

ORAL ARGUMENT NOT YET SCHEDULED

No. 22-7063

UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

AMERICAN SOCIETY FOR TESTING AND MATERIALS, et al.,
Appellants

v.

PUBLIC.RESOURCE.ORG, INC.,
Appellee

Appeal from the United States District Court
for the District of Columbia
Hon. Tanya S. Chutkan, No. 1:13-cv-1215-TSC

PUBLIC APPENDIX
VOLUME 6 (JA2438-JA2817)
MATERIAL UNDER SEAL IN SEPARATE SUPPLEMENT

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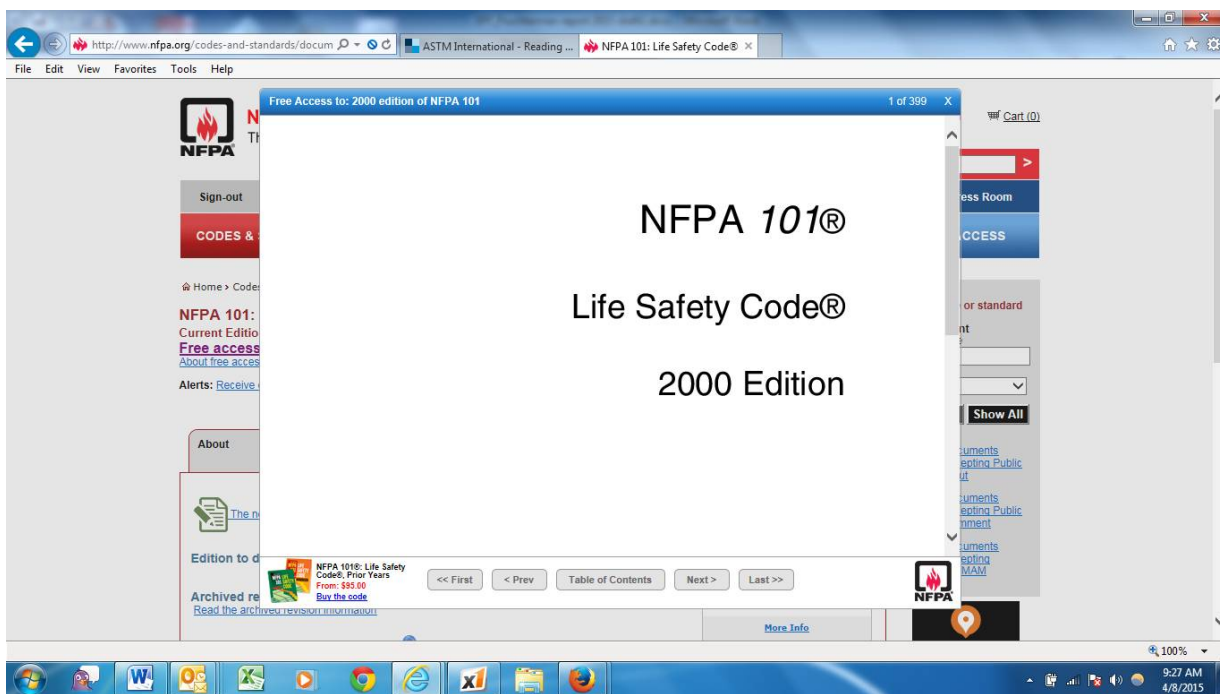
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can't tell what they do because there are no text labels on them, and the letters "I AGREE" are shown only as a picture of those words, which is not perceptible to a blind person.

The second phase of my test was to perform the functional tests on a specific standard, NPFA 101-2000. In this second phase of the test is also where the NFPA free access website fails to make the text accessible, and fails to meet the WCAG accessibility standard mentioned above. Rather than presenting the text in a standard webpage, which is the typical way to present information in a web browser, the NFPA site opens an image-only window. Rather than presenting the text of the standard as HTML text, it presents it as a picture of the text. See the screen shot below.

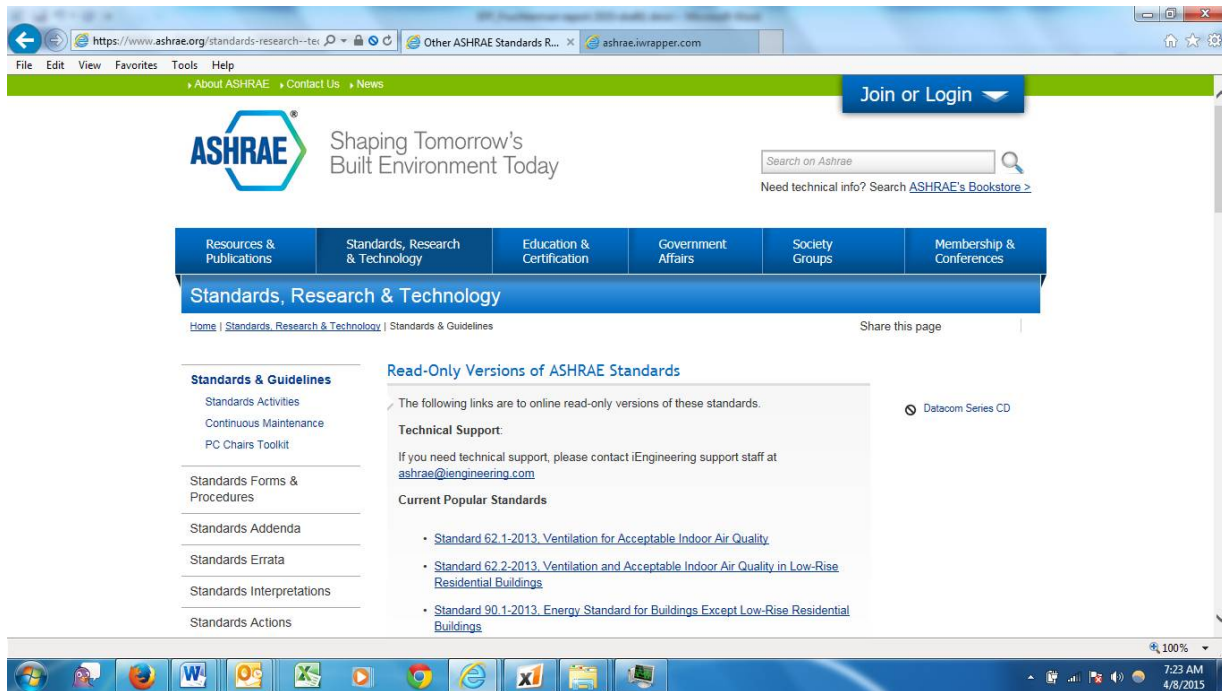


To a sighted person, both the text in a standard webpage and the text in an image-only window looks pretty similar: the words are visible. But, "under the hood," so to speak, the use of an image prevents the browser from presenting the text on the screen as text. A browser ordinarily transmits text to a screen reader in a way that facilitates access for the visually

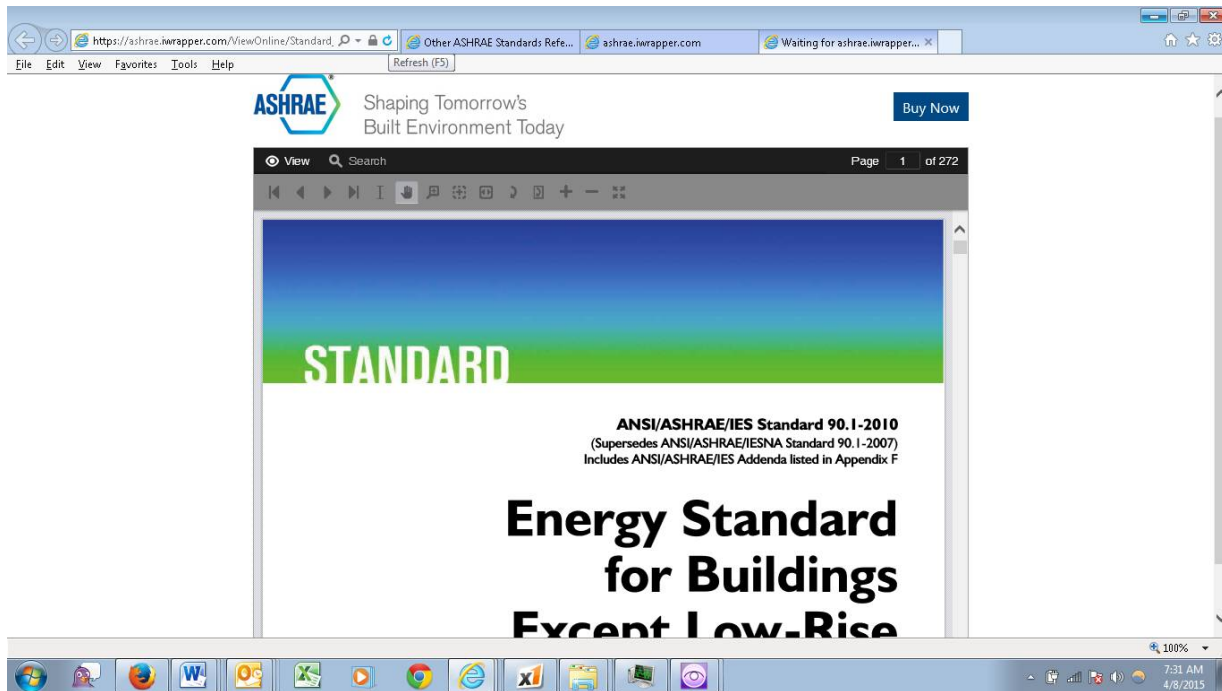
impaired. Instead, when NFPA's website presents text only within an image, the web browser processes it as an image, as if someone took a picture of a page and sent it as a photo rather than sending a text file. The screen reader cannot perceive the text in an image; all the screen reader can perceive is that there is a big picture on the screen. A screen reader stops working at this point: it does not know what is in the picture. And so even if a blind person were able to open a specific standard on the NFPA website, such as NFPA 101, he or she will not be able to perceive any of the content in the standard because the page appears blank to him or her. This means that on the NFPA free reading website a blind person cannot independently read the standard, go to a specific page within it, or search it for terms of interest.

Testing the American Society of Heating, Refrigerating and Air-Conditioning Engineers Website's Accessibility

Counsel suggested I investigate the accessibility of ASHRAE Standard 90.1-2010, Energy Standard for Buildings Except Low-Rise Residential Buildings (I-P). ASHRAE's website does not require a visitor to sign up for a free account before viewing certain standards, and so a blind user should be able to navigate to the place where online read-only versions of the standards reside, and then identify specific standards by number and description. Thus, the first of the four tasks, navigating to a specific standard, is a task that a blind person can perform independently on the ASHRAE website. See the screen shot below of this portion of the ASHRAE website with the listing of links to different standards.



However, once a specific standard is chosen, the standard is not perceptible to a blind person, for the same reason that I discussed earlier with respect to the NFPA website. See the screen shot below of the ASHRAE 90.1-2010 standard as displayed on the website. The text of the standard is inaccessible to a blind person, and therefore a blind person is unable to perform the functional accessibility tasks. First, the ASHRAE website presents the standard in a window that prevents screen reader software from reading aloud the text of the standard. Second, the navigation controls on the standards-display portion of the ASHRAE website do not work with a screen reader, so a blind person would be unable to navigate to a specific location in the standard. Lastly, although there is a text search function that works for a sighted person, I was unable to get that functionality to work with a screen reader. And, even if I could get the search function to work with a screen reader, a screen reader would still be unable to read aloud the actual content of the standard at that point, and so the exercise would be pointless for a blind person.

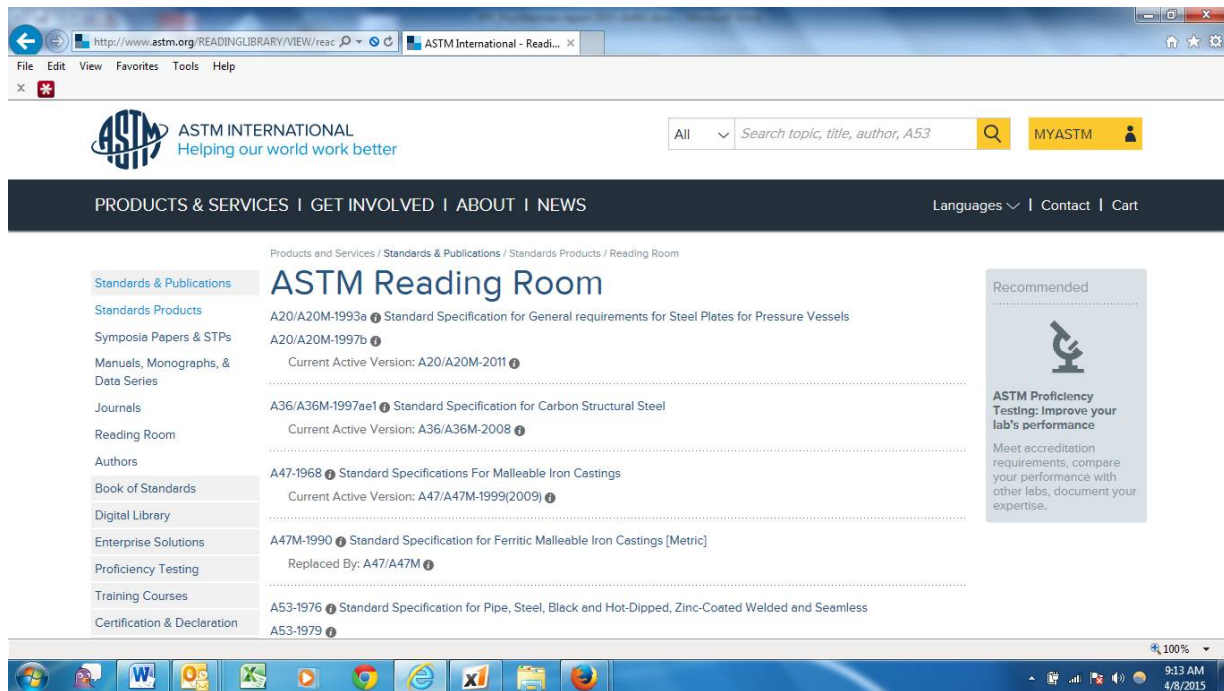


Because the ASHRAE website provides the content of the standard as an image, it is inaccessible to a blind person. As I mentioned above, the WCAG accessibility standard requires the text to be provided for any information delivered as an image, and the ASHRAE website fails to do so for the standard I tested. I also tested five other ASHRAE standards (ASHRAE 62.1-2013, 62.2-2013, 90.1-2013 (I-P), 90.2-2007, and 189.1-2014) on the ASHRAE website, and they all presented the same image-based interface to the standards, and are therefore inaccessible to blind people.

Testing the American Society for Testing and Materials Website's Accessibility

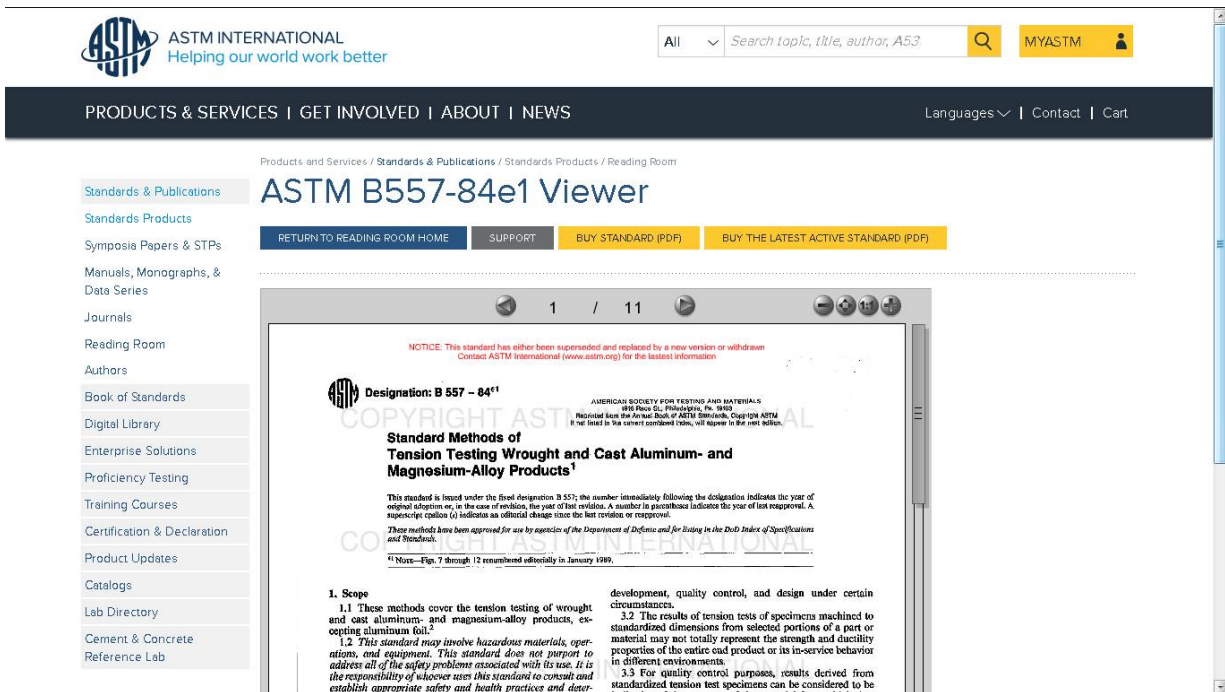
Counsel suggested I investigate the accessibility of Standard B557-84 Wrought and Cast Aluminum- and Magnesium-Alloy Products. The ASTM website requires visitors to sign up for a free account before viewing certain standards. The process of setting up a free account is accessible, and therefore a blind person should be able to independently gain access to the

ASTM Reading Room, where the standards are located. A blind user could navigate to the place where online read-only versions of the standards reside, and could identify specific standards by number and description. Thus the first of the four tasks, navigating to a specific standard, was a task that a blind person could perform independently. See the screen shot below of this portion of the ASTM website with the listing of links to different standards.



I was able to locate a version of the standard ASTM B557-84e1. When one selects the standard, a new window appears with an image-only viewer of the standard. For the same reason as I described earlier with respect to the NFPA and ASHRAE websites, this standard on the ASTM website is not perceptible to a blind person. First, the ASTM website presents the standard in a window that prevents screen reader software from reading aloud the text of the standard. Second, the navigation controls on the standards-displaying portion of the ASTM website do not work with a screen reader, so a blind person would be unable to navigate to a specific location in

the standard. I was not able to locate a text-searching function on the ASTM standard I examined.



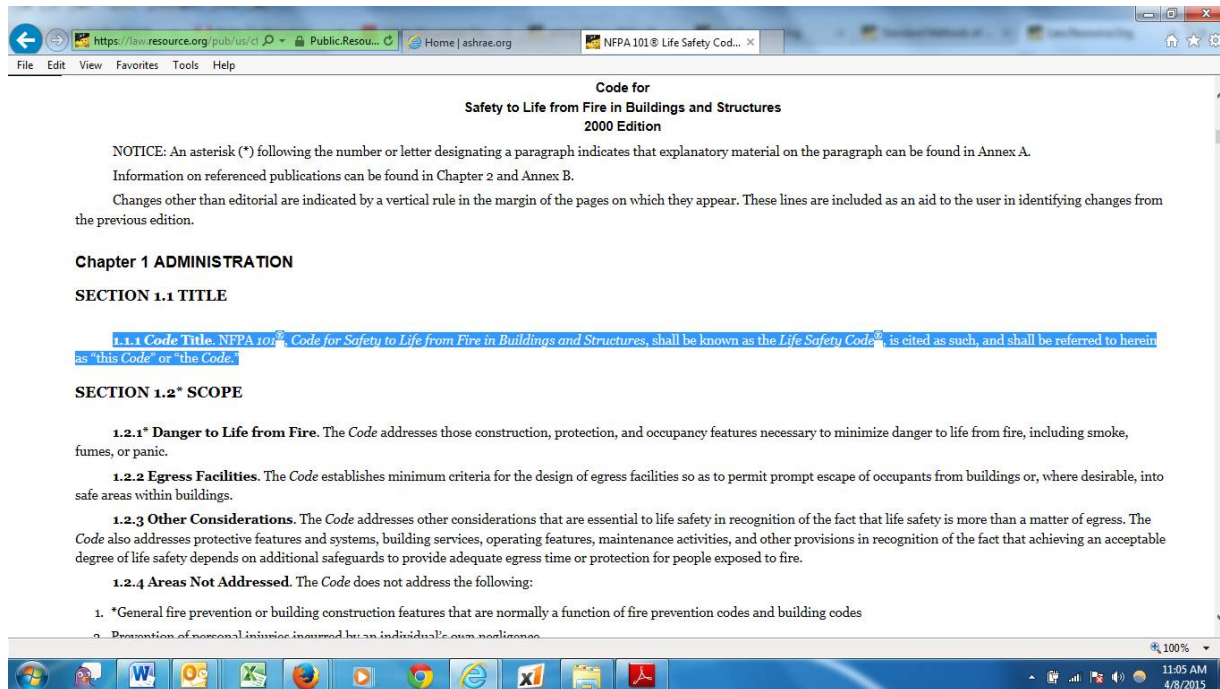
Because the content of the ASTM standard appears as an image in the ASTM Reading Room, it is inaccessible to the blind person. As I mentioned above, the WCAG accessibility standard requires the text to be provided for any information delivered as an image, and the ASTM website fails to do that for the standard I tested. I also tested the first standard listed on the website, ASTM A20/A20M-93a, and it presented the same image-based inaccessible interface to the standard, meaning that a blind person would not be able to perceive it.

Testing the Public.Resource.Org Website's Accessibility

After unsuccessfully trying to access the NFPA 101-2000, ASHRAE 90.1-2010 and ASTM B557-84 standards on the websites of the three standards organization as a blind user would, I went to the same standards on the Public.Resource.Org website and tried the same

tasks. I was able to successfully complete all of the accessibility tasks on all three of the standards on the Public.Resource.Org website.

The Public.Resource.Org website has no required sign-up procedure, so I did not need to test the accessibility of that process. It is possible to go directly to a specific standard either by using a direct weblink or by navigating the text-oriented website. For example, searching on the terms “NFPA 101 resource.org” shows the standard available directly from Google’s search engine in the top few links, in both PDF and HTML form. HTML is generally more accessible, so I selected that link and it directly opened up in my browser. The entire text of the standard was available, and I was able to read the standard using screen reading software, navigate to a specific place in the document using screen reading software, and search for key terms using screen reading software. My test therefore indicated that a blind person using a screen reader would be able to perform all of the functional tasks: reading the entire standard, navigating to a specific place in the standard, or searching on key terms. Because the text is provided as standard HTML, a blind person is able to listen to the text, or access it using a digital braille device. This kind of HTML content is also highly accessible to people with other print disabilities and the assistive technology they use to access print. For example, people with low vision or with dyslexia often use a screen reader to read text aloud.

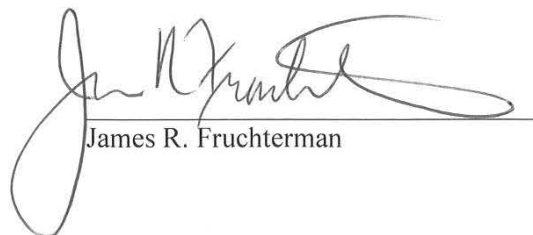


I also found a version of the ASTM B557-84 standard on the Public.Resource.Org website as an HTML file. It was well-structured and highly accessible. Like the NPFA 101-2000 standard on the Public.Resource.Org website, this standard could be readily located and accessed by a blind person using a screen reader, and could then be perceived in its entirety using the screen reader.

I then examined the accessibility of more recent versions of the NFPA 101 standard located on the Public.Resource.Org website. These were available only in PDF formats, not HTML. I accessed the 2012 version of the NPFA 101 standard, and found that it was an image-based PDF. I also searched for the ASHRAE 90.1-2010 standard and found it in PDF form on the Public.Resource.Org website without needing to login to access it. It was also an image-based PDF. Image-based PDFs are generally not accessible to blind people. However, these files both came with the underlying text associated with the page images. It was possible for me to open the PDFs in a browser or Adobe Reader, do a Select All command (Control A on a PC),

a Copy command (Control C on a PC) and then switch to a text-oriented word processing program (Microsoft Word) and paste the text of the entire standard into a file there. The text appeared to be an automatic optical character recognition version of the standard, which meant there were some errors in the transcription. But, generally the accuracy was sufficient to perform the functional tasks: reading the entire standard, navigating to a specific place in the standard, or searching on key terms. It should be noted that this approach would not likely occur to a blind person opening an image PDF file, because the Adobe software does not announce that the underlying text was present. It is also possible for a blind person to independently perform optical character recognition on image-based PDFs themselves and access the text that way, and many advanced computer users that are blind would be aware that this is possible. Although performing optical character recognition on a PDF is not as optimal as having HTML text available to read immediately without conversion, this method by which PDFs can be made perceptible to the blind is still better than having no access, which is effectively what the NFPA, ASHRAE, and ASTM websites offer.

Dated: April 13, 2015



James R. Fruchterman

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Exhibit A

James R. Fruchterman

Founder and CEO

Benetech

Education

- California Institute of Technology
B.S. Engineering, 1976-80
M.S. Applied Physics, 1978-80
- Stanford University, 1980-81
Ph.D. Studies in Electrical Engineering

Professional Experience

- CEO and Founder, 2015-present
President, CEO, Chairman, Founder, 2000-2014
Benetech (name changed from Arkenstone in 2000)
Palo Alto, California
- President, CEO, Chairman, Founder, 1989-2000
Arkenstone, Inc.
Moffett Field, California
- Director, 1989-present
Vice President Finance, CFO, 1989-2004
President & CEO, Founder, 1989-95
RAF Technology, Inc.
Palo Alto, California and Redmond, Washington
- Vice President, Marketing, 1987-89
Founder, Vice President, Finance, 1982-88
Calera Recognition Systems, Inc.
Santa Clara, California
- Prior engineering positions with:
 - Phoenix Engineering, Inc.
 - G.C.H., Inc.
 - IBM T.J. Watson Research Center
 - General Motors Company
 - NASA — Jet Propulsion Laboratory
 - Fermi National Accelerator Laboratory

Publications

- Technology Serving Humanity (chapter). In Schultz, R. (editor) [*Creating Good Work*](#), Palgrave Macmillan, February 2013
- [Guest Editor's Page](#), AFB Journal of Visual Impairment & Blindness, October-November 2012
- An Interview With Technology Guru George Kerscher, AFB Journal of Visual Impairment & Blindness, October-November 2012
- [For Love or Lucre](#), Stanford Social Innovation Review, Spring 2011
- [Developing Information Technology to Meet Social Needs](#). In *Innovations*, MIT Press, 2008
- Accessing Books and Documents, a chapter in the book, [Assistive Technology for Vision-Impaired and Blind People](#), Springer Verlag 2008
- [Everyone Deserves Access to Technology](#), OpEd in *The Sacramento Bee* by Jim Fruchterman and Gregg Vanderheiden, June 17, 2007
- Document Recognition Serving People With Disabilities, *Proc. SPIE 6500*, International Society for Optics and Photonics, 2007
- [Pattern Recognition Technology Helps Disabled People Access Books](#), *SPIE Newsroom*, International Society for Optics and Photonics, May 14, 2007
- [Nothing Ventured Nothing Gained, Addressing the Critical Gaps in Risk-Taking Capital for Social Enterprise](#), by Jed Emerson, Tim Freundlich and Jim Fruchterman, published by Oxford Said Business School, 2006
- [Build Great Companies, Then Help Build a Great World](#), OpEd in *The San Jose Mercury News*, November 13, 2006
- [Comments on Accessibility of Google Print and Google's Library Project](#), white paper, February 2005
- [Technology Benefiting Humanity](#), published in the Association for Computing Machines *Ubiquity* magazine, March 2004
- The Power of Technology Social Enterprises, published in the N-TEN forecast series, February 2004
- [In the Palm of Your Hand: A Vision of the Future of Technology for People with Visual Impairments](#), published in the American Foundation for the Blind's *Journal of Vision Impairment and Blindness*, October 2003
- [The Chafee Amendment: Improving Access to Information](#), published in *Information Technology and Disabilities*, a journal published by [Equal Access to Software and Information \(EASI\)](#), co-authored with Bookshare Senior Product Manager Alison Lingane, October 2003
- [The Soundproof Book: Exploration of Rights Conflict and Access to Commercial EBooks for People with Disabilities](#), published in *First Monday*, co-authored with George Kerscher, the International Project Manager of [the DAISY Consortium](#), May 2002
- [Bookshare, Books without Barriers](#), at the [Closing the Gap](#) conference, Minneapolis, MN, October 2001

- Two presentations given at the IT Accessibility 2001 Conference, May 2001 at the National Institute of Standards and Technology
 - [I Dream of Software](#)
 - [The Business Case for Adaptive Technology](#)
- Humanizing the Voice of the Machine, with Prof. Mari Ostendorf (University of Washington), Annual Meeting of the American Association for the Advancement of the Machine, Boston, MA, February 2000
- [The Many Facets of Open Book: Ruby Edition](#), California State University, Northridge (CSUN), 15th Technology and Persons with Disabilities Conference, March 2000
- [Corporate Responsibility for Adaptive Technology](#), California State University, Northridge (CSUN), 14th Technology and Persons with Disabilities Conference, March 1999
- [Developing Partnerships for Assistive and Universally Designed Technology for Persons with Disabilities](#), Testimony before United States House of Representatives, Committee on Science, Subcommittee on Technology, August 4, 1998
- Access to Maps and Location Information through Virtual Reality Techniques and GPS Satellite Receivers, 3rd International Technical Aids Seminar, Tokyo, Japan, July 1994

Invited Talks

- [“Innovation in America: The Role of Technology,”](#) August 1, 2013, Testimony before U.S. House of Representatives, Judiciary Committee’s Subcommittee on Courts, Intellectual Property, and the Internet.
- [“Social Change at Scale – That’s Innovation!”](#) May 2012, TEDxSanJoseCA 2012, San Jose, CA.
- [“The Power of Failure, People and Karma Banking,”](#) May 20, 2012, Commencement speech, St. Mary's College, Moraga, CA.
- [“Raising the Floor,”](#) October, 2011, *Keynote Speech*, Association for Education and Rehabilitation of the Blind and Visually Impaired Conference, Cleveland OH.
- *Keynote speech, IEEE Sections Congress, August 2011, San Francisco, CA.*
- [“Making the Book Truly Accessible,”](#) Tools of Change Conference, New York, NY, 2011 Keynote Speech
- UBS-Ashoka Visionaris Award, Keynote Speech, Social Entrepreneur of the Year Award, Mexico City, Mexico, September, 2010
- A series of three invited speeches on Bookshare and accessible books, in Tokyo, Shizuoka and Osaka, Japan, February, 2009
- Keynote Speech, Social Enterprise World Forum, Edinburgh, Scotland, September, 2008
- [“Raising the Floor: Providing Accessible Technology and Content to Every Person with a Disability on the Planet,”](#) International Conference on Computers Helping People with Special Needs, Linz, Austria, July, 2008 Keynote Speech
- [“Raising the Floor,”](#) CSUN Conference on Technology and Persons with Disabilities, March, 2008 Keynote Speech

- Extensive speaking engagements to students about technology serving people with disabilities. Have done invited talks at:
 - Stanford University
 - University of California at Berkeley
 - Brigham Young University
 - University of the Pacific
 - Santa Clara University
 - California Institute of Technology
 - San Jose State
 - University of California at Santa Cruz
 - University of California at Davis
 - Loyola Marymount University
 - Pepperdine University
 - University of Washington
 - Columbia University
 - Harvard University
 - University of Geneva
 - Oxford University
- Inflection Point Opportunities in Social Investment, Closing Keynote for the UBS Philanthropy Forum, Lisbon, Portugal, July 2007
- It's Not Rocket Science: Building Social Enterprises, Keynote for the 7th Gathering of the Social Enterprise Alliance, Atlanta, Georgia, March 2006
- Opening Keynote for the Global Social Venture Competition, New York, April, 2006
- Keynote for the 7th IAPR Workshop on Document Analysis Systems, Nelson, New Zealand, February 2006
- [Building a Global Library for People with Print Disabilities](#), a speech for the World Summit on the Information Society, Tunis, Tunisia, November 2005
- Innovating Information Technologies to Protect Human Rights, a speech for the World Affairs Council of Northern California, February 2004
- Setting the 2004 Agenda: Technology, speaker at the World Economic Forum, Davos, Switzerland, January 2004
- Seizing Market Failure as an Investment Opportunity, Keynote for the Business for Social Responsibility Annual Conference, Los Angeles, November 2003.
- In the Palm of Your Hand, Keynote for the World Blind Union Asia Pacific conference, Singapore, November, 2003
- Technology and Human Rights, University of Peradeniya, Sri Lanka, November, 2003
- When Markets Fail, Who Responds? Discussion Leader at the World Economic Forum, Davos, Switzerland, January 2003
- Technology for Nonprofits, with Michael Gilbert, National Gathering for Social Entrepreneurs, Minneapolis, MN, December, 2002
- Bookshare: Large Scale, Web-Based Accessible Books, TechShare conference organized by

the Royal National Institute of the Blind, Birmingham, UK, November 2002

- Putting Technology to Work for Development, speech at the United Nations to the joint meeting of the World Technology Network and UNOPS, July 2002
- Bookshare: The Project for Creating Accessible Books through Computers, at the General Session of the [National Federation of the Blind](#) 2002 Annual Convention, July 2002
- Stanford Social Entrepreneurship Conference, January 2002
- [The Once and Future Web: Tenth Anniversary of the First U.S. Web Page](#) at the Stanford Linear Accelerator Laboratory, December 2001
- NetImpact Annual Conference at Kenan-Flagler Business School, November 2001
- American Council of the Blind Annual Convention, July 2001
- [Bringing Socially Beneficial Technology into the Service of Humanity](#), EE380 at Stanford University, April 2001
- Information Technology in the Service of Human Rights at the Computers, Freedom and Privacy Conference, March 2001
- Rank Prize Fund Symposium, Grasmere, England
- Guest Lecturer for CSUN program in disability leadership

Professional Associations

- Association for Computing Machinery
- Institute of Electrical and Electronics Engineers
- American Association for the Advancement of Science
- Social Enterprise Alliance

Awards and Public Service

- Head of Benetech Delegation, Diplomatic Conference to Conclude a Treaty to Facilitate Access to Published Works by Visually Impaired Persons and Persons with Print Disabilities, World Intellectual Property Organization, Marrakesh, Morocco (2013)
- Member, Global Agenda Council on Measuring Sustainability, World Economic Forum (2012-2014)
- Member of the Board of Directors, ZeroDivide, foundation investing in community enterprises that leverage technology to benefit people in low-income and other underserved communities (2007-2013)
- Commissioner, Federal Advisory Commission on Accessible Instructional Materials in Postsecondary Education for Students with Disabilities, 2010-2011
- Duke University, CASE Award for Enterprising Social Innovation, 2011
- Brigham Young University, Center for Economic Self-Reliance Social Innovator of the Year, 2009
- AT&T Technology Innovation Award from the Alliance for Technology Access, March

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2008

- Strache Leadership Award from the California State University, Northridge, 2007
- John D. and Catherine T. MacArthur Foundation Fellowship, 2006
- Technical Advisory Committee Member, National Instructional Materials Accessibility Standard, U.S. Department of Education (2005-2008)
- Advisory Committee Member, National Instructional Materials Accessibility Center, U.S. Department of Education (2006-present)
- [Skoll Award for Social Entrepreneurship](#), 2004 and 2006
- Fast Company Social Capitalist Award: Top 20 Groups Changing the World, 2004
- Laureate, [The 2003 and 2001 Tech Museum Awards](#)
- [American Library Association Francis Joseph Campbell Award](#), 2003
- [Schwab Foundation Outstanding Social Entrepreneur of 2003 Award](#)
- Member, the Community Partnership Committee, which oversees a diversity and disability agreement with SBC, Inc.
- Runner-up, Yale-Goldman Sachs National Nonprofit Business Plan Competition, 2003
- American Foundation for the Blind Access Award, 2003
- [Robert S. Bray Award](#), The American Council of the Blind
- Winner, Education Category, 2002 Stockholm Challenge
- [Fast 50 Champion of Innovation](#) 2002
- Judge, 2002 [National Social Venture Competition](#)
- Member, Board of Directors of the [Social Enterprise Alliance](#) (2000-2010, chair 2008-2010)
- Member of the Advisory Board, Telecommunications Access Rehabilitation Engineering Research Center, a joint effort of the Trace R&D Center of the University of Wisconsin-Madison and the Technology Access Program of Gallaudet University, 2001
- Panelist, National Science Foundation Small Business Innovation Research Program, 1998, 2000, 2003
- Participant, 1998 NSF Workshop for Discussing Research Priorities and Evaluation Strategies in Speech Synthesis, August, 1998
- Member, Electronic Information and Technology Access Advisory Committee, a federal advisory committee responsible for drafting federal acquisition standards for accessibility under Section 508, 1998-1999
- Member, Telecommunications Access Advisory Committee, a federal advisory committee responsible for making recommendations to the U.S. Access Board and Federal Communications Commission on implementing portions of the 1996 Telecommunications Act, 1996-1997
- U.S. Patent Number 5,470,223: System and Method for Tracking a Pedestrian

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- Finalist, 1996 Discover Magazine Awards for Technological Innovation
- 1996 Access Award, American Foundation for the Blind

Major Works and Areas of Expertise

- Founder and CEO of [Benetech](#), a highly innovative nonprofit company focused on using the power of technology to address social needs in areas such as disability, literacy, human rights and the environment.
- Founder of Arkenstone, Inc., a leading nonprofit organization providing adaptive technology for education and employment for people with disabilities and the largest maker of reading systems for people with blindness, vision impairment and learning disabilities. Developer of the Arkenstone Reader, the first affordable reading system for the blind. Designer of Open Book, the first talking Windows program for the blind. Co-inventor of Atlas Speaks, the first accessible map software for the blind, and of Strider, a talking GPS locator for the blind.
- Cofounder of [RAF Technology, Inc.](#), the nation's leading company in optical character recognition technology for processing forms in postal and medical applications. RAF's software is used to route the United States mail.
- Cofounder of Calera Recognition Systems, Inc., the first company to develop omnifont optical character recognition that works without user training.

