

The well refills



PHOTO: MAXIME BOUFFARD

YOU DON'T MISS THE WATER until the well runs dry. When it refills, it feels like a miracle.

I attended *Pass Over* on Broadway on Wednesday, September 1. For decades I've been able to give people a speech about the magic of live theatre, but on that Wednesday night I felt it. Broadway closed on March 12, 2020; my wife and I had tickets for a show that night that we didn't see. September 1 was the first time in 18 months I sat inside a theatre with other people and watched actors on stage in real-time, unmediated by a screen or a streaming service—a Broadway production with all the story-telling tools Broadway offers. I had not realized how much I'd missed live theatre. It was wonderful to be back.

Pass Over haunted me, keeping my mind busy for days teasing out the Biblical allusions and the parallels with *Waiting for Godot*. I thought about the story being told, and also about how it was being told. *Pass Over* does not wow the audience with stage technology, but stage technology helps the actors tell the story. ESTA's technical standards help that technology be used safely and effectively. A haze delineated the light beams and hid the upstage scenery. The lighting colors shifted, running through various whites and high-pressure sodium yellow. Of course, there's a show deck and scenery—and costumes. ESTA doesn't have standards for costumes, but it does have standards touching on every other element. It was nice to think that ESTA's Technical Standards Program may have helped make it possible. Here's an update on some of the current projects in the TSP.

Control Protocols Working Group

The Control Protocols Working Group has the largest portfolio of published standards of any of the TSP's nine working groups. The last working group meeting, held online on July 27, had updates or action on 14 draft standards. The two I'd like to highlight are the

revision of *BSR E1.59, Object Transform Protocol*, (see Dan Murfin's "OTP: Describing the Physical Position and Characteristics of Scenic Elements" in the Spring 2021 *Protocol*) and a new project to provide security to comply with California regulations for "connected devices." *E1.59* was originally written to synchronize lighting and sound with moving scenery, but is being reworked to include camera tracking and other visual data that needs to be coordinated between systems when digital content is integrated with live content. (See Marcus Bengtsson's "Extended Reality" in the Summer 2021 *Protocol*.) The required data fields are about two to three times the number of fields in the existing version of the standard (*ANSI E1.59 – 2021*), but the standard is scalable. The second project is to address California's cybersecurity requirements, which really are simply good practice. (See "Cybersecurity: Legal Requirements Push Toward Good Practice" by Robert Bell in the Winter 2020 *Protocol*.) A study group has been working for months figuring out what we reasonably can do to make sure a theatrical control network is not hijacked. A formal proposal to create an American National Standard is on the agenda for the late September working group meeting.

Electrical Power Working Group

The Electrical Power Working Group has revised *E1.19, Recommended Practice for the Use of Class A Ground-Fault Circuit Interrupters (GFCIs) Intended for Personnel Protection in the Entertainment Industry*. The changes are relatively minor, but they remove assurances that readers can buy GFCI products that perhaps don't exist and give better guidance on appropriate distance from water. The revised version was offered for public review, no one commented, so the working group is in the process of voting via letter ballot to accept the document as an American National Standard. So far everyone who has voted has voted Yes. Two ballots

are not returned, but those people have failed to vote on any of the four ballots that are now open. People get busy with other things. That's what people do, but these two will lose voting status if they fail to vote. The TSP only works with active engagement.

The other three EPWG ballots that are open are for the reaffirmation of *ANSI E1.16 – 2002 (R2017) Entertainment Technology – Configuration Standard for Metal-Halide Ballast Power Cables*, and *ANSI E1.24 – 2012 (R2017), Entertainment Technology – Dimensional Requirements for Stage Pin Connectors*. These standards are in public review for reaffirmation through October 4. Chances are excellent that no one will have a comment; these standards work. The third ballot is to abandon *BSR E1.65 Recommended Practice for the Periodic Inspection, Testing, and Maintenance of Electrical and Electronic Equipment Used in the Entertainment and Live Event Industries*. There already are standards for general equipment inspection and maintenance; writing something special for our industry hasn't come to the top of anyone's to-do list.

