



Technical Standards Program

ESTA Standards Watch

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Seven ESTA TSP documents in public review

As this is being written, seven ESTA documents are available for public review at <http://estalink.us/pr>. Comments on these standards are due before 9 April 2019. The reviews are **over** when that day starts, so act no later than 8 April. In alphanumeric order, they are:

BSR E1.6-3, Selection and use of serially manufactured chain hoists in the Entertainment Industry

ANSI E1.6-3-2012 is being revised. It is one of a 4-part set of standards covering motorized rigging used in the entertainment and special events industry. This standard addresses minimum safety requirements for the selection and use of serially manufactured chain hoists, having capacity of two tons or less. The standard is being updated to address outdated references, errors, and new technologies.

BSR ES1.9, Crowd Management

This standard is part of a suite of standards currently in development to address requirements for special event safety. It defines "crowd management" as distinguished from "crowd control," provides an overview of crowd management theory, and applies this theory to reasonably foreseeable risks associated with live events. The standard identifies minimum standards and requirements, and provides suggestions to help event organizers make reasonable choices for their events.

BSR E1.21, Entertainment Technology--Temporary Structures Used for Technical Production of Outdoor Entertainment Events

ANSI E1.21-2013 is being revised to enhance the requirements for operations management plans, designated person responsibilities, and related requirements. ANSI E1.21 establishes a minimum acceptable level of design and performance parameters to ensure structural reliability, safety, and to establish a reasonable standard for care temporary special event structures.

BSR E1.47, Recommended Guidelines for Entertainment Rigging System Inspections

ANSI E1.47-2017 is being revised to expand and to add clarity to its recommendations for inspections of rigging systems used in the entertainment industry.

BSR E1.59, Entertainment Technology--Object Transform Protocol (OTP)

This standard describes a mechanism to transfer object transform information such as position, orientation and velocity over an IP network using a subset of the [ACN] protocol suite. It covers data format, data protocol, data addressing, and network management. Data transmitted is intended to coordinate visual and audio elements of a production and should not be used for safety critical applications.

BSR E1.62, Minimum specifications for mass-produced portable platforms, ramps, stairs, and choral risers for live performance events

The standard covers mass-produced portable platforms, stair units and ramps used with those platforms, and choral risers, designed to be used for the presentation of music concerts, dramatic plays, fashion shows, and other special events. The units covered by this standard are of a size and weight that allows them to be moved and erected by one or two people. Larger, heavier units are outside the scope of this standard. The scope also covers the railings provided as fall protection accessories, and to the legging systems.

The Introduction to Modern Atmospheric Effects, 6th edition

The Introduction to Modern Atmospheric Effects was written to be an introductory text on fog and haze effects, offering a factual presentation on all types of popular atmospheric fog effects. A 6th edition has been developed to give some information about formal monitoring techniques and air sampling methods that may be needed to control fog exposure. The new text is designed to introduce the reader to these monitoring methods; the details on how to do air sampling are given in other publicly available sources cited by the Introduction. This new 6th edition is offered for review to give the public a chance to point out errors or omissions and to make suggestions for possible improvements.

ANSI E1.48 – 2014 (R2019) published

ANSI E1.48 standard specifies a $V(\lambda)$ function for photometry that more accurately reflects the response of the human eye at the extreme blue and red ends of the spectrum than the 80+ year-old function used with many light meters. The differences between the E1.48 and the older function are not great with continuous spectrum white light but are quite significant when measuring the output of RGB LED luminaires.

The new edition is published and available at <https://tsp.esta.org/freestandards> at no cost—the free download being made possible by the generosity of ProSight Specialty Insurance. It also is available for purchase for \$40.00 from [ANSI](#) and [IHS](#).

ETCP paper and pencil exams in conjunction with Jay Glerum masterclasses

The Entertainment Technician Certification Program has announced that ETCP Paper and Pencil rigging examinations will be offered in conjunction with the Jay O. Glerum Rigging Masterclasses in San Diego, CA on the morning of 3 April 2019. All qualified riggers over 21 years of age are invited to apply to sit for the exam. Applicants should fill out the “Pre-Arranged Paper and Pencil Exam Application Form” at <http://etcp.esta.org/riggerapplicationmaterials>. Completed applications should be submitted to the ETCP office by Monday, 11 March 2019.

The Jay O. Glerum Masterclasses now have three tracks of learning: advanced, intermediate, and entry level. Held at San Diego State University’s Done Powell Theatre, the Entry-Level courses will take place from March 30-31, and the Intermediate Level will be taught on April 1-2. All courses carry full ETCP Renewal Credits. To register visit <https://www.usitt.org/glerummasterclass/>. Registration ends March 15.

Help change the future of entertainment control

The Control Protocol's Working Group's Next Generation Task Group has created an online, ten-minute survey to determine how the standards already in the field are performing for stakeholders. How do standards such as DMX512, RDM, and sACN work for you? Do they make your job easier? Do you use all the features they offer? What kind of systems are you building with them? The task group wants to know the answers to these questions, so we're inviting you to spend ten minutes or less responding to an online survey at <http://estalink.us/survey>. Please write to protocolsatisfaction@esta.org with any questions or concerns.

ESTA's 2019 Plugfest dates announced

The ESTA Control Protocols Plugfest, the North American event where manufacturers and developers test their lighting products for network interoperability, is scheduled to take place from 19 to 21 July 2019 at the D/FW Marriott Solana in Westlake, Texas. This informal testing laboratory is offered free of charge to both ESTA and non-ESTA members.

ESTA's Plugfest is an opportunity to connect your lighting products with those of other manufacturers to test and resolve network compatibility challenges. Attendees bring controllers, intelligent lights, control protocol analyzers, and other network-connected components. People attend from around the world to pursue improvement of their customers' product experiences. The ESTA Plugfest has become a required step in many global manufacturers' product development roadmaps. The scheduled hours are 09:00-23:00 Friday thru Sunday. Members of the E1.11 (DMX512), E1.20 (RDM), E1.31 (sACN), and E1.33 (RDMnet) task groups who authored the standards will be available to answer questions and help explain our protocols.

An event information link can be accessed at <http://tsp.esta.org/tsp/news/plugfest.html>. For additional information, please contact the event organizers at plugfest@esta.org.