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Exhibit B

Documents, Facts, or Data Considered in Forming My Opinions:

- The ASHRAE website, at www.ashrae.org
- The ASTM website, at www.astm.org
- The NFPA website, at www.nfpa.org
- The Public.Resource.Org website, at www.public.resource.org
- World Wide Web Consortium's Web Content Accessibility Guidelines (WCAG) 2.0, at <http://www.w3.org/TR/WCAG20/>
- Window-Eyes screen reader software
- JAWS screen reader software
- I also consulted with a blind engineer (and skilled daily user of screen reader technology) to confirm the specific accessibility challenges I found in my tests

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Exhibit C

[\[contents\]](#)

Web Content Accessibility Guidelines (WCAG) 2.0

W3C Recommendation 11 December 2008

This version:

<http://www.w3.org/TR/2008/REC-WCAG20-20081211/>

Latest version:

<http://www.w3.org/TR/WCAG20/>

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Editors:

Ben Caldwell, Trace R&D Center, University of Wisconsin-Madison
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Previous Editors:

Wendy Chisholm (until July 2006 while at W3C)
John Slatin (until June 2006 while at Accessibility Institute, University of Texas at Austin)
Jason White (until June 2005 while at University of Melbourne)

Please refer to the [errata](#) for this document, which may include normative corrections.

See also [translations](#).

This document is also available in non-normative formats, available from [Alternate Versions of Web Content Accessibility Guidelines 2.0](#).

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Abstract

Web Content Accessibility Guidelines (WCAG) 2.0 covers a wide range of recommendations for making Web content more accessible. Following these guidelines will make content accessible to a wider range of people with disabilities, including blindness and low vision, deafness and hearing loss, learning disabilities, cognitive limitations, limited movement, speech disabilities, photosensitivity and combinations of these. Following these guidelines will also often make your Web content more usable to users in general.

WCAG 2.0 success criteria are written as testable statements that are not technology-specific. Guidance about satisfying the success criteria in specific technologies, as well as general information about interpreting the success criteria, is provided in separate documents. See [Web Content Accessibility Guidelines \(WCAG\) Overview](#) for an introduction and links to WCAG technical and educational material.

WCAG 2.0 succeeds [Web Content Accessibility Guidelines 1.0 \[WCAG10\]](#), which was published as a W3C Recommendation May 1999. Although it is possible to conform either to WCAG 1.0 or to WCAG 2.0 (or both), the W3C recommends that new and updated content use WCAG 2.0. The W3C also recommends that Web accessibility policies reference WCAG 2.0.

Status of this Document

This section describes the status of this document at the time of its publication. Other documents may supersede this

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document. A list of current W3C publications and the latest revision of this technical report can be found in the [W3C technical reports index](#) at <http://www.w3.org/TR/>.

This is the Web Content Accessibility Guidelines (WCAG) 2.0 [W3C Recommendation](#) from the [Web Content Accessibility Guidelines Working Group](#).

This document has been reviewed by W3C Members, by software developers, and by other W3C groups and interested parties, and is endorsed by the Director as a W3C Recommendation. It is a stable document and may be used as reference material or cited from another document. W3C's role in making the Recommendation is to draw attention to the specification and to promote its widespread deployment. This enhances the functionality and interoperability of the Web.

WCAG 2.0 is supported by the associated non-normative documents, [Understanding WCAG 2.0](#) and [Techniques for WCAG 2.0](#). Although those documents do not have the formal status that WCAG 2.0 itself has, they provide information important to understanding and implementing WCAG.

The Working Group requests that any comments be made using the provided [online comment form](#). If this is not possible, comments can also be sent to public-comments-wcag20@w3.org. The [archives for the public comments list](#) are publicly available. Comments received on the WCAG 2.0 Recommendation cannot result in changes to this version of the guidelines, but may be addressed in errata or future versions of WCAG. The Working Group does not plan to make formal responses to comments. Archives of the [WCAG WG mailing list discussions](#) are publicly available, and future work undertaken by the Working Group may address comments received on this document.

This document has been produced as part of the W3C [Web Accessibility Initiative](#) (WAI). The goals of the WCAG Working Group are discussed in the [WCAG Working Group charter](#). The WCAG Working Group is part of the [WAI Technical Activity](#).

This document was produced by a group operating under the [5 February 2004 W3C Patent Policy](#). W3C maintains a [public list of any patent disclosures](#) made in connection with the deliverables of the group; that page also includes instructions for disclosing a patent. An individual who has actual knowledge of a patent which the individual believes contains [Essential Claim\(s\)](#) must disclose the information in accordance with [section 6 of the W3C Patent Policy](#).

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Introduction

This section is informative.

Web Content Accessibility Guidelines (WCAG) 2.0 defines how to make Web content more accessible to people with disabilities. Accessibility involves a wide range of disabilities, including visual, auditory, physical, speech, cognitive, language, learning, and neurological disabilities. Although these guidelines cover a wide range of issues, they are not able to address the needs of people with all types, degrees, and combinations of disability. These guidelines also make Web content more usable by older individuals with changing abilities due to aging and often improve usability for users in general.

WCAG 2.0 is developed through the [W3C process](#) in cooperation with individuals and organizations around the world, with a goal of providing a shared standard for Web content accessibility that meets the needs of individuals, organizations, and governments internationally. WCAG 2.0 builds on WCAG 1.0 [\[WCAG10\]](#) and is designed to apply broadly to different Web technologies now and in the future, and to be testable with a combination of automated testing and human evaluation. For an introduction to WCAG, see the [Web Content Accessibility Guidelines \(WCAG\) Overview](#).

Web accessibility depends not only on accessible content but also on accessible Web browsers and other user agents. Authoring tools also have an important role in Web accessibility. For an overview of how these components of Web development and interaction work together, see:

- [Essential Components of Web Accessibility](#)
- [User Agent Accessibility Guidelines \(UAAG\) Overview](#)
- [Authoring Tool Accessibility Guidelines \(ATAG\) Overview](#)

WCAG 2.0 Layers of Guidance

The individuals and organizations that use WCAG vary widely and include Web designers and developers, policy makers, purchasing agents, teachers, and students. In order to meet the varying needs of this audience, several layers of guidance are provided including overall *principles*, general *guidelines*, testable *success criteria* and a rich collection of *sufficient techniques*, *advisory techniques*, and *documented common failures* with examples, resource links and code.

- **Principles** - At the top are four principles that provide the foundation for Web accessibility: *perceivable*, *operable*, *understandable*, and *robust*. See also [Understanding the Four Principles of Accessibility](#).
- **Guidelines** - Under the principles are guidelines. The 12 guidelines provide the basic goals that authors should work toward in order to make content more accessible to users with different disabilities. The guidelines are not testable, but provide the framework and overall objectives to help authors understand the success criteria and better implement the techniques.
- **Success Criteria** - For each guideline, testable success criteria are provided to allow WCAG 2.0 to be used where requirements and conformance testing are necessary such as in design specification, purchasing, regulation, and contractual agreements. In order to meet the needs of different groups and different situations, three levels of conformance are defined: A (lowest), AA, and AAA (highest). Additional information on WCAG levels can be found in [Understanding Levels of Conformance](#).
- **Sufficient and Advisory Techniques** - For each of the *guidelines* and *success criteria* in the WCAG 2.0 document itself, the working group has also documented a wide variety of *techniques*. The techniques are informative and fall into two categories: those that are *sufficient* for meeting the success criteria and those that are *advisory*. The advisory techniques go beyond what is required by the individual success criteria and allow authors to better address the guidelines. Some advisory techniques address accessibility barriers that are not covered by the testable success criteria. Where common failures are known, these are also documented. See also [Sufficient and Advisory](#)

All of these layers of guidance (principles, guidelines, success criteria, and sufficient and advisory techniques) work together to provide guidance on how to make content more accessible. Authors are encouraged to view and apply all layers that they are able to, including the advisory techniques, in order to best address the needs of the widest possible range of users.

Note that even content that conforms at the highest level (AAA) will not be accessible to individuals with all types, degrees, or combinations of disability, particularly in the cognitive language and learning areas. Authors are encouraged to consider the full range of techniques, including the advisory techniques, as well as to seek relevant advice about current best practice to ensure that Web content is accessible, as far as possible, to this community. [Metadata](#) may assist users in finding content most suitable for their needs.

WCAG 2.0 Supporting Documents

The WCAG 2.0 document is designed to meet the needs of those who need a stable, referenceable technical standard. Other documents, called supporting documents, are based on the WCAG 2.0 document and address other important purposes, including the ability to be updated to describe how WCAG would be applied with new technologies. Supporting documents include:

1. [How to Meet WCAG 2.0](#) - A customizable quick reference to WCAG 2.0 that includes all of the guidelines, success criteria, and techniques for authors to use as they are developing and evaluating Web content.
2. [Understanding WCAG 2.0](#) - A guide to understanding and implementing WCAG 2.0. There is a short "Understanding" document for each guideline and success criterion in WCAG 2.0 as well as key topics.
3. [Techniques for WCAG 2.0](#) - A collection of techniques and common failures, each in a separate document that includes a description, examples, code and tests.
4. [The WCAG 2.0 Documents](#) - A diagram and description of how the technical documents are related and linked.

See [Web Content Accessibility Guidelines \(WCAG\) Overview](#) for a description of the WCAG 2.0 supporting material, including education resources related to WCAG 2.0. Additional resources covering topics such as the business case for Web accessibility, planning implementation to improve the accessibility of Web sites, and accessibility policies are listed in [WAI Resources](#).

Important Terms in WCAG 2.0

WCAG 2.0 includes three important terms that are different from WCAG 1.0. Each of these is introduced briefly below and defined more fully in the glossary.

Web Page

It is important to note that, in this standard, the term "[Web page](#)" includes much more than static HTML pages. It also includes the increasingly dynamic Web pages that are emerging on the Web, including "pages" that can present entire virtual interactive communities. For example, the term "Web page" includes an immersive, interactive movie-like experience found at a single URI. For more information, see [Understanding "Web Page"](#).

Programmatically Determined

Several success criteria require that content (or certain aspects of content) can be "[programmatically determined](#)." This means that the content is delivered in such a way that [user agents](#), including [assistive technologies](#), can extract and present this information to users in different modalities. For more information, see [Understanding Programmatically Determined](#).

Accessibility Supported

Using a technology in a way that is accessibility supported means that it works with assistive technologies (AT) and the accessibility features of operating systems, browsers, and other user agents. Technology features can only be [relied upon](#) to conform to WCAG 2.0 success criteria if they are used in a way that is "[accessibility supported](#)". Technology features can be used in ways that are not accessibility supported (do not work with assistive technologies, etc.) as long as they are not relied upon to conform to any success criterion (i.e., the same information or functionality is also available another way that is supported).

The definition of "accessibility supported" is provided in the [Appendix A: Glossary](#) section of these guidelines. For more information, see [Understanding Accessibility Support](#).

WCAG 2.0 Guidelines

This section is normative.

Principle 1: Perceivable - Information and user interface components must be presentable to users in ways they can perceive.

Guideline 1.1 Text Alternatives: Provide text alternatives for any non-text content so that it can be changed into other forms people need, such as large print, braille, speech, symbols or simpler language.

[Understanding Guideline 1.1](#)

1.1.1 Non-text Content: All non-text content that is presented to the user has a text alternative that serves the equivalent purpose, except for the situations listed below. (Level A)

[How to Meet 1.1.1](#)
[Understanding 1.1.1](#)

- **Controls, Input:** If non-text content is a control or accepts user input, then it has a name that describes its purpose. (Refer to [Guideline 4.1](#) for additional requirements for controls and content that accepts user input.)
- **Time-Based Media:** If non-text content is time-based media, then text alternatives at least provide descriptive identification of the non-text content. (Refer to [Guideline 1.2](#) for additional requirements for media.)
- **Test:** If non-text content is a test or exercise that would be invalid if presented in text, then text alternatives at least provide descriptive identification of the non-text content.
- **Sensory:** If non-text content is primarily intended to create a specific sensory experience, then text alternatives at least provide descriptive identification of the non-text content.
- **CAPTCHA:** If the purpose of non-text content is to confirm that content is being accessed by a person rather than a computer, then text alternatives that identify and describe the purpose of the non-text content are provided, and alternative forms of CAPTCHA using output modes for different types of sensory perception are provided to accommodate different disabilities.
- **Decoration, Formatting, Invisible:** If non-text content is pure decoration, is used only for visual formatting, or is not presented to users, then it is implemented in a way that it can be ignored by assistive technology.

Guideline 1.2 Time-based Media: Provide alternatives for time-based media.

[Understanding Guideline 1.2](#)

1.2.1 Audio-only and Video-only (Prerecorded): For prerecorded audio-only and prerecorded video-only media, the following are true, except when the audio or video is a media alternative for text and is clearly labeled as such: (Level A)

[How to Meet 1.2.1](#)
[Understanding 1.2.1](#)

- **Prerecorded Audio-only:** An alternative for time-based media is provided that presents equivalent information for prerecorded audio-only content.
- **Prerecorded Video-only:** Either an alternative for time-based media or an audio track is provided that presents equivalent information for prerecorded video-only content.

1.2.2 Captions (Prerecorded): Captions are provided for all prerecorded audio content in synchronized media, except when the media is a media alternative for text and is clearly labeled as such. (Level A)

[How to Meet 1.2.2](#)
[Understanding 1.2.2](#)

1.2.3 Audio Description or Media Alternative (Prerecorded): An alternative for time-based media or audio description of the prerecorded video content is provided for synchronized media, except when the media is a media alternative for text and is clearly labeled as such. (Level A)

[How to Meet 1.2.3](#)
[Understanding 1.2.3](#)

1.2.4 Captions (Live): Captions are provided for all live audio content in synchronized media. (Level AA)

[How to Meet 1.2.4](#)
[Understanding 1.2.4](#)

1.2.5 Audio Description (Prerecorded): Audio description is provided for all prerecorded video content in synchronized media. (Level AA)

[How to Meet 1.2.5](#)
[Understanding 1.2.5](#)

1.2.6 Sign Language (Prerecorded): Sign language interpretation is provided for all prerecorded audio content in synchronized media. (Level AAA)

[How to Meet 1.2.6](#)
[Understanding 1.2.6](#)

1.2.7 Extended Audio Description (Prerecorded): Where pauses in foreground audio are insufficient to allow audio descriptions to convey the sense of the video, extended audio description is provided for all prerecorded video content in synchronized media. (Level AAA)

[How to Meet 1.2.7](#)
[Understanding 1.2.7](#)

1.2.8 Media Alternative (Prerecorded): An alternative for time-based media is provided for all prerecorded synchronized media and for all prerecorded video-only media. (Level AAA)

[How to Meet 1.2.8](#)
[Understanding 1.2.8](#)

1.2.9 Audio-only (Live): An alternative for time-based media that presents equivalent information for live audio-only content is provided. (Level AAA)

[How to Meet 1.2.9](#)
[Understanding 1.2.9](#)

Guideline 1.3 Adaptable: Create content that can be presented in different ways (for example simpler layout) without losing information or structure.

[Understanding Guideline 1.3](#)

1.3.1 Info and Relationships: Information, structure, and relationships conveyed through presentation can be programmatically determined or are available in text. (Level A)

[How to Meet 1.3.1](#)
[Understanding 1.3.1](#)

1.3.2 Meaningful Sequence: When the sequence in which content is presented affects its meaning, a correct reading sequence can be programmatically determined. (Level A)

[How to Meet 1.3.2](#)
[Understanding 1.3.2](#)

1.3.3 Sensory Characteristics: Instructions provided for understanding and operating content do not rely solely on sensory characteristics of components such as shape, size, visual location, orientation, or sound. (Level A)

[How to Meet 1.3.3](#)
[Understanding 1.3.3](#)

Note: For requirements related to color, refer to [Guideline 1.4](#).

Guideline 1.4 Distinguishable: Make it easier for users to see and hear content including separating foreground from background.

[Understanding Guideline 1.4](#)

1.4.1 Use of Color: Color is not used as the only visual means of conveying information, indicating an action, prompting a response, or distinguishing a visual element. (Level A)

[How to Meet 1.4.1](#)
[Understanding 1.4.1](#)

Note: This success criterion addresses color perception specifically. Other forms of perception are covered in [Guideline 1.3](#) including programmatic access to color and other visual presentation coding.

1.4.2 Audio Control: If any audio on a Web page plays automatically for more than 3 seconds, either a mechanism is available to pause or stop the audio, or a mechanism is available to control audio volume independently from the overall system volume level. (Level A)

[How to Meet 1.4.2](#)
[Understanding 1.4.2](#)

Note: Since any content that does not meet this success criterion can interfere with a user's ability to use the whole page, all content on the Web page (whether or not it is used to meet other success criteria) must meet this success criterion. See [Conformance Requirement 5: Non-Interference](#).

1.4.3 Contrast (Minimum): The visual presentation of text and images of text has a contrast ratio of at least 4.5:1, except for the following: (Level AA)

[How to Meet 1.4.3](#)
[Understanding 1.4.3](#)

- **Large Text:** Large-scale text and images of large-scale text have a contrast ratio of at least 3:1;
- **Incidental:** Text or images of text that are part of an inactive user interface component, that are pure decoration, that are not visible to anyone, or that are part of a picture that contains significant other visual content, have no contrast requirement.
- **Logotypes:** Text that is part of a logo or brand name has no minimum contrast requirement.

1.4.4 Resize text: Except for captions and images of text, text can be resized without assistive technology up to 200 percent without loss of content or functionality. (Level AA)

[How to Meet 1.4.4](#)
[Understanding 1.4.4](#)

1.4.5 Images of Text: If the technologies being used can achieve the visual presentation, text is used to convey information rather than images of text except for the following: (Level AA)

[How to Meet 1.4.5](#)
[Understanding 1.4.5](#)

- **Customizable:** The image of text can be visually customized to the user's requirements;
- **Essential:** A particular presentation of text is essential to the information being conveyed.

Note: Logotypes (text that is part of a logo or brand name) are considered essential.

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1.4.6 Contrast (Enhanced): The visual presentation of text and images of text has a contrast ratio of at least 7:1, except for the following: (Level AAA)

[How to Meet 1.4.6](#)
[Understanding 1.4.6](#)

- **Large Text:** Large-scale text and images of large-scale text have a contrast ratio of at least 4.5:1;
- **Incidental:** Text or images of text that are part of an inactive user interface component, that are pure decoration, that are not visible to anyone, or that are part of a picture that contains significant other visual content, have no contrast requirement.
- **Logotypes:** Text that is part of a logo or brand name has no minimum contrast requirement.

1.4.7 Low or No Background Audio: For prerecorded audio-only content that (1) contains primarily speech in the foreground, (2) is not an audio CAPTCHA or audio logo, and (3) is not vocalization intended to be primarily musical expression such as singing or rapping, at least one of the following is true: (Level AAA)

[How to Meet 1.4.7](#)
[Understanding 1.4.7](#)

- **No Background:** The audio does not contain background sounds.
- **Turn Off:** The background sounds can be turned off.
- **20 dB:** The background sounds are at least 20 decibels lower than the foreground speech content, with the exception of occasional sounds that last for only one or two seconds.

Note: Per the definition of "decibel," background sound that meets this requirement will be approximately four times quieter than the foreground speech content.

1.4.8 Visual Presentation: For the visual presentation of blocks of text, a mechanism is available to achieve the following: (Level AAA)

[How to Meet 1.4.8](#)
[Understanding 1.4.8](#)

1. Foreground and background colors can be selected by the user.
2. Width is no more than 80 characters or glyphs (40 if CJK).
3. Text is not justified (aligned to both the left and the right margins).
4. Line spacing (leading) is at least space-and-a-half within paragraphs, and paragraph spacing is at least 1.5 times larger than the line spacing.
5. Text can be resized without assistive technology up to 200 percent in a way that does not require the user to scroll horizontally to read a line of text on a full-screen window.

1.4.9 Images of Text (No Exception): Images of text are only used for pure decoration or where a particular presentation of text is essential to the information being conveyed. (Level AAA)

[How to Meet 1.4.9](#)
[Understanding 1.4.9](#)

Note: Logotypes (text that is part of a logo or brand name) are considered essential.

Principle 2: Operable - User interface components and navigation must be operable.

Guideline 2.1 Keyboard Accessible: Make all functionality available from a keyboard.

[Understanding Guideline 2.1](#)

2.1.1 Keyboard: All functionality of the content is operable through a keyboard interface without requiring specific timings for individual keystrokes, except where the underlying function requires input that depends on the path of the user's movement and not just the endpoints. (Level A)

[How to Meet 2.1.1](#)
[Understanding 2.1.1](#)

Note 1: This exception relates to the underlying function, not the input technique. For example, if using handwriting to enter text, the input technique (handwriting) requires path-dependent input but the underlying function (text input) does not.

Note 2: This does not forbid and should not discourage providing mouse input or other input methods in addition to keyboard operation.

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2.1.2 No Keyboard Trap: If keyboard focus can be moved to a component of the page using a keyboard interface, then focus can be moved away from that component using only a keyboard interface, and, if it requires more than unmodified arrow or tab keys or other standard exit methods, the user is advised of the method for moving focus away. (Level A)

[How to Meet 2.1.2](#)
[Understanding 2.1.2](#)

Note: Since any content that does not meet this success criterion can interfere with a user's ability to use the whole page, all content on the Web page (whether it is used to meet other success criteria or not) must meet this success criterion. See [Conformance Requirement 5: Non-Interference](#).

2.1.3 Keyboard (No Exception): All functionality of the content is operable through a keyboard interface without requiring specific timings for individual keystrokes. (Level AAA)

[How to Meet 2.1.3](#)
[Understanding 2.1.3](#)

Guideline 2.2 Enough Time: Provide users enough time to read and use content.

[Understanding Guideline 2.2](#)

2.2.1 Timing Adjustable: For each time limit that is set by the content, at least one of the following is true: (Level A)

[How to Meet 2.2.1](#)
[Understanding 2.2.1](#)

- **Turn off:** The user is allowed to turn off the time limit before encountering it; or
- **Adjust:** The user is allowed to adjust the time limit before encountering it over a wide range that is at least ten times the length of the default setting; or
- **Extend:** The user is warned before time expires and given at least 20 seconds to extend the time limit with a simple action (for example, "press the space bar"), and the user is allowed to extend the time limit at least ten times; or
- **Real-time Exception:** The time limit is a required part of a real-time event (for example, an auction), and no alternative to the time limit is possible; or
- **Essential Exception:** The time limit is essential and extending it would invalidate the activity; or
- **20 Hour Exception:** The time limit is longer than 20 hours.

Note: This success criterion helps ensure that users can complete tasks without unexpected changes in content or context that are a result of a time limit. This success criterion should be considered in conjunction with [Success Criterion 3.2.1](#), which puts limits on changes of content or context as a result of user action.

2.2.2 Pause, Stop, Hide: For moving, blinking, scrolling, or auto-updating information, all of the following are true: (Level A)

[How to Meet 2.2.2](#)
[Understanding 2.2.2](#)

- **Moving, blinking, scrolling:** For any moving, blinking or scrolling information that (1) starts automatically, (2) lasts more than five seconds, and (3) is presented in parallel with other content, there is a mechanism for the user to pause, stop, or hide it unless the movement, blinking, or scrolling is part of an activity where it is essential; and
- **Auto-updating:** For any auto-updating information that (1) starts automatically and (2) is presented in parallel with other content, there is a mechanism for the user to pause, stop, or hide it or to control the frequency of the update unless the auto-updating is part of an activity where it is essential.

Note 1: For requirements related to flickering or flashing content, refer to [Guideline 2.3](#).

Note 2: Since any content that does not meet this success criterion can interfere with a user's ability to use the whole page, all content on the Web page (whether it is used to meet other success criteria or not) must meet this success criterion. See [Conformance Requirement 5: Non-Interference](#).

Note 3: Content that is updated periodically by software or that is streamed to the user agent is not required to preserve or present information that is generated or received between the initiation of the pause and resuming presentation, as this may not be technically possible, and in many situations could be misleading to do so.

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Note 4: An animation that occurs as part of a preload phase or similar situation can be considered essential if interaction cannot occur during that phase for all users and if not indicating progress could confuse users or cause them to think that content was frozen or broken.

2.2.3 No Timing: Timing is not an essential part of the event or activity presented by the content, except for non-interactive synchronized media and real-time events. (Level AAA)

[How to Meet 2.2.3](#)
[Understanding 2.2.3](#)

2.2.4 Interruptions: Interruptions can be postponed or suppressed by the user, except interruptions involving an emergency. (Level AAA)

[How to Meet 2.2.4](#)
[Understanding 2.2.4](#)

2.2.5 Re-authenticating: When an authenticated session expires, the user can continue the activity without loss of data after re-authenticating. (Level AAA)

[How to Meet 2.2.5](#)
[Understanding 2.2.5](#)

Guideline 2.3 Seizures: Do not design content in a way that is known to cause seizures.

[Understanding Guideline 2.3](#)

2.3.1 Three Flashes or Below Threshold: Web pages do not contain anything that flashes more than three times in any one second period, or the flash is below the general flash and red flash thresholds. (Level A)

[How to Meet 2.3.1](#)
[Understanding 2.3.1](#)

Note: Since any content that does not meet this success criterion can interfere with a user's ability to use the whole page, all content on the Web page (whether it is used to meet other success criteria or not) must meet this success criterion. See [Conformance Requirement 5: Non-Interference](#).

2.3.2 Three Flashes: Web pages do not contain anything that flashes more than three times in any one second period. (Level AAA)

[How to Meet 2.3.2](#)
[Understanding 2.3.2](#)

Guideline 2.4 Navigable: Provide ways to help users navigate, find content, and determine where they are.

[Understanding Guideline 2.4](#)

2.4.1 Bypass Blocks: A mechanism is available to bypass blocks of content that are repeated on multiple Web pages. (Level A)

[How to Meet 2.4.1](#)
[Understanding 2.4.1](#)

2.4.2 Page Titled: Web pages have titles that describe topic or purpose. (Level A)

[How to Meet 2.4.2](#)
[Understanding 2.4.2](#)

2.4.3 Focus Order: If a Web page can be navigated sequentially and the navigation sequences affect meaning or operation, focusable components receive focus in an order that preserves meaning and operability. (Level A)

[How to Meet 2.4.3](#)
[Understanding 2.4.3](#)

2.4.4 Link Purpose (In Context): The purpose of each link can be determined from the link text alone or from the link text together with its programmatically determined link context, except where the purpose of the link would be ambiguous to users in general. (Level A)

[How to Meet 2.4.4](#)
[Understanding 2.4.4](#)

2.4.5 Multiple Ways: More than one way is available to locate a Web page within a set of Web pages except where the Web Page is the result of, or a step in, a process. (Level AA)

[How to Meet 2.4.5](#)
[Understanding 2.4.5](#)

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2.4.6 Headings and Labels: Headings and labels describe topic or purpose. (Level AA)

[How to Meet 2.4.6](#)
[Understanding 2.4.6](#)

2.4.7 Focus Visible: Any keyboard operable user interface has a mode of operation where the keyboard focus indicator is visible. (Level AA)

[How to Meet 2.4.7](#)
[Understanding 2.4.7](#)

2.4.8 Location: Information about the user's location within a set of Web pages is available. (Level AAA)

[How to Meet 2.4.8](#)
[Understanding 2.4.8](#)

2.4.9 Link Purpose (Link Only): A mechanism is available to allow the purpose of each link to be identified from link text alone, except where the purpose of the link would be ambiguous to users in general. (Level AAA)

[How to Meet 2.4.9](#)
[Understanding 2.4.9](#)

2.4.10 Section Headings: Section headings are used to organize the content. (Level AAA)

[How to Meet 2.4.10](#)
[Understanding 2.4.10](#)

Note 1: "Heading" is used in its general sense and includes titles and other ways to add a heading to different types of content.

Note 2: This success criterion covers sections within writing, not user interface components. User Interface components are covered under [Success Criterion 4.1.2](#).

Principle 3: Understandable - Information and the operation of user interface must be understandable.

Guideline 3.1 Readable: Make text content readable and understandable.

[Understanding Guideline 3.1](#)

3.1.1 Language of Page: The default human language of each Web page can be programmatically determined. (Level A)

[How to Meet 3.1.1](#)
[Understanding 3.1.1](#)

3.1.2 Language of Parts: The human language of each passage or phrase in the content can be programmatically determined except for proper names, technical terms, words of indeterminate language, and words or phrases that have become part of the vernacular of the immediately surrounding text. (Level AA)

[How to Meet 3.1.2](#)
[Understanding 3.1.2](#)

3.1.3 Unusual Words: A mechanism is available for identifying specific definitions of words or phrases used in an unusual or restricted way, including idioms and jargon. (Level AAA)

[How to Meet 3.1.3](#)
[Understanding 3.1.3](#)

3.1.4 Abbreviations: A mechanism for identifying the expanded form or meaning of abbreviations is available. (Level AAA)

[How to Meet 3.1.4](#)
[Understanding 3.1.4](#)

3.1.5 Reading Level: When text requires reading ability more advanced than the lower secondary education level after removal of proper names and titles, supplemental content, or a version that does not require reading ability more advanced than the lower secondary education level, is available. (Level AAA)

[How to Meet 3.1.5](#)
[Understanding 3.1.5](#)

3.1.6 Pronunciation: A mechanism is available for identifying specific pronunciation of words where meaning of the words, in context, is ambiguous without knowing the pronunciation. (Level AAA)

[How to Meet 3.1.6](#)
[Understanding 3.1.6](#)

Guideline 3.2 Predictable: Make Web pages appear and operate in predictable ways.

3.2.1 On Focus: When any component receives focus, it does not initiate a change of context. (Level A)

[How to Meet 3.2.1](#)
[Understanding 3.2.1](#)

3.2.2 On Input: Changing the setting of any user interface component does not automatically cause a change of context unless the user has been advised of the behavior before using the component. (Level A)

[How to Meet 3.2.2](#)
[Understanding 3.2.2](#)

3.2.3 Consistent Navigation: Navigational mechanisms that are repeated on multiple Web pages within a set of Web pages occur in the same relative order each time they are repeated, unless a change is initiated by the user. (Level AA)

[How to Meet 3.2.3](#)
[Understanding 3.2.3](#)

3.2.4 Consistent Identification: Components that have the same functionality within a set of Web pages are identified consistently. (Level AA)

[How to Meet 3.2.4](#)
[Understanding 3.2.4](#)

3.2.5 Change on Request: Changes of context are initiated only by user request or a mechanism is available to turn off such changes. (Level AAA)

[How to Meet 3.2.5](#)
[Understanding 3.2.5](#)

Guideline 3.3 Input Assistance: Help users avoid and correct mistakes.

[Understanding Guideline 3.3](#)

3.3.1 Error Identification: If an input error is automatically detected, the item that is in error is identified and the error is described to the user in text. (Level A)

[How to Meet 3.3.1](#)
[Understanding 3.3.1](#)

3.3.2 Labels or Instructions: Labels or instructions are provided when content requires user input. (Level A)

[How to Meet 3.3.2](#)
[Understanding 3.3.2](#)

3.3.3 Error Suggestion: If an input error is automatically detected and suggestions for correction are known, then the suggestions are provided to the user, unless it would jeopardize the security or purpose of the content. (Level AA)

[How to Meet 3.3.3](#)
[Understanding 3.3.3](#)

3.3.4 Error Prevention (Legal, Financial, Data): For Web pages that cause legal commitments or financial transactions for the user to occur, that modify or delete user-controllable data in data storage systems, or that submit user test responses, at least one of the following is true: (Level AA)

[How to Meet 3.3.4](#)
[Understanding 3.3.4](#)

1. **Reversible:** Submissions are reversible.
2. **Checked:** Data entered by the user is checked for input errors and the user is provided an opportunity to correct them.
3. **Confirmed:** A mechanism is available for reviewing, confirming, and correcting information before finalizing the submission.

3.3.5 Help: Context-sensitive help is available. (Level AAA)

[How to Meet 3.3.5](#)
[Understanding 3.3.5](#)

3.3.6 Error Prevention (All): For Web pages that require the user to submit information, at least one of the following is true: (Level AAA)

[How to Meet 3.3.6](#)
[Understanding 3.3.6](#)

1. **Reversible:** Submissions are reversible.

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2. **Checked:** Data entered by the user is checked for input errors and the user is provided an opportunity to correct them.
3. **Confirmed:** A mechanism is available for reviewing, confirming, and correcting information before finalizing the submission.

Principle 4: Robust - Content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies.

Guideline 4.1 Compatible: Maximize compatibility with current and future user agents, including assistive technologies.

[Understanding Guideline 4.1](#)

4.1.1 Parsing: In content implemented using markup languages, elements have complete start and end tags, elements are nested according to their specifications, elements do not contain duplicate attributes, and any IDs are unique, except where the specifications allow these features. (Level A)

[How to Meet 4.1.1](#)
[Understanding 4.1.1](#)

Note: Start and end tags that are missing a critical character in their formation, such as a closing angle bracket or a mismatched attribute value quotation mark are not complete.

4.1.2 Name, Role, Value: For all user interface components (including but not limited to: form elements, links and components generated by scripts), the name and role can be programmatically determined; states, properties, and values that can be set by the user can be programmatically set; and notification of changes to these items is available to user agents, including assistive technologies. (Level A)

[How to Meet 4.1.2](#)
[Understanding 4.1.2](#)

Note: This success criterion is primarily for Web authors who develop or script their own user interface components. For example, standard HTML controls already meet this success criterion when used according to specification.

Conformance

This section is normative.

This section lists requirements for conformance to WCAG 2.0. It also gives information about how to make conformance claims, which are optional. Finally, it describes what it means to be accessibility supported, since only accessibility-supported ways of using technologies can be relied upon for conformance. [Understanding Conformance](#) includes further explanation of the accessibility-supported concept.

