO/IEC 21823-1 ED1: Information technology - Internet of Things (IoT) - Interoperability for Internet of Things Systems - Part 1: Framework, 26 January 2018

ISO/DIS 30414, Human resource management - Guidelines for human capital reporting for internal and external stakeholders, 1 February 2018, \$107.00

35/1384/CD, IEC 62281 ED4: Safety of primary and secondary lithium cells and batteries during transport, 9 February 2018

ISO/DIS 20607, Safety of machinery - Instruction handbook – General drafting principles, 11 February 2018, \$93.00

56/1757/CDV, IEC 31010 ED2: Risk management - Risk assessment techniques, 16 February 2018

100/2992/CDV, IEC 60268-4 ED6: Sound system equipment - Part 4: Microphones, 16 February 2018

100/3012/CD, IEC 60268-16 ED5: Sound system equipment - Part 16: Objective rating of speech intelligibility by speech transmission index, 16 February 2018

ISO/IEC DIS 15067-3-3, Information technology - Home Electronic System (HES) application model - Part 3-3: Model of a system of interacting Energy Management Agents (EMAs) for demand response energy management, 23 February 2018, \$88.00

22H/229/CD, IEC 62040-5-1 ED1: Uninterruptible power systems (UPS) - Part 5-1: DC output UPS - Safety requirements, 23 February 2018

22H/228/CD, IEC 62040-3 ED3: Uninterruptible power systems (UPS) - Part 3: Method of specifying the performance and test requirements, 23 February 2018

85/619/CD, IEC 61557-11 ED2: Electrical safety in low voltage distribution systems up to 1000 V a.c. and 1500 V d.c. - Equipment for testing, measuring or monitoring of protective measures – Part 11: Effectiveness of residual current monitors (RCMs) type A and type B in TT, TN and IT systems, 23 February 2018

Recently Published IEC & ISO Documents

Listed here are documents recently approved by the IEC and ISO. A list of standards resellers is available at <http://webstore.ansi.org/faq.aspx#resellers>.

ISO 10074:2017, Anodizing of aluminium and its alloys – Specification for hard anodic oxidation coatings on aluminium and its alloys, \$103.00

ISO/IEC 11801-1:2017, Information technology - Generic cabling for customer premises - Part 1: General requirements, \$232.00

ISO/IEC 11801-2:2017, Information technology - Generic cabling for customer premises - Part 2: Office premises, \$138.00

ISO/IEC 11801-3:2017, Information technology - Generic cabling for customer premises - Part 3: Industrial premises, \$185.00

ISO/IEC 11801-4:2017, Information technology - Generic cabling for customer premises - Part 4: Single-tenant homes, \$162.00

ISO/IEC 11801-5:2017, Information technology - Generic cabling for customer premises - Part 5: Data centres, \$209.00

ISO/IEC 11801-6:2017, Information technology - Generic cabling for customer premises - Part 6: Distributed building services, \$185.00

ISO/IEC 14882:2017, Programming languages - C++, \$232.00

ISO/IEC 19941:2017, Information technology - Cloud computing - Interoperability and portability, \$209.00

ISO/IEC 21778:2017, Information technology - The JSON data interchange syntax, \$45.00

ISO/IEC TR 22446:2017, Information technology – Continual performance improvement of IT enabled services, \$138.00

ISO/IEC/IEEE 12207:2017, Systems and software engineering - Software life cycle processes, \$232.00

TSP Meeting Schedule

The January 2018 meetings are in conjunction with the NAMM Show at the Anaheim Convention Center.