Severe Weather Summit

The Event Safety Alliance has announced the return of the *Severe Weather Summit*, 21-22 March 2019. The Severe Weather Summit is designed to aid event and venue professionals in preparing for and responding to dangerous weather conditions. Over the course of two days at the National Weather Center's Storm Prediction Center in Norman, Oklahoma, subject matter experts from NOAA and the National Weather Service will explore topics including:

- Severe weather phenomena that can threaten all types of events and facilities;
- Why playing “amateur meteorologist” can be dangerous;
- Public and private-sector resources that can assist in weather preparedness;

- Technologies that can provide advanced warning of threatening weather; and
- How to develop a relevant and actionable severe weather plan.

Registration is just \$349 for ESA members, and \$449 for non-members, and includes breakfast and lunch at the Storm Prediction Center. Seating for this event is limited. For more information and to register, visit <http://severeweathersummit.com>

Response requested on Department of Transportation Guidance

The U.S. Department of Transportation Task Force has requested the affected public to review DoT guidance documents and to submit feedback by 8 April 2019. These documents are meant to clarify pertinent statutory and regulatory requirements, assist with statutory and regulatory compliance, and communicate the DoT's position on an issue.

The DoT is seeking written input on its guidance documents that:

- Are no longer necessary;
- Spur cost-inducing action by the regulated entities;
- Are inconsistent and/or unclear;
- May not be conducive to uniform or consistent enforcement; or
- Need to be updated to reflect developments that have taken place since the guidance was issued.

For more information, go to <https://www.regulations.gov> and follow the online instructions for submitting comments, or see the DoT's [Notice of Review of Guidance](#).

WTO Technical Barrier to Trade Notifications—for now

Notify US, the U.S. Department of Commerce's service to announce Technical Barrier to Trade filings, is on-line. A few of these TBTs that may be of interest to Standards Watch readers are listed below.

If you have a problem with a TBTs, you can protest through your representative to the World Trade Organization. (So far the USA is still a member of 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/growth/tools-databases/tbt/en/tbt-and-you/being-heard/> for advice on filing objections.

Costa Rica Notification CRI/122/CRI (CRI/122 , Add.1 , Add.2 ,)

Date issued: 5 February 2019

Corrigendum type: Addendum

Correction type: Correction with full text

Corrigendum: On 14 October 2011, the Government of Costa Rica notified, in document G/TBT/N/CRI/122, Costa Rican Technical Regulation (RTCR) No. 458: 2011, Regulation to formalize the Costa Rican Electrical Code for the Safety of Life and Property, which adopts, as Costa Rica's Electrical Code, the most recent Spanish version of National Fire Protection Agency Standard NFPA-70, entitled National Electrical Code (NEC) 2008.

This Addendum serves to inform WTO Member States that the notified Regulation has been amended to facilitate the application of the Costa Rican Electrical Code and to ensure that it does not affect trade in goods.

The relevant text is available online at: <http://reglatec.go.cr/reglatec/principal.jsp>

Centro de Obstáculos Técnicos al Comercio (TBT Centre) Website: <http://www.reglatec.go.cr/>

WTO Contact Point: crotc@meic.go.cr Tel.: (+506) 2549-1479 San José, Costa Rica

Text available at: https://members.wto.org/crnattachments/2019/TBT/CRI/19_0542_00_s.pdf

Costa Rica Notification CRI/184

Date issued: 28 January 2019

Agency responsible: Ministry of the Economy, Industry and Trade (MEIC)

National inquiry point: Ministerio de Economía, Industria y Comercio: Dirección de Mejora Regulatoria y Reglamentación Técnica, Centro de Información de Obstáculos Técnicos al Comercio - CIOT (MEIC)

Products covered: Electrical switches, sockets, plugs and cord connectors

Title: RTCR 497: 2018 Materiales Eléctricos. Tableros y disyuntores termomagnéticos, interruptores de uso general, tomacorrientes, enchufes y conectores de cordón, para ser usados con tensiones hasta de 1000 v. especificaciones (Costa Rican Technical Regulation (RTCR) No. 497:2018: Electrical Accessories. Panel boards and thermal-magnetic circuit breakers, general-use switches, sockets, plugs and cord connectors for use up to 1000 V; specifications). (21 pages, in Spanish)

Description of content: The purpose of the notified regulation is to establish safety requirements to prevent safety hazards for people and their property, subject to proper installation and use. It applies to the use of panel boards and thermal-magnetic circuit breakers, general-use switches, sockets, plugs and cord connectors, for use up to 1000 V, in electrical installations in residential, commercial and hospital structures.

Objective and rationale: Protection of human life.

Relevant documents:

1. Decreto Ejecutivo N° 36463-MEIC del 26 de noviembre de 2010. RTCR 443:2010 Metrología. Unidades de Medidas Sistema Internacional (SI).
2. Decreto Ejecutivo N° 36979-MEIC del 13 de diciembre de 2011 y sus reformas. RTCR 458:2011 Reglamento de Oficialización del Código Eléctrico de Costa Rica para la Seguridad de la Vida y de la Propiedad.
3. Decreto Ejecutivo N° 37662-MEIC-H-MICIT del 26 de abril de 2013. Procedimiento para la Demostración de la Evaluación de la Conformidad de los Reglamentos Técnicos.

Proposed date of adoption: Not given by country

Proposed date of entry into force: Not given by country

Final date for comments: 29 March 2019

Full text: [https://tsapps.nist.gov/notifyus/docs/wto_country/CRI/full_text/pdf/CRI184\(spanish\).pdf](https://tsapps.nist.gov/notifyus/docs/wto_country/CRI/full_text/pdf/CRI184(spanish).pdf)

Israel Notification ISR/1033

Date issued: 5 February 2019

Agency responsible: Israel WTO-TBT Enquiry Point, Ministry of Industry, Trade and Labor (MOITAL)

National inquiry point: Israel WTO-TBT Enquiry Point, Ministry of Industry, Trade and Labor (MOITAL)

Products covered: Paints and varnishes (HS 3212, 3213)

Title: SI 1343 - Paints and varnishes - General requirements (7 pages, in Hebrew)

Description of content: Revision of the Mandatory Standard SI 1343, dealing with the general requirements for paints and varnishes. The major differences between the old version and this new revised draft standard are as follow:

- Applies also to paints and varnishes packed in tubes or in containers with internal pressure that exceeds its ambient pressure;
- Deletes paragraph 5 dealing with the declared content;
- Adds new requirement for maximum lead content in products (paragraph 6);
- Adopts the American test methods for lead content detailed in ASTM F2853-10 and in CPSC-CH-E 1003-09.

Both the old standard and this new revised standard will apply from entry into force as will be announced in the publication in Israel Official Gazette until 1 January 2021. During this time product may be tested according to the old or the new revised standard.