Event Safety Working Group

The Event Safety Working Group is becoming one of our most productive working groups. Its projects are being built on the work of the Event Safety Alliance and its *Event Safety Guide*. *ANSI ES1.7, Event Safety – Weather Preparedness*, was published early this year. *BSR ES1.4, Event Safety – Fire Safety Requirements*, should be approved soon. (The Technical Standards Counsel is voting to approve it now.) There are **lots** of fire safety standards, but this one is designed to help management people in the live event industry. Fire safety is the identification and assessment of event specific fire risks, and the effects that fire and smoke will have to the life safety of all persons who may be affected. It includes those measures required to minimize the likelihood of a fire starting, means of escape, fire safety monitoring, and the methods used to limit the development, spread, and effects of fire.

As I write this, three Event Safety standards are in public review. *BSR ES1.5, Event Safety Requirements – Medical*, describes the steps necessary to create a reasonable level of protection from medical hazards that can be caused, exacerbated by, or effective treatment delayed, as a result of the challenges and circumstances presented by the special event environment. It includes the identification and assessment of specific medical hazards, and also addresses the potential ramifications and potential impact on local medical services provided for the local population. (You don't want to burden the local hospital if it's already full of COVID patients.) *BSR ES1.6, Event Safety – Communications*, describes requirements for internal communication and public information for live events and related activities. It provides guidelines and good practices for effective communication within the production and operation of a live event. (It was unhelpful on September 11 to have incompatible radio systems for the first responders. They couldn't talk to

each other.) *BSR BS1.18 – 202x, Event Safety – Rigging*, provides minimum requirements and general guidelines for the design, planning, installation, set-up, removal, and operation of rigging. We have lots of standards for people who design, install, and maintain rigging systems; this one is aimed at helping management make sure that's all done properly.

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Floors Working Group

The Floors Working Group has a new project: *BSR E1.76, Wire Rope Tension Grids*. It'll cover design and application criteria including: the loading, self-weight considerations, transitions between levels, and suspension from the building structure. The standard will provide deflection criteria for both structural elements and the woven mesh; guidance on the size of openings, including trap doors and bays similar to loft-wells; and requirements for hand rails and consideration for other accessories, such as stage lighting battens.

A call for members

You can become part of the team of people working to make the entertainment industry simpler, safer, and more profitable by joining a working group. At this time, the following working groups are looking for new voting members in these particular interest categories, to help balance the interests in the working group.

- **Control Protocols:** General interest, designers, dealer/rental companies—not manufacturers.
- **Electrical Power:** Designers, general interest, anybody but users.
- **Event Safety:** Equipment providers, performing artists, insurance companies, event producers.
- **Floors:** Designers, dealer/rental companies.
- **Fog and Smoke:** Dealer/rental companies and equipment manufacturers, but really anybody other than users. Half the voting body is users, and that's too much.
- **Followspot Position:** Producers of any type, dealer/rental companies.
- **Photometrics:** Dealer/rental companies, designers, general interest.
- **Rigging:** Designers.
- **Stage Machinery:** Users.

“Interest” means how the work of the group affects your livelihood or your health, and not that you find it interesting. The interest categories are relative to how you are affected by the subject matter of the working groups. Definitions for the interest categories can be found on the second page of the working group application forms, which are available at <http://estalink.us/evt6b>. If you see any working groups that fit your interests and expertise, and you are in one of the under-represented categories, please join.

Wire tension grids have been in use since at least 1949 in anechoic chambers. Since then have been used in black box theatres in place of or as a supplement to a catwalk system. Now they are being used as work-access platforms for arena rigging in extremely large venues, such as the Chase Center in San Francisco.

Does this interest you? You can join the Floors Working Group to help create the standard. See the “Call for Members” sidebar for more information about joining this or other working groups. Or—with a lower time commitment—you can comment in a public review in a year or two at <http://estalink.us/pr>.

Followspot Position Working Group

The least active of our working groups at this time is the Followspot Position Working Group. It has two standards: one for the design of permanent followspot positions and one for temporary (short-term use) followspot positions. There has been some talk of writing guidance on the glass for enclosed followspot booths. Some people are concerned about the intensity of the light projected through a small part of the glass. Wikipedia, the fount of all knowledge, says sunlight illuminates surfaces to about 98,000 lux. The exit aperture of a 3 kW xenon followspot, considered as an illuminated surface, is about 1,214,740 lux. So far there is no action on this, but it’s an interesting discussion topic.