At the Anaheim Hilton

| | | |
|--------------------------------------|---------------|--------------------------|
| Control Protocols Working Group | 19:00 – 23:00 | Friday 26 January 2018 |
| Control Protocols Compliance SG | 09:00 – 13:00 | Friday 26 January 2018 |
| Control Protocols E1.20 | 19:00 – 23:00 | Thursday 25 January 2018 |
| | 14:00 – 18:00 | Friday 26 January 2018 |
| Control Protocols E1.33 | 14:00 – 18:00 | Thursday 25 January 2018 |
| Control Protocols E1.59 | 09:00 – 13:00 | Thursday 25 January 2018 |
| Control Protocols NAEP | 19:00 – 23:00 | Saturday 27 January 2018 |
| Event Safety Working Group | 14:00 – 18:00 | Saturday 27 January 2018 |
| Event Safety Fire Safety Task Group | 14:00 – 18:00 | Friday 26 January 2018 |
| Event Safety Venue & Site Design TG | 10:00 – 13:00 | Saturday 27 January 2018 |
| Floors Working Group | 11:00 – 13:00 | Saturday 27 January 2018 |
| Rigging Working Group | 19:00 – 23:00 | Saturday 27 January 2018 |
| Rigging Working E1.6-3 Task Group | 19:00 – 23:00 | Friday 26 January 2018 |
| Rigging Working E1.6-4 Task Group | 14:00 – 18:00 | Saturday 27 January 2018 |
| Rigging E1.47 Inspections Task Group | 14:00 – 18:00 | Saturday 27 January 2018 |
| Stage Lifts Working Group | 09:00 – noon | Sunday 28 January 2018 |

At the Disney Paradise Pier Hotel

| | | |
|-----------------------------|---------------|------------------------|
| Technical Standards Council | 09:00 – 13:00 | Monday 29 January 2018 |
|-----------------------------|---------------|------------------------|

The most up-to-date schedule always can be found at <http://tsp.esta.org/tsp/meetings/index.php>.

ESTA Standards Watch

is distributed as a benefit to ESTA members and as a communications medium for ESTA's Technical Standards Program. Original material is copyright the Entertainment Services and Technology Association.

Editors:

Karl G. Ruling, Technical Standards Manager
Entertainment Services and Technology Association
630 Ninth Avenue, Suite 609
New York, NY 10036
USA
karl.ruling@esta.org
1 212 244 1505 ext. 703
Fax 1 212 244 1502

Erin Grabe, Asst. Technical Standards Manager
Entertainment Services and Technology Association
630 Ninth Avenue, Suite 609
New York, NY 10036
USA
erin.grabe@esta.org
1 212 244 1505 ext. 606
Fax 1 212 244 1502

TSP Donors Who Have Made Long-Term, Multi-Year Pledges

About the Stage
Altman Lighting
Barbizon Lighting Company
B-Hive Industries
Scott Blair
BMI Supply
Boston Illumination Group
Candela Controls
Chauvet
City Theatrical
Clark-Reder Engineering
Columbus McKinnon Corporation
Tracey Cosgrove and Mark McKinney
Bruce Darden
Doug Fleenor Design
Earl Girls Inc. EGI Pro
Electronic Theatre Controls
Entertainment Project Services
Geiger Engineers, PC
Tony Giovannetti
GLP German Light Products
Golden Sea Professional Equipment Limited
H & H Specialties
Harlequin Floors
High Output
Neil Huff
Hughston Engineering
IATSE Local 891
InCord
Beverly and Tom Inglesby
Interactive Technologies
InterAmerica Stage
iWeiss Inc.
J.R. Clancy
Jules Lauve
Brian Lawlor
Lex Products
Lycian Stage Lighting

John T. McGraw
McLaren Engineering Group
Mike Garl Consulting
Mike Wood Consulting
Morpheus Lights
NAMM
Niscon
Oasis Stage Werks
Reed Rigging
Reliable Design Services
Robe
Rosco Laboratories
Rose Brand
Alan M. Rowe
David Saltiel
Sapsis Rigging
Stage Equipment & Lighting
Stage Rigging
Stagemaker
Stageworks
Syracuse Scenery and Stage Lighting, Co.
Dana Taylor
Steve Terry
Texas Scenic Company
Theatre Projects Consultants
Theatre Safety Programs
TMB
Tomcat
Tyler Truss Systems
VER
Vertigo
Vincent Lighting Systems
Steve Walker & Associates
Walt Disney Parks and Resorts
Westview Productions
WNP Services, Inc.
XSF Xtreme Structures and Fabrication