Objective and rationale: Consumer information, labelling; Protection of human health or safety; Protection of the environment

Relevant documents: Israel Mandatory Standard SI 1343 (August 1995) and Amendment 1 (December 2005).

Proposed date of adoption: Not given by country

Proposed date of entry into force: 1 January 2021

Final date for comments: 6 April 2019

Full text: [https://tsapps.nist.gov/notifyus/docs/wto_country/ISR/full_text/pdf/ISR1033\(hebrew\).pdf](https://tsapps.nist.gov/notifyus/docs/wto_country/ISR/full_text/pdf/ISR1033(hebrew).pdf)

United States of America Notification USA/1440

Date issued: 21 February 2019

Agency responsible: Office of Energy Efficiency and Renewable Energy (OEERE)

National inquiry point: USA WTO TBT Enquiry Point

4. Notified under Article: 2.9.2

Products covered: General service lamps

6. ICS Codes: 01.020 , 13.020 , 29.140

Title: Energy Conservation Program: Energy Conservation Standards for General Service Lamps (12 pages, in English)

Description of content: On 19 January 2017, the U.S. Department of Energy (DOE) published two final rules adopting revised definitions of general service lamp (GSL), general service incandescent lamp (GSIL) and other supplemental definitions, effective 1 January 2020. DOE has since determined that the legal basis underlying those revisions misconstrued existing law. As a result, DOE is issuing this notice of proposed rulemaking (NOPR) proposing to withdraw the definitions established in the 19 January 2017, final rules. DOE proposes to maintain the existing regulatory definitions of GSL and GSIL, which are the same as the statutory definitions of those terms.

Objective and rationale: Prevention of deceptive practices and consumer protection.

Relevant documents: - 84 Federal Register (FR) 3120, 11 February 2019; Title 10 Code of Federal Regulations (CFR) Part 430. Will appear in the Federal Register when adopted.

- G/TBT/N/USA/874 and subsequent addenda - Energy Efficiency Program for Consumer Products: Energy Conservation Standards for General Service Lamps.

Proposed date of adoption: Not given by country

Proposed date of entry into force: Not given by country

Final date for comments: 12 April 2019

Full text URL: https://members.wto.org/crnattachments/2019/TBT/USA/19_0994_00_e.pdf

European Union Notification EU/642

Date issued: 12 February 2019

Agency responsible: EU-TBT Enquiry Point

National inquiry point: EU-TBT Enquiry Point

Products covered: Single use plastic products, fishing gear and products made from oxo-degradable plastic

Title: Proposal for a Directive of the European Parliament and of the Council on the reduction of the impact of certain plastic products on the environment (65 pages, in English)

Description of content: This proposal for a Directive of the European Parliament and of the Council addresses certain plastic products to prevent and reduce their impact on the environment, in particular the aquatic environment, and on human health. Where alternatives are easily available and affordable, single-use plastic products will be banned from being placed on the Union market. For other products, the focus is on prevention measures, such as consumption reduction, marking requirements and product design requirements.

Objective and rationale: Prevention and reduction of the impact on the environment, in particular the aquatic environment, and human health.

Relevant documents: Impact Assessment Study

https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2017-6169607_en

Proposed date of adoption: Not given by country

Proposed date of entry into force: Not given by country

Final date for comments: 13 April 2019

Full text: [https://tsapps.nist.gov/notifyus/docs/wto_country/EU/full_text/pdf/EU642\(english\).pdf](https://tsapps.nist.gov/notifyus/docs/wto_country/EU/full_text/pdf/EU642(english).pdf)

Canada Notification CAN/578

Date issued: 20 February 2019

Agency responsible: Department of Innovation, Sciences and Economic Development

National inquiry point: Foreign Affairs, Trade and Development Canada

Products covered: Radiocommunications

Title: RSS-130, Issue 2, (7 pages, available in English & French) and RSS-196, Issue 2 (8 and 9 pages, available in English and French).

Description of content: Notice is hereby given by the Ministry of Innovation, Science and Economic Development Canada that the following have been published on its Web site:

- RSS-130, Issue 2, Equipment Operating in the Frequency Bands 617-652 MHz, 663-698 MHz, 698-756 MHz and 777-787 MHz sets out certification requirements for all equipment operating in the frequency bands 617-652 MHz, 663-698 MHz, 698-756 MHz and 777-787 MHz.
- RSS-196, Issue 2, Point-to-Multipoint Broadband Equipment Operating in the Band 512-608 MHz for Rural Remote Broadband Systems (RRBS) (TV Channels 21 to 36) sets out certification requirements for equipment employed in Rural Remote Broadband Systems (RRBS) to provide point-to-multipoint fixed wireless access broadband radiocommunication in the band 512-608 MHz (TV channels 21 to 36).

Objective and rationale: Spectrum Management

Relevant documents: Canada Gazette, Part I, 16 February 2019, (available in English and French).

Proposed date of adoption: Not given by country

Proposed date of entry into force: 8 February 2019

Final date for comments: 9 May 2019

Full text: [https://tsapps.nist.gov/notifyus/docs/wto_country/CAN/full_text/pdf/CAN578\[1\]\(english\).pdf](https://tsapps.nist.gov/notifyus/docs/wto_country/CAN/full_text/pdf/CAN578[1](english).pdf) and [https://tsapps.nist.gov/notifyus/docs/wto_country/CAN/full_text/pdf/CAN578\[2\]\(english\).pdf](https://tsapps.nist.gov/notifyus/docs/wto_country/CAN/full_text/pdf/CAN578[2](english).pdf)

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 1 April 2019

BSR/ADA Standard No. 178-201x, Orthodontic Anchor Screws (identical national adoption of ISO 19023:2018)

This standard specifies requirements and test methods for orthodontic anchor screws used in orthodontic treatment. The standard provides test methods for the comparison of physical and mechanical properties of orthodontic anchor screws and packaging and labelling information.

Single copy price: \$25.00

Obtain an electronic copy from: standards@ada.org

Send comments to: bralowerp@ada.org

BSR/IES RP-39-201x, Recommended Practice: Off Roadway Sign Luminance (new standard)

These recommendations provide guidelines only for the lighting of signs that are located off the right of way of roadways, that is, all signs not regulated by a federal, state, provincial, or local jurisdiction, and includes on- and off-premise, internally and externally illuminated, and electronic signs. For recommendations for roadway signs used for vehicle or pedestrian navigation, the reader is referred to IES RP-19-01, Recommended Practice for Roadway Sign Lighting.

