

MINUTES
FLOORS WORKING GROUP

Friday, February 15, 2002
Hyatt Regency Hotel
New Orleans, Louisiana

Chair: Tim Hansen, Oasis Stage Werks, principal; producer
Recording secretary: William L. Maiman

1 Opening remarks

Tim Hansen noted that we had a quorum present, welcomed everyone to the meeting and we started at 1:15PM

2 Attendance and membership

Members attending: Jerry Gorrell; Theatre Safety Programs; ; principal; user
Tim Hansen; Oasis Stage Werks; ; principal; producer
Keith Sklar; Actors' Equity Association; observer; gen. interest
Michael Sean Graves; Rosco Laboratories; principal; producer
Ken Greenwood; Actors' Equity Association; observer; gen. interest
Seth Popper; League of American Theatres and Producers, Inc.; observer;
gen. interest
Bob Dagger; American Harlequin Corp. (Harlequin Corporation); principal;
producer

Visitors: Ralph Weber, Endl Texas

2.1 Introduction of those present

A green sign-in sheet was passed around the room. While it was circulating, those present introduced themselves. It was noted that some members are participating via audioconferencing and that others had sent their regrets.

2.2 Call for quorum

It was determined that a quorum was present.

3 Requirements for membership

Tim Hansen reviewed the requirements for membership. Every principal member of the working group is required to attend meetings. Any principal member and voting alternate that both miss three consecutive meetings will have their membership status changed to observer. This action will be taken as the last item of business at each meeting and recorded in the minutes of that meeting.

No action was required at the end of this meeting.

The full list of Floors Working Group voters, including those not present, during the period of the meeting was:

Name	Company	Representing	Voting Status	Int. Cat.
Bob Dagger	American Harlequin Corp.	American Harlequin Corp.	P	P
Tim Hansen	Oasis Stage Werks	Oasis Stage Werks	P	P
Gary Justesen	Oasis Stage Werks	Oasis Stage Werks	A	P
Tim Cox	PLASA	PLASA	P	G
Michael Sean Graves	Rosco Laboratories	Rosco Laboratories	P	P
Jerry Gorrell	Theatre Safety Programs	Theatre Safety Programs	P	U
Steven Wiese	Wenger Corp.	Wenger Corp.	P	P
			6 votes	4 P 1 G 1 U

4 Approval of minutes from the previous meeting

Jerry Gorrell moved that the minutes from the previous meeting be accepted. The motion was seconded by Michael Sean Graves. The motion was accepted unanimously on a voice vote.

5 ESTA declarations

5.1 Anti-trust statement

Tim Hansen read aloud the anti-trust statement:

"The ESTA Board of Directors, the Technical Standards Committee and the leadership of this Working Group will reject or nullify any actions that unlawfully restrain trade. Anyone who feels that such an action is being or has been taken is requested to bring that matter to the attention of the chair immediately. Anyone who feels that action in restraint of trade have been taken and not properly annulled is requested to notify the TSC (chairs), or the ESTA President immediately.

"ESTA legal counsel has informed us that violations of the antitrust laws can have serious consequences. Individuals engaged in certain unlawful conduct can be found criminally liable. An individual convicted of a criminal violation of the Sherman Act may be fined as much as \$100,000 and imprisoned for up to three years. An easy to read pamphlet describing restraint of trade issues is available from the Technical Standards Manager."

No anti-trust issues were brought to the attention of the chair:

5.2 Call for patents:

Tim Hansen read aloud the call for patents:

"ESTA intends not to publish any standard that contains protected intellectual property, unless that property can be licensed by anyone for a reasonable fee. ESTA uses a process of open patent and copyright disclosures to implement its intent. ESTA does not conduct patent or copyright searches and does not warrant that its programs contain no protected intellectual property."

"In keeping with the open disclosures policy, I ask if anyone present wishes to notify the working group of the existence of a patent that might protect material in a standard being developed by the working group. You need not be the holder of the patent or copyright to notify the working group of its existence."

No patent or copyright issues were brought to the attention of the chair.

6 Approval of agenda

Jerry Gorrell moved that the agenda be approved. Bob Dagger seconded the motion. It was accepted unanimously on a voice vote.

7 Old business

7.1 News from Rosco Italy and Rosco Russia - Michael Sean Graves

Michael Sean Graves reported that there is NO news from Rosco Italy. He did locate some information on staging materials, but nothing on sprung floors. Moscow is still a possibility, and he will report on these results at the Dallas meeting. Rosco does have a Germany office that is a potential source of information and could provide translation assistance.