Investors in Innovation, supporters of ESTA's Technical Standards Program

VISIONARY LEADERS (\$50,000 & up)

ETC

ProSight Specialty Insurance

VISIONARY (\$10,000 & up; >100 employees/members)

Chauvet Professional

Cisco System

Columbus McKinnon Entertainment Technology

Robe

United States Institute for Theatre Technology

VER

Walt Disney Parks and Resorts

VISIONARY (\$5,000 & up; 20–100 employees/members)

Altman Lighting, Inc.

German Light Products

JR Clancy

McLaren Engineering Group

Rose Brand

Stage Rigging

TMB

Tyler Truss Systems, Inc.

VISIONARY (\$500 & up; <20 employees/members)

About the Stage

B-Hive Industries, Inc.

Scott Blair

Boston Illumination Group

Louis Bradfield

Candela Controls Inc.

Clark Reder Engineering

Tracey Cosgrove & Mark McKinney

Doug Fleenor Design

EGI Event Production Services

Entertainment Project Services

Neil Huff

Hughston Engineering Inc.

Interactive Technologies

Jules Lauve

Brian Lawlor

Limelight Productions, Inc.

John T. McGraw

Mike Garl Consulting

Mike Wood Consulting

Reed Rigging

Reliable Design Services

Alan Rowe

David Saltiel

Sapsis Rigging Inc.

Stageworks

Dana Taylor

Steve Terry

Theatre Projects

Theatre Safety Programs

Tobins Lake Sales Theatrical Supply

Vertigo

Steve A. Walker & Associates

Westview Productions

WNP Services

INVESTOR (\$3,000–\$9,999; >100 employees/members)

Barbizon Electric

Golden Sea Professional Equipment Limited

IATSE Local 891

Lex

NAMM

Rosco Laboratories

Texas Scenic Company

INVESTOR (\$1,500–\$4,999; 20–100 employees/members)

American Society of Theatre Consultants

BMI Supply

City Theatrical Inc.

InterAmerica Stage, Inc.

Lycian Stage Lighting

Morpheus Lights

Niscon Inc.

Syracuse Scenery and Stage Lighting

XSF Xtreme Structures and Fabrication

INVESTOR (\$200–\$499; <20 employees/members)

Benjamin Cohen

Bruce Darden

Tony Giovannetti

Indianapolis Stage Sales & Rentals, Inc.

Jason Kyle

Eric Loader

Moss LED

Stephen Vanciel

SUPPORTER (<\$3,000; >100 employees/members)

Ian Foulds, IATSE Local 873
Harlequin Floors

PSAV
Thern Stage Equipment

SUPPORTER (<\$1,500; 20–100 employees/members)

Aerial Arts
Blizzard Lighting, LLC
Creative Stage Lighting
Geiger Engineers
H&H Specialties
High Output
InCord
iWeiss
Oasis Stage Werks

Serapid
Stage Equipment & Lighting
Stagemaker
Thermotex Industries, Inc.
Tomcat
Total Structures
Ultratec Special Effects
Vincent Lighting Systems

SUPPORTER (<\$200; <20 employees/members)

AC Power Distribution, Inc.
Michael Cowger
Peter Donovan
Mitch Hefter
Bill Hektner
Alan Hendrickson
Hoist Sales and Services
Beverly and Tom Inglesby
Intensity Advisors
JSAV
Eddie Kramer
Michael Lay
John Musarra

Shawn Nolan
Lizz Pittsley
Phil Reilly
Robert Scales
Charles Scott
Michael Skinner
Stage Labor of the Ozarks
Studio T+L, LLC
John Szewczuk
Teclumen
Theta Consulting
Tracy Underhill
Robert L. Williams

☞ Planned Giving donor: Ken Vannice