Single copy price: \$25.00

Order from and send comments to: Patricia McGillicuddy, (917) 913-0027, pmcgillicuddy@ies.org

BSR/UL 3100-201x, Standard for Safety for Automated Guided Vehicles (AGVs) (new standard)

This proposal provides revisions to the proposal document dated September 21, 2018 for this first edition of the Standard for Automated Guided Vehicles (AGVs), ANSI/CAN/UL 3100. to the applicable requirements per comments received.

Single copy price: Free

Obtain an electronic copy from: <http://www.shopulstandards.com>

Send comments to: Megan Monsen, megan.monsen@ul.com

Due 23 April 2019

BSR/ASME Y14.31-2014 (R201x), Undimensioned Drawings (reaffirmation of ANSI/ASME Y14.31-2014)

This standard establishes the requirements for undimensioned drawings that graphically define items with true geometry views and predominantly without the use of dimensions.

Single copy price: \$53.00

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

Send comments to: Fredric Constantino, constantinof@asme.org

BSR/ASME Y14.35-2014 (R201x), Revision of Engineering Drawings and Associated Documents

(reaffirmation of ANSI/ASME Y14.35-2014)

This standard defines the practices for revising drawings and associated documents. The revision practices of this standard apply to any form of original drawing and associated documents.

Single copy price: \$45.00

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

Send comments to: Fredric Constantino, constantinof@asme.org

CSA Public Review Announcements

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

Due 22 March 2019

C22. 2 No. 35 Extra-low-voltage control circuit cable, low-energy control cable, and extra-low-voltage control cable (new edition)

This standard specifies requirements for the following types of control cables, rated 30 V maximum, intended for use in extra-low-voltage control circuits in accordance with the rules of the Canadian Electrical Code, Part I:

- (a) Type LVT extra-low-voltage control circuit cables, rated 60 °C maximum;
- (b) Low-Energy Control Cables, rated 105 °C maximum;
- (c) Type ELC extra-low-voltage control cables, rated 60 °C maximum; and
- (d) Type GCS golf course and Type LSS lawn sprinkler, Type LVLL low-voltage landscape lighting, and Type ULEC underground low-energy circuit cables, rated 60 °C maximum.

Due 26 March 2019

IEC 61000-4-1, Electromagnetic compatibility (EMC) - Part 4-1: Testing and measurement techniques - Overview of IEC 61000-4 series (new edition)

This part of IEC 61000 gives information and guidance on the EMC basic standards and other basic EMC documents published in the IEC 61000-4 series. Those basic standards describe mainly immunity tests to be considered and applied for electric and electronic equipment, including systems.

The object of this part of IEC 61000 is to give assistance to the technical committees of IEC or other bodies, users and manufacturers in

- considering the immunity test methods applicable to their products;
- determining the immunity test methods relevant for the electromagnetic environment in which their products are intended to be used;
- specifying the ports of their products being subjected to the relevant immunity test methods.

Due 4 April 2019

Z240.10.1-16, Site preparation, foundation, and installation of buildings (amendment)

This standard specifies general requirements for manufactured homes, including technical requirements, and requirements on quality control, markings, and provision of printed instructions.

Due 12 April 2019

C22.1, Amendment - Canadian Electrical Code, Part I, Subject No. 4416, Deletion of 30-500 series of Rules. (amendment)

Delete Rules 30-500 through 30-510, and associated Appendix G references, thus deleting the requirements for luminaires in residential occupancies from the CEC. The argument is that these rules are better covered in the NBC, and there can be no conflict if the rules are in one place. Some of the provinces have already deleted these clauses from their local adoptions of the Canadian Electrical Code.

C22.1, Amendment - Canadian Electrical Code, Part I, Subject No. 4417, Reduction of spacing between cable bundles for Class 2 power and data communication circuits. (amendment)

Revise Rule 16-330 so spacing is reduced from 25 mm to 15 mm.

Due 15 April 2019

C22.2 No. 250.2, Lighting Systems Equipment (new standard)

This standard applies to lighting systems equipment that performs a sensing and/or signaling function, to convey data through wired or wireless means to, or from, other components of a field installed lighting system. This equipment is rated at 600 V or less, for commercial, industrial or residential applications, and intended to be installed in non-hazardous locations in accordance with the rules of the Canadian Electrical Code Part I, C22.2

No.1. These requirements cover:

- (a) Power Source Equipment, and luminaires that are part of a lighting system
- (b) Luminaires and its remote components connected to Class 2 power and data communication circuits (Power over Ethernet).

- (c) Extra low voltage lighting systems incorporating a power supply, luminaires, and bare or insulated conductors
-

DIN Public Review Announcement

The Deutsches Institut für Normung has announced a draft document possibly of interest to *Standards Watch* readers. After you register with DIN at <http://www.entwuerfe.din.de/>, you may purchase and comment on DIN draft standards. This document will be available for public review until 2019-04-08 and costs 76.80 € from Beuth Verlag. The document is in German.

DIN SPEC 56951, Veranstaltungstechnik - Antrieb und Steuerung für sicherheitstechnische Einrichtungen (Entertainment Technology - Drives and control systems for safety-related equipment)

This DIN SPEC specifies additional provisions and explanations to DIN 56950-1 for protective and safety equipment. The DIN website page announcing the public review gives examples of these “additional provisions” as applying to non-fan-powered smoke extraction systems and protective fire safety curtains for the stage and side stages. However, a perusal of the table of contents shows that it also covers devices for safely holding loads above persons and braking devices for lowering loads—more than fire safety curtains and smoke vents.

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, (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/IES LP-xx-201x (IoT), Lighting Practice: Lighting Systems and the Internet of Things (new standard)

Provides basic planning information for Connected Lighting Systems. The following topics and sections will be expanded upon to provide a common vocabulary for team members when developing their applications:

Description of IoT and connected lighting, new construction considerations, retrofit considerations, commercial and residential application considerations, wired and wireless systems, security, sequence of operations and commissioning, coordination considerations for specification and installation, and explanation of applicable codes and standards.

Contact: Patricia McGillicuddy, pmcgillicuddy@ies.org

BSR/IES LS-5-201x, Lighting Science: Color (new standard)

This standard will cover all aspects of color in relation to human vision. Definitions, human color vision, color measurement, systems, rendering, sources, uses, performance standards, and product labeling.

Contact: Patricia McGillicuddy, pmcgillicuddy@ies.org

BSR/IES LM-9-201x, Approved Method: Electrical and Photometric Measurement of Fluorescent Lamps (new standard)

This approved method explains the technique for electrical and photometric measurements of linear fluorescent lamps and tube fluorescent lamps operating on a reference ballast.