7.2 International Association of Dance, Medicine, and Science. (IADMS)

Rachel Rist, who is based in the UK, would like to be informed of our work, but has nothing to add to our work at the present time. Bob Dagger and Bill Maiman will coordinate keeping her informed.

7.3 Review status of known information / standards on floors – Tim Hansen

7.3.1 Cost of an official English translation of the DIN standard – Tim Cox

Tim Cox sent word that he "now has an official copy of the standard, which is only available in German. I have arranged for that to be translated into English.....and will pass it on after its available." The Working Group expressed its appreciation to PLASA for undertaking the expense of arranging for an English translation of the DIN 18032.2 standard. As noted in previous meetings, discussion followed concerning the relevancy of a standard for Sports floors to performance floors, the need to change the testing values to conform to performance applications, and that only some tests specified in the DIN standard are relevant to the entertainment industry.

Jerry Gorrell noted that comparisons between older floors and newly manufactured floors would also be important. He is currently warehousing 4 segments of 4' squares, of the old floor from the Arizona ballet 4' squares – a few segments – useful for old floors –new floor comparisons –

7.3.2 Suspension testing and discussions with Dr. Paul Elliott – Tim Hansen

Dr. Paul Elliott was working for Robbins Flooring, however he has left the company. A replacement has not been hired. Tim noted that he is attempting to locate Dr. Elliott through other means and will report on progress locating the elusive Dr. Elliott and with contacting Robbins Flooring at the Dallas meetings.

7.3.3 Research on other appropriate DIN standards - Keith Sklar

Keith Sklar noted that all of the standards are in German, and very few standards have been translated into English. There is a two-page list of DIN standards appropriate for floors, though it is uncertain which ones are relevant for performance-based flooring. After discussion, Keith

agreed to work directly with Michael Sean Graves to contact the German office of Rosco and to develop a list of DIN standards that are relevant and important for the Working Group to evaluate. Jerry Gorrell recommended that DIN 51130 be investigated. Bob Dagger also asked to be copied on correspondence, as his office has a familiarity with some of the appropriate German DIN standards.

Discussion continued, with Bob Dagger noting that other standards are in development – also the ISO has a standard that is almost finished and out of the Public Review phase. Tim noted that the main question is use of testing methods specified in each standard. He suggested that a possible approach might be to extract and define testing values referenced in each specification and then compare the values and ranges. It was agreed that Bob Dagger will investigate the ISO standard (and other standards that he is aware of) and to report on this at the Dallas meeting.

7.3.4 Examination of the values used in the Cincinnati testing to develop a range of values for dance – Tim Hansen

Tim Hansen reported that he was granted permission to distribute a copy of the test results to members of the Floors Working Group. There was not enough time to prepare copies and to distribute the information prior to the meeting of the Working Group. He will have it distributed prior to Dallas. Tim Hansen showed photos of the testing, the report, and briefly explained some of the conclusions gained from the testing conducted in Cincinnati. Five manufacturers submitted products to be tested in different categories, including energy absorption, deflection, area of deflection, and rolling load.

Robbins Flooring conducted the testing, and their primary business is the sports flooring industry. They travel to install the sports floor and will test the floor after installation to insure that the installed product meets relevant specifications, as well as to be consistent from one end to the other of the installed surface.

Tim Hansen noted that the testing examined different products and measured the response of the floor to a load. The testing did yield results but there was an interesting development in the subjective testing. He noted that the measured numbers and subjective results did not match, i.e. the floor surface felt harder or better than the test results would indicate – meaning that other variables may need to be examined – Slippage?, dust?, shoes may affect results? Also, one dancer may not be able to speak for other dancers and may have different preferences. Even a group of barefoot dancers will not yield consistent results. Tim asked, "do they play follow the leader?"

In summary, Tim noted that a Broadway client paid for the tests and that the tests have many measurements and other laboratory test results. The manufacturers tested included, Harelquin, D'Anser, L'Air (provided by a third party), Broadway Show Deck---and variations of the tested version, some consisting of a steel frame with Arboron deck (an engineered panel that is nearly indestructible).

Tim Hansen recommended that time be allowed for discussion in Dallas of the testing machinery used and the results obtained.

Bob Dagger noted the need to choose the *relevant* parts of the Din standard and choose values that are relevant for performance venues. Also, there is still a need to work on a testing apparatus that can be used on existing stages and their surfaces.

7.3.5 Examination of resiliency and rake as interdependent issues - Ken Greenwood

Ken Greenwood reported that Equity is designing a study on Rake and Floor surfaces. A key question to be examined is, "Can a floor that is flat have more slipperiness than a floor that has a rake?" It was noted that the study would have to factor in many variables and look at contributing factors. Additional parts of this report can be found under section, 7.5, also being presented by Ken Greenwood and Keith Sklar.