Conformance Requirements

In order for a Web page to conform to WCAG 2.0, all of the following conformance requirements must be satisfied:

1. Conformance Level: One of the following levels of conformance is met in full.

- **Level A:** For Level A conformance (the minimum level of conformance), the Web page satisfies all the Level A Success Criteria, or a conforming alternate version is provided.
- **Level AA:** For Level AA conformance, the Web page satisfies all the Level A and Level AA Success Criteria, or a Level AA conforming alternate version is provided.
- **Level AAA:** For Level AAA conformance, the Web page satisfies all the Level A, Level AA and Level AAA Success Criteria, or a Level AAA conforming alternate version is provided.

Note 1: Although conformance can only be achieved at the stated levels, authors are encouraged to report (in their claim) any progress toward meeting success criteria from all levels beyond the achieved level of conformance.

Note 2: It is not recommended that Level AAA conformance be required as a general policy for entire sites because it is not possible to satisfy all Level AAA Success Criteria for some content.

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2. Full pages: Conformance (and conformance level) is for full Web page(s) only, and cannot be achieved if part of a Web page is excluded.

Note 1: For the purpose of determining conformance, alternatives to part of a page's content are considered part of the page when the alternatives can be obtained directly from the page, e.g., a long description or an alternative presentation of a video.

Note 2: Authors of Web pages that cannot conform due to content outside of the author's control may consider a [Statement of Partial Conformance](#).

3. Complete processes: When a Web page is one of a series of Web pages presenting a process (i.e., a sequence of steps that need to be completed in order to accomplish an activity), all Web pages in the process conform at the specified level or better. (Conformance is not possible at a particular level if any page in the process does not conform at that level or better.)

Example: An online store has a series of pages that are used to select and purchase products. All pages in the series from start to finish (checkout) conform in order for any page that is part of the process to conform.

4. Only Accessibility-Supported Ways of Using Technologies: Only accessibility-supported ways of using technologies are relied upon to satisfy the success criteria. Any information or functionality that is provided in a way that is not accessibility supported is also available in a way that is accessibility supported. (See [Understanding accessibility support](#).)

5. Non-Interference: If technologies are used in a way that is not accessibility supported, or if they are used in a non-conforming way, then they do not block the ability of users to access the rest of the page. In addition, the Web page as a whole continues to meet the conformance requirements under each of the following conditions:

1. when any technology that is not relied upon is turned on in a user agent,
2. when any technology that is not relied upon is turned off in a user agent, and
3. when any technology that is not relied upon is not supported by a user agent

In addition, the following success criteria apply to all content on the page, including content that is not otherwise relied upon to meet conformance, because failure to meet them could interfere with any use of the page:

- **1.4.2 - Audio Control,**
- **2.1.2 - No Keyboard Trap,**
- **2.3.1 - Three Flashes or Below Threshold,** and
- **2.2.2 - Pause, Stop, Hide.**

Note: If a page cannot conform (for example, a conformance test page or an example page), it cannot be included in the scope of conformance or in a conformance claim.

For more information, including examples, see [Understanding Conformance Requirements](#).

Conformance Claims (Optional)

Conformance is defined only for Web pages. However, a conformance claim may be made to cover one page, a series of pages, or multiple related Web pages.

Required Components of a Conformance Claim

Conformance claims are **not required**. Authors can conform to WCAG 2.0 without making a claim. However, if a conformance claim is made, then the conformance claim **must** include the following information:

1. **Date** of the claim
2. **Guidelines title, version and URI** "Web Content Accessibility Guidelines 2.0 at <http://www.w3.org/TR/2008/REC-WCAG20-20081211/>"
3. **Conformance level** satisfied: (Level A, AA or AAA)
4. **A concise description of the Web pages**, such as a list of URIs for which the claim is made, including whether subdomains are included in the claim.

Note 1: The Web pages may be described by list or by an expression that describes all of the URIs included in the claim.

Note 2: Web-based products that do not have a URI prior to installation on the customer's Web site may have a statement that the product would conform when installed.

5. A list of the Web content technologies relied upon.

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Note: If a conformance logo is used, it would constitute a claim and must be accompanied by the required components of a conformance claim listed above.

Optional Components of a Conformance Claim

In addition to the required components of a conformance claim above, consider providing additional information to assist users. Recommended additional information includes:

- A list of success criteria beyond the level of conformance claimed that have been met. This information should be provided in a form that users can use, preferably machine-readable metadata.
- A list of the specific technologies that are "*used but not relied upon*."
- A list of user agents, including assistive technologies that were used to test the content.
- Information about any additional steps taken that go beyond the success criteria to enhance accessibility.
- A machine-readable metadata version of the list of specific technologies that are relied upon.
- A machine-readable metadata version of the conformance claim.

Note 1: Refer to [Understanding Conformance Claims](#) for more information and example conformance claims.

Note 2: Refer to [Understanding Metadata](#) for more information about the use of metadata in conformance claims.

Statement of Partial Conformance - Third Party Content

Sometimes, Web pages are created that will later have additional content added to them. For example, an email program, a blog, an article that allows users to add comments, or applications supporting user-contributed content. Another example would be a page, such as a portal or news site, composed of content aggregated from multiple contributors, or sites that automatically insert content from other sources over time, such as when advertisements are inserted dynamically.

In these cases, it is not possible to know at the time of original posting what the uncontrolled content of the pages will be. It is important to note that the uncontrolled content can affect the accessibility of the controlled content as well. Two options are available:

1. A determination of conformance can be made based on best knowledge. If a page of this type is monitored and repaired (non-conforming content is removed or brought into conformance) within two business days, then a determination or claim of conformance can be made since, except for errors in externally contributed content which are corrected or removed when encountered, the page conforms. No conformance claim can be made if it is not possible to monitor or correct non-conforming content;
OR
2. A "statement of partial conformance" may be made that the page does not conform, but could conform if certain parts were removed. The form of that statement would be, "This page does not conform, but would conform to WCAG 2.0 at level X if the following parts from uncontrolled sources were removed." In addition, the following would also be true of uncontrolled content that is described in the statement of partial conformance:
 - a. It is not content that is under the author's control.
 - b. It is described in a way that users can identify (e.g., they cannot be described as "all parts that we do not control" unless they are clearly marked as such.)

Statement of Partial Conformance - Language

A "statement of partial conformance due to language" may be made when the page does not conform, but would conform if accessibility support existed for (all of) the language(s) used on the page. The form of that statement would be, "This page does not conform, but would conform to WCAG 2.0 at level X if accessibility support existed for the following language(s):"

Appendix A: Glossary

This section is normative.

abbreviation

shortened form of a word, phrase, or name where the abbreviation has not become part of the language

Note 1: This includes initialisms and acronyms where:

1. **initialisms** are shortened forms of a name or phrase made from the initial letters of words or syllables contained in that name or phrase

Note 1: Not defined in all languages.

Example 1: SNCF is a French initialism that contains the initial letters of the Société Nationale des Chemins de Fer, the French national railroad.

Example 2: ESP is an initialism for extrasensory perception.

2. **acronyms** are abbreviated forms made from the initial letters or parts of other words (in a name or phrase) which may be pronounced as a word

Example: NOAA is an acronym made from the initial letters of the National Oceanic and Atmospheric Administration in the United States.

Note 2: Some companies have adopted what used to be an initialism as their company name. In these cases, the new name of the company is the letters (for example, Ecma) and the word is no longer considered an abbreviation.

accessibility supported

supported by users' assistive technologies as well as the accessibility features in browsers and other user agents. To qualify as an accessibility-supported use of a Web content technology (or feature of a technology), both 1 and 2 must be satisfied for a Web content technology (or feature):

1. **The way that the Web content technology is used must be supported by users' assistive technology (AT).** This means that the way that the technology is used has been tested for interoperability with users' assistive technology in the human language(s) of the content,

AND

2. **The Web content technology must have accessibility-supported user agents that are available to users.**

This means that at least one of the following four statements is true:

- a. The technology is supported natively in widely-distributed user agents that are also accessibility supported (such as HTML and CSS);

OR

- b. The technology is supported in a widely-distributed plug-in that is also accessibility supported;

OR

- c. The content is available in a closed environment, such as a university or corporate network, where the user agent required by the technology and used by the organization is also accessibility supported;

OR

- d. The user agent(s) that support the technology are accessibility supported and are available for download or purchase in a way that:

- does not cost a person with a disability any more than a person without a disability **and**
- is as easy to find and obtain for a person with a disability as it is for a person without disabilities.

Note 1: The WCAG Working group and the W3C do not specify which or how much support by assistive technologies there must be for a particular use of a Web technology in order for it to be classified as accessibility supported. (See [Level of Assistive Technology Support Needed for "Accessibility Support"](#).)

Note 2: Web technologies can be used in ways that are not accessibility supported as long as they are not relied upon and the page as a whole meets the conformance requirements, including [Conformance Requirement 4: Only Accessibility-Supported Ways of Using Technologies](#) and [Conformance Requirement 5: Non-Interference](#), are met.

Note 3: When a Web Technology is used in a way that is "accessibility supported," it does not imply that the entire technology or all uses of the technology are supported. Most technologies, including HTML, lack support for at least one feature or use. Pages conform to WCAG only if the uses of the technology that are accessibility supported can be relied upon to meet WCAG requirements.

Note 4: When citing Web content technologies that have multiple versions, the version(s) supported should be specified.

Note 5: One way for authors to locate uses of a technology that are accessibility supported would be to consult compilations of uses that are documented to be accessibility supported. (See [Understanding Accessibility-Supported Web Technology Uses](#).) Authors, companies, technology vendors, or others may document accessibility-supported ways of using Web content technologies. However, all ways of using technologies in the documentation would need to meet the definition of accessibility-supported Web content technologies above.

alternative for time-based media

document including correctly sequenced text descriptions of time-based visual and auditory information and providing a means for achieving the outcomes of any time-based interaction

Note: A screenplay used to create the synchronized media content would meet this definition only if it was corrected

to accurately represent the final synchronized media after editing.

ambiguous to users in general

the purpose cannot be determined from the link and all information of the Web page presented to the user simultaneously with the link (i.e., readers without disabilities would not know what a link would do until they activated it)

Example: The word guava in the following sentence "One of the notable exports is guava" is a link. The link could lead to a definition of guava, a chart listing the quantity of guava exported or a photograph of people harvesting guava. Until the link is activated, all readers are unsure and the person with a disability is not at any disadvantage.

ASCII art

picture created by a spatial arrangement of characters or glyphs (typically from the 95 printable characters defined by ASCII).

assistive technology (as used in this document)

hardware and/or software that acts as a user agent, or along with a mainstream user agent, to provide functionality to meet the requirements of users with disabilities that go beyond those offered by mainstream user agents

Note 1: functionality provided by assistive technology includes alternative presentations (e.g., as synthesized speech or magnified content), alternative input methods (e.g., voice), additional navigation or orientation mechanisms, and content transformations (e.g., to make tables more accessible).

Note 2: Assistive technologies often communicate data and messages with mainstream user agents by using and monitoring APIs.

Note 3: The distinction between mainstream user agents and assistive technologies is not absolute. Many mainstream user agents provide some features to assist individuals with disabilities. The basic difference is that mainstream user agents target broad and diverse audiences that usually include people with and without disabilities. Assistive technologies target narrowly defined populations of users with specific disabilities. The assistance provided by an assistive technology is more specific and appropriate to the needs of its target users. The mainstream user agent may provide important functionality to assistive technologies like retrieving Web content from program objects or parsing markup into identifiable bundles.

Example: Assistive technologies that are important in the context of this document include the following:

- screen magnifiers, and other visual reading assistants, which are used by people with visual, perceptual and physical print disabilities to change text font, size, spacing, color, synchronization with speech, etc. in order to improve the visual readability of rendered text and images;
- screen readers, which are used by people who are blind to read textual information through synthesized speech or braille;
- text-to-speech software, which is used by some people with cognitive, language, and learning disabilities to convert text into synthetic speech;
- speech recognition software, which may be used by people who have some physical disabilities;
- alternative keyboards, which are used by people with certain physical disabilities to simulate the keyboard (including alternate keyboards that use head pointers, single switches, sip/puff and other special input devices.);
- alternative pointing devices, which are used by people with certain physical disabilities to simulate mouse pointing and button activations.

audio

the technology of sound reproduction

Note: Audio can be created synthetically (including speech synthesis), recorded from real world sounds, or both.

audio description

narration added to the soundtrack to describe important visual details that cannot be understood from the main soundtrack alone

Note 1: Audio description of video provides information about actions, characters, scene changes, on-screen text, and other visual content.

Note 2: In standard audio description, narration is added during existing pauses in dialogue. (See also extended audio description.)

Note 3: Where all of the video information is already provided in existing audio, no additional audio description is necessary.

audio-only

a time-based presentation that contains only audio (no video and no interaction)

blinking

switch back and forth between two visual states in a way that is meant to draw attention

Note: See also flash. It is possible for something to be large enough and blink brightly enough at the right frequency to be also classified as a flash.

blocks of text

more than one sentence of text

CAPTCHA

initialism for "Completely Automated Public Turing test to tell Computers and Humans Apart"

Note 1: CAPTCHA tests often involve asking the user to type in text that is displayed in an obscured image or audio file.

Note 2: A Turing test is any system of tests designed to differentiate a human from a computer. It is named after famed computer scientist Alan Turing. The term was coined by researchers at Carnegie Mellon University.

[\[CAPTCHA\]](#)

captions

synchronized visual and/or text alternative for both speech and non-speech audio information needed to understand the media content

Note 1: Captions are similar to dialogue-only subtitles except captions convey not only the content of spoken dialogue, but also equivalents for non-dialogue audio information needed to understand the program content, including sound effects, music, laughter, speaker identification and location.

Note 2: Closed Captions are equivalents that can be turned on and off with some players.

Note 3: Open Captions are any captions that cannot be turned off. For example, if the captions are visual equivalent images of text embedded in video.

Note 4: Captions should not obscure or obstruct relevant information in the video.

Note 5: In some countries, captions are called subtitles.

Note 6: Audio descriptions can be, but do not need to be, captioned since they are descriptions of information that is already presented visually.

changes of context

major changes in the content of the Web page that, if made without user awareness, can disorient users who are not able to view the entire page simultaneously

Changes in context include changes of:

1. user agent;
2. viewport;
3. focus;
4. content that changes the meaning of the Web page.

Note: A change of content is not always a change of context. Changes in content, such as an expanding outline, dynamic menu, or a tab control do not necessarily change the context, unless they also change one of the above (e.g., focus).

Example: Opening a new window, moving focus to a different component, going to a new page (including anything that would look to a user as if they had moved to a new page) or significantly re-arranging the content of a page are examples of changes of context.

conformance

satisfying all the requirements of a given standard, guideline or specification

conforming alternate version

version that

1. conforms at the designated level, and
2. provides all of the same information and functionality in the same human language, and
3. is as up to date as the non-conforming content, and

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4. for which at least one of the following is true:

- a. the conforming version can be reached from the non-conforming page via an accessibility-supported mechanism, or
- b. the non-conforming version can only be reached from the conforming version, or
- c. the non-conforming version can only be reached from a conforming page that also provides a mechanism to reach the conforming version

Note 1: In this definition, "can only be reached" means that there is some mechanism, such as a conditional redirect, that prevents a user from "reaching" (loading) the non-conforming page unless the user had just come from the conforming version.

Note 2: The alternate version does not need to be matched page for page with the original (e.g., the conforming alternate version may consist of multiple pages).

Note 3: If multiple language versions are available, then conforming alternate versions are required for each language offered.

Note 4: Alternate versions may be provided to accommodate different technology environments or user groups. Each version should be as conformant as possible. One version would need to be fully conformant in order to meet [conformance requirement 1](#).

Note 5: The conforming alternative version does not need to reside within the scope of conformance, or even on the same Web site, as long as it is as freely available as the non-conforming version.

Note 6: Alternate versions should not be confused with supplementary content, which support the original page and enhance comprehension.

Note 7: Setting user preferences within the content to produce a conforming version is an acceptable mechanism for reaching another version as long as the method used to set the preferences is accessibility supported.

See [Understanding Conforming Alternate Versions](#)

content (Web content)

information and sensory experience to be communicated to the user by means of a user agent, including code or markup that defines the content's structure, presentation, and interactions

context-sensitive help

help text that provides information related to the function currently being performed

Note: Clear labels can act as context-sensitive help.

contrast ratio

$(L1 + 0.05) / (L2 + 0.05)$, where

- L1 is the relative luminance of the lighter of the colors, and
- L2 is the relative luminance of the darker of the colors.

Note 1: Contrast ratios can range from 1 to 21 (commonly written 1:1 to 21:1).

Note 2: Because authors do not have control over user settings as to how text is rendered (for example font smoothing or anti-aliasing), the contrast ratio for text can be evaluated with anti-aliasing turned off.

Note 3: For the purpose of Success Criteria 1.4.3 and 1.4.6, contrast is measured with respect to the specified background over which the text is rendered in normal usage. If no background color is specified, then white is assumed.

Note 4: Background color is the specified color of content over which the text is to be rendered in normal usage. It is a failure if no background color is specified when the text color is specified, because the user's default background color is unknown and cannot be evaluated for sufficient contrast. For the same reason, it is a failure if no text color is specified when a background color is specified.

Note 5: When there is a border around the letter, the border can add contrast and would be used in calculating the contrast between the letter and its background. A narrow border around the letter would be used as the letter. A wide border around the letter that fills in the inner details of the letters acts as a halo and would be considered background.

Note 6: WCAG conformance should be evaluated for color pairs specified in the content that an author would expect to appear adjacent in typical presentation. Authors need not consider unusual presentations, such as color changes made by the user agent, except where caused by authors' code.

correct reading sequence

any sequence where words and paragraphs are presented in an order that does not change the meaning of the

content

emergency

a sudden, unexpected situation or occurrence that requires immediate action to preserve health, safety, or property

essential

if removed, would fundamentally change the information or functionality of the content, **and** information and functionality cannot be achieved in another way that would conform

extended audio description

audio description that is added to an audiovisual presentation by pausing the video so that there is time to add additional description

Note: This technique is only used when the sense of the video would be lost without the additional audio description and the pauses between dialogue/narration are too short.

flash

a pair of opposing changes in relative luminance that can cause seizures in some people if it is large enough and in the right frequency range

Note 1: See general flash and red flash thresholds for information about types of flash that are not allowed.

Note 2: See also blinking.

functionality

processes and outcomes achievable through user action

general flash and red flash thresholds

a flash or rapidly changing image sequence is below the threshold (i.e., content **passes**) if any of the following are true:

1. there are no more than three **general flashes** and / or no more than three **red flashes** within any one-second period; or
2. the combined area of flashes occurring concurrently occupies no more than a total of .006 steradians within any 10 degree visual field on the screen (25% of any 10 degree visual field on the screen) at typical viewing distance

where:

- A **general flash** is defined as a pair of opposing changes in relative luminance of 10% or more of the maximum relative luminance where the relative luminance of the darker image is below 0.80; and where "a pair of opposing changes" is an increase followed by a decrease, or a decrease followed by an increase, and
- A **red flash** is defined as any pair of opposing transitions involving a saturated red.

Exception: Flashing that is a fine, balanced, pattern such as white noise or an alternating checkerboard pattern with "squares" smaller than 0.1 degree (of visual field at typical viewing distance) on a side does not violate the thresholds.

Note 1: For general software or Web content, using a 341 x 256 pixel rectangle anywhere on the displayed screen area when the content is viewed at 1024 x 768 pixels will provide a good estimate of a 10 degree visual field for standard screen sizes and viewing distances (e.g., 15-17 inch screen at 22-26 inches). (Higher resolutions displays showing the same rendering of the content yield smaller and safer images so it is lower resolutions that are used to define the thresholds.)

Note 2: A transition is the change in relative luminance (or relative luminance/color for red flashing) between adjacent peaks and valleys in a plot of relative luminance (or relative luminance/color for red flashing) measurement against time. A flash consists of two opposing transitions.

Note 3: The current working definition in the field for "**pair of opposing transitions involving a saturated red**" is where, for either or both states involved in each transition, $R/(R + G + B) \geq 0.8$, and the change in the value of $(R-G-B) \times 320$ is > 20 (negative values of $(R-G-B) \times 320$ are set to zero) for both transitions. R, G, B values range from 0-1 as specified in "relative luminance" definition. [[HARDING-BINNIE](#)]

Note 4: Tools are available that will carry out analysis from video screen capture. However, no tool is necessary to evaluate for this condition if flashing is less than or equal to 3 flashes in any one second. Content automatically passes (see #1 and #2 above).

human language

language that is spoken, written or signed (through visual or tactile means) to communicate with humans

Note: See also sign language.

idiom

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phrase whose meaning cannot be deduced from the meaning of the individual words and the specific words cannot be changed without losing the meaning

Note: idioms cannot be translated directly, word for word, without losing their (cultural or language-dependent) meaning.

Example 1: In English, "spilling the beans" means "revealing a secret." However, "knocking over the beans" or "spilling the vegetables" does not mean the same thing.

Example 2: In Japanese, the phrase "さじを投げける" literally translates into "he throws a spoon," but it means that there is nothing he can do and finally he gives up.

Example 3: In Dutch, "Hij ging met de kippen op stok" literally translates into "He went to roost with the chickens," but it means that he went to bed early.

image of text

text that has been rendered in a non-text form (e.g., an image) in order to achieve a particular visual effect

Note: This does not include text that is part of a picture that contains significant other visual content.

Example: A person's name on a nametag in a photograph.

informative

for information purposes and not required for conformance

Note: Content required for conformance is referred to as "normative."

input error

information provided by the user that is not accepted

Note: This includes:

1. Information that is required by the Web page but omitted by the user
2. Information that is provided by the user but that falls outside the required data format or values

jargon

words used in a particular way by people in a particular field

Example: The word StickyKeys is jargon from the field of assistive technology/accessibility.

keyboard interface

interface used by software to obtain keystroke input

Note 1: A keyboard interface allows users to provide keystroke input to programs even if the native technology does not contain a keyboard.

Example: A touchscreen PDA has a keyboard interface built into its operating system as well as a connector for external keyboards. Applications on the PDA can use the interface to obtain keyboard input either from an external keyboard or from other applications that provide simulated keyboard output, such as handwriting interpreters or speech-to-text applications with "keyboard emulation" functionality.

Note 2: Operation of the application (or parts of the application) through a keyboard-operated mouse emulator, such as MouseKeys, does not qualify as operation through a keyboard interface because operation of the program is through its pointing device interface, not through its keyboard interface.

label

text or other component with a text alternative that is presented to a user to identify a component within Web content

Note 1: A label is presented to all users whereas the name may be hidden and only exposed by assistive technology. In many (but not all) cases the name and the label are the same.

Note 2: The term label is not limited to the label element in HTML.

large scale (text)

with at least 18 point or 14 point bold or font size that would yield equivalent size for Chinese, Japanese and Korean (CJK) fonts

Note 1: Fonts with extraordinarily thin strokes or unusual features and characteristics that reduce the familiarity of their letter forms are harder to read, especially at lower contrast levels.

Note 2: Font size is the size when the content is delivered. It does not include resizing that may be done by a user.

Note 3: The actual size of the character that a user sees is dependent both on the author-defined size and the user's display or user-agent settings. For many mainstream body text fonts, 14 and 18 point is roughly equivalent to 1.2 and

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1.5 em or to 120% or 150% of the default size for body text (assuming that the body font is 100%), but authors would need to check this for the particular fonts in use. When fonts are defined in relative units, the actual point size is calculated by the user agent for display. The point size should be obtained from the user agent, or calculated based on font metrics as the user agent does, when evaluating this success criterion. Users who have low vision would be responsible for choosing appropriate settings.

Note 4: When using text without specifying the font size, the smallest font size used on major browsers for unspecified text would be a reasonable size to assume for the font. If a level 1 heading is rendered in 14pt bold or higher on major browsers, then it would be reasonable to assume it is large text. Relative scaling can be calculated from the default sizes in a similar fashion.

Note 5: The 18 and 14 point sizes for roman texts are taken from the minimum size for large print (14pt) and the larger standard font size (18pt). For other fonts such as CJK languages, the "equivalent" sizes would be the minimum large print size used for those languages and the next larger standard large print size.

legal commitments

transactions where the person incurs a legally binding obligation or benefit

Example: A marriage license, a stock trade (financial and legal), a will, a loan, adoption, signing up for the army, a contract of any type, etc.

link purpose

nature of the result obtained by activating a hyperlink

live

information captured from a real-world event and transmitted to the receiver with no more than a broadcast delay

Note 1: A broadcast delay is a short (usually automated) delay, for example used in order to give the broadcaster time to queue or censor the audio (or video) feed, but not sufficient to allow significant editing.

Note 2: If information is completely computer generated, it is not live.

lower secondary education level

the two or three year period of education that begins after completion of six years of school and ends nine years after the beginning of primary education

Note: This definition is based on the International Standard Classification of Education [\[UNESCO\]](#).

mechanism

process or technique for achieving a result

Note 1: The mechanism may be explicitly provided in the content, or may be relied upon to be provided by either the platform or by user agents, including assistive technologies.

Note 2: The mechanism needs to meet all success criteria for the conformance level claimed.

media alternative for text

media that presents no more information than is already presented in text (directly or via text alternatives)

Note: A media alternative for text is provided for those who benefit from alternate representations of text. Media alternatives for text may be audio-only, video-only (including sign-language video), or audio-video.

name

text by which software can identify a component within Web content to the user

Note 1: The name may be hidden and only exposed by assistive technology, whereas a label is presented to all users. In many (but not all) cases, the label and the name are the same.

Note 2: This is unrelated to the name attribute in HTML.

navigated sequentially

navigated in the order defined for advancing focus (from one element to the next) using a keyboard interface

non-text content

any content that is not a sequence of characters that can be programmatically determined or where the sequence is not expressing something in human language

Note: This includes ASCII Art (which is a pattern of characters), emoticons, leetspeak (which uses character substitution), and images representing text

normative

required for conformance

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Note 1: One may conform in a variety of well-defined ways to this document.

Note 2: Content identified as "informative" or "non-normative" is never required for conformance.

on a full-screen window

on the most common sized desktop/laptop display with the viewport maximized

Note: Since people generally keep their computers for several years, it is best not to rely on the latest desktop/laptop display resolutions but to consider the common desktop/laptop display resolutions over the course of several years when making this evaluation.

paused

stopped by user request and not resumed until requested by user

prerecorded

information that is not live

presentation

rendering of the content in a form to be perceived by users

primary education level

six year time period that begins between the ages of five and seven, possibly without any previous education

Note: This definition is based on the International Standard Classification of Education [[UNESCO](#)].

process

series of user actions where each action is required in order to complete an activity

Example 1: Successful use of a series of Web pages on a shopping site requires users to view alternative products, prices and offers, select products, submit an order, provide shipping information and provide payment information.

Example 2: An account registration page requires successful completion of a Turing test before the registration form can be accessed.

programmatically determined (programmatically determinable)

determined by software from author-supplied data provided in a way that different user agents, including assistive technologies, can extract and present this information to users in different modalities

Example 1: Determined in a markup language from elements and attributes that are accessed directly by commonly available assistive technology.

Example 2: Determined from technology-specific data structures in a non-markup language and exposed to assistive technology via an accessibility API that is supported by commonly available assistive technology.

programmatically determined link context

additional information that can be programmatically determined from relationships with a link, combined with the link text, and presented to users in different modalities

Example: In HTML, information that is programmatically determinable from a link in English includes text that is in the same paragraph, list, or table cell as the link or in a table header cell that is associated with the table cell that contains the link.

Note: Since screen readers interpret punctuation, they can also provide the context from the current sentence, when the focus is on a link in that sentence.

programmatically set

set by software using methods that are supported by user agents, including assistive technologies

pure decoration

-serving only an aesthetic purpose, providing no information, and having no functionality

Note: Text is only purely decorative if the words can be rearranged or substituted without changing their purpose.

Example: The cover page of a dictionary has random words in very light text in the background.

real-time event

event that a) occurs at the same time as the viewing and b) is not completely generated by the content

Example 1: A Webcast of a live performance (occurs at the same time as the viewing and is not pre-recorded).

Example 2: An on-line auction with people bidding (occurs at the same time as the viewing).

Example 3: Live humans interacting in a virtual world using avatars (is not completely generated by the content and occurs at the same time as the viewing).

relationships

meaningful associations between distinct pieces of content

relative luminance

the relative brightness of any point in a colorspace, normalized to 0 for darkest black and 1 for lightest white

Note 1: For the sRGB colorspace, the relative luminance of a color is defined as $L = 0.2126 * R + 0.7152 * G + 0.0722 * B$ where **R**, **G** and **B** are defined as:

- if $R_{sRGB} \leq 0.03928$ then $R = R_{sRGB}/12.92$ else $R = ((R_{sRGB}+0.055)/1.055) ^ 2.4$
- if $G_{sRGB} \leq 0.03928$ then $G = G_{sRGB}/12.92$ else $G = ((G_{sRGB}+0.055)/1.055) ^ 2.4$
- if $B_{sRGB} \leq 0.03928$ then $B = B_{sRGB}/12.92$ else $B = ((B_{sRGB}+0.055)/1.055) ^ 2.4$

and R_{sRGB} , G_{sRGB} , and B_{sRGB} are defined as:

- $R_{sRGB} = R_{8bit}/255$
- $G_{sRGB} = G_{8bit}/255$
- $B_{sRGB} = B_{8bit}/255$

The "^" character is the exponentiation operator. (Formula taken from [\[sRGB\]](#) and [\[IEC-4WD\]](#)).

Note 2: Almost all systems used today to view Web content assume sRGB encoding. Unless it is known that another color space will be used to process and display the content, authors should evaluate using sRGB colorspace. If using other color spaces, see [Understanding Success Criterion 1.4.3](#).

Note 3: If dithering occurs after delivery, then the source color value is used. For colors that are dithered at the source, the average values of the colors that are dithered should be used (average R, average G, and average B).

Note 4: Tools are available that automatically do the calculations when testing contrast and flash.

Note 5: A [MathML version of the relative luminance definition](#) is available.

relied upon (technologies that are)

the content would not conform if that technology is turned off or is not supported

role

text or number by which software can identify the function of a component within Web content

Example: A number that indicates whether an image functions as a hyperlink, command button, or check box.

same functionality

same result when used

Example: A submit "search" button on one Web page and a "find" button on another Web page may both have a field to enter a term and list topics in the Web site related to the term submitted. In this case, they would have the same functionality but would not be labeled consistently.

same relative order

same position relative to other items

Note: Items are considered to be in the same relative order even if other items are inserted or removed from the original order. For example, expanding navigation menus may insert an additional level of detail or a secondary navigation section may be inserted into the reading order.

satisfies a success criterion

the success criterion does not evaluate to 'false' when applied to the page

section

A self-contained portion of written content that deals with one or more related topics or thoughts

Note: A section may consist of one or more paragraphs and include graphics, tables, lists and sub-sections.

set of Web pages

collection of [Web pages](#) that share a common purpose and that are created by the same author, group or organization

Note: Different language versions would be considered different sets of Web pages.

sign language

a language using combinations of movements of the hands and arms, facial expressions, or body positions to convey meaning

sign language interpretation

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translation of one language, generally a spoken language, into a sign language

Note: True sign languages are independent languages that are unrelated to the spoken language(s) of the same country or region.

specific sensory experience

a sensory experience that is not purely decorative and does not primarily convey important information or perform a function

Example: Examples include a performance of a flute solo, works of visual art etc.

structure

1. The way the parts of a Web page are organized in relation to each other; and
2. The way a collection of Web pages is organized

supplemental content

additional content that illustrates or clarifies the primary content

Example 1: An audio version of a Web page.

Example 2: An illustration of a complex process.

Example 3: A paragraph summarizing the major outcomes and recommendations made in a research study.

synchronized media

audio or video synchronized with another format for presenting information and/or with time-based interactive components, unless the media is a media alternative for text that is clearly labeled as such

technology (Web content)

mechanism for encoding instructions to be rendered, played or executed by user agents

Note 1: As used in these guidelines "Web Technology" and the word "technology" (when used alone) both refer to Web Content Technologies.

Note 2: Web content technologies may include markup languages, data formats, or programming languages that authors may use alone or in combination to create end-user experiences that range from static Web pages to synchronized media presentations to dynamic Web applications.

Example: Some common examples of Web content technologies include HTML, CSS, SVG, PNG, PDF, Flash, and JavaScript.

text

sequence of characters that can be programmatically determined, where the sequence is expressing something in human language

text alternative

Text that is programmatically associated with non-text content or referred to from text that is programmatically associated with non-text content. Programmatically associated text is text whose location can be programmatically determined from the non-text content.

Example: An image of a chart is described in text in the paragraph after the chart. The short text alternative for the chart indicates that a description follows.

Note: Refer to [Understanding Text Alternatives](#) for more information.

used in an unusual or restricted way

words used in such a way that requires users to know exactly which definition to apply in order to understand the content correctly

Example: The term "gig" means something different if it occurs in a discussion of music concerts than it does in article about computer hard drive space, but the appropriate definition can be determined from context. By contrast, the word "text" is used in a very specific way in WCAG 2.0, so a definition is supplied in the glossary.

user agent

any software that retrieves and presents Web content for users

Example: Web browsers, media players, plug-ins, and other programs — including assistive technologies — that help in retrieving, rendering, and interacting with Web content.

user-controllable

data that is intended to be accessed by users

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Note: This does not refer to such things as Internet logs and search engine monitoring data.

Example: Name and address fields for a user's account.

user interface component

a part of the content that is perceived by users as a single control for a distinct function

Note 1: Multiple user interface components may be implemented as a single programmatic element. Components here is not tied to programming techniques, but rather to what the user perceives as separate controls.

Note 2: User interface components include form elements and links as well as components generated by scripts.

Example: An applet has a "control" that can be used to move through content by line or page or random access. Since each of these would need to have a name and be settable independently, they would each be a "user interface component."

video

the technology of moving or sequenced pictures or images

Note: Video can be made up of animated or photographic images, or both.

video-only

a time-based presentation that contains only video (no audio and no interaction)

viewport

object in which the user agent presents content

Note 1: The user agent presents content through one or more viewports. Viewports include windows, frames, loudspeakers, and virtual magnifying glasses. A viewport may contain another viewport (e.g., nested frames). Interface components created by the user agent such as prompts, menus, and alerts are not viewports.

Note 2: This definition is based on [User Agent Accessibility Guidelines 1.0 Glossary](#).

visually customized

the font, size, color, and background can be set

Web page

a non-embedded resource obtained from a single URI using HTTP plus any other resources that are used in the rendering or intended to be rendered together with it by a user agent

Note 1: Although any "other resources" would be rendered together with the primary resource, they would not necessarily be rendered simultaneously with each other.

Note 2: For the purposes of conformance with these guidelines, a resource must be "non-embedded" within the scope of conformance to be considered a Web page.

Example 1: A Web resource including all embedded images and media.

Example 2: A Web mail program built using Asynchronous JavaScript and XML (AJAX). The program lives entirely at <http://example.com/mail>, but includes an inbox, a contacts area and a calendar. Links or buttons are provided that cause the inbox, contacts, or calendar to display, but do not change the URI of the page as a whole.

Example 3: A customizable portal site, where users can choose content to display from a set of different content modules.

Example 4: When you enter "<http://shopping.example.com/>" in your browser, you enter a movie-like interactive shopping environment where you visually move around in a store dragging products off of the shelves around you and into a visual shopping cart in front of you. Clicking on a product causes it to be demonstrated with a specification sheet floating alongside. This might be a single-page Web site or just one page within a Web site.

Appendix B: Acknowledgments

This section is informative.

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Additional information about participation in the Web Content Accessibility Guidelines Working Group (WCAG WG) can be found on the [Working Group home page](#).

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- Alex Li (SAP AG)
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Appendix C: References

This section is informative.