Contact: Patricia McGillicuddy, pmcgillicuddy@ies.org

BSR/IES LM-10-201x, Approved Method: Photometric Testing of Roadway and Area Lighting Fluorescent Luminaires (new standard)

Photometric testing (distribution photometry) of roadway and area lighting luminaires using fluorescent lamps.

Contact: Patricia McGillicuddy, pmcgillicuddy@ies.org

BSR/IES LM-11-201x, Approved Method: Guide for Photometric Testing of Searchlights (new standard)

Project Need: Update to IES LM-11, including:

- Technological advances in both the luminaire manufacturing and photometric testing industries;
- The format of the document needs to be updated to the current document format guidelines for the IES TPC;
- The references to other IES Lighting Measurement standards need to be updated;

- The range length section needs to be checked for accuracy and potentially rewritten based on current industry practices;
- The environmental test conditions and measurement instrument requirements sections need to be harmonized with current IES standards for photometric laboratory measurements.

Arrays of LEDs will not be addressed in this revision. Once an updated document is published, the subcommittee will address this topic. This guide applies to lighting equipment having a total field angle of less than ten degrees. This includes equipment in which light is controlled by reflectors, lenses, or their combinations. The guide applies to projectors with a variety of light sources, including tungsten filament, tungsten-halogen, and high-intensity discharge lamps. It does not apply to projector systems comprised of arrays of light emitting diodes. For luminaires where the total field spread is equal to or exceeds ten degrees, refer to IESNA LM-35. Photometric testing of reflector-type lamps is described in IESNA LM-20.

Contact: Patricia McGillicuddy, pmcgillicuddy@ies.org

BSR/IES LM-20-201x, Approved Method: Photometry of Reflector Type Lamps (new standard)

As used in this laboratory method, a reflector-type lamp is a lamp having a reflective element(s) intended to redirect flux from the emitting element (e.g., filament, arc) to form the intended spatial distribution of the light. For example, a reflective element might take the form of a reflective coating applied to the lamp bulb, or a reflector positioned relative to the emitting element and permanently affixed in this position. This laboratory method does not apply to the following: lamps of standard bulb shape to which an integral reflector is added such as silver-bowl and silvered-neck lamps; reflector-type lamps that are designed for special applications, such as automotive headlamps and projection lamps, for which lamp specific test procedures have been established; or lamps that are known to have special testing requirements beyond those addressed in this laboratory method such as linear fluorescent reflector lamps that have special temperature or orientation requirements.

Contact: Patricia McGillicuddy, pmcgillicuddy@ies.org

BSR/IES LM-31-201x, Approved Method: Photometric Testing of Roadway and Area Lighting Luminaires Using Incandescent Filament or High Intensity Discharge Lamps (new standard)

Photometric testing (distribution photometry) of roadway and area lighting luminaires using HID and incandescent lamps.

Contact: Patricia McGillicuddy, pmcgillicuddy@ies.org

BSR/IES LM-35-201x, Approved Method: Photometric Testing of Floodlights Using High Intensity Discharge or Incandescent Filament Lamps (new standard)

Project Need: To promote uniform test results in measuring luminous flux and intensity of floodlight luminaires using HID and incandescent lamps, as obtained under controlled lab conditions. Primary goals of the rewrite are to convert the document to the new LM-format, to address harmonization concerns with other IES documents that address photometric testing of other luminaire types. Additionally, the document will require the addition of absolute photometric testing methods. Floodlights are limited to luminaires with a total field angle greater than or equal to ten degrees.

Contact: Patricia McGillicuddy, pmcgillicuddy@ies.org

BSR/IES LM-40-201x, Approved Method: Life Testing of Fluorescent Lamps (new standard)

This guide describes the procedures by which fluorescent lamps can be operated under controlled conditions to obtain optimally comparable data on individual lamp life, changes in light output, and other parameters that vary during the life of the lamp.

Contact: Patricia McGillicuddy, pmcgillicuddy@ies.org

BSR/IES LM-46-201x, Approved Method: Photometric Testing of Indoor Luminaires Using High Intensity Discharge or Incandescent Filament Lamps (new standard)

Primary goals of the rewrite are to convert the document to the new LM-format, to address any harmonization issues with other LMs that address photometric testing of other luminaire types that use HID and incandescent filament lamps and to identify more types of luminaire geometries and provide a consistent method regarding how to center/orient them on the photometer. This approved method is intended to promote uniform test results as obtained under controlled laboratory conditions in measuring the luminous flux and intensity of high intensity discharge and incandescent indoor-type luminaires. All mercury, highpressure sodium (HPS), and metal halide lamps are classified as High Intensity Discharge (HID) lamps, and their photometry when installed in indoor-type

luminaires is covered by this method. Also covered are similar luminaire types employing incandescent lamps, including tungsten-halogen lamps. For the unique testing requirements of entertainment lighting luminaires (stage, TV, film) using HID and incandescent lamps, consult LM-73. Because of their special characteristics, low-pressure sodium lamps and fluorescent lamps are not discussed in these procedures.

Contact: Patricia McGillicuddy, pmcgillicuddy@ies.org

BSR/IES LM-49-201x, Approved Method: Life Testing of Incandescent Filament Lamps (new standard)

The purpose of this work is to review the document for revisions necessary to maintain its usefulness as a measurement standard. This approved method describes the procedures to be followed and the precautions to be observed in obtaining uniform and reproducible measurements during life testing of incandescent filament lamps under standard conditions.

Contact: Patricia McGillicuddy, pmcgillicuddy@ies.org

BSR/IES LM-51-201x, Approved Method: Electrical and Photometric Measurement of High Intensity Discharge Lamps (new standard)

This approved method describes the procedures to be followed and the precautions to be observed in obtaining uniform and reproducible measurements of the electrical and photometric characteristics of High Intensity Discharge (HID) lamps under standard conditions in 60Hz, alternating current circuits. This Approved Method includes other technologies within the high intensity discharge family including High Pressure Sodium, Mercury Discharge, Ceramic Metal Halide, and Pulse Start Metal Halide lamps. It addresses electrical and photometric characteristics of high intensity discharge lamps operated on auxiliary devices, either external or integrated, designed and certified to meet lamp industry standards and tolerance. Xenon arc lamps, lowpressure sodium lamps (IES LM-50-00, IES Approved Method for the Electrical and Photometric Measurements of Low Pressure Sodium Lamps (withdrawn from publication)), and automotive lamps are not addressed in this IES Approved Method. Additional information on these lamp types may be found in the IES Lighting Handbook and the other references listed at the end of this standard.