Fog and Smoke Working Group

The Fog and Smoke Working Group has received ANSI approval for *ANSI E1.40 – 2016 (R2021), Recommendations for the Planning of Theatrical Dust Effects*. The new edition hasn’t been published yet, but it’s a reaffirmation of the 2016 edition; other than copyright, ESTA address, and other front-matter it will be the same as the 2016 document.

The new project for the Fog and Smoke Working Group is *BSR E1.74, Guidance on Ventilation for Indoor Stages and Motion Picture Studios*. The current pandemic has made it clear that good ventilation is key to controlling disease spread, not only the spread of COVID-19, but also the flu, common cold, and other diseases. Ventilation also has great affect on atmospheric effects. (Negative pressure in the orchestra pit will assure that stage fog will go into the pit, making the musicians unhappy.) There are lots of existing standards for the ventilation of indoor spaces, but, as Monona Rossol pointed out in her NATEAC presentation, “Stage and House Ventilation” a lot of them are not designed to control disease, and they don’t give explicit advice how the ventilation requirements might change as the use of the venue changes. Sometimes a stage is a construction site; sometimes it’s not. This standard should help people understand what ventilation standards would need to be used when, and what modifications might be needed for particular productions or public health situations.

Photometrics Working Group

The Photometrics Working Group is revising *ANSI E1.41 – 2016, Recommendations for Measuring and Reporting Photometric Performance Data for Entertainment Luminaires Utilizing Solid State Light Sources*. Some of the parameters in the published edition, such as “color efficiency” and “color ratio,” are not used, and new parameters, such as the Stoboscopic Visibility Measure, are now required by law in the EU. The working group also plans to add a requirement to report spectral power distribution, which is the subject of a new project, *BSR E1.75, Guidelines for the Measurement and Reporting of Luminaire Spectral Power/Absorbance for the Entertainment Industry*. That project ties in to the revision of *E1.41* and also would support the automated luminaire color control work being done in the CPWG.

Rigging Working Group

The Rigging Working Group has 21 projects. Some of these are simply the maintenance of existing standards. Others are revisions or new standards. A revision of interest is *BSR E1.43, Entertainment Technology – Performer Flying Systems*. The existing standard from 2016 was written to address safety with performer flying systems used on large shows such as *Spider-Man: Turn Off the Dark*, a show so plagued with problems it had 183 preview performances. The standard is being reworked to serve smaller productions too—something that may come in handy soon. The “NATEAC Squares” at NATEAC in July session had some people predicting that performer flying effects will become as ubiquitous as video screens. A new project of interest is *BSR E1.70, Selection and Use of Ground Supported Winch Stands and Towers in the Entertainment Industry*, which should be very useful when we can get back to doing shows outdoors and in spaces that don’t have overhead rigging systems.

Stage Machinery Working Group

The working group has four active projects; a lot of the discussion was about defining scopes so that they don’t cover each other’s territory. The *BSR E1.42* project is to revise the existing *ANSI E1.42 – 2018, Entertainment Technology – Design, Installation, and Use of Orchestra Pit Lifts*. That standard was written so that AHJs would have a standard for orchestra pit lifts more appropriate than standards for passenger or freight elevators. Now the discussion is about also including lifts built specifically for shows, not as part of the permanent building structure. Other projects include *BSR E1.71, Powered Curtain Machines*, a standard for curtain automation in situations not rising to the level of risk or complexity covered by *ANSI E1.6-1*, and *BSR E1.72, Stage Floor Machinery*, covering turntables and wagons. *BSR E1.64, Stage Machinery Motion Control*, is a project affecting all of the above.

It's to develop a common standard for the design, operation, and control of all stage machinery.

Is any of this interesting to you? You can join a working group (see the "Call for Members" sidebar) or visit a meeting. See <https://esta.org/ESTA/meetings.php> for the meeting schedule including times. They are all by WebEx and will be through at least January 2022. The meeting log-in information is part of the meeting agenda for each working group member or pending member, which is not posted for the general public. The meetings are not secret, but we don't want the WebEx equivalent of Zoombombing. However, if you want to listen in, send an email to standards@esta.org, and the agenda with log-in information will be sent to you. If you find a meeting interesting, perhaps you will want to join. Of course, you can always comment on a document when it's in public review. Visit <http://estalink.us/pr>. ■



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