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Exhibit D

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EXHIBIT 97

ASTM Editions Incorporated by Reference

No.	Edition	Title	Superseded by:
ASTM A106 / A106 M	2004b	Standard Specification for Seamless Carbon Steel Pipe for High-Temperature Service	A106/A106M-15
ASTM A184	1979	Standard Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement	A184/A184M - 06(2011)
ASTM A185	1979	Standard Specification for Welded Steel Wire Fabric for Concrete Reinforcement	ASTM A185/A185M-07
ASTM A203 / A203M	1997	Standard Specification for Pressure Vessel Plates, Alloy Steel, Nickel	A203/A203M - 12
ASTM A242	1979	Standard Specification for High-Strength Low-Alloy Structural Steel	A242/A242M - 13
ASTM A285	1978	Standard Specification for Pressure Vessel Plates, Carbon Steel, Low- and Intermediate- Tensile Strength	A285/A285M - 12
ASTM A307	1978e	Standard Specification for Carbon Steel Externally Threaded Standard Fasteners	A307 - 14
ASTM A325	1979	Standard Specification for High-Strength Bolts for Structural Steel Joints	A325 - 14
ASTM A333 / A333M	1994	Standard Specification for Seamless and Welded Steel Pipe for Low-Temperature Service	A333/A333M - 13

ASTM Editions Incorporated by Reference

No.	Edition	Title	Superseded by:
ASTM A36	1977ae	Standard Specification for Structural Steel	A36/A36M - 14
ASTM A36 / A36M	1997ae1	Standard Specification for Carbon Structural Steel	A36/A36M - 14
ASTM A369 / A369M	1992	Standard Specification for Carbon and Ferritic Alloy Steel Forged and Bored Pipe for High- Temperature Service	A369/A369M - 11
ASTM A370	1977e 2	Standard Methods and Definitions for Mechanical Testing of Steel Products	A370 - 15
ASTM A441	1979	Standard Specification for High-Strength Low-Alloy Structural Manganese Vanadium Steel	ASTM D441 - 07(2012)
ASTM A449	1978a	Standard Specification for Quenched and Tempered Steel Bolts and Studs	A449 - 14
ASTM A475	1978 (1984) e 1	Standard Specification for Zinc-Coated Steel Wire Strand	A475 - 03(2014)
ASTM A490	1979	Standard Specification for Quenched and Tempered Alloy Steel Bolts for Structural Steel Joints	A490 - 14a
ASTM A496	1978	Standard Specification for Deformed Steel Wire for Concrete Reinforcement	ASTM A496/A496M-07

ASTM Editions Incorporated by Reference

No.	Edition	Title	Superseded by:
ASTM A497	1979	Standard Specification for Welded Deformed Steel Wire Fabric for Concrete Reinforcement	ASTM A497/A497M-07
ASTM A500	1978	Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes	A500/A500M - 13
ASTM A501	1976	Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing	A501/A501M - 14
ASTM A502	1976	Standard Specification for Steel Structural Rivets	A502 - 03(2015)
ASTM A514	1977	Standard Specification for High-Yield Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding	A514/A514M - 14
ASTM A516 / A516M	1990 (1996) e1	Standard Specification for Pressure Vessel Plates, Carbon Steel, for Moderate and Lower- Temperature Service	A516/A516M - 10(2015)
ASTM A520	1972 (1985)	Standard Specification for Supplementary Requirements for Seamless and Electric-Resistance-Welded Carbon Steel Tubular Products for High-Temperature Service Conforming to ISO Recommendations For Boiler Construction	Withdrawn Standard: ASTM A520-97 Developed by Subcommittee: A01.09 WITHDRAWN, NO REPLACEMENT

ASTM Editions Incorporated by Reference

No.	Edition	Title	Superseded by:
ASTM A522 / A522M	1995b	Standard Specification for Forged or Rolled 8 and 9 % Nickel Alloy Steel Flanges, Fittings, Valves, and Parts for Low-Temperature Service	A522/A522M - 14
ASTM A529	1975	Standard Specification for Structural Steel with 42,000PSI (290 Mpa) Minimum Yield Point (1/2 in. (12.7 mm) Maximum Thickness	A529/A529M - 14
ASTM A539	1990a	Standard Specification for Electric-Resistance-Welded Coiled Steel Tubing for Gas and Fuel Oil Lines	Withdrawn Standard: ASTM A539-99 Developed by Subcommittee: A01.09 D28WITHDRAWN, NO REPLACEMENT
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ASTM Editions Incorporated by Reference

No.	Edition	Title	Superseded by:
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ASTM A618	1974	Standard Specification for Hot-Formed Welded and Seamless High-Strength Low-Alloy Structural Tubing	A618/A618M - 04(2015)
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ASTM Editions Incorporated by Reference

No.	Edition	Title	Superseded by:
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No.	Edition	Title	Superseded by:
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ASTM B85	1984	Standard Specification for Aluminum-Alloy Die Castings	B85/B85M - 14
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ASTM B88	1996	Standard Specification for Seamless Copper Water Tube	B88 - 14
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No.	Edition	Title	Superseded by:
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ASTM Editions Incorporated by Reference

No.	Edition	Title	Superseded by:
ASTM C549	1981 (1995) e 1	Standard Specification for Perlite Loose Fill Insulation	C549 - 06(2012)
ASTM C564	1970 (1982)	Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings	C564 - 14
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ASTM D1072	1990 (1994) e 1	Standard Test Method for Total Sulfur in Fuel Gases	D1072 - 06(2012)
ASTM D1193	1977 (1983)	Standard Specification for Reagent Water	D1193 - 06(2011)
ASTM D1217	1993 (1998)	Standard Test Method for Density and Relative Density (Specific Gravity) of Liquids by Bingham Pycnometer	D1217 - 12
ASTM D1246	1995 (1999)	Standard Test Method for Bromide Ion in Water	D1246 - 10
ASTM D1253	1986 (1996)	Standard Test Method for Residual Chlorine in Water	D1253 - 14
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No.	Edition	Title	Superseded by:
ASTM D129	1995	Standard Test Method for Sulfur in Petroleum Products (General Bomb Method)	D129 - 13
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ASTM D1415	1988 (1994)	Standard Practice for Rubber Property-International Hardness	D1415 - 06(2012)
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ASTM D1481	1993 (1997)	Standard Test Method for Density and Relative Density (Specific Gravity) of Viscous Materials by Lipkin Bicapillary Pycnometer	D1481 - 12
ASTM D1518	1985 (1998) e1	Standard Test Method for Thermal Transmittance of Textile Materials	D1518 - 14

ASTM Editions Incorporated by Reference

No.	Edition	Title	Superseded by:
ASTM D1535	1989	Standard Test Method for Specifying Color by the Munsell System	D1535 - 14
ASTM D1552	1995	Standard Test Method for Sulfur in Petroleum Products (High-Temperature Method)	D1552 - 15
ASTM D1687	1992 (1996)	Standard Test Methods for Chromium in Water	D1687 - 12
ASTM D1688	1995	Standard Test Methods for Copper in Water	D1688 - 12
ASTM D1785	1986	Standard Specification for Poly (Vinyl Chloride)(PVC) Plastic Pipe, Schedules 40, 80, and 120	D1785 - 15
ASTM D1835	1997	Standard Specification for Liquefied Petroleum (LP) Gases	D1835 - 13
ASTM D1890	1996	Standard Test Method for Beta Particle Radioactivity of Water	D1890 - 15
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ASTM D1946	1990 (1994) e1	Standard Practice for Analysis of Reformed Gas by Gas Chromatography	D1946 - 90(2011)

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No.	Edition	Title	Superseded by:
ASTM D2013	1986 (1994)	Standard Method of Preparing Coal Samples for Analysis	D2013/D2013M - 12
ASTM D2015	1996	Standard Test Method for Gross Calorific Value of Coal and Coke by the Adiabatic Bomb Calorimeter	Withdrawn Standard: ASTM D2015-00 Developed by Subcommittee: D05.21 WITHDRAWN, NO REPLACEMENT
ASTM D2036	1998	Standard Test Method for Cyanides in Water	D2036 - 09(2015)
ASTM D2163	1991 (1996)	Standard Test Method for Analysis of Liquefied Petroleum (LP) Gases and Propane Concentrates by Gas Chromatography	D2163 - 14e1
ASTM D2216	1998	Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass	D2216 - 10
ASTM D2234	1998	Standard Practice for Collection of a Gross Sample of Coal	D2234/D2234M - 10
ASTM D2247	1968 (1973)	Standard Method for Testing Coated Metal Specimens at 100 Percent Relative Humidity	D2247 - 11
ASTM D2460	1997	Standard Test Method for Alpha-Particle-Emitting Isotopes of Radium in Water	D2460 - 07(2013)

ASTM Editions Incorporated by Reference

No.	Edition	Title	Superseded by:
ASTM D2502	1992 (1996)	Standard Test Method for Estimation of Molecular Weight (Relative Molecular Mass) of Petroleum Oils from Viscosity Measurements	D2502 - 14
ASTM D2503	1992 (1997)	Standard Test Method for Relative Molecular Mass (Molecular Weight) of Hydrocarbons by Thermoelectric Measurement of Vapor Pressure	D2503 - 92(2012)
ASTM D2505	1988 (1998)	Standard Test Method for Ethylene, Other Hydrocarbons, and Carbon Dioxide in High-Purity Ethylene by Gas Chromatography	D2505 - 88(2015)
ASTM D257	1991	Standard Test Method for DC Resistance of Conductance of Insulating Materials	D257 - 14
ASTM D2597	1994 (1999)	Standard Test Method for Analysis of Demethanized Hydrocarbon Liquid Mixtures Containing Nitrogen and Carbon Dioxide by Gas Chromatography	D2597 - 10
ASTM D2622	1998	Standard Test Method for Sulfur in Petroleum Products by Wavelength Dispersive X-ray Fluorescence Spectrometry	D2622 - 10
ASTM D2724	1987 (1995)	Standard Test Methods for Bonded, Fused, and Laminated Apparel Fabrics	D2724 - 07(2015)

ASTM Editions Incorporated by Reference

No.	Edition	Title	Superseded by:
ASTM D2777	1998	Standard Practice for Determination of Precision and Bias of Applicable Test Methods of Committee D-19 on Water	D2777 - 13
ASTM D287	1992 (1995)	Standard Test Method for API Gravity of Crude Petroleum and Petroleum Products (Hydrometer Method)	D287 - 12b
ASTM D2879	1997	Standard Test Method for Vapor Pressure-Temperature Relationship and Initial Decomposition Temperature of Liquids by Isoteniscope	D2879 - 10
ASTM D2908	1974	Standard Recommended Practice for Measuring Volatile Organic Matter in Water by Aqueous-Injection Gas Chromatography	D2908 - 91(2011)
ASTM D2986	1995a (1999)	Standard Practice for Evaluation of Air, Assay Media by the Monodisperse DOP (Diocetyl Phthalate) Smoke Test	Withdrawn Standard: ASTM D2986-95a(1999) Developed by Subcommittee: D22.01 WITHDRAWN, NO REPLACEMENT
ASTM D3120	1996	Standard Test Method for Trace Quantities of Sulfur in Light Liquid Petroleum Hydrocarbons by Oxidative Microcoulometry	D3120 - 08(2014)

ASTM Editions Incorporated by Reference

No.	Edition	Title	Superseded by:
ASTM D3173	1987 (1996)	Standard Test Method for Moisture in the Analysis Sample of Coal and Coke	D3173 - 11
ASTM D3176	1989 (1997)	Standard Practice for Ultimate Analysis of Coal and Coke	D3176 - 15
ASTM D3177	1989 (1997)	Standard Test Methods for Total Sulfur in the Analysis Sample of Coal and Coke	Withdrawn Standard: ASTM D3177-02(2007) Developed by Subcommittee: D05.21 WITHDRAWN, REPLACED BY D4239
ASTM D3178	1989 (1997)	Standard Test Methods for Carbon and Hydrogen in the Analysis Sample of Coal and Coke	Withdrawn Standard: ASTM D3178-89(2002) Developed by Subcommittee: D05.21 WITHDRAWN, REPLACED BY D5373
ASTM D323	1958 (1968)	Standard Test Method for Vapor Pressure of Petroleum Products (Reid Method)	D323 - 15a
ASTM D3236	1988 (1999)	Standard Test Method for Apparent Viscosity of Hot Melt Adhesives and Coating Materials	D3236 - 15
ASTM D3246	1996	Standard Test Method for Sulfur in Petroleum Gas by Oxidative Microcoulometry	D3246 - 15

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No.	Edition	Title	Superseded by:
ASTM D3286	1996	Standard Test Method for Gross Calorific Value of Coal and Coke by the Isoperibol Bomb Calorimeter	Withdrawn Standard: ASTM D3286-96 Developed by Subcommittee: D05.21 WITHDRAWN, REPLACED BY D5865
ASTM D3371	1995	Standard Test Method for Nitriles in Aqueous Solution by Gas-Liquid Chromatography	Withdrawn Standard: ASTM D3371-95 Developed by Subcommittee: D19.06 WITHDRAWN, NO REPLACEMENT
ASTM D3454	1997	Standard Test Method for Radium-226 in Water	D3454 - 11
ASTM D3588	1998	Standard Practice for Calculating Heat Value, Compressibility Factor, and Relative Density of Gaseous Fuels	D3588 - 98(2011)
ASTM D3697	1992 (1996)	Standard Test Method for Antimony in Water	D3697 - 12
ASTM D388	1998a	Standard Classification of Coals by Rank	D388 - 15
ASTM D396	1998	Standard Specification for Fuel Oils	D396 - 15c
ASTM D4057	1995e 1	Standard Practice for Manual Sampling of Petroleum and Petroleum Products	D4057 - 12

ASTM Editions Incorporated by Reference

No.	Edition	Title	Superseded by:
ASTM D4084	1994	Standard Test Method for Analysis of Hydrogen Sulfide in Gaseous Fuels (Lead Acetate Reaction Rate Method)	D4084 - 07(2012)
ASTM D413	1982 (1993) e 1	Standard Test Method for Rubber Property-Adhesion to Flexible Substrate	D413 - 98(2013)
ASTM D4177	1995	Standard Practice for Automatic Sampling of Petroleum and Petroleum Products	D4177 - 15a
ASTM D4239	1997e 1	Standard Test Methods for Sulfur in the Analysis Sample of Coal and Coke Using High Temperature Tube Furnace Combustion Methods	D4239 - 14e2
ASTM D4268	1993	Standard Test Method for Testing Fiber Ropes	Withdrawn Standard: ASTM D4268-93 Developed by Subcommittee: D13.16 WITHDRAWN, NO REPLACEMENT
ASTM D4294	1998	Standard Test Method for Sulfur in Petroleum and Petroleum Products by Energy-Dispersive X-Ray Fluorescence Spectrometry	D4294 - 10
ASTM D4329	1999	Standard Practice for Fluorescent UV Exposure of Plastics	D4329 - 13

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No.	Edition	Title	Superseded by:
ASTM E283	1991 (1999)	Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen	E283 - 04(2012)
ASTM E185	1982	Standard Practice for Conducting Surveillance Tests for Light-Water Cooled Nuclear Power Reactor Vessels	E185 - 15e1
ASTM D4891	1989 (1994) E 1	Standard Test Method for Heating Value of Gases in Natural Gas Range by Stoichiometric Combustion	D4891 - 13
ASTM D5489	1996a	Standard Guide for Care Symbols for Care Instructions Textile Products	D5489 - 14
ASTM E408	1971	Standard Methods of Test for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques	E408 - 13
ASTM D611	1982 (1998)	Standard Test Methods for Aniline Point and Mixed Aniline Point of Petroleum Products and Hydrocarbon Solvents	D611 - 12
ASTM D5373	1993 (1997)	Standard Methods for Instrumental Determination of Carbon, Hydrogen, and Nitrogen in Laboratory Samples of Coal and Coke	D5373 - 14e1

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No.	Edition	Title	Superseded by:
ASTM E606	1980	Standard Recommended Practice for Constant-Amplitude Low-Cycle Fatigue Testing	E606 / E606M - 12
ASTM E695	1979 (1997) e 1	Standard Method of Measuring Relative Resistance of Wall, Floor, and Roof Construction to Impact Loading	E695 - 03(2015)e1
ASTM D814	1995	Standard Test Method for Rubber Property- -Vapor Transmission of Volatile Liquids	D814 - 95(2014)
ASTM F478	1992 (1999)	Standard Specification for In-Service Care of Insulating Line Hose and Covers	F478 - 14a
ASTM D6216	1998	Standard Practice for Opacity Monitor Manufacturers to Certify Conformance with Design and Performance Specifications	D6216 - 12
ASTM D6228	1998	Standard Test Method for Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Flame Photometric Detection	D6228 - 10
ASTM E72	1980	Standard Methods of Conducting Strength Tests of Panels for Building Construction	E72 - 15
ASTM D6503	1999	Standard Test Method for Enterococci in Water Using Enterolert	D6503 - 14
ASTM F1122	1987 (1998)	Standard Specification for Quick Disconnect Couplings	F1122 - 04(2015)e1

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No.	Edition	Title	Superseded by:
ASTM F1155	1998	Standard Practice for Selection and Application of Piping System Materials	F1155 - 10(2015)
ASTM F1273	1991 (1996) e 1	Standard Specification for Tank Vent Flame Arresters	F1273 - 91(2013)
ASTM D975	1998b	Standard Specification for Diesel Fuel Oils	D975 - 15c
ASTM F631	1993	Standard Guide for Collecting Skimmer Performance Data in Controlled Environments	F631 - 15
ASTM F715	1995	Standard Test Methods for Coated Fabrics Used for Oil Spill Control and Storage	F715 - 07(2012)
ASTM F722	1982 (1988)	Standard Specification for Welded Joints for Shipboard Piping Systems	F722 - 82(2014)
ASTM D4986	1998	Standard Test Method for Horizontal Burning Characteristics of Cellular Polymeric Materials	D4986 - 10
ASTM D5673	1996	Standard Test Method for Elements in Water by Inductively Coupled Plasma-Mass Spectrometry	D5673 - 15
ASTM E154	1968 (1979) e 1	Standard Methods of Testing Materials for Use as Vapor Barriers Under Concrete Slabs and as Ground Cover in Crawl Spaces	E154/E154M - 08a(2013)e1

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No.	Edition	Title	Superseded by:
ASTM D5865	1998a	Standard Test Method for Gross Calorific Value of Coal and Coke	D5865 - 13
ASTM D665	1998e 1	Standard Test Method for Rust-Preventing Characteristics of Inhibited Mineral Oil in the Presence of Water	D665 - 14e1
ASTM D86	2007	Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure	D86 - 15
ASTM D5257	1997	Standard Test Method for Dissolved Hexavalent Chromium in Water by Ion Chromatography	D5257 - 11
ASTM E1337	1990 (1996)	Standard Test Method for Determining Longitudinal Peak Braking Coefficient of Paved Surfaces Using a Standard Reference Test Tire	E1337 - 90(2012)
ASTM E23	1982	Standard Test Methods for Notched Bar Impact Testing of Metallic Materials	E23 - 12c
ASTM D512	1989 (1999)	Standard Test Methods for Chloride Ion In Water	D512 - 12
ASTM D975	2007	Standard Specification for Diesel Fuel Oils	D975 - 15c
ASTM E29	1993a	Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications	E29 - 13

ASTM Editions Incorporated by Reference

No.	Edition	Title	Superseded by:
ASTM E29	1990	Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications	E29 - 13
ASTM D976	1991 (1995) e 1	Standard Test Methods for Calculated Cetane Index of Distillate Fuels	D976 - 06(2011)
ASTM E424	1971	Standard Methods of Test for Solar Energy Transmittance and Reflectance (Terrestrial) of Sheet Materials	E424 - 71(2015)
ASTM E11	1995	Standard Specification for Wire Cloth and Sieves for Testing Purposes	E11 - 15
ASTM E1625	1994	Standard Test Method for Determining Biodegradability of Organic Chemicals in Semi- Continuous Activated Sludge (SCAS)	Withdrawn Standard: ASTM E1625-94(2008) Developed by Subcommittee: E47.04 WITHDRAWN, NO REPLACEMENT
ASTM E168	1988	Standard Practices for General Techniques of Infrared Quantitative Analysis	Withdrawn Standard: ASTM E168-06 Developed by Subcommittee: E13.03 WITHDRAWN, NO REPLACEMENT

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No.	Edition	Title	Superseded by:
ASTM D4420	1994	Standard Test Method for Determination of Aromatics in Finished Gasoline by Gas Chromatography	Withdrawn Standard: ASTM D4420-94(1999)e1 Developed by Subcommittee: D02.04.0L WITHDRAWN, REPLACED BY D5580
ASTM D4809	1995	Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter (Precision Method)	D4809 - 13
ASTM E773	1997	Standard Test Method for Accelerated Weathering of Sealed Insulating Glass Units	Withdrawn Standard: ASTM E773-01 Developed by Subcommittee: E06.22 WITHDRAWN, NO REPLACEMENT
ASTM E774	1997	Standard Specifications for the Classification of the Durability of Sealed Insulating Glass Units	Withdrawn Standard: ASTM E774-97 Developed by Subcommittee: E06.22 WITHDRAWN, NO REPLACEMENT
ASTM E169	1987	Standard Practices for General Techniques of Ultraviolet-Visible Quantitative Analysis	E169 - 04(2014)
ASTM D6420	1999	Standard Test Method for Determination of Gaseous Organic Compounds by Direct Interface Gas Chromatography-Mass Spectrometry	D6420 - 99(2010)

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No.	Edition	Title	Superseded by:
ASTM E145	1994e 1	Standard Specification for Gravity-Convection and Forced-Ventilation Ovens	E145 - 94(2011)
ASTM E96	1995	Standard Test Methods for Water Vapor Transmission of Materials	E96/E96M - 15
ASTM E260	1996	Standard Practice for Packed Column Gas Chromatography	E260 - 96(2011)
ASTM F1006	1986 (1997)	Standard Specification for Entrainment Separators for Use in Marine Piping Applications	F1006 - 86(2014)e1
ASTM F1007	1986 (1996) e 1	Standard Specification for Pipe-Line Expansion Joints of the Packed Slip Type for Marine Application	F1007 - 86(2014)
ASTM E711	1987 (1992)	Standard Test Method for Gross Calorific Value of Refuse-Derived Fuel by the Bomb Calorimeter	Withdrawn Standard: ASTM E711-87(2004) Developed by Subcommittee: D34.03 WITHDRAWN, NO REPLACEMENT
ASTM F1020	1986 (1996) e 1	Standard Specification for Line-Blind Valves for Marine Applications	F1020 - 86(2011)
ASTM F1120	1987 (1998)	Standard Specification for Circular Metallic Bellows Type Expansion Joints for Piping Applications	F1120 - 87(2015)

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No.	Edition	Title	Superseded by:
ASTM E776	1987 (1992)	Standard Test Method for Forms of Chlorine in Refuse-Derived Fuel	E776 - 87(2009)
ASTM E1719	1997	Standard Test Method for Vapor Pressure of Liquids by Ebulliometry	E1719 - 12
ASTM F1123	1987 (1998)	Standard Specification for Non-Metallic Expansion Joints	F1123 - 87(2015)
ASTM F1139	1988 (1998)	Standard Specification for Steam Traps and Drains	F1139 - 88(2015)
ASTM E681	1985	Standard Test Method for Concentration Limits of Flammability of Chemicals	E681 - 09(2015)
ASTM F1172	1988 (1998)	Standard Specification for Fuel Oil Meters of the Volumetric Positive Displacement Type	F1172 - 88(2015)e1
ASTM F1173	1995	Standard Specification for Thermosetting Resin Fiberglass Pipe and Fittings to be Used for Marine Applications	F1173 - 01(2012)
ASTM E775	1987 (1992)	Standard Test Methods for Total Sulfur in the Analysis Sample of Refuse-Derived Fuel	E775 - 15

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No.	Edition	Title	Superseded by:
ASTM E885	1988	Standard Test Methods for Analyses of Metals in Refuse-Derived Fuel by Atomic Absorption Spectroscopy	Withdrawn Standard: ASTM E885-88(2004) Developed by Subcommittee: D34.03 WITHDRAWN, NO REPLACEMENT
ASTM F1003	1986 (1992)	Standard Specification for Searchlights on Motor Lifeboats	F1003 - 02(2012)e1
ASTM F1199	1988 (1998)	Standard Specification for Cast (All Temperatures and Pressures) and Welded Pipe Line Strainers (150 psig and 150 Degrees F Maximum)	F1199 - 88(2015)
ASTM F1200	1988 (1998)	Standard Specification for Fabricated (Welded) Pipe Line Strainers (Above 150 psig and 150°F)	F1200 - 88(2010)
ASTM F1201	1988 (1998)	Standard Specification for Fluid Conditioner Fittings in Piping Applications Above Zero Degrees F	F1201 - 88(2010)
ASTM F1014	1992	Standard Specification for Flashlights on Vessels	F1014 - 02(2012)e1
ASTM F1121	1987 (1998)	Standard Specification for International Shore Connections for Marine Fire Applications	F1121 - 87(2015)

ASTM Editions Incorporated by Reference

No.	Edition	Title	Superseded by:
ASTM F1193	2006	Standard Practice for Quality, Manufacture, and Construction of Amusement Rides and Devices	F1193 - 14
ASTM F1196	1994	Standard Specification for Sliding Watertight Door Assemblies	F1196 - 00(2013)
ASTM F1471	1993	Standard Test Method for Air Cleaning Performance of a High-Efficiency Particulate Air-Filter System	F1471 - 09
ASTM F1197	1989 (1994) e 1	Standard Specification for Sliding Watertight Door Control Systems	F1197 - 00(2012)
ASTM F1548	1994	Standard Specification for the Performance of Fittings for Use with Gasketed Mechanical Couplings Used in Piping Applications	F1548 - 01(2012)
ASTM F1271	1990 (1995) e 1	Standard Specification for Impact Attenuation of Surfacing Materials Within the Use Zone of Playground Equipment	F1271 - 90(2012)
ASTM F1321	1992	Standard Guide for Conducting a Stability Test (Lightweight Survey and Inclining Experiment) to Determine Light Ship Displacement and Centers of Gravity of a Vessel	F1321 - 14

ASTM Editions Incorporated by Reference

No.	Edition	Title	Superseded by:
ASTM F1323	1998	Standard Specification for Shipboard Incinerators	F1323 - 14
ASTM F462	1979 (1999)	Standard Consumer Safety Specification for Slip-Resistant Bathing Facilities	F462 - 79(2007)
ASTM F1546 / F 1546M	1996	Standard Specification for Fire Hose Nozzles	F1546 - 96(2012)e1
ASTM F1950	1999	Standard Specification for Physical Information to be Transferred With Used Amusement Rides and Devices	Withdrawn Standard: ASTM F1950-99 Developed by Subcommittee: F24.20 WITHDRAWN, NO REPLACEMENT
ASTM F1951	1999	Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment	F1951 - 14
ASTM F682	1982a (1988)	Standard Specification for Wrought Carbon Steel Sleeve-Type Pipe Couplings	F682 - 82a(2014)
ASTM F1957	1999	Standard Test Method for Composite Foam Hardness Durometer Hardness	F1957 - 99(2011)
ASTM F631	1980 (1985)	Standard Method for Testing Full Scale Advancing Spill Removal Devices	F631 - 15
ASTM F715	1981 (1986)	Standard Methods of Testing Spill Control Barrier Membrane Materials	F715 - 07(2012)

ASTM Editions Incorporated by Reference

No.	Edition	Title	Superseded by:
ASTM F747	1997	Standard Terminology Relating to Amusement Rides and Devices	F747 - 15
ASTM F808	1983 (1988) e 1	Standard Guide for Collecting Skimmer Performance Data in Uncontrolled Environments	Withdrawn Standard: ASTM F808-83(1988) Developed by Subcommittee: F20.12 WITHDRAWN, NO REPLACEMENT
ASTM G151	1997	Standard Practice for Exposing Nonmetallic Materials in Accelerated Test Devices that Use Laboratory Light Sources	G151 - 10
ASTM G154	2000a	Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials	G154 - 12a
ASTM G21	1990	Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi	G21 - 15

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NFPA Editions Incorporated by Reference

No.	Edition	Title	Superseded by:
NFPA 1	2003	Uniform Fire Code	2015
NFPA 1	2006	Uniform Fire Code	2015
NFPA 11	2005	Standard for Low Medium and High Expansion Foam	2016
NFPA 12	2005	Standard on Carbon Dioxide Extinguishing Systems	2015
NFPA 10	2002	Standard for Portable Fire Extinguishers (Title of work on certificate of registration is "National Fire Codes Vol. 1-12 and Master Index")	2013
NFPA 13	2002	Installation of Sprinkler Systems (Title of work on certificate of registration is "National Fire Codes Vol. 1-12 and Master Index")	2016
NFPA 25	2002	Inspection, Testing and Maintenance of Water-Based Fire Protection Systems (Title of work on certificate of registration is "National Fire Codes Vol. 1-12 and Master Index")	2014
NFPA 30	2003	Flammable and Combustible Liquids Code	2015
NFPA 54	2006	National Fuel Gas Code	2015

NFPA Editions Incorporated by Reference

No.	Edition	Title	Superseded by:
NFPA 58	2001	Liquefied Petroleum Gas Code (Title of work on certificate of registration is "National Fire Codes Vol 3")	2014
NFPA 58	2004	Liquefied Petroleum Gas Code	2014
NFPA 59	2004	Utility LP Gas Plant Code	2015
NFPA 70	1999	National Electrical Code	2014
NFPA 70	2005	National Electrical Code	2014
NFPA 70	2008	National Electrical Code	2014
NFPA 70	2011	National Electrical Code	2014
NFPA 70	2014	National Electrical Code	NA
NFPA 72	2002	National Fire Alarm Code	2016
NFPA 99	2005	Health Care Facilities Code	2015
NFPA 101	2000	Life Safety Code	2015
NFPA 101	2003	Life Safety Code	2015
NFPA 101	2006	Life Safety Code	2015
NFPA 704	2007	Standard System for the Identification of the Hazards of Materials for Emergency Response	2012

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ASHRAE Editions Incorporated by Reference

No.	Edition	Title	Superseded by:
ANSI/ASHRAE/IES 90.1	2010	ANSI/ASHRAE/IESNA Standard 90 1-2010, Energy Standard for Buildings Except for Low-Rise Residential Buildings (I-P Edition)	2013
ANSI/ASHRAE/IESNA 90.1	2007	ANSI/ASHRAE/IESNA Standard 90 1-2007, Energy Standard for Buildings Except for Low-Rise Residential Buildings (I-P Edition)	2013
ANSI/ASHRAE/IESNA 90.1	2004	ANSI/ASHRAE/IESNA Standard 90 1-2004, Energy Standard for Buildings Except for Low-Rise Residential Buildings (I-P Edition)	2013
ASHRAE Handbook	1993	1993 ASHRAE Handbook: Fundamentals (I-P Edition)	2013

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EXHIBIT 101



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ASHRAE's Mission and Vision

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To advance the arts and sciences of heating, ventilation, air conditioning and refrigeration to serve humanity and promote a sustainable world.

Vision

ASHRAE will be the global leader, the foremost source of technical and educational information, and the primary provider of opportunity for professional growth in the arts and sciences of heating, ventilating, air conditioning and refrigerating.

ASHRAE's Core Values

Excellence

ASHRAE education, technical information and all other activities and products will always reflect the best practices that lead our industry. We strive for continuous improvement and innovation in all our practices and products.

Commitment

ASHRAE and its members are passionate about serving the built environment, creating value, and recognizing the accomplishments of others.

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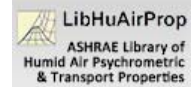
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Risk Management Guidance for Health and Safety under Extraordinary Incidents (January 12, 2002):

- [Presidential Study Group: Final Report \(PDF\) \(33.7 KB\)](#)

Risk Management Guidance for Health, Safety and Environmental Security under Extraordinary Incidents (January 26, 2003):

- [Executive Summary \(PDF\) \(61.9 KB\)](#)
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EXHIBIT 103



ASHRAE Writing Standards in Code-Intended Language

**Version 2
January 12, 2015**

This document may not be distributed in whole or in part in either paper or electronic form outside of ASHRAE membership without the express permission of the ASHRAE Manager of Standards.

1. INTRODUCTION

ASHRAE Rules of the Board (ROB) includes these rules:

1.201.004.5 All standards shall be written in definitive mandatory language.

1.201.004.3 Standards that are intended for code use should be concise and written in appropriate code language with simple and direct prescriptive methods for compliance, with alternative performance paths.

1.201.003.1 Write all new and revised standards and addenda that cover subjects addressed in building codes or regulations in such a way that those standards can be readily integrated into those codes and regulations and applied as an integral part of the resultant code or regulatory documents.

The Procedures for ASHRAE Standards Actions (PASA) defines code-intended standard and a code language document as:

code-intended standard: A standard intended to be adopted as a code using code language.

code language document: A document that presents a set of requirements related to the design, application, or use of HVAC&R and related technologies where all or portions of the document may be enacted as mandatory enforceable requirements by a political jurisdiction. Portions intended to be enforced (normative) are written in mandatory, enforceable language. Portions not intended to be enforced are identified as informative and are to be located in informative notes, in informative annexes (appendices) or in other advisory documents. See annex, informative annex, informative notes and normative annex.

These rules and definitions support ASHRAE's objective to have code-intended ASHRAE Standards adopted by reference directly into laws, rules, regulations, and other documents that cover the built environment, or referenced as a component of other standards, model codes and documents that form the basis for those same laws, rules, and regulations. To achieve this objective:

- ASHRAE standards must be written entirely in mandatory language.
- ASHRAE standards intended for adoption within codes, rules, regulations, and other documents that cover the built environment must be written in code-intended language.

A companion guide, *ASHRAE Guide to Writing Standards in Mandatory Language*, provides steps for all Project Committees (PCs) to complete as a step toward compliance with the ROB's mandatory language requirement.

The nature of writing standards in code-intended language requires a basic understanding of how codes, rules, regulations and other documents must be written to clearly state specific requirements and desired outcomes that can be documented and verified for compliance within a legal framework. A code-intended standard must also align with other model codes and standards that are collectively used to regulate the built environment, and compliance with any path in the standard must be capable of being uniformly documented and verified.

2. GUIDANCE FOR WRITING STANDARDS IN CODE-INTENDED LANGUAGE

2.1 Responsibilities

2.1.1 Standard Project Committees

2.1.1.1 Mandatory Language. Each standard project committee (SPC) and standing standard project committee (SSPC) must review its draft standard or addendum to identify the use of non-mandatory language, following the steps in *ASHRAE Guide to Writing Standards in Mandatory Language* Section 2.2.1 before submitting the draft for publication public review approval. If the SPC/SSPC is unable to make corrective revisions to eliminate non-mandatory language the SPC/SSPC is encouraged to request assistance from ASHRAE staff to assist with the development of revisions to meet the mandatory language requirement.

2.1.1.2 Code-Intended Language. Each SPC/SSPC must review and apply the guidance in Section 2.2 of this guide before submitting its draft for publication public review approval. To facilitate the development of appropriate code-intended language and reduce the need for and time associated with outside assistance, PCs are encouraged to establish a format and compliance subcommittee, comprised of one or more volunteers, focused on meeting the code-intended requirement. If the SPC/SSPC is unable to make corrective revisions to comply with the code-intended language requirement, the SPC/SSPC is encouraged to request assistance from ASHRAE staff to assist with the development of revisions to meet the code-intended language requirement.

2.1.2 Standards Project Liaison Subcommittee (SPLS). SPLS, with support from ASHRAE Staff, (a) will review the normative portions of code-intended draft standards and addenda submitted for public review to determine if they are written in both mandatory and code-intended language, and (b) will assist the project committee (PC) Chair (or his/her designee such as a format and compliance subcommittee) with revisions that will result in the draft standard or addenda meeting the code-intended language requirements.

2.2 Code-Intended Language Format and Content

2.2.1 General. The criteria in Sections 2.2.2 through 2.2.6 must be followed by PCs writing code-intended standards and addenda. Informative Annex A provides examples of how to (and how not to) write standards in code-intended language and rationale behind the need for code-intended language.

2.2.2 Conformity Assessment. Reference to third-party testing, certification, listing, labeling or other entities engaged in documenting or verifying compliance with any part of the standard or addenda must be referred to as an “approved agency” instead of including the name of the third-party. The following definition must be included in each standard.

approved agency: an agency engaged in conducting tests, furnishing inspection services, or commissioning services that has been approved by the entity responsible for validating compliance with this standard.