Contact: Patricia McGillicuddy, pmcgillicuddy@ies.org

BSR/IES LM-54-201x, Approved Method: Guide to Lamp Seasoning (new standard)

This Guide applies to normal and accelerated seasoning of incandescent filament, cathode fluorescent lamps, and high intensity discharge (HID) lamps. Manufacturers' recommendations for seasoning should be followed for lamps of types other than listed above. Lamps intended for use as reference standards may require special or additional seasoning and should be selected from a pool of seasoned lamps.

Contact: Patricia McGillicuddy, pmcgillicuddy@ies.org

BSR/IES LM-58-201x, Approved Method: Spectroradiometric Measurement Methods for Light Sources (new standard)

This document describes the requirements and recommendations of the instruments and the procedures for spectroradiometric measurements including those of color performance, spectral irradiance, spectral radiance, and spectral total radiant flux, either in relative or in absolute units. The spectral range is from approximately 200 nm to 1700 nm where the characterization of light from lighting sources, visual displays and light emitting diodes, is most commonly done. This document does not provide in-depth detail on every subject, but directs the user to references that completely describe the concepts. The light source or device under test shall be operated in accordance with the appropriate IES LM (Lighting Measurement) or ANSI (American National Standards Institute) document pertaining to the device and is not described in this document.

Contact: Patricia McGillicuddy, pmcgillicuddy@ies.org

BSR/IES LM-63-201x, Standard File Format for the Electronic Transfer of Photometric Data and Related Information (new standard)

The document describes the standard photometric data system and how to build a file for data transfer, storage, and retrieval.

Contact: Patricia McGillicuddy, pmcgillicuddy@ies.org

BSR/IES LM-75-201x, Approved Method: Guide to Goniometer Measurements, Types, and Photometric Coordinate Systems (new standard)

The purpose of the revision to LM-75 is to add information relating to the usage of goniophotometers. The

revision will establish an alignment with LM-78, which is a general guide to integrating sphere measurements and the usage spectrodimeters is included in LM-78. Goniocolorimeters and goniospectroradiometers are also within the scope. In addition, it will have a section on eliminating stray light, correcting for stray light, and when it is allowable to zero data. LM-75 is intended to be referenced by other LMs that use goniometers. This document provides definitions of spherical coordinate systems and goniophotometer types used to measure light sources. It does not address the use of goniophotometers to measure media or surfaces. The operating principles behind each type of goniophotometer are addressed, and a general guide to goniophotometer calibration, stray light elimination, and stray light correction is presented. A methodology of when zeroing data for upward light measurements is provided. Additionally, the correspondence between relevant IES and CIE definitions are described.

Contact: Patricia McGillicuddy, pmcgillicuddy@ies.org

BSR/IES LM-77-201x, Approved Method: Intensity Distribution Measurement of Luminaires and Lamps Using Digital Screen Imaging Photometry (new standard)

This method describes measurement procedures for the determination of the luminous intensity distribution of directional lamps and luminaires using a digital camera to capture the projected light on a screen. Digital photometry allows for high-speed data collection versus a traditional goniophotometer approach over a restricted angular range. The method provides underlying principles, requirements, factors, and limitations. Use of imaging equipment to perform digital photometry, such as capturing luminaire luminous intensity distribution by directly imaging the luminaire or an integrating sphere containing the luminaire are outside the scope of this document.

Contact: Patricia McGillicuddy, pmcgillicuddy@ies.org

BSR/IES LM-78-201x, Approved Method: Total Flux Measurement of Lamps Using an Integrating Sphere (new standard)

This document describes the procedures to be followed and precautions to be observed in performing reproducible measurements of total flux of lamps and luminaires using integrating sphere measurement systems. Two types of integrating sphere systems are presented: one employing a V lambda correct photometer head and another employing a spectroradiometer as the detector. This document explains a particular technique for total flux measurement of all types of lamps and luminaires using integrating spheres.

Contact: Patricia McGillicuddy, pmcgillicuddy@ies.org

BSR/IES RP-xx-201x, Recommended Practice: Lighting Theatre and Auditorium Spaces (new standard)

Revise and update IES DG-20 Stage Lighting - A Guide to Planning of Theatres and Auditoriums. Add content for stage lighting controls; interfacing with networks, houselight design, control, and performance including emergency lighting, stage worklight, and cue light systems; LED and automated stage lighting instruments; power distribution for stage and houselighting systems; and future proofing systems.

Contact: Patricia McGillicuddy, pmcgillicuddy@ies.org

BSR/IES TM-BIM-201x, Lighting Practice: Building Information Management (new standard)

The proposed technical memorandum shall include a recommended minimum list of parameters to be used in the construction of parametric luminaire content used in BIM software. Note that this document shall remain software agnostic. Furthermore, it shall be limited to parameters vital to luminaire schedules and load calculations.

Contact: Patricia McGillicuddy, pmcgillicuddy@ies.org

BSR/IES TM-xx-SG-201x, Approved Method: Estimating Sky Glow Contributions from End-Uses (new standard)

Recent public attention has focused on the growing artificial brightness of the night sky (i.e., sky glow) due to increased use of light at night and concerns regarding adverse consequences of that growth. Global interest both within and outside the lighting community (including producers, users, and parties of general interest) appears to be coalescing around the importance of minimizing sky glow while not hindering the benefits of lighting at night, and much potential improvement can be achieved in the careful design and implementation of appropriate luminaires. At present, however, there is no established IES guidance for estimating the contributions to sky glow across the suite of relevant lighting applications. The ability to accurately detail the characteristics of those contributions is needed to help identify the most effective strategies for reducing their

effects on sky glow. This Technical Memorandum will develop and detail recommended procedures and related tools for estimating contributions to sky glow.

Contact: Patricia McGillicuddy, pmcgillicuddy@ies.org

BSR/IES TM-15-201x, Approved Method: Luminaire Classification System for Outdoor Luminaires (new standard)

This Technical Memorandum defines a lighting application classification system for outdoor luminaires that provides information to lighting professionals regarding the lumen distribution within solid angles of specific interest. The lumens within these solid angles are intended to be one of the metrics used to evaluate luminaire optical distribution including the potential for light pollution and obtrusive light, but not as the only metric that should be evaluated.