7.3.6 Report on developing a portable testing machine - Bob Dagger

Bob Dagger noted that the original objective was to find a method of measuring slip measurement on site and to distinguish a floor that is used mostly for entertainment or dance performances. Also, a key requirement was to correlate the type of dance with the values derived from the testing --HOWEVER --there are too many variables -- so an examination of available testing machines was started. --Then the research located Mr. George Sauter and his work on preventing slips and falls and that there is a need to invite George to be a part of the Floors Working Group. Also, there are special associations concerned with materials used on floors, i.e. the, Rubber and Plastic Research Association, Tim Hansen offered to contact Mr. Sauter and invite him to join the Floors Working Group.

The information on the book, STOP -- Slips and Fall Accidents!" and Mr. Sauter follows:

STOP -- Slip and Fall Accidents!, Dr. George Sotter, copyright 2000, Sotter Engineering Corporation, Sotter Engineering Corporation, 26705 Loma Verde, Mission Viejo, CA 92691-6055, LIC Cat. No. 99-91001, ISBN -0-9676030-0-5.

Mr. Sotter can be contacted via e-mail:< sottergeo@aol.com> or via telephone, (949) 582-0889. Sotter Engineering Corporation, 26705 Loma Verde, Mission Viejo, CA 92691-6055

7.3.7 Report on terminology and alternative words - Tim Cox

Members of the WG liked the working definition of resilience as submitted by Tim--"Resilience-the ability of a floor to return to its normal form when a load is removed." Tim Cox, also noted, "What this means is that a floor will deflect, bend or squash under a load (which might be an impact) and that it will recover its former shape when the load is removed. This is elasticity --a material that is behaving elastically will return to its former shape, but a material that behaves plastically, possibly because it's elastic region has been passed, will not return to its original shape.

Michael Sean Graves offered to follow-up on Akron rubber center to determine if there is an industry "approved" definition of resilience - since the Working Group needs more descriptive language i.e. "return to mean previous state" -- and the explanation needs clarity also.

Bob Dagger to review definitions with other associations, i.e. PARA.

Michael Sean Graves to review definitions with the Akron Rubber Center.

All reports will be presented at the Dallas meetings.

7.4 ANSI Standard on Floors -- Refine and approve the scope, determine the process and assign tasks - Tim Hansen

7.4.1 Test criteria and data collection - Tim Hansen

This was tabled till the Dallas meeting, due to a desire to arrange for permission to use data from the Cincinnati tests as described above.

7.4.2 Examination of WG mission statement terminology – Tim Cox

Ken Greenwood – noted that the original statement is not correct –but the proposal submitted by Tim Cox is worthy of discussion -- but it should be more extensive and not limited to slip resistance.

The Floors Working Group had been using, "To establish a standard method for testing performance venue floors for resiliency and slip resistance."

Tim Cox suggested the following, " To establish a standard for the definitions, methods, of measurement and appropriate ranges for the characteristics of performance floors that affect the health and safety of personnel."

It was noted that there was another version of the Mission Statement from earlier discussions. Michael Sean Graves offered to look for the mission statement.

Seth Popper offered to redraft the mission statement and to present it for review at our Dallas meeting.

7.4.3 Draft of scope of proposed standard – Tim Cox

Tim Cox offered the following for consideration:

"This standard is concerned with various characteristics of floors for theatrical, dance, and similar performances. This standard offers advice on those characteristics for venue owners/operators, manufacturers, specifiers, producers and performers.

A number of characteristics, including slip resistance, resilience, rake, strength and endurance are defined and methods presented for measurement of these characteristics. Suggested values are presented for a range of performance activities."

Tim also simplified the chart of concepts discussed at the LDI meeting, by proposing:

Characteristics	Definition	Method of Test	Suggested Ranges
Slip Resistance	Yes	Yes	Yes
Resilience / Shock Absorbency	Yes	Yes	Yes
Rake	Yes	Yes	Yes
Strength (Max. Load)	Yes	No	Yes
Endurance (Wear and Tear)	Yes	Yes	Yes

After examination of the scope submitted by Tim Cox, the discussion noted that the descriptive words are good, though the chart needs clarification. Also, endurance is a difficult concept to define. The goal is to specify the maximum load that a floor can handle – but this is a difficult issue to define as the ability of a floor to handle a maximum load is mostly dependant on the structural design and construction of the subfloor. The dance floor is similar to a covering, however we are concerned with the way the floor presents itself to people walking on it. Also the dance floor has to not deform permanently after a wagon is finished rolling on it – and not be affected by slip resistance. So, specifying the exact material composition of a floor may be best left to the marketplace to define –based on the needs of a particular client. Therefore, the endurance issues needs additional refining - Tim Hansen offered to work with Tim Cox on revising the scope of the proposed standard and to report on this at the Dallas meeting.