2.2.3 Coordination and Integration with Other Relevant Documents. Where the standard is intended to be used in conjunction with documents published by other standards or model code development organizations, the ASHRAE standard must be sensitive to “meshing” with those other documents so that the ASHRAE standard will be adoptable by reference into those documents to address the topic covered by the ASHRAE standard.

2.2.4 Responsibility within Code-Intended Standards. Where the standard requires something to be done, the standard needs to identify what is required to be done, who is required to do it, and, if relevant, who is required to receive the results. More specifically, where the standard requires something to be done, a specific criterion and a metric must be provided as the basis for documenting and verifying compliance.

2.2.5 Simple and Repeatable. The standard will be more adoptable by reference where the criteria are stated simply and, where there are multiple paths to compliance with the standard, each path must be similarly repeatable and comparable.

2.2.6 Administration and Compliance. The standard will be more adoptable by reference and applied where the criteria related to administering, documenting, and verifying compliance are combined and located into one section in the standard titled “Administration and Compliance.”

2.2.7 Normative References. The Project Committee Manual of Procedures (PC MOP) defines a normative reference as “a reference to a document that establishes a requirement necessary to comply with the referencing standard.” For all standards, normative references must be specifically referenced by publication date, approval date, or version number.

2.2.8 Informative Information in Normative Sections. The PASA defines the use and limits of informative information within normative sections of ASHRAE Standards as:

informative notes: explanatory information, appearing in a standard, that does not contain requirements or any information considered indispensable for the use of the standard. Informative notes are to begin with the words “(Informative Note(s))” and be placed after the section of the standard to which the note applies. If the informative note is more than two sentences, the information must be placed in an informative annex and referred to by the informative note. Where there is more than one informative note, the notes must be numbered sequentially.

INFORMATIVE ANNEX A CODE-INTENDED STANDARDS: EXAMPLES AND RATIONAL

A1. Conformity Assessment

Conformity assessment is the mechanism(s) by which documentation and verification that something required has been realized. For the purposes of this document, conformity assessment means “any activity to determine, directly or indirectly, that a process, product, or service meets relevant technical standards and fulfills relevant requirements.” Examples of conformity assessment activities include testing, surveillance, inspection, auditing, certification, registration, and accreditation.

For example, a test standard clearly establishes uniform provisions for conducting a test or other activity to verify an outcome. Some ASHRAE standards are themselves test standards, while other ASHRAE standards refer to test standards developed by ASHRAE or others.

As stated in Section 2.2.6, normative portions of ASHRAE standards need to reference standards or other documents with a specific publication or approval date included in the reference. Not doing this would amount to acceptance of future versions of the reference materials.

Examples from selected ASHRAE standards are provided below to highlight conformity assessment associated issues, why there are potential issues, and how to more appropriately present the information in the standard.

A1.1 Approved Agency

Fenestration and Doors. Air leakage for fenestration and doors shall be determined in accordance with NFRC 400. Air leakage shall be determined by a laboratory accredited by a nationally recognized accreditation organization, such as the National Fenestration Rating Council, and shall be labeled and certified by the manufacturer. Air leakage shall not exceed 1.0 cfm/ft² for glazed swinging entrance doors and for revolving doors and 0.4 cfm/ft² for all other products.

As stated in Section 2.2.2, third-party testing, certification, listing, labeling or other entities engaged in documenting or verifying compliance with any part of the standard cannot be included in the standard by name but instead must be referred to as an “approved agency.” Federal, state, and local agencies that formulate and implement associated laws and regulations based on or through adoption of the ASHRAE standard by reference have the authority to determine what third-parties are and are not acceptable by name or by reference to a nationally recognized accreditation program. If not in a regulatory context, those that adopt and use the standard will determine who they consider suitable to conduct conformity assessment on their behalf.

Consider the suggested revision below of the existing standard provision shown above. As revised, the issue of naming a particular conformity assessment organization is removed. The reliance on the test standard is retained, and the decision as to who is an “approved agency” is left up to the entity adopting or requiring conformance with the standard. Note that a definition of approved agency is provided in Section 2.2.2 for inclusion in ASHRAE standards where the issue of conformity assessment arises.

Fenestration and Doors. The air leakage rate of glazed swinging entrance doors and revolving doors shall not exceed 1.0 cfm/ft² and for all other products shall not exceed 0.4 cfm/ft². The air leakage rate shall be determined by an approved agency in accordance with NFRC 400 and the product labeled.

A1.2 Testing and Certification

Fenestration and Doors. Procedures for determining fenestration and door performance are described in Section X. Product samples used for determining fenestration performance shall be production line units or representative of units purchased by the consumer or contractor.

The conformity assessment issue in the example above is what product samples, how many, where they are from, etc., is within the purview of the third-party testing or certification agency. It is not appropriate to provide these in the standard unless the PC feels the standard needs to have a specific section on conformity assessment. If so, then care must be taken to ensure that similar detail is provided for all other products and materials in the standard so that there is consistency on this issue where the standard has criteria applicable to multiple products.

A1.3 Alternative Paths, Consistency, and Comparability

U-factor: U-factors shall be determined in accordance with NFRC 100. U-factors for skylights shall be determined for a slope of 20 degrees above the horizontal.

Exceptions:

- a. *U-factors from Section X which applies to unlabeled skylights) shall be an acceptable alternative for determining compliance with the U-factor criteria for skylights. Where credit is being taken for a low-emissivity coating, the emissivity of the coating shall be determined in accordance with NFRC 300. Emissivity shall be verified and certified by the manufacturer.*

In the above example, the standard clearly states a reference test procedure for determining a thermal property of skylights and then provides an alternative source for skylights that are unlabeled. For consistency, the standard has identified a test standard that must then be referenced as the only acceptable conformity assessment condition. Where default values are to be used for untested products, there is a potentially inconsistent set of conditions: one being to test, but the other one indicating a test is not required. With respect to the low-emissivity coating in the above example, the manufacturer can self-test and certify emissivity data for their products as stated in the last sentence. This does not appear to be consistent with other sections of the standard where a more rigorous conformity assessment activity is required. In referencing test standards to guide performance of products, systems, materials, or other components in an ASHRAE standard, the provisions in the standard must be sensitive to consistency on conformity assessment related issues throughout the standard.

Another potential conformity assessment issue is referencing computer programs, websites, or other sources of information that are not fixed in time by a publication date, approval date, or version number as required in Section 2.2.6.

A2. Meshing with Other Codes and Standards

If an ASHRAE code-intended standard is coordinated with other codes and standards then the ASHRAE standard can mesh with those other documents, and collectively they address the same or a broader scope than the ASHRAE standard addresses. If the ASHRAE standard cannot mesh with other relevant documents, then it will either not be adopted by reference or will be adapted into those other documents so it can be used with them. In either case, the criteria in the ASHRAE standard may not be what is ultimately adopted and required to be satisfied. This would be less likely to occur with method of test standards, which in and of themselves, are generally designed to stand alone, or with standards associated

with measurement data or expression of performance. In addressing this issue, consider if the standard can stand alone where applied or, like one piece in a jigsaw puzzle, it is likely to be part of, or related to, a broader set of requirements comprised of multiple documents. If the latter situation is envisioned, then the standard needs to be written so it can mesh with those other documents.

Consider the following examples from ASHRAE standards that highlight this issue. It is important to emphasize that the wording presented is certainly acceptable if the ASHRAE standard is the only code or standard applied to the subject. If not, then those other documents can conflict with the ASHRAE standard and preclude the ASHRAE standard being adopted by reference, cause it to be adapted or modified by another Standards Development Organization (SDO), or cause it to be adapted or modified by the entity adopting the ASHRAE standard.

A2.1 Compatibility Regarding Building Types and Spaces

Commercial occupancy is a premise or that portion of a premise where people transact business, receive personal service, or purchase food and other goods. Commercial occupancies include, among others, office and professional buildings, markets (but not large mercantile occupancies), and work or storage areas that do not qualify as industrial occupancies.

Large mercantile occupancy is a premise or that portion of a premise where more than 100 persons congregate on levels above or below street level to purchase personal merchandise.

The terms “commercial occupancy” and “large mercantile occupancy,” while usable within the context of a specific ASHRAE standard, are not correlated with other ASHRAE standards nor are they in line with the definition of building use groups as provided in other codes and standards. This adversely affects the ability of those other codes and standards to adopt the ASHRAE standard by reference to address the subject covered. Use of the language in the above example would not only prevent having the standard adopted by reference, but would also (a) necessitate the adaptation of parts of the ASHRAE standard within those other codes and standards, and (b) require some “guessing” on the part of those adapting the criteria in the ASHRAE standard as to how the criteria should be applied to the building types and spaces contained in their documents.

A2.2 Compatibility Regarding Components of Buildings

building entrance: any doorway, set of doors, turnstile, vestibule, or other form of portal that is ordinarily used to gain access to the building by its users and occupants.

The terms “entrance” and “main entrance” have specific meanings in building and fire codes. If it is the intent of the ASHRAE standard using the above definition to address all building entrance doors without exception, the definition could be revised to be consistent with the terms used in building and fire codes. If the intent is to just address some entrances in a different way than currently addressed in building and fire codes (e.g., entrance, main entrance, or accessible entrance), then the standard could be revised to either refer to or use the definitions in those other documents. Moreover, if there is a specific need for a difference, then the PC can develop new terms and definitions to address the issues that are unique to entrances covered by the ASHRAE standard.

A2.3 Compatibility Regarding Building Systems

Exception: Commercial kitchen hoods used for collecting and removing grease vapors and smoke.

Other codes and standards addressing this subject use the terms Type I and Type II hoods to describe the effluent conducted by the hood. The example above from an ASHRAE standard can stand alone, but it is more likely that it would be applied with other codes and standards addressing this topic and additional topics associated with mechanical systems in buildings. In not being coordinated with other codes and standards, it will be difficult to claim the exception intended in the ASHRAE standard on a uniform basis. This issue could be addressed by changing the ASHRAE standard to exempt “Type I hoods” and then define Type I hoods in the definitions section of the ASHRAE standard.

A2.4 Including Criteria Already in Other Standards

Feeders. Feeder conductors shall be sized for a maximum voltage drop of 2% at design load.

Branch Circuits. Branch circuit conductors shall be sized for a maximum voltage drop of 3% at design load.

The provisions shown in above example regulate the size of electrical system components in buildings. While these provisions can be applied using the ASHRAE standard alone, the ASHRAE standard must also be applied to buildings with a myriad of other codes and standards. One of those other codes and standards already contains such a provision, and that standard is widely adopted to regulate electrical system safety and performance. Including this provision in an ASHRAE standard where it is already contained and maintained in another creates a situation where two standards have criteria on the same topic and could diverge at any time. A conflict with another code or standard that is clearly the authority on a subject can be avoided by simply referring to that other code or standard and the specific criteria therein.

A2.5 Compatibility on Definitions of Terms

Exception: Lighting in spaces where patient care is rendered.

The term “patient care” is not defined in the above example, but would be an appropriate definition in the ASHRAE standard. However, that definition must be correlated with other codes and standards governing health care, although those definitions could cast a very wide net allowing this exception to possibly be used where it is not necessarily intended by the standard. If it is determined in this case that the patient care definition intended by the standard is the same as that in other codes and standards, then the definition in the ASHRAE standard must be consistent with that definition. On the other hand, if not the same as that in other codes and standards, then the ASHRAE standard could define another term that would represent a subset of patient care to eliminate any potential conflict between the ASHRAE standard and the other related codes and standards.

A3. Identification of Responsible Parties

Identification of responsible parties is relevant to ensuring that if something is to be done that someone or some entity is named as having responsibility to do it, and if someone is to receive it, then that someone or entity is also named. This is an important issue because if something is required to be done but no responsible party is named, then there is no mechanism to ensure what is required by the standard actually takes place. Without specifying a responsible party, the standard leaves it to those adopting the ASHRAE standard to define the responsible party themselves. If something is to be done and someone is supposed to do it or be involved in its development or delivery, then the ASHRAE standard is the place to establish

the applicable and governing criteria. In addition, in establishing those criteria it is important to focus on a particular skill set as opposed to using specific names, titles, job descriptions, etc.

A related item associated with compliance verification is simply if compliance with the stated provisions can be verified, at what time in the process and by whom. If the standard provides a requirement that is intended to be enforced at one point in time but there is no entity likely to be available to ensure compliance, then that provision may be unenforceable (e.g., a requirement that a system be operated in a particular manner where there is no one likely to be available to verify compliance). As such, it is a reason not to adopt the standard, a source of amendment, or something in the standard that is not followed.

A3.1 Indicating Who Performs a Required Test

***Type II Hood Performance Test.** A performance test shall be conducted upon the completion of — and before final approval of — installation of a ventilation system serving commercial cooking appliances. The test shall verify the rate of exhaust airflow required by Section X. The permit holder shall furnish the necessary test equipment and devices required to perform the tests.*

Who is responsible for conducting the test? There are many entities (contractor, building owner, designer, hood manufacturer, inspector, etc.), who can conduct the required test, and, in not indicating the necessary qualifications of those considered appropriate to conduct the test, the standard is silent on that issue and provides no guidance to those adopting the ASHRAE standard. The need for standardization might not be important for those that only have to deal with such a test one time and in one place. But for those who design, construct, operate, own, insure, and perform other duties associated with this topic, the failure of the standard to provide specific guidance as to the qualifications of the intended responsible party for conducting the tests means there are likely to be as many different sets of guidance or requirements on this issue as there are adopting entities. Clearly, if practical, it is preferable for the ASHRAE standard to identify the responsible parties and their necessary qualifications where appropriate. As the developing organization, ASHRAE is in the best position to address this issue.

The following is a potential revision of the example above that focuses on identification of the responsible party:

***Type II Hood Performance Test.** A performance test shall be conducted by an approved third-party upon the completion of — and before final approval of — installation of a ventilation system serving commercial cooking appliances. The test shall verify the rate of exhaust airflow required by Section X and the test results provided by the approved third-party to the authority having jurisdiction over the final approval of the system. The permit holder shall furnish the necessary test equipment and devices required to perform the tests.*

A3.2 Who Provides Required Information

***Supplemental Information.** Supplemental information necessary to verify compliance with this standard, such as calculations, worksheets, compliance forms, vendor literature, or other data, shall be made available where required by the building official.*

Who is required to make the supplemental information available (owner, contractor, registered design professional, manufacturer, etc.) and what qualifications must they possess? Without a designation of

responsibility and qualifications, the enforcement authority (code official) is placed into the position of making the selection, which could delay the approval of a project if the standard does not designate a responsible party. The PC is in the best position to list those responsible for providing this information.

A3.3 Who Provides a Required Report

***General.** Construction documents shall require that all HVAC systems be balanced in accordance with generally accepted engineering standards (see Informative Appendix E). Construction documents shall require that a written balance report be provided to the building owner or the designated representative of the building owner for HVAC systems serving zones with a total conditioned area exceeding 5000 ft².*

Who is responsible for providing the written balance report? Should the construction documents require that the balance report be provided and then be further required to designate the responsible party? The PC is in the best position to make this decision and put it into the standard instead of leaving the decision up to those adopting the standard by reference or those using the standard.

A3.4 Who Performs Required Calculations

***Load Calculations.** Service water heating system design loads for the purpose of sizing systems and equipment shall be determined in accordance with manufacturers' published sizing guidelines or generally accepted engineering standards and handbooks acceptable to the adopting authority (e.g., 2011 ASHRAE Handbook — HVAC Applications).*

Who is responsible for determining the design loads? Again, the PC is in the best position to make the designation. In addition, there is one additional aspect of the provision above; there are no sizing limitations in the standard for the system. Once the loads are calculated, what would one do with them other than verify that they had been determined? In this instance, the standard could establish some criterion that is based on the load calculations; otherwise, why make someone responsible for determining the loads?

A3.5 Who Provides Required Construction Documents

***Drawings.** Construction documents shall require that within 30 days after the date of system acceptance, record drawings of the actual installation shall be provided to the building owner, including...*

***Manuals.** Construction documents shall require that an operating manual and maintenance manual be provided to the building owner. The manuals shall include, at a minimum, the following...*

Who is responsible for providing the required documents, or should the criterion be "...shall require that the registered design professional of record provide"?

A4. Simple and Repeatable

Ensuring the criteria in a standard are simple and repeatable is important because this affects the ability to understand, apply, implement, or document or verify compliance with a standard. In addition, the intent of a standard is to foster uniformity and consistency in the subject covered by the standard; this is adversely affected by the level of complexity in the standard. Where there are multiple paths to

compliance with the standard, each path must be similarly repeatable and comparable. If not, users are more likely to take the path of least resistance and that path will become the singular path in the standard.

Examples of current standards provisions and suggestions for simplification are shown below. Where considering this issue, first focus on what is to be required in the standard and produce a first draft of a provision that is in accordance with the other issues described in this Annex. Once that is completed, determine if the text specifically communicates what is intended to be conveyed and that all involved will draw the same conclusion from reading the text. Then generate and evaluate alternative ways to further refine, simplify, and present the provision. As a final step, consider the need for consistency in the application and use of the text. Continue this process until there is a clear and concise statement that conveys the requirement.

A4.1 Simplification - First Example

***budget building design:** a computer representation of a hypothetical design based on the actual proposed building design. This representation is used as the basis for calculating the energy cost budget.*

In the revision of this definition below, the second sentence has been combined with the first to simplify the definition.

***budget building design:** a computer representation, used as the basis for calculating the energy cost budget, of a hypothetical design based on the actual design of the proposed building.*

Note also that it is not necessary to provide background, reasons, or informative statements for provisions in standards. Focus on limiting the text in a standard to the provisions that are necessary to meet the purpose of the standard. If the need for informative text, commentary and other language to explain what is in the standard or how it is to be used continues to arise, this may be a self-admission that there is a need to continue reviewing the core provisions in the standard to ensure they have been crafted in a simple and repeatable manner.

A4.2 Simplification - Second Example

***Inspections.** All building construction, additions, or alterations subject to the provisions of this standard shall be subject to inspection by the building official, and all such work shall remain accessible and exposed for inspection purposes until approved in accordance with the procedures specified by the building official. Items for inspection include at least the following:*

- a. wall insulation after the insulation and vapor retarder are in place but before concealment*
- b. roof/ceiling insulation after roof/insulation is in place but before concealment*
- c. slab/foundation wall after slab/foundation insulation is in place but before concealment*
- d. fenestration after all glazing materials are in place*
- e. mechanical systems and equipment and insulation after installation but before concealment*
- f. electrical equipment and systems after installation but before concealment*

Consider this simplified revision:

***Inspections.** Everything subject to the provisions of this standard shall be subject to inspection by the building official and shall remain accessible and exposed for inspection purposes until approved by the building official.*

The term “approved” has a specific meaning and definition in codes, so it would be advantageous to include it in the definitions section of the ASHRAE standard (*approved by the code official as a result of investigation and tests conducted by him or her, or by reason of accepted principles or tests by nationally recognized organizations*¹), thereby allowing the text to be simplified as shown above. Anytime a term or concept needs to be defined to facilitate understanding and use of the standard, it needs to be defined in the definitions section unless it is used only once, in which case, it can be addressed at the point in the standard where the term or concept is used. Also, given that this related set of standards is focused on minimum requirements, there is no need to list anything other than the minimum, so the text listed below could be deleted. Clearly, one need only read the standard to know that things are “subject to the provisions of the standard,” which is another reason for not listing them in the standard.

A4.3 Clarification - First Example

clerestory: that part of a building that rises clear of the roofs or other parts and whose walls contain windows for lighting the interior.

What are “other parts?” Will designers, specifiers, and code officials all have a uniform interpretation and application of this definition? Is the text “for lighting the interior” necessary? Does this mean that if the wall has a window but it is not for lighting the interior, then it is not a clerestory, and if not, then what is it?

A4.4 Clarification - Second Example

Space Control. Each space enclosed by ceiling-height partitions shall have at least one control device to independently control the general lighting within the space. Each manual device shall be readily accessible and located so the occupants can see the controlled lighting.

- a. A control device shall be installed that automatically turns lighting off within 30 minutes of all occupants leaving a space, except spaces with multi-scene control, in
 1. classrooms (not including shop classrooms, laboratory classrooms, and preschool through 12th grade classrooms),
 2. conference/meeting rooms, and
 3. employee lunch and break rooms.

These spaces are not required to be connected to other automatic lighting shutoff controls.

Is it clear to what “these spaces” is referring? Is it the three listed spaces or the spaces enclosed by ceiling height partitions? Is the second sentence addressing manual devices confusing since the provision requires some spaces to have automatic controls and the opening sentence requires at least one control? Where composing provisions for a standard, it can be helpful to map out the intent and flow of the provisions via a diagram, and then, where that diagram matches the intent of those writing the standard, craft language to describe the diagram that then becomes the text for the standard. Such a logic statement might read as follows, which could then be transferred into text for the standard.

¹ ICC International Energy Conservation Code, 2012

- Each space with ceiling height partitions must have at least one control to control only the lighting in that space
- Where that control is readily accessible and located so those in the space using the control can see the lighting that is controlled
- Where that space is a classroom, conference/meeting room, or employee lunch or break room that does not have multi-scene controls, then the control device must automatically turn off the lighting within 30 minutes of all occupants leaving the space and those spaces need not be connected to any other automatic lighting shutoff controls

A4.5 Clarification for Consistency

Foundation vents shall not interfere with the insulation.

While the intent may be generally understood, any 10 different individuals would likely visualize the application of this text differently and apply it differently. Recognize there are vents for ventilation but there may also be vents to reduce pressures of flooding on walls, so it is to some degree impossible to even verify this in the field unless those conditions exist. If the standard cannot clearly state what is required so most everyone can understand and apply the provisions uniformly, then evaluate the need for the provision. Alternative criteria such as “floor insulation must be installed so it is at least X in. above the top of any foundation wall vent” might be considered in this instance.

A4.6 Clarification to Ensure Uniform Interpretation and Application

Insulation Protection. Exterior insulation shall be covered with a protective material to prevent damage from sunlight, moisture, landscaping operations, equipment maintenance, and wind.

For a given application, is it likely that there will be a uniform understanding of what constitutes a protective material and what UV, moisture, landscaping operations, and wind impacts must be addressed by that protective material? Would landscaping operations be known and capable of being evaluated at the time that compliance with this provision is conducted? Are they well enough known where performing an inspection of the exterior insulation? Without some additional specifics as to methods of protection and how protection performance is to be measured and expressed, the inclusion of this provision, while well intended, could easily be disregarded or cited as an example why the standard cannot be adopted by reference.

It is also relevant to simplicity and repeatability that standards, by definition, are intended to provide for consistency and comparability on the issues addressed in the standard. As discussed in the above examples, if there are multiple paths to compliance in a standard and the paths are not equal, then the path of least resistance becomes the standard. In developing a standard, it is important to establish clear minimum requirements even if multiple paths to compliance are desired. If the standard establishes criteria beyond specific minimums, this can adversely affect the simplicity of the standard and its adoptability by reference.

A5. Consolidate Administration and Compliance Criteria

Consolidation of administration and compliance criteria is simply the placement of all the provisions of a standard related to administration, compliance documentation and verification, and other matters not specific to the technical requirements in the standard in one place as stated in Section 2.2.5. This is important because the location of these provisions in one place in makes the standard easier for users to

implement, apply and document or verify compliance with the standard compared to them being separately located throughout the standard, thereby increasing the chances that the standard will be adopted by reference.

Section A5.1 provided examples of provisions currently in an ASHRAE standard that relate to administration of the document within a building regulatory context. These appear throughout the standard at the point where they are considered relevant, but could be more appropriately included in a section on administration and compliance documentation and verification; an example of which is shown in Section A5.2. This helps those having to comply with the document and those enforcing the document to have a clearer understanding of how the document is to be administered and applied, and what is needed to document and verify compliance. Unless there is a unique and significant reason to keep one or more administrative provisions in a position adjacent to the technical requirement to which they apply, all provisions, such as those below, should be placed in the section in the standard on administration and compliance verification. Note that no attempt has been made to revise the actual text in these provisions.

A5.1. Criteria Located Throughout A Standard

Motor Nameplate Horsepower. For each fan, the selected fan motor shall be no larger than the first available motor size greater than the bhp. The fan bhp must be indicated on the design documents to allow for compliance verification by the code official.

It is interesting to note that this is the first place in this particular standard where there is a specific requirement on the plans. It is advantageous to the application and use of a standard to list all those specific data requirements in one place in the administrative section of the standard.

Drawings. Construction documents shall require that, within 90 days after the date of system acceptance, record drawings of the actual installation provided to the building owner or the designated representative of the building owner. Record drawings shall include, as a minimum, the location and performance data on each piece of equipment, general configuration of duct and pipe distribution system including sizes, and the terminal air or water design flow rates.

Additions to Existing Buildings. Service water heating systems and equipment shall comply with the requirements of this section.

Exception: Where the service water heating to an addition is provided by existing service water heating systems and equipment, such systems and equipment shall not be required to comply with this standard. However, any new systems or equipment installed must comply with specific requirements applicable to those systems and equipment. (This type of provision—applicability of various parts of the standard to additions, renovations, etc., would seem to be fairly uniform throughout the standard. As such, it may be more appropriate to locate these provisions collectively in an administrative section and then make them more generic so they clearly state that anything new added to an existing building that replace something that pre-existed (e.g., a new piece of equipment or new controls) must meet the standard as applicable for new construction.)

Drawings. Construction documents shall require that within 30 days after the date of system acceptance, record drawings of the actual installation shall be provided to the building owner, including

- a. a single-line diagram of the building electrical distribution system; and
- b. floor plans indicating location and area served for all distribution.

Manuals. Construction documents shall require that an operating manual and maintenance manual be provided to the building owner. The manuals shall include, at a minimum, the following: (include a list of what is required).

Trade-Offs Limited to Building Permit. Where the building permit being sought applies to less than the whole building, only the calculation parameters related to the systems to which the permit applies shall be allowed to vary. Parameters relating to unmodified existing conditions or to future building components shall be identical for both the energy cost budget and the design energy cost calculations. Future building components shall meet the prescriptive requirements of Sections x, y, or z.

Envelope Limitation. For new buildings or additions, the building Energy Cost Budget Method results shall not be submitted for building permit approval to the authority having jurisdiction prior to submittal for approval of the building envelope design.

A5.2 Combining and Organizing to Create a Focus on Compliance

The example below is from a draft ASHRAE standard showing how the provisions associated with administration and compliance can be combined. Again, no attempt has been made to revise or change the wording to address any mandatory language or other code-intended language issues.

4. ADMINISTRATION AND ENFORCEMENT

4.1 General. Building projects shall comply with Sections x through y.

4.2. Application to Buildings

4.2.1 New Buildings. New buildings shall comply with the provisions of Sections x through y as applicable.

4.2.2 Additions to Existing Buildings. Additions to existing buildings shall comply with the provisions of Sections x through y as applicable.

4.2.3 Alterations of Existing Buildings. Alterations of existing buildings shall comply with the provisions of Sections x through y as applicable to the scope of work associated with the alteration. Nothing in this standard shall require that any portion of an existing building not associated with the alteration be brought into compliance with this standard. Nothing in this standard shall require compliance with a provision of this standard if such compliance will result in the increase of energy or water consumption of the building or production of increased emissions or effluent of waste.

Exception: Any building or portion thereof that has been specifically designated as historic.

4.2.4 Changes in Occupancy or Space Use. Spaces in a building that are converted to a different occupancy or use to an occupancy or use within the scope of this standard as covered in Section x

and such conversion involves construction and approval by the authority having jurisdiction, those spaces shall be brought into compliance with all the applicable requirements of this standard.

4.3 Compliance

4.3.1 Administrative Requirements. *Administrative requirements relating to permit requirements, enforcement by the authority having jurisdiction, interpretations, claims of exemption, and rights of appeal shall be those specified by the authority having jurisdiction.*

4.3.2 Technical Requirements. *The information shown in Table X shall be provided on the plans and specifications.*

Note that a Table X would be included based on the content of and requirements in the standard.

4.3.3 Alternative Materials, Methods of Construction or Design. *The provisions of this standard are not intended to prevent the use of any material, method of construction, design, equipment or building system not specifically prescribed herein, provided they have been approved by the authority having jurisdiction as meeting the intent of this standard.*

4.3.4 Validity. *If any term, part, provision, section, paragraph subdivision, table, chart or referenced standard of this standard shall be held unconstitutional, invalid or ineffective, in whole or in part, such determination shall not be deemed to invalidate any remaining term, part, provision, section, paragraph, subdivision, table, chart or referenced standard of this standard.*

4.3.5 Other Laws. *The provisions of this standard shall not be deemed to nullify any provisions of local, state or federal law. Where there is a conflict between a requirement of this standard and such other law affecting design, construction or operation of the building, precedence shall be determined by the authority having jurisdiction.*

4.3.6 Referenced Standards. *The standards reference in this standard and listed in Section x shall be considered part of the requirements of this standard to the prescribed extent of such reference. Where differences occur between the provision of this standard and referenced standards, the provisions of this standard shall apply.*

4.3.7 Normative Appendices. *The normative appendices to this standard are considered to be integral parts of the mandatory requirements of this standard, which, for reasons of convenience, are placed apart from all other normative elements.*

4.3.8 Informative Appendices. *The informative appendices to and the informative notes located within this standard contain additional information and are not mandatory or part of this standard.*

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EXHIBIT 104



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Capitol Hill Event to Feature Policy and Business Leader Insights on Voluntary Standards and Conformance

12/03/2015

The [American National Standards Institute](#) (ANSI) has teamed with the [National Association of Manufacturers](#) (NAM) to co-host an exclusive Shopfloor Series event on Capitol Hill entitled “*What Do Airplanes, Robots, Toys, Flat Screen TVs Amusement Parks & 3D Printing Have in Common?*” The event—on **December 4, 2015, from 12:00-1:30 p.m. EST**—will feature discussions between policy and business leaders who will highlight the importance of government participation in and the reliance on voluntary standards and conformance.



The session will be held in the Rayburn House Office Building 2123 and will be co-sponsored by [ASTM International](#) and [Underwriters Laboratories](#) (UL) and the [American Bar Association](#). Featured experts will include Jeff Weiss, senior advisor for standards and global regulatory policy at the U.S. Department of Commerce, as well as representatives from the Toy Industry Association (TIA), ANSI, ASTM International, the National Electrical Manufacturers Association (NEMA), and UL.

To view the event flyer [click here](#). To learn more or to RSVP, contact Scott Cooper, ANSI vice president of government relations (scooper@ansi.org; 202.331.3610).



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AMERICAN BAR ASSOCIATION

**SECTION OF ADMINISTRATIVE LAW AND REGULATORY
PRACTICE**

REPORT TO THE HOUSE OF DELEGATES

RESOLUTION

- 1 RESOLVED, That the American Bar Association urges Congress to amend 5 U.S.C.
2 552(a)(1) of the Freedom of Information Act (FOIA) by supplementing the obligation of
3 all federal administrative agencies to publish their substantive rules of general
4 applicability in the Federal Register. Specifically, Congress should require that when a
5 standard drafted by a private organization is exempted from Federal Register publication
6 because it has been “incorporated by reference” (IBR) into a substantive rule of general
7 applicability, the rulemaking agency must ensure meaningful free public availability of
8 the incorporated text, such as through online access in a centralized online location or
9 access in all government depository libraries.
10
- 11 FURTHER RESOLVED, That Congress should amend 5 U.S.C. 553, the Administrative
12 Procedure Act’s rulemaking provisions, to require meaningful free public availability of a
13 proposed IBR standard’s text during the public comment period.
14
- 15 FURTHER RESOLVED, That Congress should ensure that private organizations, where
16 appropriate, have access to compensation for financial losses attributable to making their
17 standards publicly available.

REPORT

I. INTRODUCTION AND BACKGROUND

For over two centuries, the United States has maintained a constitutive tradition of meaningful free access to our binding laws: that all citizens should be able to see the law is bedrock. Since the 1800s, Congress has provided free public access to federal statutes and, since the 1930s, to federal regulations as well, through a network of state and territorial libraries, followed by the creation of the Federal Depository Library System.¹ Congress further deepened the tradition by requiring the Government Printing Office to make available universal online access to statutes and regulations² and then requiring online public access to other government documents and materials in the Electronic Freedom of Information of Act Amendments in 1996 and the e-Government Act of 2002.³

For numerous federal rules, however, public access is far from assured; these rules can be difficult to find and costly to read. The Freedom of Information Act generally requires Federal Register publication for all agency “substantive rules of general applicability” and “statements of general policy or interpretations of general applicability.”⁴ However, it allows, in the so-called “incorporation by reference” provision of 5 U.S.C. 552(a)(1), that “matter reasonably available to the class of persons affected thereby [may be] deemed published in the Federal Register when incorporated by reference therein with the approval of the Director of the Federal Register.”⁵

To save resources and build on private expertise, federal agencies have, on numerous occasions, worked with private organizations, incorporating privately drafted standards by reference into thousands of federal regulations. The Office of the Federal Register (OFR) must approve all agency incorporations by reference, but the Freedom of Information Act provides no further specifics on what level of access might be understood to make a particular standard “reasonably available” and thus eligible for incorporation by reference. Meanwhile, OFR has declined to define “reasonably available” in its regulations, despite its statutory responsibility to approve agency

¹ See H.R. Journal, 3d Cong., 2d Sess. 328-39 (1795) (describing Act of Mar. 3, 1795), Act of Dec. 23, 1817, res. 2, 3 Stat. 473; Act of Feb. 5, 1859, ch. 22, § 10, 11 Stat. 379, 381.

² 44 U.S.C. § 4102(b)(2006) (capping recoverable costs as “incremental costs of dissemination” and requiring no-charge online access in government depository libraries). The GPO charges no fee whatsoever for online access.

³ Electronic Freedom of Information Act Amendments of 1996, Pub. L. No. 104-231, § 4(7), 110 Stat. 3048, 3049 (1996); E-Government Act of 2002, Pub. L. No. 107-347, §§ 206(a)-(d), 207(f), 116 Stat. 2899, 2915-16, 2918-19 (codified as amended at 44 U.S.C. § 3501 note (2006)).

⁴ 5 U.S.C. 552(a)(1).

⁵ *Id.*

incorporations.⁶ See 1 C.F.R. 51.7(a). Research also has revealed no public consideration by OFR of access charges to incorporated standards.⁷

The Code of the Federal Register (C.F.R.) presently contains nearly 9,500 agency incorporations by reference of standards. These “IBR rules” have the same legal force as any other government rule. Some IBR rules incorporate material from other federal agencies or state entities, but thousands of these rules are privately drafted standards prepared by so-called “standards development organizations,” or “SDOs.”⁸ Standards development organizations range from the Society of Automotive Engineers to the American Petroleum Institute. As the Office of the Federal Register has explained, “[t]he legal effect of incorporation by references is that the material is treated as if it were published in the *Federal Register* and CFR. This material, like any other properly issued rule, has the force and effect of law. . . mak[ing] privately developed technical standards Federally enforceable.”⁹

Federal agencies seek to use privately-drafted IBR standards on subjects ranging from toy safety,¹⁰ crib, toddler bed, and stroller safety, safety standards for vehicle windshields (so they withstand fracture),¹¹ placement requirements for cranes on oil drilling platforms on the Outer Continental Shelf,¹² and food additive standards,¹³ to

⁶ See Incorporation by Reference, 79 Fed. Reg. 66,267, 66,270 (Nov., 7, 2014) (final rule). Beyond that, the OFR Director is to assess whether incorporation would “substantially reduce the volume of material published in the Federal Register,” and whether the material is “usable,” considering “the completeness and ease of handling of the publication; and . . . [w]hether it is bound, numbered, and organized.” 1 C.F.R. 51.7(a). In the digital age, these requirements now would seem to serve little purpose.

⁷ E.g. Consumer Product Safety Commission, *Children’s Gasoline Burn Prevention Act* Regulation, 80 Fed. Reg. 16,961, 16,962-63 (Mar. 31, 2015) (OFR approval of incorporation by reference of ASTM F2517-15 despite lack of free access); www.astm.org (charging \$43 for standard; unavailable in reading room). As of November, 2014, an agency requesting approval of incorporation by reference must itself discuss how the materials are “reasonably available to interested parties.” 1 C.F.R. 51.5(a)(1), but it is unclear whether the OFR will make any independent determination on that question or simply defer to the agency.