Contact: Patricia McGillicuddy, pmcgillicuddy@ies.org

BSR C84.1-201x, Standard for Electric Power Systems and Equipment Voltage Ratings (60 hertz) (revision of ANSI C84.1-2016)

This standard establishes nominal voltage ratings and operating tolerances for 60 Hz electric power systems above 100 volts. It also makes recommendations to other standardizing groups with respect to voltage ratings for equipment used on power systems and for utilization devices connected to such systems. This standard includes preferred voltage ratings up to and including 1200 kV maximum system voltage, as defined in the standard. In defining maximum system voltage, voltage transients, and temporary overvoltages caused by abnormal system conditions such as faults, load rejection, and the like are excluded. However, voltage transients and temporary overvoltages may affect equipment operating performance and are considered in equipment application.

Contact: Khaled Masri, Khaled.Masri@nema.org

BSR/TIA 598-E-201x, Optical Fiber, Cable, and Component Color Coding (revision and redesignation of ANSI/TIA 598-D-2014)

This is a revision of ANSI/TIA-598-D-2014. The modifications may include: (1) Incorporating Addendum 1, Additional Colors for Fibers 13-16; (2) Incorporating Addendum 2, Jacket Color for OM5 Indoor Fiber Cables; (3) Incorporate and enhance connector and adapter identification from ANSI/TIA-568.3-D; (4) Broaden scope to include connector and adapter identification, cabling architectures utilizing 16 elements, marking updates, and possibly reorganization of the content; and (5) Review and update marking, identifications, and guidance to align with current best practice.

Contact: Teesha Jenkins, standards@tiaonline.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 C137.2-2019, Standard for Lighting Systems – Cybersecurity Requirements for Lighting Systems for Parking Facilities (new standard): 15 February 2019

ANSI CSA B44.1/ASME A17.5-2019, Elevator and Escalator Electrical Equipment (revision of ANSI CSA B44.1/ASME A17.5-2014): 15 February 2019

ANSI/ASHRAE 62.1m-2019, Ventilation for Acceptable Indoor Air Quality (addenda to ANSI/ASHRAE Standard 62.1-2016): 13 February 2019

ANSI/ASHRAE/IES 90.1ai-2019, Energy Standard for Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/IESNA Standard 90.1-2016): 13 February 2019

ANSI/ASHRAE/IES 90.1aj-2019, Energy Standard for Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/IESNA Standard 90.1-2016): 13 February 2019

ANSI/ASHRAE/IES 90.1bg-2019, Energy Standard for Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/IESNA Standard 90.1-2016): 13 February 2019

ANSI/ASHRAE/IES 90.1m-2019, Energy Standard for Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/IESNA Standard 90.1-2016): 13 February 2019

ANSI/ASSP A10.8-2019, Scaffolding - Safety Requirements (revision and redesignation of ANSI ASSE A10.8-2011): 7 February 2019

ANSI/BICSI 002-2019, Data Center Design and Implementation Best Practices (revision of ANSI/BICSI 002-2014): 8 February 2019

ANSI/BOMA Z65.3-2018, Gross Areas of a Building: Standard Methods of Measurement (revision of ANSI/BOMA Z65.3-2009): 8 February 2019

ANSI/NSF 140-2019 (i27r2), Sustainability Assessment for Carpet (revision of BSR/NSF 140-201x (i27r1)): 6 February 2019

ANSI/NSF 391.1-2019 (i1r2), General Sustainability Assessment Criteria for Professional Services (new standard): 29 January 2019

Draft IEC & ISO Documents

This section lists proposed documents 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 a 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 22367, Medical laboratories - Application of risk management to medical laboratories. 28 February 2019, \$155.00

ISO/DIS 24334, Laminate floor coverings - Determination of locking strength for mechanically assembled panels. 28 February 2019, \$40.00

ISO/DIS 10015, Quality management - Guidelines for competence management and people development, 4 March 2019, \$40.00

ISO/DIS 10018, Quality management - Customer satisfaction - Guidelines for complaints handling in organizations, 4 March 2019, 53.00

ISO/DIS 5912, Camping tents - Requirements and test methods , 4 March 2019, \$93.00

ISO/IEC DIS 18032, Information technology - Security techniques - Prime number generation, 4 March 2019, \$102.00

34/589/CDV, IEC 61547 ED3: Equipment for general lighting purposes - EMC immunity requirements, 5 March 2019

34/590/CDV, IEC 62386-105 ED1: Digital addressable lighting interface - Part 105: Particular requirements for control gear - Firmware Transfer, 5 March 2019

35/1415/CDV, IEC 60086-6 ED1: Primary batteries - Part 6: Guidance on environmental aspects, 5 March 2019

37B/182/CD, IEC 61643-322 ED1: Components for low-voltage surge protective devices - Part 322: Selection and application principles for silicon PN-junction voltage limiters, 5 March 2019

ISO/DIS 22111, Bases for design of structures - General requirements, 11 March 2019, \$107.00

25/655/FDIS, ISO 80000-10 ED2: Quantities and units - Part 10: Atomic and nuclear physics, 22 March 2019

25/656/FDIS, ISO 80000-11 ED2: Quantities and units - Part 11: Characteristic numbers, 22 March 2019

25/657/FDIS, ISO 80000-9 ED2: Quantities and units - Part 9: Physical chemistry and molecular physics, 22 March 2019

25/658/FDIS, ISO 80000-2 ED2: Quantities and units - Part 2: Mathematics, 22 March 2019

25/649/FDIS, ISO 80000-3 ED1: Quantities and units - Part 3: Space and time, 22 March 2019

25/650/FDIS, ISO 80000-4 ED2: Quantities and units - Part 4: Mechanics, 22 March 2019

25/651/FDIS, ISO 80000-5 ED2: Quantities and units - Part 5: Thermodynamics, 22 March 2019

25/652/FDIS, ISO 80000-7 ED2: Quantities and units - Part 7: Light and radiation, 22 March 2019

25/653/FDIS, ISO 80000-8 ED1: Quantities and units - Part 8: Acoustics, 22 March 2019

25/654/FDIS, ISO 80000-12 ED2: Quantities and units - Part 12: Condensed matter physics, 22 March 2019

35/1420/FDIS, IEC 60086-4 ED5: Primary batteries - Part 4: Safety of lithium batteries, 22 March 2019

35/1421/CD, IEC 60086-1 ED13: Primary batteries - Part 1: General, 5 April 2019

100/3221/CD, IEC 60958-5 ED1: Digital audio interface - Part 5: Consumer application enhancement, 5 April 2019