7.5 Raked stages, studies and new developments – Ken Greenwood

Ken Greenwood reported on the development of a study being conducted for Actors Equity by researchers affiliated with John Hopkins and to be funded by the Health and Pension Fund, with a goal being to learn about injuries and how to prevent them in stage performers. Initially, 35 NYC Broadway Theatres would be evaluated and assessed for Rake, Resilience, and Friction. A case control study method would be used and there would be an active program to identify incidents, the performer, the space, and to conduct an evaluation of the person quickly and also to compare the affected individual to others. Also, there would be a control population as well. It is anticipated that it will take at least six months to obtain a couple of hundred samples and enough information to yield valid samples and detailed information to draw conclusions.

Ken noted that the proposal and final criteria are still under development and that a definition of injury is being developed. A working definition of injury can be considered as, "something that occurs during your course of employment while on stage, that prevents you from working –like a loss time injury. He also noted that there are many comparisons with sports injuries and that the injuries need not be life threatening; but prevent a performer from working and or prevent you from performing at top of your game."

The Working Group discussed the statement submitted by Keith Sklar that was sent to members with the agenda. It was agreed to delete the phrase, "for the sole purpose of enhancing the sightlines for the audience members." Also, a technical measurement of rake is needed, i.e. "degrees or floors sloped more than 1/16" of a foot" Other items noted are, "the challenge to write a performance based document –this is what we want it to be rather than to define the criteria of assemblage" and that there is a need to define main stage, ramp, and transitional areas.

After some discussion, the Working Group devised the following definition of Rake:
Raked stages are theatrical performance floors that are sloped or inclined at more than 1/16" of a foot (0.3 degrees), used for performances such as dramatic productions and musicals. Raked stages include any inclined playing surface, such as set pieces and ramps.

Jerry Gorrell and Keith Sklar will continue to examine the definition and other criteria for defining rake and present a report at the Dallas meeting.

7.6 Expansion of working group and adding users - Tim Hansen

Tim Hansen noted, that attendance at meetings is important for the success of the Working Group. The attendance at meetings is also the main obstacle preventing involvement, as most non-dealer/manufacturer individuals do not have the economic resources to attend meetings. Therefore, the members of the Floors Working Group need to make a special effort towards involving interested and knowledgeable parties in the development of definitions, processes, etc. and eventually, the public comment review process.

8 New business

Michael Sean Graves has the old mission statement and will send a copy to the ESTA office for distribution to the Working Group prior to the Dallas meeting.

9 Other business

There was none.

10 Schedule for future meetings

The Technical Standards Program will hold meetings in Dallas over the weekends of May 3 – 5 and July 26 – 28. LDI 2002 is scheduled for October 18 – 20 in Las Vegas.

11 Adjournment

Jerry Gorrell made a motion to adjourn and Bob Dagger seconded the motion. The meeting ended at 4:45PM.

Floors Working Group Membership List at the End of the Meeting

Name	Company	Representing	Voting Status	Int. Cat.
Keith Sklar	Actors' Equity Association	Actors' Equity Association	O	G
Ken Greenwood	Actors' Equity Association	Actors' Equity Association	O	G
Bob Dagger	American Harlequin Corp.	American Harlequin Corp.	P	P
Fred Allen	Fred Allen & Associates	Fred Allen & Associates	O	U
Edward Paget	Jones & Phillips Associates, Inc.	Jones & Phillips Associates, Inc.	O	G
Nevin Kleege	Kleege Industries	Kleege Industries	O	G
Seth Popper	League of American Theatres and Producers, Inc.	League of American Theatres and Producers, Inc.	O	G
Gary Justesen	Oasis Stage Werks	Oasis Stage Werks	A	P
Tim Hansen	Oasis Stage Werks	Oasis Stage Werks	P	P
Tim Cox	PLASA	PLASA	P	G
Michael Sean Graves	Rosco Laboratories	Rosco Laboratories	P	P
Jerry Gorrell	Theatre Safety Programs	Theatre Safety Programs	P	U
Mark Elliott	Walt Disney Co.	Walt Disney Company	O	U
Steven Wiese	Wenger Corp.	Wenger Corp.	P	P

Voting Status

- O Observer, non-voting
- P Principal voting on behalf of an organization or company
- A Alternate voting member representing an organization or company
- I Individual voting member representing no entity other than him or herself

Interest Category

- G General Interest
- U User of floors or flooring products
- P Manufacturer of floors or flooring products