⁸ Emily J. Bremer, *Incorporation by Reference in an Open-Government Age*, 36 Harv. J. L. & Pub. Pol’y 131 (2013); Nina Mendelson, *Private Control over Access to the Law: The Perplexing Federal Regulatory Use of Private Standards*, 112 Mich. L. Rev. 737 (2014); Peter Strauss, *Private Standards Organizations and Public Law*, 22 Wm. & Mary Bill Rts. J. 497 (2013).

⁹ <http://www.archives.gov/federal-register/cfr/ibr-locations.html#why>. In some instances, as discussed below, a regulated entity might be able to argue that the lack of public access undermines notice sufficiently to prevent federal enforcement.

¹⁰ E.g., 16 C.F.R. §§ 1505.5, 1505.6 (CPSC requirements for electrically operated toys, including toys with heating elements, intended for children’s use, incorporating by reference National Fire Protection Association and ANSI standards)

¹¹ 49 C.F.R. § 571.2015.

¹² 30 C.F.R. 250.108 (incorporating by reference American Petroleum Institute Recommended Practice 2D).

¹³ See 21 C.F.R. § 172.831 (sucralose regulation, incorporating by reference the Food Chemical Codex, 4th edition).

operating storage requirements for propane tanks, aimed at limiting the tank's potential to leak or explode.¹⁴ Executive policy, embodied in Circular A-119, now encourages agencies to contribute funds to private standards drafting as well as informal agency staff participation in the SDO process.

Meanwhile, public access to such standards can be extremely difficult, as it is typically impeded by privately set access charges. Unlike the U.S. Code and the rest of the C.F.R., there is no assured free access to IBR rules either online or in the nearly 1800 government depository libraries. Under OFR's approach, these standards can be freely read by the public in the Washington, D.C. reading room of the Office of the Federal Register, but only by written request for an appointment.¹⁵ Apart from this, OFR refers the public to the SDO. These IBR standards accordingly are strewn across many individually-maintained private websites. SDOs also can set a fee for access, typically one that far exceeds the transactions costs, such as copying costs, of making a standard available.

Membership in an SDO usually affords discounted access to its standards, but such memberships are costly; for example, the American National Standards Institute charges \$ 750 per year. Otherwise, access to an individual standard can range from \$40 to upwards of \$1000. The incorporated safety standard for seat belts on earthmoving equipment such as bulldozers is currently priced at \$72;¹⁶ the incorporated safety standard for hand-held infant carriers is \$43,¹⁷ and the current edition of the Food Chemical Codex, which the FDA has incorporated by reference into food additive standards, is priced at \$ 499.¹⁸ As Professor Emily Bremer has reported, the average price for just one incorporated pipeline safety standard is \$150, while a complete set of IBR standards implementing the Pipeline and Hazardous Materials Safety Act cost nearly \$10,000 as of September 2014.¹⁹ The cost of reading the two newly-incorporated-by-reference standards for the packaging and transportation of radioactive material, to avoid radiation leakage in transit, is \$ 213.²⁰

¹⁴ 26 C.F.R. 1910.110(b)(3)(i) (incorporating by reference American Society for Mechanical Engineers' Boiler and Pressure Vessel Code (1968 edition)).

¹⁵ See Office of the Federal Register, "Where to Find Materials Incorporated by Reference at NARA Facilities," available at <http://www.archives.gov/federal-register/cfr/ibr-locations.html#why>. Rulemaking agencies also sometimes make the text of IBR rules available for inspection in their own reading rooms, again, typically located in Washington, D.C.

¹⁶ See 29 CFR 1926.602(a)(2)(i) (incorporating Society of Automotive Engineers Standard J386-1969); standards.sae.org/j386_196903/. The price of \$72 is for the current revision of Standard J386. It is unclear whether the 1969 version can be accessed at all on SAE's website.

¹⁷ See 16 C.F.R. 1225.2 (incorporating by reference ASTM F 2050-13a); www.astm.org. The standard is inexplicably absent from the online reading room ASTM maintains for government-incorporated standards.

¹⁸ See 21 C.F.R. 172.185(a) (test methods standard for TBHQ in the food additive); https://store.usp.org/OA_HTML/ibeCCTpItnDspRte.jsp?item=344067.

¹⁹ Emily Bremer, On the Cost of Private Standards in Public Law, 63 U. Kansas L. Rev. 279 (2015).

²⁰ See Nuclear Regulatory Commission, Revisions to Transportation Safety Requirements and Harmonization with International Atomic Energy Agency Transportation Requirements, 80

The SDOs have no obligation to make standards available at any price, and some standards, particularly older ones, are now simply unavailable from the SDOs. On the other hand, SDOs occasionally charge more for an older version that an agency has incorporated by reference into binding law—a reflection of the newly conferred monopoly value—than for the SDO’s current version of those same standards.²¹

As publicly-filed comments and other public sources indicate, the fees charged for IBR rules significantly obstruct citizens and entities from seeing the text of this law. Regulated entities needing access to incorporated standards are often small businesses for whom the mass of necessary standards may be a significant cost.²² For example, as the Modification and Replacement Parts Association commented in response to the petition for rulemaking, “The burden of paying high costs simply to know the requirements of regulations may have the effect of driving small businesses and competitors out of the market, or worse endanger the safety of the flying public by making adherence to regulations more difficult due to fees”²³

And given the access fees charged, members of the public affected by regulatory frameworks relying upon IBR rules likely cannot afford to read these standards. For

Fed. Reg. 33,988, 34,010-11 (June 12, 2015) (reciting charges for incorporated by reference standards).

²¹ For example, the American Herbal Products Association charges \$250 for a digital-rights-protected copy of the first edition of its *Herbs of Commerce*, use of which is a legal obligation under FDA regulations; the more recent second edition, a “must-have” for anyone in the business but not yet made legally obligatory, can be bought as a book for \$99. Peter Strauss, *Private Standards Organizations and Public Law*, 22 Wm. & Mary Bill Rts. J. 497 (2013).

²² Public comments filed with the Office of Federal Register made this problem clear. The National Propane Gas Association, an organization whose members are overwhelmingly (over 90%) small businesses, commented in response to OFR’s notice of proposed rule that the costs of acquiring access “can be significant for small businesses in a highly regulated environment, such as the propane industry.” *See* Comments of Robert Helminiak, National Propane Gas Ass’n, OFR 2013-0001-0019 (Dec. 30, 2013), at 1; Comments of Jerry Call, American Foundry Society, NARA-12-0002-0147 (June 1, 2012), at 1-2 (“Obtaining IBR material can add several thousands of dollars of expenses per year to a small business, particularly manufacturers . . . [T]he ASTM foundry safety standard alone cross references 35 other consensus standards and that is just the tip of the iceberg on safety standards.”); Comments of National Tank Truck Carriers, NARA-2012-0002-0145 (small businesses “have no option but to purchase the material at whatever price is set by the body which develops and copyrights the information. . . . [W]e cite the need for many years for the tank truck industry to purchase a full publication from the Compressed Gas Association just to find out what the definition of a ‘dent’ was. . . . HM241 could impact up to 41,366 parties and . . . there is no limit on how much the bodies could charge”); Comments of American Foundry Society, NARA-2012-0002-0147 (“\$ 75 is not much for a standard, but a typical small manufacturer, including a foundry, may be subject to as many as 1000 standards. The ASTM foundry safety standard alone cross-references 35 other consensus standards and that is just the tip of the iceberg . . .”).

²³ *See* Comment of the Modification & Replacement Parts Ass’n 14 (Regulations.Gov, filed June 1, 2012), *available at* <http://www.regulations.gov/contentStreamer?objectId=09000064810266b8&disposition=attachment&contentType=pdf>

example, a staff attorney at Vermont Legal Aid filed a public comment indicating that the costs of accessing IBR rules interfered with the ability of Medicare recipients to know their rights.²⁴

In a positive development, some of the many SDOs have begun to create online reading rooms in which IBR rules can be freely viewed. But standards are still very hard to locate, not consistently available, and readers must identify themselves, waive a variety of rights, and even agree to broad indemnification and forum selection clauses in order to see the text of the rules. And SDOs uniformly reserve the right to revoke the access at will.

Agency use of IBR rules raises two particularly pressing issues. The first is the lack of consistent and meaningful public access to the text of these binding federal rules. While IBR rules are not formally secret, the financial obstacles that must be overcome to read the text undermine any notion of meaningful public availability. Second, the lack of access to proposed IBR rules, as well as supporting data, undermines the public's right to comment on proposed agency rules under the Administrative Procedure Act.

The present resolution would put the ABA on record in support of the principle of meaningful public access to law, as well as public participation in federal regulation. The ABA should speak now for two reasons: First, as described below, the Office of the Federal Register has recently declined an opportunity to use its Freedom of Information Act implementation powers to effectuate these principles. Second, agency use of privately-drafted rules is likely to increase, given continuing agency resource constraints, as well as executive and congressional policy favoring agency use of privately drafted rules in preference to "government-unique" rules.²⁵ Unfortunately, neither policy has directly engaged the resulting public access problems. Only Congressional action will remedy this unsatisfactory situation. A clear and strong statement by the ABA on the topic should help prompt such action.

²⁴ *E.g.*, Comments of Jacob Speidel, Senior Citizens Law Project, Vermont Legal Aid, OFR-2013-0001-0037 (Jan. 31, 2014), at 1 (price precludes "many Vermont seniors" from accessing materials). *See also* Comments of Robert Weissman, Public Citizen, OFR 2013-0001-0031 (Jan. 31, 2014), at 1 (reporting on behalf of multiple nonprofit, public interest organizations that "free access . . . will strengthen the capacity of organizations like ours to engage in rulemaking processes, analyze issues, and work for solutions to public policy challenges . . . and strengthen citizen participation in our democracy"); Comments of George Slover and Rachel Weintraub, Consumers Union and Consumers Federation of America, OFR 2013-0001-0034 (Jan. 31, 2014) (noting importance of transparent standards to identify products that are not in compliance with applicable standards so as to notify the agency and alert consumers).

²⁵ *See* National Technology Transfer and Advancement Act of 1995, sec. 12(d), 15 U.S.C. 272 note (2012); Office of Mgmt & Budget, Circular A-119 Revised; Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities para. 1 (1998), available at http://whitehouse.gov/omb/circulars_a119.

II. DISCUSSION

A. The Bedrock Principle of Public Access to the Law Should Be Reaffirmed in the IBR Rules Setting

IBR rules are not formally “secret”—access is not prohibited outright. Self-evidently, however, the cost of reading it, together with the difficulty of finding it, render these standards inaccessible to the public. At root, there must be meaningful free access to all incorporated rules, if the evils of “secret law” that the Freedom of Information Act was established to resist are to be avoided. In the words of Columbia Law Professor Peter Strauss, joined by numerous other professors: “[I]n the age of information, secret law, that the public must pay for to know, is unacceptable.”²⁶ The ABA accordingly should resolve that the Freedom of Information Act be clarified to ensure meaningful levels of free public access to all binding law.

1. As the authors and owners of the law, the public has a right to know it

First, free public access to the law is essential in a democratic society. As the 5th Circuit explained in *Veeck v. Southern Bldg. Code Cong. Int'l*, free public access to the law serves “the very important and practical policy that citizens must have free access to the laws which govern them” if they are to be able to conform their conduct to them.²⁷ *Veeck* relied principally on the Supreme Court’s holding in *Banks v. Manchester* that “[i]t is against sound public policy to prevent [free access to judicial opinions], or to suppress and keep from the earliest knowledge of the public the statutes.”²⁸ As explained in *Veeck*, these justifications are not simply “due process” arguments. Rather, they rest on the idea that “public ownership of the law means precisely that ‘the law’ is in the ‘public domain’ for whatever use the citizens choose to make of it.”²⁹

This “right to know” accrues to *all* citizens, not just those who must conform their conduct to the law. Broad public access to IBR material, is as important as access by directly regulated entities. “Th[e] ‘metaphorical concept of citizen authorship’” requires free public access to the law as a foundation to a legitimate democratic society. “The citizens are the authors of the law, and therefore its owners, regardless of who actually drafts the provisions, because the law derives its authority from the consent of the public, expressed through the democratic process.”³⁰ Thus, even those who need not conform their conduct to regulatory requirements have a right to know. As public comments filed

²⁶ Incorporation by Reference, 77 Fed. Reg. 11,414, 11,415 (Feb. 27, 2012) (posting of law professors’ petition to revise IBR rules; seeking comment on same).

²⁷ 293 F.3d 791, 795-800 (5th Cir. 2002) (en banc).

²⁸ See 128 U.S. 244, 253 (1888) (quoting *Nash v. Lathrop*, 142 Mass. 29, 6 N.E. 559 (1886)).

²⁹ 293 F.3d at 799.

³⁰ *Veeck*, 293 F.3d at 799 (quoting *Building Officials & Code Adm. v. Code Technology*, 628 F.2d 730, 734 (1st Cir. 1980)).

to the Office of the Federal Register and the Office of Management and Budget make clear, the public has an interest in reading IBR material.³¹

Ready access to standards that have been incorporated by reference is necessary for citizens to know what their government is doing and to hold the government accountable for serving – or not serving – the public interest. As President Obama stated in his Memorandum on Transparency and Open Government, on January 21, 2009: “Transparency promotes accountability and provides information for citizens about what their Government is doing.” This transparency, including public access to the content of regulations, is a critical safeguard against agency capture and other governance problems. Transparency regarding the content of IBR standards is particularly important when that material has been prepared, in the first instance, by private organizations rather than governmental agencies – as when, for example, natural gas pipeline safety rules and offshore oil drilling rules incorporate standards drafted by the American Petroleum Institute, and even when motor vehicle safety standards incorporate standards drafted by the Society of Automotive Engineers. We note that regulatory standards created by industry associations such as the API, compared with professionally focused organizations such as ASME, the American Society of Mechanical Engineers, may raise particular concerns warranting public awareness. Still, this is not to criticize any particular standard or organization, but to emphasize that transparency and ready access are critical to ensuring that the government makes proper use of *all* incorporated material and that adopted standards do, in fact, protect the public interest as required by statute. And as the 5th Circuit pointed out in *Veeck*, citizens need access to the law not only to guide their actions and to hold the government accountable, but “to influence future legislation” and to educate others.³²

2. Limits on public access raise constitutional difficulties

The current system may raise constitutional difficulties by allowing agencies to reference incorporated material, when the public must pay to see that material. (Travel to a Washington, D.C., reading room will not, for most, be a viable alternative.) First, impediments to a regulated entity’s ability to access government standards raises due process concerns. As noted, small businesses have complained that the access fees charged to read the text of the law can be a significant obstacle to their ability to learn their legal obligations. In the context of whether to sustain a changed agency interpretation of a rule, the Supreme Court has endorsed “the principle that agencies

³¹ See supra note 24 (Vermont Legal Services comment); NARA-12-0002-0140 (Consumers Union, emphasizing the need for free access to standards to notify the CPSC and warn consumers regarding unsafe products); OMB-2012-0003-0074 (public interest organizations, including environmental, watchdog, and library organizations, emphasizing need for free access to engage government and public on range of public policy issues); NARA-12-0002 (“A concerned Citizen,” noting that knowledge of airbag standards allows citizen to be “a more educated consumer”). Public comments on access issues were filed in an Office of the Federal Register rulemaking on whether to revise its criteria for revising IBR rules; comments also were filed in a 2012 Office of Management Budget proceeding on whether to revise Circular A-119. As of October 2015, Circular A-119 remains unrevised.

³² 293 F.3d at 799.

should provide regulated parties ‘fair warning of the conduct [a regulation] prohibits or requires,’” and that due process thus bars the imposition of sanctions upon someone who could not have received notice of his or her obligations.³³

The current use by agencies of incorporated private material without meaningful public access is constitutionally suspect for a second reason as well. The public cannot discuss or criticize the government’s decisions if the substance of those decisions is not available. As the Supreme Court noted in refusing to uphold a statute that would close criminal trials, “‘a major purpose of [the First] Amendment was to protect the free discussion of governmental affairs.’ [This] serves to ensure that the individual citizen can effectively participate in and contribute to our republican system of self-government.”³⁴ The potential significant charges to read IBR standards raises heightened constitutional concerns, because the thousands of IBR standards are wide-ranging in subject, affecting numerous industries, and quasi-legislative in character, with broad and prospective effect. An assurance of free access only in a Washington, D.C. reading room is insufficient. The obstacles to access that must be overcome -- the charges and travel impediments -- effectively deny the public’s right to know and discuss government actions. Legislative history accompanying the Freedom of Information Act draws the same link: “‘The right to speak and the right to print, without the right to know, are pretty empty.’” *See* H. Rept. No. 1497, 89th Cong., 2d Session 2 (1966) (quoting Dr. Harold Cross). Significant access charges for regulatory standards are a real obstacle to knowing their content, and indeed, the Supreme Court has invalidated much smaller charges as inconsistent with similar core principles of democratic government, such as the right to vote.³⁵

³³ *Christopher v. SmithKline Beecham*, 132 S. Ct. 2156, 2167-68 (2012) (alteration in original) (quoting *Gates & Fox Co. v. Occupational Safety & Health Review Comm’n*, 790 F.2d 154, 156 (D.C. Cir. 1986)(Scalia, J)).

³⁴ *Globe Newspaper Co. v. Superior Court for Norfolk County*, 457 U.S. 596, 604 (US 1982) (quoting *Mills v. Alabama*, 384 U.S. 214, 218 (1966)); see also *Press Enterprise v. Superior Court*, 478 U.S. 1 (1986) (refusing to approve closure of preliminary hearing). *Cf. In re Gitto Global Corp.*, 422 F.3d 1 (1st Cir. 2005) (“Only the most compelling reasons can justify non-disclosure of judicial records.”); *Leigh v. Salazar*, 677 F.3d 892, 900 (9th Cir. 2012) (“[A] court cannot rubber-stamp an access restriction simply because the government says it is necessary. By reporting about the government, the media are ‘surrogates for the public.’”) (requiring consideration of public right of access to view Bureau of Land Management horse roundups).

³⁵ *Cf. Harper v. Virginia Bd. Of Elections*, 383 U.S. 663, 666-68 (1966) (invalidating state \$1.50 poll tax as effective denial of right to vote). OFR’s approval of IBR rules under this system of private fees may also raise equal protection concerns, given the central importance, in a democracy, of public access to the law’s text. In other settings, the courts have relied on equal protection grounds to invalidate comparable fees imposed upon participation in government. *Harper v. Virginia Bd. Of Elections*, *supra*; *Lubin v. Panish*, 415 U.S. 710, 717-18 (1974) (striking down \$701 filing fee requirement for California election, given “our tradition . . . of hospitality toward all candidates without regard to their economic status.”). For many rules, moreover, budget constraints may be connected with substantive interests; access constraints will distinctively, systematically disadvantage those interests. For example, consumers will likely

3. IBR rules must be broadly available; assuring meaningful free access only to regulated entities is insufficient

The need for public notice of the contents of federal regulations goes well beyond the regulated entities tasked with complying with them. Congress enacts regulatory statutes specifically to guard wide swaths of the public, and the public accordingly has a specific interest in the content of rules. Consumers of food and toys, parents who wish to purchase infant carriers, strollers, walkers, or infant bath seats, those who rely on ocean fishing for their livelihood, or neighbors of a pipeline or propane tank – all of these individuals are obviously affected by these standards, and should be entitled to notice of them. For one last example, the Department of Transportation Pipeline and Hazardous Materials Safety Administration requires natural gas pipeline operators to institute “public awareness programs” to provide public information and public communications regarding spills according to an IBR standard of the American Petroleum Institute. 49 C.F.R. § 192.616 (incorporating API Standard 1162). Community members who reside near natural gas pipelines at risk from a spill are obviously affected by the scope of public communication requirements. Standards such as these must be meaningfully available both to pipeline operators and to the community. The content of these standards can affect individual choices of which toys or infant carriers to buy, where to live, and whether to file public comments with the regulating agency or write one’s member of Congress. In short, regulatory beneficiaries have a cognizable stake in these standards, and the content of the standards can affect their conduct. They therefore need notice of the text as well; meaningful public access without cost has to be understood as essential.

4. The public must be able to locate the law.

Public access principles require not only the provision of meaningful free access to the text of the law, but that the law be reasonably easy to locate. IBR rules are referenced in the Code of Federal Regulations, but the text of the rules is often very hard to find. IBR rules are distributed across a wide variety of differently-organized websites, and neither the online CFR nor Federal Register typically contains any sort of specific link to the IBR rule’s text. The current distribution of IBR rules in numerous locations makes each obscure, raising the same sorts of concerns that prompted the passage of the Federal Register Act.³⁶ Further, although agencies are required to “summarize” in the preamble to a final rule “the material it incorporates by reference,”³⁷ that summary does not include the full text, and in any event, preambles are published neither in the Code of Federal Regulations nor on agency websites containing regulations. The ABA

have smaller budgets than manufacturers; neighbors to a pipeline will likely have smaller budgets than the pipeline operator.

³⁶ Erwin Griswold, *Government in Ignorance of the Law—A Plea for Better Publication of Executive Legislation*, 48 Harv. L. Rev. 198, 204, 205, 294 (1934) (distribution of federal rules among “pamphlets” or upon a “single sheet of paper” amounted to “chaos” and an “intolerable” situation). See Federal Register Act of 1935, 74 Pub. L. 220, 49 Stat. 500-503 (H.R. 6323) July 26, 1935.

³⁷ 1 CFR 51.5(a)(2); 1 CFR 51.5(b)(3) (2015).

accordingly should resolve not only that meaningful levels of free access be provided to IBR rules, but that such access enable the public to readily find the text of those rules.

5. Current law as implemented has failed to ensure sufficient public access to the law

One might think that these interests would already be protected under the Freedom of Information Act's Section 552, which requires, as a condition of Office of Federal Register approval of incorporation by reference, that incorporated material be "reasonably available" to the "class of persons affected thereby." 5 U.S.C. 552(a)(1). Indeed, the legislative history accompanying 5 U.S.C. § 552's incorporation by reference provisions made clear its concern with widespread public access, not simply that the IBR material would not be formally secret: "*Any member of the public* must be able to familiarize himself with the enumerated items . . . by the use of the Federal Register, or the statutory standards mentioned above will not have been met." S. Rep. No. 1219, 88th Cong., 2d Sess. 5 (1964) (emphasis added).

Arguments could be made that the Freedom of Information Act's "reasonably available" language, particularly in this age of information, already requires meaningful levels of free access to all incorporated standards not only to regulated entities, but to regulatory beneficiaries and the public at large. Implementation, however, has fallen far short of this understanding. In November 2013, the Office of the Federal Register began a rulemaking on its "incorporation by reference" approval procedures in response to a 2012 rulemaking petition led by Columbia Law School Professor Peter L. Strauss and joined by numerous law professors. The petition had asked OFR to approve IBR rules only if free read-only access to the text were provided to the public.³⁸ Despite embarking on a rulemaking, OFR ultimately declined to significantly revise its approach.³⁹ The Office of Federal Register has continued to approve the incorporation by reference of standards that remain difficult to locate and expensive to read.

Accordingly, Congressional action to clarify the requirements of the Freedom of Information Act and the Administrative Procedure Act is now critical.

6. Other concerns do not justify sacrificing the bedrock principle of ensuring meaningful public access to the law

SDOs typically favor and sometimes even seek having their privately drafted standards adopted as the law of the land, and agencies undoubtedly find it useful to draw upon this stock of standards. But SDOs also have raised concerns that agreeing to

³⁸ See Office of the Federal Register, Incorporation by Reference (Partial Grant of Petition, Notice of Proposed Rulemaking), 78 Fed. Reg. 60,784 (Oct. 2, 2013).

³⁹ Rather than requiring any greater public access to the text of incorporated standards, OFR essentially reaffirmed the status quo, adding only a requirement that the rulemaking agency seeking approval of an incorporation by reference explain "the ways that the materials it incorporates by reference are reasonably available to interested parties" and "summarize" the incorporated material. See 1 C.F.R. 51.5(b)(2), (3).

meaningful free public access will result in undercompensation for the cost of preparing these standards even if SDOs can still sell books of standards to the public.

These standards surely can be valuable, and SDOs consistently claim a copyright in them. The ABA need not resolve that the considerations that mandate meaningful public availability of incorporated standards necessarily require invalidation of the SDOs' copyrights in those standards. The doctrine governing whether copyright persists in text that is first developed by private-sector entities and subsequently adopted into law is complex and fact-specific, and accordingly is beyond the scope of the Resolution.⁴⁰ Moreover, legislation to implement this resolution could also address the issue, such as by clarifying the continuing validity of copyrights in IBR materials made publicly available as recommended here or by addressing compensation an agency could offer an SDO for the use of its privately drafted standards.⁴¹ Some SDOs affirmatively seek incorporation by reference of their standards; others receive financial contributions from agencies specifically to finish a particular standard that the agency can then incorporate; some may benefit because there is a larger market for either their current or superseded standards. Meanwhile some SDOs may object to incorporation of all or nearly all of a standard, particularly if incorporation significantly reduces their ability to sell standards. However, the potential need in some cases to compensate the drafters of privately drafted standards should not defeat the obligation of government agencies to make legally binding regulations available to the public.

Providing some level of meaningful free public access to these standards, such as through online access or in government depository libraries, does seem unlikely to impair the future development of these standards or the ability of agencies to incorporate them. As noted, some SDOs have recently set up free online reading rooms for their standards that have been incorporated by reference. These actions blunt any concern that the supply of voluntary consensus standards on which agencies can draw will be significantly impacted if some level of free public access to the text is required. In addition, there may be other solutions to this concern, whether through agency negotiation with SDOs or

⁴⁰ See *Veeck v. Southern Building Code Cong. Int'l, Inc.*, 293 F.3d 791 (5th Cir. en banc 2002), *cert. denied*, 537 U.S. 1043 (2002); *Practice Management Info. Corp. v. American Medical Ass'n*, 121 F.3d 516 (9th Cir. 1997), *cert. denied*, 522 U.S. 933 (1997); *CCC Information Svc v. MacLean Hunter Market Reports, Inc.*, 44 F.3d 61 (2d Cir. 1994), *cert. denied*, 516 U.S. 817 (1995).

⁴¹ Though the law in this area is far from clear, an agency that republishes the text of a copyright-protected standard, over the drafting organization's objection and with harm to the standard's commercial value, could, under some circumstances, lose a "fair use" claim and instead face copyright infringement liability or even liability for taking property without just compensation. 28 U.S.C. 1498(b) (2006); *see generally* Office of Legal Counsel, U.S. Department of Justice, *Whether and Under What Circumstances Government Reproduction of Copyrighted Materials is a Noninfringing "Fair Use" Under Section 107 of the Copyright Act of 1976*, 1999 WL 3390240 (1999), at * 3-4 ("The case law provides very little guidance, [but] there is no basis for concluding that the photocopying . . . by the federal government automatically . . . constitutes a fair use."); *id.* at *11 (concluding that although government photocopying can be "nonfringing," there is no 'per se' rule protecting government reproduction of copyrighted material).

payments to them. Agencies already can and do contribute funds to the SDO standards development process, and executive policy encourages agency staff participation in the SDO process.⁴² On the other hand, it is abundantly clear that requiring individuals to pay a significant fee, or to travel to Washington, D.C., to see the text of the binding law, substantially burdens public access.

The Resolution does not suggest any specific resolution of these concerns. Instead, the ABA should simply resolve that Congress enact legislation that at its core bars the outcome that requires a reader to pay significant fees in order to read the binding law of the land.

B. To effectuate the statutory right to participate in rulemaking, the Administrative Procedure Act should be clarified to ensure that the public receives meaningful access to the substance of a proposed IBR rule.

As well-established elements of the rulemaking process require, an agency's notice of proposed rule must be published in the Federal Register with the detail needed to facilitate a meaningful opportunity to comment.⁴³ These procedural requirements, which are fundamental to ensuring the continued validity and legitimacy of agency rulemaking, require that "interested persons" must be able to participate in rulemaking by submitting "data, views, or arguments" -- public comments--to the agency.⁴⁴ An "interested person" cannot meaningfully exercise his or her right to comment without access to the substance of the standard on which comment is to be filed.⁴⁵ Requiring an "interested person" to pay a fee to learn the content of a proposed rule is a significant obstacle impeding that person's right to comment under Section 553(c).

⁴² Office of Mgmt. & Budget, Circular No. A-119 Revised: Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities para. 1 (1998), available at http://www.whitehouse.gov/omb/circulars_a119.

Both the NTTAA and OMB Circular A-119 affirmatively encourage agency staff participation in the SDO processes that develop standards, *see* Pub. L. 104-113, sec. 12(d)(2) (Mar. 7, 1996), and Circular A-119 also contemplates financial contributions of the SDO process. While this may be sensible, in the absence of public access to SDO materials, it can have two problematic consequences. First, it leaves understanding of supporting science and rationales in private hands, thus evading the APA's public notice-and-comment rulemaking process not only by concealing what is being proposed, but also by hiding the support for it. Second, it creates the appearance, and potentially the reality, of agency staff promoting a regulatory agenda in an effectively *ex parte* context.

⁴³ 5 U.S.C. 553(b)(3); *Long Island Care at Home v. Coke* 551 U.S. 158, 174 (2007) ("The object [of 553(b)], in short, is one of fair notice.").

⁴⁴ 5 U.S.C. 553(c).

⁴⁵ Cf. *Portland Cement v. Ruckelshaus*, 486 F.2d 375 (D.C. Cir. 1973), cert. denied, 417 U.S. 921 (1974); *United States v. Nova Scotia Food Products Corp.*, 568 F.2d 240 (2d Cir. 1977) (requiring agencies to disclose data to effectuate meaningful right to public comment).

III. CONCLUSION

In short, the ABA should resolve—simply—three propositions. First, the ABA should resolve that the Freedom of Information Act be clarified to require meaningful levels of free public access to the text of all binding law. That meaningful free public access could be provided online, for example, or in depository libraries. To ensure that the public can readily locate IBR standards, the access ought to be in a centralized location. If not the government depository library system or live online links in the Code of Federal Regulations, IBR standards at least should be available through links in a single federally-maintained website. To the extent any disruption would be triggered by this Resolution—perhaps an agency might have to negotiate some level of public access as a condition of incorporating a particular standard by reference—the impact is worth bearing in order to bring FOIA’s standard of “reasonabl[e] availabil[ity]” into the Information Age and to effectuate the bedrock principle that the law, in a democracy, must be meaningfully available to the public.

And second, no standard should become part of binding federal regulatory law without the public being assured of the full opportunity to participate normally afforded by section 553 of the Administrative Procedure Act. Therefore, the ABA should resolve that section 553 be clarified to require meaningful free public availability, during the public comment period, of a proposed IBR standard’s text.⁴⁶

Finally, the ABA should resolve that, in order to effectuate these critical principles, Congress should ensure that private organizations will, where appropriate, have access to compensation for financial losses attributable to making their standards publicly available.

Respectfully submitted,

Jeff Rosen, Chair
Section of Administrative Law and Regulatory Practice

⁴⁶ Although 5 U.S.C. 553(b)(3) formally authorizes an agency merely to give notice of a “description of subjects and issues involved,” as a practical matter agency notices of proposed rule generally contain text the agency is proposing to promulgate. (Advance notices of proposed rulemaking are more frequently phrased in general terms.) The ABA accordingly should resolve that the text of proposed IBR rules also be made publicly available to make meaningful the right to comment.

GENERAL INFORMATION FORM

Submitting Entity: Section of Administrative Law and Regulatory Practice

Submitted By: Jeff Rosen, Section Chair

1. Summary of Resolution(s).

To effectuate the bedrock principle of public access to the law, the resolution urges Congress to strengthen the Freedom of Information Act and Administrative Procedure Act to ensure meaningful free public access to all federal rules.

2. Approval by Submitting Entity.

The Council of the Section of Administrative Law and Regulatory Practice voted to approve the resolution on November 10, 2015.

3. Has this or a similar resolution been submitted to the House or Board previously?

No.

4. What existing Association policies are relevant to this Resolution and how would they be affected by its adoption?

None are directly relevant.

5. If this is a late report, what urgency exists which requires action at this meeting of the House?

N/A

6. Status of Legislation. (If applicable)

N/A

7. Brief explanation regarding plans for implementation of the policy, if adopted by the House of Delegates.

Policy could be implemented by legislative action.

8. Cost to the Association. (Both direct and indirect costs)

None.

9. Disclosure of Interest. (If applicable)
N/A

10. Referrals.

Business Law Section
Civil Rights and Social Justice Section
Government and Public Sectors Lawyers Division
Intellectual Property Law Section
Science & Technology Law Section

11. Contact Name and Address Information. (Prior to the meeting. Please include name, address, telephone number and e-mail address)

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12. Contact Name and Address Information. (Who will present the report to the House? Please include name, address, telephone number, cell phone number and e-mail address.)

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EXECUTIVE SUMMARY

1. Summary of the Resolution

To effectuate the bedrock principle of meaningful public access to the law, the resolution urges Congress to strengthen public availability to the text of all federal regulations both when agencies propose them and after promulgation as final rules.

2. Summary of the Issue that the Resolution Addresses

Federal agencies currently “incorporate by reference” thousands of outside standards into binding federal regulations. Free public access to the text is reliably provided only in the Office of the Federal Register’s reading room in Washington, D.C. Otherwise a reader may be required to pay substantial access fees set by drafting organizations, significantly obstructing public access, particularly by individuals and small businesses. The right to comment on an agency’s proposed “incorporation by reference” of such standards into federal regulations is also impeded by the lack of public access to the text.

3. Please Explain How the Proposed Policy Position will address the issue

The resolution urges Congress to amend the Freedom of Information Act to ensure meaningful levels of free public availability to all federal regulations, including text that is “incorporated by reference.” Such public access could be afforded through centralized online access, for example, or in government depository libraries. The resolution also urges Congress to amend the Administrative Procedure Act’s rulemaking provisions to require meaningful free public availability of such text during the public comment period.

As a safeguard against the (probably remote) possibility that the prospect of free public access might induce a drafting organization to decline to make its standard available for incorporation, the resolution also recommends that Congress should ensure that such organizations have access to compensation where appropriate.

4. Summary of Minority Views

None identified.

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EXHIBIT 106



ASTM INTERNATIONAL
Helping our world work better

Public Policy & Corporate Outreach

Virtual Officers' Training Week
September 2015

Presenter: Sarah Shoemaker

ASTM International

About ASTM International

- Non-governmental, not-for-profit organization
- Develops voluntary, consensus standards
- Provides certification programs
- Does not provide accreditation services

ASTM's objectives

- Promote public health and safety, and the overall quality of life
- Contribute to the reliability of materials, products, systems and services
- Facilitate national, regional, and international commerce



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Virtual Officers' Training Week
September 21-24, 2015



Role of Standards

Standards in the Public and Private Sector

- Impact global trade, innovation and competition
- Guide product design, development, market access
- Used by companies, research labs, government agencies

ASTM International Standards

- Voluntary consensus standards
- Regularly reviewed
- Meet World Trade Organization (WTO) principles for international standards



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Public Policy



ASTM in Washington, DC

Government Affairs

- Congress
- Federal government agencies

Stakeholder Outreach

- Companies
- Embassy officials based in Washington
- Industry associations
- International Non Governmental Organizations (NGOs)



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September 21-24, 2015



U.S. Standards System

Voluntary and led by the private sector **Requires cooperation among stakeholders**

- Standards organizations
- Industry, consumers, and users
- Government representatives
- Academia

Meets stakeholders' needs

- Protect safety, health, and environment
- Improve industry competitiveness
- Facilitate global trade and market access



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September 21-24, 2015



Support and Mandate for Government Participation

P.L. 104-113 National Technology Transfer and Advancement Act of 1995 (NTTAA)

– “...all Federal agencies and departments shall use technical standards that are developed or adopted by voluntary consensus standards bodies,and shall, ...participate with such bodies in the development of technical standards.”