CIS//I/611/CD, Amendment 1 - CISPR 35: Electromagnetic compatibility of multimedia equipment - Immunity requirements, 5 April 2019

JTC1-SC41/90/DTR, ISO/IEC TR 30148 ED1: Internet of Things (IoT) - Application of sensor network for wireless gas meters, 5 April 2019

23/842/NP, PNW 23-842: General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) - Part 4: General functional safety requirements for products intended to be integrated in Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS), 12 April 2019

ISO/DIS 21895, Categorization and classification of civil unmanned aircraft systems, 28 April 2019, \$46.00

ISO/DIS 21384-1, Unmanned aircraft systems - Part 1: General specification, 28 April 2019, \$33.00

ISO/DIS 21384-4, Unmanned aircraft systems - Part 4: Terms and definitions, 29 April 2019, \$58.00

ISO/IEC 23000-19/DAMd3, Information technology – Multimedia application format (MPEG-A) - Part 19: Common media application format (CMAF) for segmented media - Amendment 3: HEVC Media Profiles update, new CMAF Structural Brand and other improvements, 29 April 2019, \$77.00

Recently Published IEC & ISO Documents

Listed here are documents recently approved by the IEC or ISO. Prices are if bought from ANSI.

ISO 7171:2019, Furniture - Storage units - Test methods for the determination of stability, \$138.00

ISO/IEC/IEEE 8802-A/Amd2:2019, Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Part A: Overview and architecture - Amendment 2: Local medium access control (MAC) address usage, \$138.00

ISO/IEC/IEEE 8802-1Q/Amd6:2019, Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Specific requirements – Part 1Q: Bridges and bridged networks - Amendment 6: Per-stream filtering and policing, \$209.00

ISO/IEC/IEEE 8802-1Q/Amd7:2019, Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Specific requirements – Part 1Q: Bridges and bridged networks - Amendment 7: Cyclic queuing and forwarding, \$162.00

ISO/IEC/IEEE 8802-1CB:2019, Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Specific requirements – Part 1CB: Frame replication and elimination for reliability, \$232.00

ISO/IEC/IEEE 8802-3/Amd10:2019, Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Specific requirements – Part 3: Standard for Ethernet - Amendment 10: Media access control parameters, physical layers, and management parameters for 200 Gb/s and 400 Gb/s operation, \$232.00

ISO/IEC/IEEE 8802-3/Amd11:2019, Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Specific requirements – Part 3: Standard for Ethernet - Amendment 11: Physical layer and management parameters for serial 25 Gb/s ethernet operation over single-mode fiber, \$185.00

ISO/IEC/IEEE 8802-11/Amd1:2019, Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Specific requirements – Part 11: Wireless LAN medium access control (MAC) and physical layer (PHY) specifications - Amendment 1: Fast initial link setup, \$232.00

ISO 20252:2019, Market, opinion and social research, including insights and data analytics - Vocabulary and service requirements, \$209.00

ISO 21316:2019, Traditional Chinese medicine - *Isatis indigotica* root, \$103.00

ISO 21370:2019, Traditional Chinese medicine - *Dendrobium officinale* stem, \$103.00

ISO 24679-1:2019, Fire safety engineering - Performance of structures in fire - Part 1: General, \$162.00

ISO 27501:2019, The human-centred organization - Guidance for managers, \$162.00

ISO/IEC 15961-3:2019, Information technology - Data protocol for radio frequency identification (RFID) for item management - Part 3: RFID data constructs, \$103.00

ISO/IEC/IEEE 24748-7:2019, Systems and software engineering – Life cycle management - Part 7: Application of systems engineering on defense programs, \$209.00

ISO/IEC/IEEE 24748-8:2019, Systems and software engineering – Life cycle management - Part 8: Technical reviews and audits on defense programs, \$232.00

ISO/IEC/IEEE 41062:2019, Software engineering – Recommended practice for software acquisition, \$209.00

TSP Meeting Schedule

The most up to date schedule sorted by day is available at <http://www.esta.org/>. The following meetings will be at the Hyatt Regency Louisville, in conjunction with the USITT Conference:

Electrical Power Working Group	11:00 – 14:00	Friday 22 March 2019
Electrical Power Inspection Task Group	08:00 – 12:00	Thursday 21 March 2019
Event Safety Fire Safety Task Group	14:00 – 18:00	Saturday 23 March 2019
Event Safety Working Group	14:00 – 18:00	Saturday 23 March 2019
Floors Working Group	14:00 – 17:00	Wednesday 20 March 2019
Followspot Position Working Group	19:00 – 22:00	Friday 22 March 2019
Rigging Working Group	19:00 – 22:00	Thursday 21 March 2019
Rigging E1-6.2 Chain Hoist Task Group	08:00 – noon	Thursday 21 March 2019
Stage Machinery E1.64 TG	09:00 – 13:00	Wednesday 20 March 2019
Stage Machinery Working Group	14:00 – 17:00	Thursday 21 March 2019
Technical Standards Council	15:00 – 18:00	Friday 22 March 2019

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

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Clark-Reder Engineering
Columbus McKinnon Corporation
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Bruce Darden
Doug Fleenor Design
Earl Girls Inc. EGI Pro
Electronic Theatre Controls
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H & H Specialties
Harlequin Floors
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Interactive Technologies
InterAmerica Stage
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Mike Garl Consulting
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Oasis Stage Werks
Reed Rigging
Reliable Design Services
Robe
Rosco Laboratories
Rose Brand
Alan M. Rowe
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Sapsis Rigging
Stage Equipment & Lighting
Stage Rigging
Stagemaker
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Theatre Safety Programs
TMB
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German Light Products

Stage Rigging

JR Clancy

TMB

McLaren Engineering Group

Tyler Truss Systems, Inc.

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About the Stage

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Scott Blair

Mike Garl Consulting

Boston Illumination Group

Mike Wood Consulting

Louis Bradfield

Power Gems

Candela Controls Inc.

Reed Rigging

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Reliable Design Services

Tracey Cosgrove & Mark McKinney

Alan Rowe

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High Output
InCord
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Oasis Stage Werks
Stage Equipment & Lighting
Stagemaker
Taurus Light Co. Ltd.
Thermotex Industries, Inc.
Vincent Lighting Systems
Zhuhai Shengchang Electronics Co.

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Tony Giovannetti
Pat Grenfell
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Beverly and Tom Inglesby
Eddie Kramer
Jason Kyle

LuxBalance Lighting
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Lizz Pittsley
Showman Systems
Michael Skinner
Skjonberg Controls Inc.
Stage Labor of the Ozarks
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