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U.S. Legal and Policy Framework

National Technology Transfer and Advancement Act of 1995 (NTTAA)

- Requires federal government agencies to use standards developed by voluntary consensus standards organization when possible
- Encourages federal government agencies to participate in standards development organizations

OMB Circular No. A-119

- Reinforces goals of National Technology Transfer and Advancement Act
- Discourages federal agencies from using government-unique standards



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U.S. Government Use of Voluntary Consensus Standards

Procurement and Contracts with the Federal Government

- Standards are furnished to ensure that materials and services are obtained in an effective manner and in compliance with the provisions of applicable Federal statutes and executive orders

Regulation that incorporates standard by reference

- An agency may adopt a voluntary standard (without changes) by incorporating the standard in a regulation by listing (or referencing) the standard by title.
- This approach eliminates the cost to the agency of creating a new standard

Regulation based on existing standard

- An agency reviews an existing standard and makes changes to match its goal or need.
- Agency conducts rulemaking process to solicit public opinion and stakeholder input



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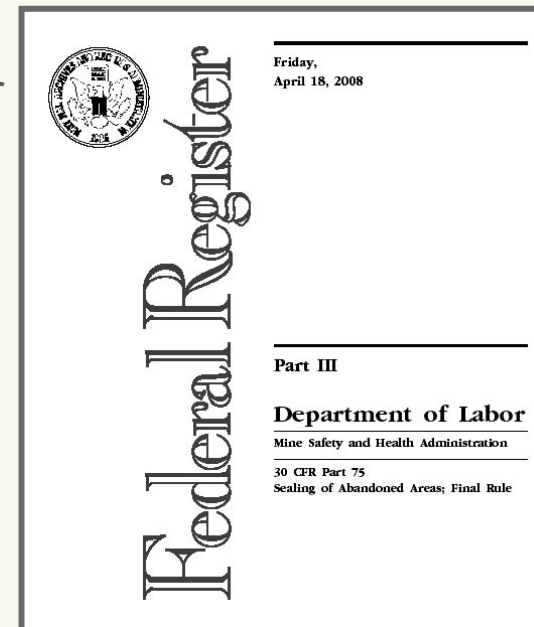
Federal Agencies & ASTM Standards

U.S. Code of Federal Regulations (CFR)

- 6,500 voluntary consensus standards incorporated by reference in federal law
- About 3,000 ASTM standards listed in CFR for regulations and procurement

U.S. Federal Register

- Public notification of standards adoptions
- Instructions for public comments



Top 10 Regulatory SDOs in US

Standards Developing Organization	Acronym	Number
American Society for Testing and Materials	ASTM	2566
U.S. Environmental Protection Agency	EPA	1471
American Public Health Association	APHA	816
American Society of Mechanical Engineers	ASME	768
American National Standards Institute	ANSI	677
National Fire Protection Association	NFPA	589
International Maritime Organization	IMO	579
Society of Automotive Engineers	SAE	437
Reprographic Technologies		351
National Highway Traffic Safety Administration, U.S. Department of Transportation	DOT/NHTSA	344



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JA02583

Congress & ASTM Standards in Law

One Hundred Tenth Congress of the United States of America

AT THE SECOND SESSION

*Begun and held at the City of Washington on Thursday,
the third day of January, two thousand and eight*

An Act

To establish consumer product safety standards and other safety requirements for children's products and to reauthorize and modernize the Consumer Product Safety Commission.

*Be it enacted by the Senate and House of Representatives of
the United States of America in Congress assembled,*

SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the “Consumer Product Safety Improvement Act of 2008”.

(b) TABLE OF CONTENTS.—The table of contents for this Act is as follows:



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Product Safety through Laws and Regulations

Statutes and Law

- Consumer Product Safety Act (CPSA)
- Consumer Product Safety Improvement Act (CPSIA)
- Virginia Graeme Baker Pool and Spa Safety Act

Regulations and Mandatory Standards

- 15 CFR 1150 Marking of Toys, Look-Alike and Imitation Firearms
- 16 CFR 1500 Hazardous Substances Act Regulations



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JA02585

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This is a service where you can view and read ASTM safety standards incorporated in United States regulations. The standards are presented for online reading. There are no print or download options. To acquire the current version of the standards with print and download options, follow the hyperlink to the current version.

CAUTION: The ASTM standards available on this site are the versions and year-dates actually referenced in the respective federal regulation or law. The ASTM standard referenced MAY NOT BE THE MOST RECENT OR UP-TO-DATE version available. It is possible that the standard and/or technology at issue has changed or been updated during the period of time since the regulation/law was enacted. As a non-governmental organization, ASTM does not control which ASTM standards (and versions thereto) are referenced in federal regulations or laws.

Send comments or questions to service@astm.org

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Standardized test methods play a vital role in the development, manufacturing and global trade of the products we rely on every day. View a brochure that explains how ASTM's test methods and supporting programs make global testing easier.

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in the reading room.

U.S. Government Membership in ASTM

Agency Name	Members
Department of Agriculture	40
Department of Commerce (incl. NIST)	165
Consumer Product Safety Commission	44
Department of Defense	257
Department of Energy	178
Environmental Protection Agency	79
Federal Aviation Administration	55
Department of Health and Human Services (incl. FDA)	120
Housing and Urban Development	3

Agency Name	Members
Department of Interior	3
Department of Justice	11
NASA	37
Nuclear Regulatory Commission	7
Occupational Safety & Health Administration	5
Department of Transportation	34
Department of Veterans Affairs	1



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ASTM Initiatives with U.S. Government

Ensure reference to current standards

- Regular review of the *Code of Federal Regulations* and *Congressional Record*
- Coordinate technical committee communications to policymakers

Understand procurement and regulatory standards needs

- Review of Regulatory Plan and Agenda
- Encourage government liaison with and **participation in** committee activities



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Proven Partnership

[Chairman Kaye's Congressional Testimony](#)



- Sworn in as the 10th Chairman of the U.S. Consumer Product Safety Commission (CPSC) on July 30, 2014. President Barack Obama nominated Mr. Kaye on March 31, 2014, and he was confirmed by the U.S. Senate on July 28, 2014, to a term that expires in October 2020
Elliot F. Kaye



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II. Corporate Outreach



ASTM Engages Decision-Makers

Raise awareness of standards and ASTM

- Standards facilitate trade and boost GDP
- No WTO list of international bodies

Identify opportunities for collaboration on issues of mutual interest

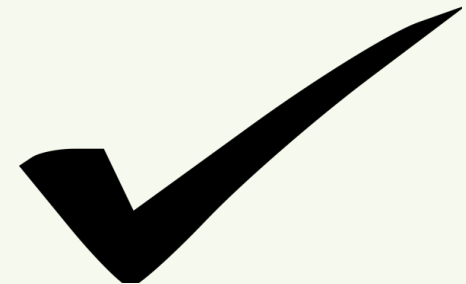
- Reduce internal company specifications

Seek industry feedback on activities and challenges

- ASTM supports industry needs to choose the best standard, regardless of the source

Ensure ASTM is meeting stakeholder needs

- Satisfy regulations and laws
- Facilitate global trade



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ASTM Standards Impact the Global Economy

ASTM standards meet World Trade Organization (WTO) criteria for “international standards”

- No WTO list of international bodies
- WTO recognizes multiple approaches to international standardization

ASTM makes it easy to participate in international standards development

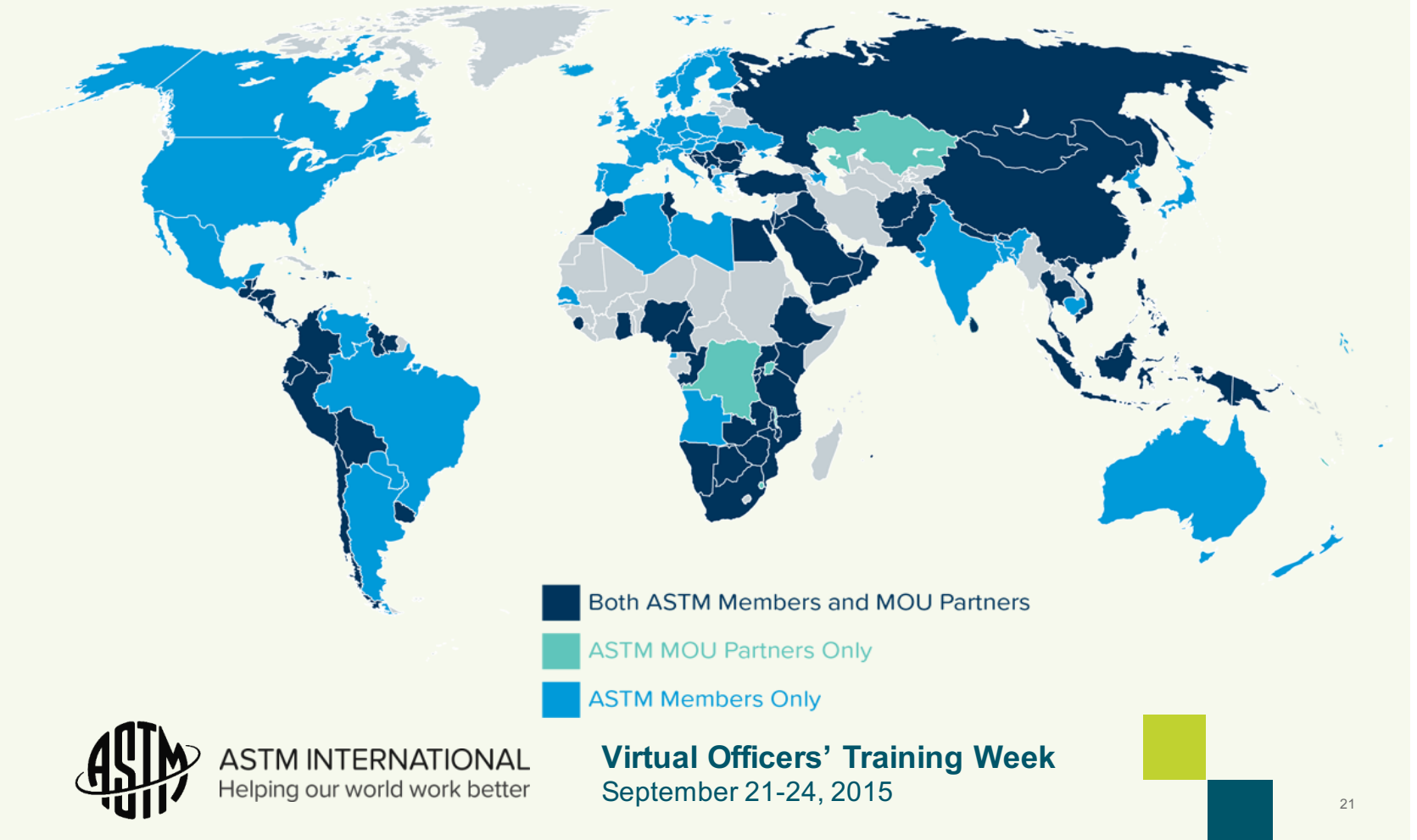
- Technology drives efficiency



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ASTM's Global Reach



ASTM complies with WTO principles for international standards development

WTO / TBT Principles	ASTM Principles
Transparency Openness Impartiality and consensus Effectiveness and relevance Coherence Consideration of developing nations	Transparency Openness Impartiality and consensus Effectiveness and relevance Coherence Consideration of developing nations



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Moving Forward

- ASTM seeks to enhance our level of cooperation and work with government and standards officials and industry to:
- Promote a global marketplace that is open, efficient, free of costly duplication, free of technical barriers, and free of national or regional limitations
- Produce high-quality and market relevant standards that advance R&D, product manufacturing, testing, quality assurance, marketing, and trade for both companies and SMEs
- Advance the ability of industries to choose the standards which best meet their needs
- Our global approach to standards development and use can help the world to work better through improved products, increased trade, and greater prosperity for the future.



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III. Questions and Discussion

Contact Information

Anthony R. Quinn,
Director, International Trade and Public Policy
aquinn@astm.org, 202 223-8484

Sarah Shoemaker,
Manager, Government and Industry Affairs
sshoemaker@astm.org, 202-223-8399

1850 M Street, NW, Suite 1030
Washington, DC 20036 USA



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EXHIBIT 107

From: Morgan, Robert </O=ASTM/OU=FIRST ADMINISTRATIVE GROUP/CN=RECIPIENTS/CN=RMORGAN>
Sent: Tuesday, May 26, 2009 3:20 PM
To: Hooper, Kathe <khooper@astm.org>
Subject: RE: New Standard

Hi Kathe!

For the purposes of code recognition, I recommend that we grant approval. Thanks for your help with this.

Best,

Bob

From: Hooper, Kathe
Sent: Tuesday, May 26, 2009 2:47 PM
To: Morgan, Robert
Subject: FW: New Standard

Hi Bob! I hope things are going well for you.

Regarding Larry Gill's email below, are you okay with me granting permission to make up to 41 copies of F2735 and F2769, as granted in my 1 December email (see 3rd email below)? Usually, I only grant these types of licenses when the request comes through a staff manager. Since Larry contacted me direct, I just want to make sure you are okay with this. (I will also include a condition that the standards must first be published by ASTM. I understand F2769 will be published by mid July at the latest.)

Please call or write with any questions. Thank you. Kathe

From: Gill, Larry [mailto:largil@ipexinc.com]
Sent: Monday, May 25, 2009 10:18 AM
To: Hooper, Kathe
Subject: RE: New Standard

Kathe

I am completing my Code change proposals for ASTM F2735 and as it turns out I will be proposing this standard to 3 Codes, Plumbing, Mechanical and Residential. These are due at the end of this week.

I therefore need permission to provide this standard to these three committees.

Plumbing Code - 15 members
Mechanical Code - 14 members
Residential Code - 12 members

Can you please let me know if this is ok?

I am also making a proposal for a new standard ASTM F2769 Polyethylene of Raised Temperature (PE-RT) Plastic Hot and Cold Water Tubing and Distribution Systems. Do you know if this is printed yet? I need the same number of copies for this as well.

Thanks.

Larry

From: Hooper, Kathe [mailto:khooper@astm.org]
Sent: December 1, 2008 3:38 PM
To: Gill, Larry
Subject: RE: New Standard

Dear Larry:

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3. ICC acknowledges that ASTM is the author and copyright owner of F2735-08a. ICC agrees to reference F2735-08a, and that such reference will not transfer, modify, alter or effect ASTM's copyright in any way.
4. Acknowledgement of the above conditions to Kathe Hooper, ASTM International (khooper@astm.org).

Attached is a PDF file of F2735-08a, including the caveat noted in item 1, for your use in making print copies in accordance with the above conditions.

Should you have any questions, please do not hesitate to contact me. .

Kind regards, Kathe

*Kathe Hooper
ASTM International
100 Barr Harbor Drive, PO Box C700
West Conshohocken, PA 19428-2959
phone: 610-832-9634
fax: 610-832-9635
email: khooper@astm.org*

From: Gill, Larry [mailto:largil@ipexinc.com]
Sent: Wednesday, November 26, 2008 1:19 PM
To: Hooper, Kathe
Subject: RE: New Standard

Kathe

I need to submit another new standard to the ICC and send them copies. I need 2 copies for ICC staff and 15 copies for committee members. The standard is ASTM F2735-08a.

Can you send me the info I need from ASTM to allow me to do this?

Thanks.

Larry Gill, P.Eng.
Manager Codes and Standards
IPEX Inc.
2441 Royal Windsor Drive
Mississauga, ON L5J4C7
Phone: 1-800-463-9502 (or 905-403-0264, ext. 299); Fax: 905-403-1124

From: Hooper, Kathe [mailto:khooper@astm.org]
Sent: December 6, 2007 1:54 PM
To: Gill, Larry
Subject: RE: New Standard

Dear Larry,

We can give you a license to reproduce and distribute printed copies of the standards as in the past. Please confirm the total number of copies you wish to distribute is 17 (of each standard). Thank you!

Kathe

*Kathe Hooper
ASTM International
100 Barr Harbor Drive, PO Box C700
West Conshohocken, PA 19428-2959
phone: 610-832-9634
fax: 610-832-9635
email: khooper@astm.org*

From: Gill, Larry [mailto:largil@ipexinc.com]
Sent: Wednesday, December 05, 2007 9:36 AM
To: Hooper, Kathe
Subject: RE: New Standard

Kathe

I have submitted the same standard (F2623) for inclusion into the ICC code as well as ASTM F1282.

I need to send 16 ICC committee members copies and one to staff for both of these standards.

Can you please send me the documents for this?

Regards;

Larry Gill, P.Eng.
Manager Codes and Standards
IPEX Inc.
2441 Royal Windsor Drive
Mississauga, ON L5J4C7

Phone: 1-800-463-9502 (or 905-403-0264, ext. 299); Fax: 905-403-1124

From: Hooper, Kathe [mailto:khooper@astm.org]
Sent: March 13, 2007 9:55 AM
To: Gill, Larry
Subject: RE: New Standard

Dear Mr. Gill:

You may obtain a license to reproduce and distribute copies of F 2623-07, in hardcopy format, to distribute to the IAPMO committee members. Please advise us how many copies of the standards you wish to make and we will be happy to send an agreement outlining the conditions involved.

Thank you. Should you have any questions, please contact me.

Kind regards,

*Kathe Hooper
ASTM International
100 Barr Harbor Drive, PO Box C700
West Conshohocken, PA 19428-2959
phone: 610-832-9634
fax: 610-832-9635
email: khooper@astm.org*

From: Gill, Larry [mailto:largil@ipexinc.com]
Sent: Monday, March 12, 2007 9:05 AM
To: DiCicco, Jill
Cc: Hooper, Kathe
Subject: RE: New Standard

Kathe

Can you please help me with this?

Thanks.

Larry Gill, P.Eng.
Manager Codes and Standards
IPEX Inc.
2441 Royal Windsor Drive
Mississauga, ON L5J4C7
Phone: 1-800-463-9502 (or 905-403-0264, ext. 299); Fax: 905-403-1124

From: DiCicco, Jill [mailto:jdicicco@astm.org]
Sent: March 8, 2007 2:26 PM
To: Gill, Larry
Cc: Hooper, Kathe

Subject: RE: New Standard

Larry
You will need permission to reprint.
Kathe Hooper will be able to assist you.
(Thank you Kathe)
Jill

From: Gill, Larry [mailto:largil@ipexinc.com]
Sent: Thursday, March 08, 2007 2:24 PM
To: DiCicco, Jill
Subject: RE: New Standard

Jill

I see that the standard is now published, ASTM F2623.

I need to submit this to IAPMO to support a Code change to add the standard to the Code.

Is it ok if I buy one original and then copy it for the IAPMO committee members?

Thanks.

Larry

From: DiCicco, Jill [mailto:jdicicco@astm.org]
Sent: January 29, 2007 11:47 AM
To: Gill, Larry
Subject: RE: New Standard

Hi Larry

still not completed the balloting process. It will not be approved until Feb 1 then the editor will then take over.
about 4 weeks after approval.
Jill

From: Gill, Larry [mailto:largil@ipexinc.com]
Sent: Mon 1/29/2007 8:01 AM
To: DiCicco, Jill
Subject: New Standard

Hi Jill

I need a copy of a new standard to submit for an IAPMO code change.

It's F 2623 for PERT.

Do you know the soonest I can get a copy?

Larry

-----Original Message-----

From: DiCicco, Jill [mailto:jdicicco@astm.org]
Sent: May 3, 2006 1:24 PM
To: Gill, Larry
Subject: RE: A New ASTM Work Item Registration - WorkItem WK11309 F1412-01e1 - Standard Specification for Polyolefin Pipe

and Fittings for Corrosive Waste Drainage Systems

No problem Larry
Attached.
Jill

-----Original Message-----

From: Gill, Larry [mailto:largil@ipexinc.com]
Sent: Wednesday, May 03, 2006 12:26 PM
To: DiCicco, Jill
Subject: RE: A New ASTM Work Item Registration - WorkItem WK11309 F1412-01e1 - Standard Specification for Polyolefin Pipe and Fittings for Corrosive Waste Drainage Systems

Jill

Thanks

Can I also have F1673? It is part of the project as well.

Larry

-----Original Message-----

From: DiCicco, Jill [mailto:jdicicco@astm.org]
Sent: May 3, 2006 12:09 PM
To: Gill, Larry
Subject: RE: A New ASTM Work Item Registration - WorkItem WK11309 F1412-01e1 - Standard Specification for Polyolefin Pipe and Fittings for Corrosive Waste Drainage Systems

Hi Larry
Attached is the word document for your work item.
Jill

-----Original Message-----

From: webmaster@astm.org [mailto:webmaster@astm.org]
Sent: Tuesday, May 02, 2006 2:59 PM
To: DiCicco, Jill
Subject: A New ASTM Work Item Registration - WorkItem WK11309 F1412-01e1 - Standard Specification for Polyolefin Pipe and Fittings for Corrosive Waste Drainage Systems

This is an automated alert from ASTM International.

To the Administrative Assistant of F17.63 Submitted by: LARRY GILL

Hello JILL DICICCO,

Please send a Word document of the current standard and the ballot item preparation instructions to the technical contact.

When referring to the Work Item please use the identifier: WK11309

Subcommittee Chairman: JAMES SHADE - email: jshade@contech-cpi.com

Technical Contact: LARRY GILL - email: largil@ipexinc.com

The following information was submitted for review.

=====

Work Item Type: Revision

Revised Standard: F1412-01e1 - Standard Specification for Polyolefin Pipe and Fittings for Corrosive Waste Drainage Systems

Sponsoring Subcommittee: F17.63

Target Ballot Date: 10/2006

Target Completion Date: 12-18 months (5/2/2007-11/2/2007)

Rationale: Harmonizing the chemical list in CSA B181.3 and ASTM F1412 and ASTM F1673.

Notify Other Committee:

Task Group Members:

ZIU, CHRISTOPH G

SAMPLE, GARY L

BAIER, SUSAN

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Phone:(610) 832-9500 ÷ Fax: (610) 832-9555 ÷ email: service@astm.org

Website: www.astm.org

Case 1:13-cv-01215-TSC Document 122-7 Filed 12/22/15 Page 80 of 117

EXHIBIT 108

From: Cote, Ron <rcote@NFPA.org>
Sent: Monday, September 14, 2009 7:53 AM
To: Hooper, Kathe <khooper@astm.org>
Cc: Di Pilla, Steven <Steven.DiPilla@esis.com>; Matthews, Diane <DMatthews@NFPA.org>; Solomon, Robert <rsolomon@NFPA.org>
Subject: RE: ASTM E2238 courtesy copies?

Kathe, yes NFPA will abide by the guidelines you prescribed. Thank you for your cooperation and quick action in preparing the review copy of E 2238.

Steve, thanks for doing the background work to get permission to show the document to the committee. I'll distribute the paper copies at the meeting.

Ron Coté, P.E.
Principal Life Safety Engineer
NFPA – Quincy, MA USA

From: Di Pilla, Steven [mailto:Steven.DiPilla@esis.com]
Sent: Thursday, September 10, 2009 2:42 PM
To: Cote, Ron
Cc: khooper@astm.org
Subject: FW: ASTM E2238 courtesy copies?

Ron:

Can you ok this and respond to Kathe – this is for the discussion on evacuation diagrams. I'm working on getting the ISO standard to review as well.

Regards,

Steve...

From: Hooper, Kathe [mailto:khooper@astm.org]
Sent: Wednesday, September 09, 2009 2:41 PM
To: Di Pilla, Steven
Cc: Shanahan, Kevin
Subject: RE: ASTM E2238 courtesy copies?

Dear Steven:

This is in response to your email of 2 September to Kevin Shanahan.

ASTM International grants a limited, non-exclusive license to reproduce and distribute up to 40 copies of E2238-02, in hardcopy format, for use by attendees at the September 2009 NFPA 101 (Safety to Life) Committee on Means of Egress meeting provided the following conditions are met:

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2. All copies of the standard are destroyed after the NFPA 101 (Safety to Life) Committee on Means of Egress members are done the developmental work.
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4. Acknowledgement of the above conditions is sent to Kathe Hooper, ASTM International (khooper@astm.org).

Attached is a PDF file of E2238-02, including the caveat noted in item 1, for your use in making print copies in accordance with the above conditions.

Should you have any questions, please do not hesitate to contact me.

Sincerely,

*Kathe Hooper
ASTM International
100 Barr Harbor Drive, PO Box C700
West Conshohocken, PA 19428-2959
phone: 610-832-9634
fax: 610-832-9635
email: khooper@astm.org*

From: Di Pilla, Steven [mailto:Steven.DiPilla@esis.com]
Sent: Wednesday, September 02, 2009 12:25 PM
To: Shanahan, Kevin
Subject: ASTM E2238 courtesy copies?

Kevin:

I'm a member of E34, and actually wrote most of E2238. Later this month, the NFPA 101 (Safety to Life) Committee on Means of Egress will be meeting. One item on the agenda is evacuation route diagrams. I would like to have permission to distribute courtesy copies of ASTM E2238-02 Standard Guide for Evacuation Route Diagrams so the committee can review it and hopefully recognize it in the code. Can you provide permission to do so?

Regards,

Steve...

Steven Di Pilla, ARM, AIC, AMIM

Director, Research and Development

ESIS, Inc. - Global Risk Control Services

+1 856 673 0632 voice

+1 215 640 5470 fax

steven.dipilla@esis.com e-mail

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EXHIBIT 109

From: Hooper, Kathe </O=ASTM/OU=FIRST ADMINISTRATIVE GROUP/CN=RECIPIENTS/CN=KHOOPER>
Sent: Wednesday, September 16, 2009 2:53 PM
To: 'Ritchey, Joseph' <ritcheyj@p2s.com>
Cc: Morgan, Robert <rmorgan@astm.org>; DiCicco, Jill <jdicicco@astm.org>
Subject: RE: Review by FGDC for teleconference
Attach: D7534.09.pdf; D7384.09.pdf; D7443.09.pdf; D7533.09.pdf

Dear Joe,

This is in response to your email correspondence today with Jill DiCicco and Bob Morgan.

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5. Acknowledgement of the above conditions is sent to Kathe Hooper, ASTM International (khooper@astm.org).

Attached are PDF files of the four standards, including the caveat noted in item 1, for your use in making print copies in accordance with the above conditions.

Should you have any questions, please do not hesitate to contact me.

Sincerely,
Kathe

*Kathe Hooper
ASTM International
100 Barr Harbor Drive, PO Box C700
West Conshohocken, PA 19428-2959
phone: 610-832-9634
fax: 610-834-7018
email: khooper@astm.org*

From: DiCicco, Jill
Sent: Wednesday, September 16, 2009 10:23 AM
To: Hooper, Kathe; 'Ritchey, Joseph'
Cc: Morgan, Robert
Subject: FW: Review by FGDC for teleconference

Hi Joe
Kathe Hooper will need to give permission to reprint any ASTM standard.
I have cc'd Kathe on this e-mail - thank you Kathe.
Jill

From: Ritchey, Joseph [mailto:ritcheyj@p2s.com]
Sent: Wednesday, September 16, 2009 12:32 AM
To: Morgan, Robert
Cc: DiCicco, Jill
Subject: Review by FGDC for teleconference

Bob,

Is your ok sufficient for me to send the following message to Julie at the USGS. She would be forwarding the PDF files of four recently approved standards under D18.01 to about 20 members of the Federal Geodetic Data Committee which is composed of US government agency representatives. I've added a watermark to the files. If you have an alternative watermark or other more formal way for me to request, please let me know.

The Office of Surface Mining is requesting FGDC endorsement of the ASTM standards.

FYI, these PDFs I received from Brendan as "galley proofs".

Thanks,

Joe.

Julie,

Thanks for taking time to meet with us.

Attached are the four standards we discussed.

Please look to see if they are readable and if the watermark is acceptable. If so, you may forward the PDFs to FGDC members for their review.

Thanks,

Joe.

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EXHIBIT 110

From: Morgan, Robert </O=ASTM/OU=FIRST ADMINISTRATIVE GROUP/CN=RECIPIENTS/CN=RMORGAN>
Sent: Tuesday, October 11, 2011 8:16 AM
To: Hooper, Kathe <khooper@astm.org>
Subject: FW: ASTM Review
Attach: Scope of Services 10-11.doc

Hi Kathe

The State of Georgia has prepared a document which references some D18 standards. This is a good thing for us. The have also lifted some information from a standard. Could you please take a look and provide the appropriate caveats. Please let me know if you have any questions.

Thanks for your help.

Bob

From: Lauren Zdunczyk
Sent: Thursday, October 06, 2011 11:05 AM
To: 'rmorgan@astm.org'
Subject: ASTM Review

Hi Bob,

We spoke last month regarding the Georgia Soil and Water Conservation Commission's (GSWCC) use of the working ASTM standard WK11340 "Standard Test Method for Determination of Sediment Retention Devices (SRDs) Performance in Reducing Soil Loss from Rainfall-Induced Erosion.

As I mentioned on the phone, we have received funding to develop a process for accepting new products/practices into the Manual for Erosion and Sediment Control in Georgia. To do this we are testing currently approved products to set benchmark standards.

Please see attached document and let me know if this violates the ASTM copyright policy. If there are any questions, I would like to set up a conference call with you and our Technical Advisory Committee chairman.

Thanks,
Lauren

Lauren Zdunczyk
Urban Program Manager
Phone: 706-552-4474 (New Number)
Fax: 706-552-4486 (New Number)
www.gaswcc.georgia.gov

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EXHIBIT 111

From: Hooper, Kathe </O=ASTM/OU=FIRST ADMINISTRATIVE GROUP/CN=RECIPIENTS/CN=KHOOPER>
Sent: Friday, October 12, 2012 12:47 PM
To: Mawn, Steve <smawn@astm.org>
Cc: West, Lesley <lwest@astm.org>; Pace, John <jpace@astm.org>
Subject: RE: Standards to IAPMO for Their Review on CD

Steve,

I believe Lesley West's department can help you with placing the standards on a CD. I'll copy Lesley on this email. (Lesley, if this is not your area, please let me know.)

We should probably include a caveat on the CD as follows:

"The standards included on this CD-ROM are copyrighted by ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428. The ASTM standards may only be reproduced, in hardcopy format, for use by IAPMO for evaluation purposes and not for any other distribution, republication, or resale. Any other reproduction or use of this document, in full or in part, without the expressed written permission of ASTM is strictly prohibited."

Kathe
Kathe Hooper
ASTM International
100 Barr Harbor Drive, PO Box C700
West Conshohocken, PA 19428-2959
phone: 610-832-9634
fax: 610-834-7018
email: khooper@astm.org

From: Mawn, Steve
Sent: Friday, October 12, 2012 11:54 AM
To: Hooper, Kathe
Cc: Mawn, Steve
Subject: Standards to IAPMO for Their Review on CD

Hi Kathe:

I have been in discussions with John Pace, Kathy Morgan, and Pat Picariello about providing standards to IAPMO that have been updated for them to review and continue to site in the codes.

Bottom line is they need an electronic copy as opposed to a view only site. They will take precautions like destroy the CDs, etc when done.

I am not sure the best way to get this done. We have about 77 standards on the list. If I give you the designations, can you or Micronics put on a CD(s). They are looking for the latest approved versions.

We are trying to get this to them by October 19th or so.

Please advise, thanks.

Steve Mawn
Manager, TCO
ASTM International
smawn@astm.org
610-832-9726

Case 1:13-cv-01215-TSC Document 122-7 Filed 12/22/15 Page 91 of 117

EXHIBIT 112

From: Mawn, Steve </O=ASTM/OU=FIRST ADMINISTRATIVE GROUP/CN=RECIPIENTS/CN=SMAWN>
Sent: Monday, February 2, 2009 1:55 PM
To: Hooper, Kathe <khooper@astm.org>
Subject: RE: E1300 Figures and Tables for Woodhead Publishing: Architectural glass to resist seismic and extreme climatic events (ed. Behr)

I am ok with it, although he is coming close to the line.

His company is a big supporter of ASTM, so I am ok with this.

If he comes back for more, then we can consider charging him.

Thanks,

Steve Mawn
smawn@astm.org
610-832-9726

From: Hooper, Kathe
Sent: Monday, February 02, 2009 1:15 PM
To: Mawn, Steve
Subject: FW: E1300 Figures and Tables for Woodhead Publishing: Architectural glass to resist seismic and extreme climatic events (ed. Behr)

Steve,

Are you okay with them adding a couple more figures to their list (see below). If so, I'll grant permission as we did previously. If you think this is getting to be too much and we should charge, let me know.
Kathe

From: Russell H. Davies [mailto:rhdavies@sgh.com]
Sent: Friday, January 30, 2009 11:03 AM
To: Hooper, Kathe
Cc: Mawn, Steve
Subject: RE: E1300 Figures and Tables for Woodhead Publishing: Architectural glass to resist seismic and extreme climatic events (ed. Behr)

Kathe-

Following your email from 23 January 2009, we are also hoping to use the following figures and tables from E1300 for the book listed above. Can you let us know if we may have permission? We will provide the credit line you requested as part of the references at the end of chapter.

Figure A1.12

Figure X1.1
Figure X3.1

Table 4

Table X6.1

Table X9.1

Thank you for your assistance,
Russell H. Davies, P.E. (NY)
SIMPSON GUMPERTZ & HEGER
212.271.7000 main
212.271.6950 direct
646.462.5899 mobile
212.271.0111 fax
www.sgh.com

From: Hooper, Kathe [mailto:khooper@astm.org]
Sent: Friday, January 23, 2009 11:48 AM
To: Russell H. Davies
Cc: Mawn, Steve
Subject: RE: E1300 Figures and Tables for Woodhead Publishing: Architectural glass to resist seismic and extreme climatic events (ed. Behr)

Dear Mr. Davies:

This is in response to your email of 20 January to Steve Mawn.

ASTM International grants a limited, non-exclusive license to reproduce figures A1.4, A1.6, A1.8, A1.20, A1.25, A1.28, A1.31, A1.33, A1.41; and tables 1, 2, 3, 5 and 6 from ASTM eE1300-07e1 in Chapter 7 of the book titled, Architectural Glass to Resist Seismic and Extreme Climatic Events, provided the following credit line is used:

"Reprinted, with permission, from E1300 - 07^{e1} Standard Practice for Determining Load Resistance of Glass in Buildings, copyright ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428. A copy of the complete standard may be obtained from ASTM, www.astm.org."

Thank you for your interest in ASTM standards.

Kind regards,

Kathe Hooper
ASTM International
100 Barr Harbor Drive, PO Box C700
West Conshohocken, PA 19428-2959
phone: 610-832-9634
fax: 610-832-9635
email: khooper@astm.org

From: Russell H. Davies [mailto:rhdavies@sgh.com]
Sent: Tuesday, January 20, 2009 2:17 PM
To: Mawn, Steve
Subject: E1300 Figures and Tables for Woodhead Publishing: Architectural glass to resist seismic and extreme climatic events (ed. Behr)

Steve-

Here is a list of the E1300 figures and tables we need for our chapter 7 "Glass to Resist Snow Loads" in the above book.

Example	Figures and Tables
7.1	Fig A1.4
7.2	Fig A1.20
7.3	Fig A1.25
7.4	Fig A1.31
7.5	Fig A1.41 Table 1
7.6	Fig A1.6 Fig A1.28 Tables 2-3,5-6
7.7	Fig A1.6 Fig A1.28 Tables 2-3,5-6
7.8	Fig A1.33 Table 1
7.9	Fig A1.41 Table 1
7.10	Fig A1.6 Fig A1.8 Table 1

There are some repeats of the tables and figures, so we hope that we can use permitted information more than once in the chapter.

Can we obtain permission and the files for the chapter? Our deadline is January 30 for the final draft, so let us know if this is possible.

Best,

Russell H. Davies, P.E. (NY)
SIMPSON GUMPERTZ & HEGER

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New York, NY 10001

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212.271.6950 direct
646.462.5899 mobile
212.271.0111 fax

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EXHIBIT 113

From: Hooper, Kathe </O=ASTM/OU=FIRST ADMINISTRATIVE GROUP/CN=RECIPIENTS/CN=KHOOPER>
Sent: Friday, June 5, 2009 8:44 AM
To: 'sales@ninjapaintball.com'
Cc: Sierk, Christine <csierk@astm.org>
Subject: RE: ASTM Copyrights

Dear Mr. Trimble,

This is in response to your emails to Christine Sierk.

Please be advised that ASTM policy does not permit the posting of our material on the public internet.

Should you have any questions, please contact me (phone: 610-832-9634, fax: 610-832-9635, e-mail: khooper@astm.org).

Kind regards,

*Kathe Hooper
ASTM International
100 Barr Harbor Drive, PO Box C700
West Conshohocken, PA 19428-2959
phone: 610-832-9634
fax: 610-832-9635
email: khooper@astm.org*

From: Sierk, Christine
Sent: Wednesday, June 03, 2009 2:07 PM
To: Hooper, Kathe
Subject: FW: ASTM Copyrights

Hi Kathe,
They just resent another email, please see below...
Many Thanks and feel better!
Christi

From: Ninja Paintball [<mailto:sales@ninjapaintball.com>]
Sent: Wednesday, June 03, 2009 1:09 PM
To: Sierk, Christine
Subject: ASTM Copyrights

Christine,

Sorry to bother you but tried to e-mail ASTM and never got a reply.

I am a member for F08-24 Paintball and am having a discussion with some people on a public forum about some standards. What is the policy of ASTM regarding copying parts of a standard for discussion on the internet? Do I need written permission and is there a fee involved?

Thank you for your time,

Ray Trimble
Sales Manager

Ninja Paintball
186 Virginia Rd.
Crystal Lake, IL 60014
877-NinjaUSA (646-5287)
815-477-0007 ext 306
Fax 815-477-7395
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EXHIBIT 114

(FILED UNDER SEAL)

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EXHIBIT 115

From: Hooper, Kathe </O=ASTM/OU=FIRST ADMINISTRATIVE GROUP/CN=RECIPIENTS/CN=KHOOPER>
Sent: Wednesday, July 29, 2009 4:18 PM
To: 'clk.wario@policja.gov.pl'
Subject: RE: polygraph examination

Dear Dominika Słapczyńska:

Thank you for your email today.

Please be advised that ASTM International does not permit the reproduction of the full text of ASTM standards in thesis papers. You may reference the standards by designation number and title, and refer readers to ASTM (www.astm.org) where they may purchase a copy of the standard.

Thank you for your interest in ASTM standards.

Kind regards,

*Kathe Hooper
ASTM International
100 Barr Harbor Drive, PO Box C700
West Conshohocken, PA 19428-2959
phone: 610-832-9634
fax: 610-832-9635
email: khooper@astm.org*

From: Custserv
Sent: Wednesday, July 29, 2009 8:47 AM
To: Naouri, Sarah
Subject: FW: polygraph examination

From: CLK WARIO [<mailto:clk.wario@policja.gov.pl>]
Sent: Wednesday, July 29, 2009 4:30 AM
To: Custserv
Subject: polygraph examination

Dear Sir/Madam

I am from Central Forensic Laboratory of the Polish Police. At the moment I am at the process of completing a forensic expert course. My graduation thesis is titled "The methodology of polygraph examination applied in the Polish justice system". It will be referred to ASTM standards, which I have translated into Polish exclusively for internal use. I would like to ask for your kind permission to photocopy of ASTM standards related to the polygraph examination for the purpose of appending them to the text of my thesis. I would like to assure you that my thesis will be available only in three copies to be presented to an examination board. The use of the ASTM standards is non-commercial.

Dominika Słapczyńska
Central Forensic Laboratory of the Polish Police

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EXHIBIT 116

From: Hooper, Kathe </O=ASTM/OU=FIRST ADMINISTRATIVE GROUP/CN=RECIPIENTS/CN=KHOOPER>
Sent: Friday, March 18, 2011 3:22 PM
To: 'Patrick' <patrick@fsmdrawings.com>
Subject: RE: Copyright & Permissions

Dear Patrick:

Thank you for your email of 15 March.

ASTM International is unable to grant permission to modify ASTM Standard E1527, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, as requested.

Thank you for your interest in ASTM standards.

Kind regards,

*Kathe Hooper
ASTM International
100 Barr Harbor Drive, PO Box C700
West Conshohocken, PA 19428-2959
phone: 610-832-9634
fax: 610-834-7018
email: khooper@astm.org*

From: Patrick [mailto:patrick@fsmdrawings.com]
Sent: Tuesday, March 15, 2011 3:39 PM
To: Hooper, Kathe
Subject: Copyright & Permissions

March 15, 2011

Ms. Kathe Hooper
Copyright & Permissions
ASTM International
100 Barr Harbor Drive
PO Box C700
West Conshohocken PA
19428-2959 USA

RE: Copyright & Permissions

Dear Ms. Hooper:

Our Drafting & Drafting Support Services firm performs field work and data collection services on a large project we produce existing conditions plans for. The contractor we work for is now asking us to provide to collect and provide more historical information and including review and documentation of historical records for notes of significance. In addition, we will be required to interview and document residents for source information.

In review of available standards or contracts available, we have found difficulty finding one that best fits our Historical Assessment Survey profile and find that the E 1527-05, that I purchased yesterday, most closely describes in detail the steps we standards required of the project – were this modified a bit.

My question to you is, can I obtain permission to modify E 1527-05 to fir our particular project?

- Assuming ASTM will allow this, the modified version will be a derivative of E 1527-05 and therefore still belonging to ASTM for Copyright reasons
- We can reference the derivative as Historical Assessment Survey, Phase-1 (HSA Phase-1)
- We will pay License to Use; we would intend to use such form as such:
 - Once on company hard drive to develop and store
 - Once per year to negotiate with contractor for contact
 - One copy to submit to City for pre-contract
 - One Copy to submit to contractor for pre-contract use
 - One copy to submit to State Agency for pre-contract use
 - One copy to submit to Federal Agency for pre-contract use
 - One copy to submit to City for Post-contract
 - One Copy to submit to contractor for Post-contract use
 - One copy to submit to State Agency for Post -contract use
 - One copy to submit to Federal Agency for Post-contract use
 - One copy for office records Post-contract use
 - Eleven (11) copies total
- We would defend and hold harmless ASTM from the any damages for using a modified version of the document
- We would provide ASTM a copy of the derivative document

Please do not hesitate contacting me with questions or concerns about this at the numbers below or by return email. In advance, I want to extend my thanks to you for the time expended considering this matter.

Sincerely,

Patrick

Patrick Doherty, Managing Partner

patrick@fsmdrawings.com

FSM Drawings, LLC

Wellington Trade Center

27 Lowell Street, Suite 503

Manchester NH 03101

A Service Disabled Veteran Owned Company

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EXHIBIT 117

From: Hooper, Kathe </O=ASTM/OU=FIRST ADMINISTRATIVE GROUP/CN=RECIPIENTS/CN=KHOOPER>
Sent: Friday, November 2, 2012 3:16 PM
To: 'nleonard2013@gmail.com'
Cc: Hugo, Joe <jhugo@astm.org>
Subject: RE: Figure Permissions

Dear Mr. Leonard,

This is in response to your email to Joe Hugo.

ASTM International is unable to grant permission to reproduce the photographs and figures from ASTM standards F2248-09 and E1300-12a in your online case study. ASTM International policy does not permit the posting of ASTM standards, or large portions of the ASTM standards, online. You may reference the ASTM standards by designation and title in your case study and refer readers to the ASTM website where they can purchase the ASTM standards.

Thank you for your interest in ASTM standards. Should you have any questions, please contact me.

Kind regards,

Kathe

*Kathe Hooper
ASTM International
100 Barr Harbor Drive, PO Box C700
West Conshohocken, PA 19428-2959
phone: 610-832-9634
fax: 610-834-7018
email: khooper@astm.org*

From: Nicholas Leonard [<mailto:nleonard2013@gmail.com>]
Sent: Thursday, November 01, 2012 12:12 PM
To: Hugo, Joe
Subject: Figure Permissions

Good Afternoon, Joseph,

My Name is Nick and am currently a 5th year senior at The Pennsylvania State University in the Architectural Engineering curriculum. For professor Kevin M. Parfitt's Forensics class, I am writing a case study about the effects of blast loading on laminated glass. To support my article, I am asking for permission to use photographs and figures from ASTM F2248-09 and ASTM 1300 - 12a. Beacuse this article will be posted online through wikispaces, the assignment is no longer an education paper, thus requires permission. I look forward to your response.

Thanks,

Nicholas Leonard

--

Nicholas Leonard
The Pennsylvania State University
Architectural Engineering, Class 2013
Alpha Rho Chi, Professional Architecture Fraternity

484.919.8060

(99) (Y) (il) (i) (l)

Case 1:13-cv-01215-TSC Document 122-7 Filed 12/22/15 Page 107 of 117

EXHIBIT 118

From: Mawn, Steve </O=ASTM/OU=FIRST ADMINISTRATIVE GROUP/CN=RECIPIENTS/CN=SMAWN>
Sent: Monday, February 2, 2009 1:55 PM
To: Hooper, Kathe <khooper@astm.org>
Subject: RE: E1300 Figures and Tables for Woodhead Publishing: Architectural glass to resist seismic and extreme climatic events (ed. Behr)

I am ok with it, although he is coming close to the line.

His company is a big supporter of ASTM, so I am ok with this.

If he comes back for more, then we can consider charging him.

Thanks,

Steve Mawn
smawn@astm.org
610-832-9726

From: Hooper, Kathe
Sent: Monday, February 02, 2009 1:15 PM
To: Mawn, Steve
Subject: FW: E1300 Figures and Tables for Woodhead Publishing: Architectural glass to resist seismic and extreme climatic events (ed. Behr)

Steve,

Are you okay with them adding a couple more figures to their list (see below). If so, I'll grant permission as we did previously. If you think this is getting to be too much and we should charge, let me know.

Kathe

From: Russell H. Davies [mailto:rhdavies@sgh.com]
Sent: Friday, January 30, 2009 11:03 AM
To: Hooper, Kathe
Cc: Mawn, Steve
Subject: RE: E1300 Figures and Tables for Woodhead Publishing: Architectural glass to resist seismic and extreme climatic events (ed. Behr)

Kathe-

Following your email from 23 January 2009, we are also hoping to use the following figures and tables from E1300 for the book listed above. Can you let us know if we may have permission? We will provide the credit line you requested as part of the references at the end of chapter.

Figure A1.12

Figure X1.1

Figure X3.1

Table 4

Table X6.1

Table X9.1

Thank you for your assistance,
Russell H. Davies, P.E. (NY)
SIMPSON GUMPERTZ & HEGER
212.271.7000 main
212.271.6950 direct
646.462.5899 mobile
212.271.0111 fax
www.sgh.com

From: Hooper, Kathe [mailto:khooper@astm.org]
Sent: Friday, January 23, 2009 11:48 AM
To: Russell H. Davies
Cc: Mawn, Steve
Subject: RE: E1300 Figures and Tables for Woodhead Publishing: Architectural glass to resist seismic and extreme climatic events (ed. Behr)

Dear Mr. Davies:

This is in response to your email of 20 January to Steve Mawn.

ASTM International grants a limited, non-exclusive license to reproduce figures A1.4, A1.6, A1.8, A1.20, A1.25, A1.28, A1.31, A1.33, A1.41; and tables 1, 2, 3, 5 and 6 from ASTM eE1300-07e1 in Chapter 7 of the book titled, Architectural Glass to Resist Seismic and Extreme Climatic Events, provided the following credit line is used:

"Reprinted, with permission, from E1300 - 07^{e1} Standard Practice for Determining Load Resistance of Glass in Buildings, copyright ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428. A copy of the complete standard may be obtained from ASTM, www.astm.org."

Thank you for your interest in ASTM standards.

Kind regards,

Kathe Hooper
ASTM International
100 Barr Harbor Drive, PO Box C700
West Conshohocken, PA 19428-2959
phone: 610-832-9634
fax: 610-832-9635
email: khooper@astm.org

From: Russell H. Davies [mailto:rhdavies@sgh.com]
Sent: Tuesday, January 20, 2009 2:17 PM
To: Mawn, Steve
Subject: E1300 Figures and Tables for Woodhead Publishing: Architectural glass to resist seismic and extreme climatic events (ed. Behr)

Steve-

Here is a list of the E1300 figures and tables we need for our chapter 7 "Glass to Resist Snow Loads" in the above book.

Example	Figures and Tables
7.1	Fig A1.4
7.2	Fig A1.20
7.3	Fig A1.25
7.4	Fig A1.31
7.5	Fig A1.41 Table 1
7.6	Fig A1.6 Fig A1.28 Tables 2-3,5-6
7.7	Fig A1.6 Fig A1.28 Tables 2-3,5-6
7.8	Fig A1.33 Table 1
7.9	Fig A1.41 Table 1
7.10	Fig A1.6 Fig A1.8 Table 1

There are some repeats of the tables and figures, so we hope that we can use permitted information more than once in the chapter.

Can we obtain permission and the files for the chapter? Our deadline is January 30 for the final draft, so let us know if this is possible.

Best,

Russell H. Davies, P.E. (NY)
SIMPSON GUMPERTZ & HEGER

| Engineering of Structures and Building Enclosures

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New York, NY 10001

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212.271.6950 direct
646.462.5899 mobile
212.271.0111 fax

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EXHIBIT 119

From: Pace, John </O=ASTM/OU=FIRST ADMINISTRATIVE GROUP/CN=RECIPIENTS/CN=JPACE>
Sent: Wednesday, January 4, 2012 4:08 PM
To: West, Lesley <lwest@astm.org>; Hooper, Kathe <khooper@astm.org>
Subject: RE: Use of Figures from G-1 Standards in MTI Book

Lesley/Kathe-

Given our "triple standard" here on considerations for such requests (Sheldon is "platinum level" because of member/committee leader/BOD/JAI/COP connection status), and the fact that such figures are extracted from various standards so the potential impact on any one is significantly reduced, let's help him out as much as possible, and the only thing needed would be to get the final numbers of figures and detailed # and document from where extracted in a final permission to cover all sides.

Thanks!
JP

From: West, Lesley
Sent: Wednesday, January 04, 2012 3:55 PM
To: Hooper, Kathe
Cc: Pace, John
Subject: Re: Use of Figures from G-1 Standards in MTI Book

Dear Kathe,

We can easily gather these figures for you and Sheldon, if that is what you want. Please let us know if you wish us to proceed.

Thanks,
Lesley

From: "Hooper, Kathe" <khooper@astm.org>
Date: Wed, 4 Jan 2012 15:24:22 -0500
To: Lesley West <lwest@astm.org>
Cc: "Pace, John" <jpace@astm.org>
Subject: FW: Use of Figures from G-1 Standards in MTI Book

Hi Lesley.

Please see the email below from Sheldon Dean. I realize that we typically do not provide figures for reproduction purposes. Since Sheldon has done so much for ASTM (COP Chairman, Chairman of the Finance/Audit Committee, etc.), I was wondering if we would be able to provide him with copies of the figures as he requested? (As he notes in his email, there may be several more figures than those noted below.) Please let me know.

Thank you. Kathe

From: Rodgers, Jen
Sent: Wednesday, December 28, 2011 2:51 PM

To: Hooper, Kathe
Cc: 'sheldondean@att.net'
Subject: FW: Use of Figures from G-1 Standards in MTI Book

Kathe,
I hope you had a wonderful Christmas holiday.

Please see the request below. Do you need to have the final version in order to determine permissions? If permission is granted, can we request better versions of the referenced images from Graphics or Editorial?

Thanks,
Jen

Jennifer L. Rodgers | Manager, Technical Committee Operations
ASTM International | 100 Barr Harbor Drive | West Conshohocken, PA 19428
Phone: +1-610-832-9694 | Fax: +1-610-834-7016
jroddgers@astm.org <<mailto:jroddgers@astm.org>> | www.astm.org <<http://www.astm.org/>>

From: Sheldon Dean [<mailto:sheldondean@att.net>]
Sent: Monday, December 05, 2011 2:50 PM
To: Rodgers, Jen
Cc: Emory Ford
Subject: Use of Figures from G-1 Standards in MTI Book

Jen,

You may remember that I mentioned that I am currently writing a book for MTI (Materials Technology Institute) on laboratory corrosion testing. I am now finishing up the second chapter draft in which I would like to include 5 figures from ASTM publications. These are listed below. At this point, I have scanned the figures and pasted them into the draft chapter. The chapter will be sent to the project team for review shortly, so nothing is finalized yet. My questions are: Is there anything I should do now regarding getting permission to use these figures? I believe that there will be several more figures that I will want to use before the book is finished. (There are about 9 more chapters to go.) My other question is whether there is any way that I could get a better copy than a scanned version? It is not important now, but when the book is finished having a good copy would make the final product look more professional. Finally, if there is a recommended wording for permission to use these figures, I would like to have it.

Figures: G 31, Fig. 1; G 5, Fig. 3; G 36, Fig. X1.2 and Fig. X1.3; Manual 20, Second Ed. Chapter 79, p. 789, Fig. 9.

Thanks for your help on this.

Sheldon

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EXHIBIT 120

From: Pace, John </O=ASTM/OU=FIRST ADMINISTRATIVE GROUP/CN=RECIPIENTS/CN=JPACE>
Sent: Friday, September 5, 2008 10:15 AM
To: Hooper, Kathe <khooper@astm.org>
Subject: RE: Method info

Kathe-

It appears they have extracted the summary information on the test method and included in their description or requirements section, so, yes, this is too much info taken and we can't allow as is.

Am okay with your proposed recommendation to them!

Thanks!
John Pace

From: Hooper, Kathe
Sent: Friday, September 05, 2008 9:46 AM
To: Pace, John
Subject: FW: Method info

Hi John.

When you get a minute, would you please take a look at this website, <http://www.caslab.com/Test-Methods-Search/>, and the email below. I don't think we should give them permission to use the material from the standard as presented on the website as they are taking various portions of the standard. Are you okay with me giving them permission to reproduce the titles and scopes only, for a three year period, provided the usual credit line is used?

Thanks. Kathe

From: Olshefsky, Jim
Sent: Thursday, August 28, 2008 1:17 PM
To: 'Trent Mueller'
Cc: Hooper, Kathe
Subject: RE: Method info

From: Trent Mueller [mailto:tmueller@caslab.com]
Sent: Thursday, August 28, 2008 1:10 PM
To: Olshefsky, Jim
Subject: Method info

Hello Jim,

I am a webmaster working for a laboratory, Columbia Analytical and saw you as the contact on the ASTM website. We have a new educational area of our website now in 'beta' where we are creating a database to help people find test methods they're looking for.

May we have your permission to use some ASTM method abstracts on our website?

<http://www.caslab.com/Test-Methods-Search/>

I have entered in some of your company's test method abstracts as a placeholder and I gave your company credit as the source. Would you like to be represented in this manner?

If you are interested in getting as much exposure as possible, I am happy to add more of your method abstracts if you'd like. I would just need a .csv or Excel file with this information.

Thank you and I look forward to your response,

Trent Mueller

Webmaster

Columbia Analytical Services, Inc.

1317 S. 13th Ave
Kelso, WA 98626
360-577-7222 (office)
360-501-3320 (direct)
www.caslab.com

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EXHIBIT 121

No. 99-40632

IN THE UNITED STATES COURT OF APPEALS
FOR THE FIFTH CIRCUIT

PETER VEECK, doing business as RegionalWeb,

Appellant,

v.

SOUTHERN BUILDING CODE CONGRESS INTERNATIONAL INC.,

Appellee.

*Appeal from the United States District Court
for the Eastern District of Texas
Honorable David Folsom*

Brief for Amici Curiae

**American Medical Association, American National Standards
Institute; American Society of Association Executives; American
Society of Heating, Refrigerating and Air-Conditioning
Engineers; American Society of Mechanical Engineers; National
Fire Protection Association; Texas Municipal League; and
Underwriters Laboratories Inc.**

Filed in Support of Appellee

Southern Building Code Congress International Inc.

Supporting Affirmance

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ATTORNEYS FOR AMICI CURIAE

SUPPLEMENTAL STATEMENT OF INTERESTED PARTIES

Peter Veeck, doing business as RegionalWeb,
Appellant,

v.

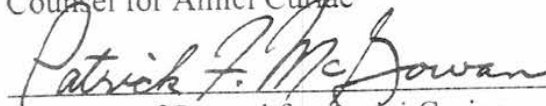
No. 99-40632

Southern Building Code Congress International Inc.,
Appellee.

The undersigned counsel of record certifies that the following listed persons have an interest in the outcome of this case. These representations are made in order that the judgment of this court may evaluate possible disqualification or recusal.

American Medical Association, Amicus Curiae
American National Standards Institute, Amicus Curiae
American Society of Association Executives, Amicus Curiae
American Society of Heating, Refrigerating and Air-Conditioning Engineers,
Amicus Curiae
American Society of Mechanical Engineers, Amicus Curiae
National Fire Protection Association, Inc., Amicus Curiae
Texas Municipal League, Amicus Curiae
Underwriters Laboratories Inc., Amicus Curiae

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Attorney of Record for Amici Curiae

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**CONCISE STATEMENT OF IDENTITY OF AMICI CURIAE,
INTEREST IN THE CASE, AND SOURCE OF AUTHORITY TO FILE**

The model building-related codes involved in the present case are part of a large genre of creative works, including model codes, standards and other reference works (hereinafter collectively referred to as “standards”), that are developed by private, not-for-profit organizations and are made available for the use and adoption by government instrumentalities throughout the United States. Amici curiae are all organizations that are involved in the creation or use of these socially valuable works. Specifically, amici fall into three categories, as follows.

- a. The Administrator and Coordinator of Voluntary Standards Development in the United States.

Amicus curiae, American National Standards Institute (ANSI), is a nonprofit membership organization which, for more than 75 years, has administered and coordinated the voluntary standardization system in the United States. ANSI is a unique partnership of approximately 1,300 companies, 250 professional, technical, trade, labor, academic and consumer organizations and some 30 government agencies. The members of the ANSI federation develop standards and otherwise participate in their development. ANSI facilitates this system by accrediting standards developers and accrediting groups to participate in the development of international standards, and it provides a forum for addressing policy issues related to domestic and international standardization.

b. Standards Development Organizations.

Amici curiae, American Medical Association (AMA), American Society of Association Executives (ASAE), American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), American Society of Mechanical Engineers (ASME), National Fire Protection Association (NFPA) and Underwriters Laboratories Inc. (UL) (hereinafter, collectively referred to, along with ANSI, as “the standards developer amici”) are all not-for-profit organizations that either develop or whose members are involved in developing copyrighted standards which are widely used and adopted by local, state and federal governments, as well as the private sector. Amici use the revenue generated from the sales and licensing of their copyrighted standards to support the creation, refinement and updating of their standards. An additional description of each individual amici may be found in the Motion for Leave to File Brief of Amici Curiae in Support of Appellee, on file with this Court.

c. Organization Representing Certain Government Beneficiaries of Private Standards Development.

The Texas Municipal League (TML) is a non-profit association that represents the interests of its 1,044 member cities (of the 1,197 incorporated cities in Texas). It accomplishes its mission by providing legislative services, legal advice, educational training, and publications to the governing bodies, officials, and employees of those cities. The TML’s member cities routinely adopt by

reference in their laws or otherwise utilize and rely on copyrighted model codes and standards and other reference works.

The codes and standards created and administered by private organizations such as the standards developer amici and their members (and SBCCI) are sought for use by both the private sector and government. In particular, these codes and standards are widely used and adopted by local and state governments and federal authorities throughout the United States who do not otherwise have the necessary facilities and resources to develop these safety standards independently. Private standards developers like those represented by the standards developer amici and their members support their standards development activities through revenues derived from the publication, sale and licensing of codes and standards made possible by the protection of the copyright laws. The ability to maintain and coordinate these standards writing activities would be severely undercut if the law were to be interpreted in a manner by which this work product could be indiscriminately copied by others because of loss of copyright protection.

Amici believe that the position argued by appellant Veeck is an ill-advised departure from established principles of law and logic. The copyrighted SBCCI codes at issue in this case are part of a large genre of creative works developed by not-for-profit standards developers such as the standards developer amici and their members and relied upon by governments such as the municipalities represented

by amicus Texas Municipal League. Standards developers create and maintain at their own substantial expense their copyrighted codes, standards and reference works and make them available to interested parties, government regulators, and the public at large. Loss of copyright protection for these works would drastically undermine the ability of standards developers to fund the ongoing creation and updating of these important works, and would therefore harm the governments and the public who benefit from and rely on the work of these standards developers.

For these reasons, amici have a direct and vital interest in the issues presented to this Court by the present case, and believe that they can provide the Court with additional perspective on the important policy considerations bearing on these issues.

ARGUMENT

The appellant Veeck's primary contention is that, because SBCCI's privately authored standards¹ have been incorporated by reference in the law of the cities of Anna and Savoy, Texas, those works have forever lost their copyright protection. If this sweeping contention were accepted, it would profoundly, deleteriously affect both private standards developers as well as the governments – state, local, and federal – who reap the benefits of private standards development. In Part A of the Argument which follows, amici address the public policy considerations which weigh against such a result. Amici then address, in Parts B and C, Veeck's principal legal arguments urging invalidation of copyright protection for codes and standards which have been referenced in laws.²

¹ For convenience, this brief uses the terms “standards” or “codes and standards” for works ranging from model codes, to compilations of rules, standards, specifications, guidelines, recommended practices, works of nomenclature, and other reference works created by private organizations for the use of the private sector and for government reference in statutes, regulations and ordinances.

² Amici have principally addressed the arguments by Veeck of due process and free expression and the applicability of the copyright merger doctrine. This brief does not, therefore, address in detail the issues framed by Veeck in terms of waiver, fair use, or copyright misuse. These doctrines either do not apply or, as used by Veeck, are merely a recasting in another form of his due process/free expression argument that the public right of access to and notice of the law renders void the copyrights to any work that has been incorporated by reference in a law.

The waiver argument, for example, as argued by Veeck, is that SBCCI, although it expressly reserved its copyrights, nevertheless waived them by allowing towns to adopt its model codes by reference “knowing that the codes would be transformed into something which, by their very nature, should be in the public domain.” (Veeck's Br., VI.B. at 14.) Veeck's waiver argument, therefore, is wholly dependent on the acceptance of Veeck's due process argument that SBCCI's works would enter the public domain upon adoption by reference in the law of Savoy and Anna. Amici address that due process argument at Part B of the Argument.

A. The Destruction of Copyrights in Model Codes and Standards Would Have Damaging Consequences, Not Just for the Non-Profit Organizations Which Develop These Works, but for the Local, State and Federal Governments Which, in Ever Increasing Numbers, Rely on Those Organizations to Produce High Quality Codes and Standards for Government Use and Adoption.

Veeck's position that a work such as the SBCCI model codes enters the public domain the moment any government instrumentality adopts the work by reference in a law potentially has the broadest implications for copyright holders like those represented by the standards developer amici who develop codes and standards which they make available for government use and adoption. More importantly, that position, if accepted, would harm governments such as those represented by amicus TML and would thwart the public interest in encouraging creativity in the development of original works for the use and adoption by these governments.

Similarly, Veeck's argument that his copying is a fair use is suffused with the false assumptions, also addressed in Part B, that SBCCI's work is already in the public domain or that it is, absent Veeck's copying, unavailable in a constitutional due process sense. (See Veeck's Br., VI.D. at 2.) In arguing for fair use, moreover, Veeck can cite to no case holding, as he would have this Court hold, that the copying verbatim of an entire copyrighted work onto the Internet for the purpose of providing unlimited, free downloading by the public could constitute a fair use. Finally, as to copyright misuse, Veeck does not even claim the existence, much less present evidence, of any agreement such as that condemned as a misuse in *Practice Management Information Corp. v. American Medical Ass'n*, 121 F.3d 516, 520-521 (9th Cir. 1997), *modified*, 133 F.3d 1140 (9th Cir. 1998), *cert. denied*, 119 S. Ct. 40 (1998).

All of these issues are treated in the district court's Memorandum and Order and in SBCCI's brief, which amici wholly support. In addition, amicus, NFPA, briefed the waiver and misuse issues in its Amicus Brief and its Supplemental Amicus Brief, filed in the district court, copies of which are a part of the record before this Court.

To appreciate those implications one must understand, first, that the creation of high quality, up-to-date codes and standards is very costly and that private standards developers rely on copyright protection, and the ability it affords to generate revenue from the sales and licensing of the works they create for government adoption, to generate the revenues necessary to sustain their on-going standards creation, refinement and updating.

The development of useful, high-quality, up-to-date, consensus-based standards is a costly, time consuming process. Drafting standards requires wide-ranging creative input from a variety of concerned constituencies and sources of expertise, including representatives of the consuming public, industry, the academy, and the public safety and regulatory community. In addition, the standards drafting process draws heavily on the administrative, technical, and support services provided by the organizations that develop them. The NFPA, for example, develops its proprietary 312 fire safety codes and standards through a voluntary consensus process approved by ANSI, the body which oversees private consensus standards developers to ensure openness, due process and the participation of a balance of relevant interests. The NFPA, for example, arranges for the hundreds of standards-related meetings that take place yearly. It provides logistical, administrative and clerical support to the 229 committees that draft and regularly update standards, and it maintains a large permanent staff of engineers,

fire service experts, administrators, and clerical staff who support the NFPA's standards development activities.

Moreover, the costs of developing standards by private, non-profit standards developers are commonly underwritten, in whole or significant part, by the revenues made possible from the copyright-protected sales and licensing of the standards themselves. Without copyright protection, others would be free to expropriate and sell or give away the works created by standards developers such as amici, and the ability of these standards developers to sustain their standards development activities, as well as other mission related programs, would be thwarted since they could no longer rely on the copyright laws to protect the revenues they realize from sales and licensing of their works.³

The impact of copyright destruction, however, would be felt by more than just the standards developers whose copyrights would be lost. Private standards development provides federal, state and local governments with valuable and high quality codes and standards at no cost to taxpayers, and governments at all levels

³ As noted in a congressional report, a large segment of the standards development community consists of non-profit, general membership organizations such as amici, which are devoted to public safety or other charitable purposes. See U.S. Congress, (Office of Technology Assessment), *Global Standards: Building Blocks for the Future* 50-51 (1992). The congressional report confirms that these types of standards development organizations are heavily dependent on the sale of their standards to support their activities. See *id.*; see also National Research Council, *Standards, Conformity Assessment, and Trade into the 21st Century* 32 (National Academy Press 1995). It is these types of organizations that, through their technical expertise, independence, and the openness and fairness of their processes produce the standards most desirable for government adoption and use.

have recognized the importance of privately developed codes and standards by adopting them in great numbers.

The federal government, for example, relies heavily on privately developed standards. It has been estimated to be the single largest user of private sector developed standards. *See* National Institute of Standards & Technology (U.S. Department of Commerce), “Standards Activities of Organizations in the United States” (NIST Special Publication 806, February 1991); *see, e.g.*, 3 Index to the Code of Federal Regulations at 2090-2091 (Congressional Information Service, Inc. 1999) (indexing over 200 citations in the Code of Federal Regulations to copyrighted NFPA standards).

Moreover, in recognition of the benefits of private standards development, the federal government has made it a policy to adopt such standards unless there is a valid reason for not doing so. For example, the Office of Management and Budget (“OMB”) has directed all federal agencies to incorporate, “in whole, in part, or by reference” privately developed standards for regulatory and other activities “whenever practicable and appropriate,” thereby “[e]liminat[ing] the cost to the Government of developing its own standards.” 63 Fed. Reg. 8545, 8554-8555 (Feb. 19, 1998) (OMB Notice of Final Revision of Circular A-119). For this initiative to succeed, private authors must have an incentive to create works useful to the government. OMB thus requires agencies to “observe and protect the rights

of the copyright holder and any other similar obligations.” *Id.* at 8555. Indeed, the federal policy of utilizing privately developed standards is so strong that “[i]n February 1996, Section 12(d) of Public Law 104-113 . . . was passed by the Congress in order to establish the policies of the existing OMB Circular A-119 in law.” *Id.* at 8546; *see* National Technology Transfer and Advancement Act of 1995, Pub. L. No. 104-113, § 12(d), 110 Stat. 775, 783 (1996). Under Veeck’s position, however, government use or adoption of a private work as part of its regulatory scheme would, by definition, invalidate the author’s copyright.

At the state and local level, it is fair to say that governments could not effectively function without privately developed codes and standards. Virtually all safety regulation requires expertise and experience that is beyond the resources of such governments alone to marshal. While complete statistics are not available due to the multiplicity of state and local governmental entities and methods of regulation, it is clear that many state and local regulations rely, in whole or in part, on privately developed standards.⁴ *See Directory of Building Codes & Regulations* (National Conference of States on Building Codes and Standards, Inc. 1998 ed.)

⁴ A multitude of state laws, for example, adopt or mandate the regulatory adoption of privately authored works. *See, e.g.*, WASH. REV. CODE § 19.27.031 (1999) (adopting the model Uniform Building Code and related standards). Many states, moreover, have enacted express legislative approval of and methods for state and municipal adoption of privately developed works through incorporation by reference. *See, e.g.*, 65 ILL. COMP. STAT. ANN. 5/1-3-1 to -6 (West 1999).

(two volume listing of state and selected municipal adoptions of building-related model codes and standards).

The prime example of this reliance is in the regulation of buildings and structures and related systems such as heating, plumbing and electricity. Virtually all state and local building codes, for example, are based on one of the three model building codes currently available in the United States. Amicus NFPA, for example, has, for close to 100 years, developed and updated every three years an electrical code called the National Electrical Code®. The 1999 edition is a prodigious work exceeding 900 pages and covering a vast array of subjects related to electrical installations. As its name suggests, it has become the national standard for electrical installations and has been adopted in one form or another, depending on state governmental structures, in every state in the union as well as in Puerto Rico and Guam. As another example, amicus ASHRAE, for over 100 years, has provided similar standards and guidelines in the field of indoor environments.

Standards developers like amici, in furtherance of their non-profit fire safety and welfare purposes, offer and encourage the use of their works by governmental entities in setting safety and other regulations and in administering government programs. They do so with the knowledge that these works will have to be made available to anyone who needs them in order to comply with the law or to

participate in the government programs which incorporate those works. Indeed, for these works to have any utility for the governments that utilize them, they must be made generally available, and it is in the interests of the standards developers to see that they are.

The ability of private standards developers to underwrite the development and updating of their standards would be destroyed by the loss of copyright protection, since, without such protection, others could freely publish and sell or otherwise exploit their work product without contributing to any of the substantial development costs. The reduction or elimination of private standards development activity that would result from the loss of copyright protection for private standards developers who developed standards for government use would be a severe loss to the governments and the public who so greatly benefited from these activities. As this brief next discusses, the law does not require a result that would be so harmful to the public interest.

B. There is No Judicially Created Exception to the Copyright Laws for Privately Authored Works that Have Been Referenced in a Law, and No Constitutional Principle of Due Process or Free Expression Requires the Creation of Such an Exception.

Veeck can cite to no case that has held invalid the copyright of a privately authored work on the grounds that it has been incorporated by reference in a law. Indeed, recent precedent is to the contrary. *See Practice Management Info. Corp. v. American Med. Ass'n*, 121 F.3d 516 (9th Cir. 1997), *modified*, 133 F.3d 1140

(9th Cir.), *cert. denied*, 119 S. Ct. 40 (1998) (“PMIC”); *CCC Info. Servs., Inc. v. MacLean Hunter Mkt. Reports, Inc.*, 44 F.3d 61, 73-74 (2d Cir. 1994). A holding invalidating a copyright on these grounds would, moreover, be contrary to the Copyright Act which, by its terms, denies copyright protection only to copyrightable works which have been originally created by the federal government or its officials, 17 U.S.C. §§ 101, 105 (1999),⁵ and which prohibits the seizure or expropriation of a copyright through action by a governmental entity, 17 U.S.C. § 201(e) (1999). Such a holding would also be contrary to firmly established government policy, and to the wide practice of federal, state and local governments throughout the United States in adopting and referencing, without controversy, copyright-protected, privately authored works. *See* discussion *supra* Part A of Argument.

In the face of statute, policy, and practice to the contrary, Veeck invokes constitutional principles of due process and free expression. He claims that these principles require the destruction of a copyright owner’s property rights in a privately developed standard the moment that any governmental authority adopts it, and that this is required in order to ensure the public’s right to full access to and

⁵ Indeed, in enacting Sections 101 and 105 of the Copyright Act, Congress was careful to ensure that “publication or other use by the Government of a private work would not affect its copyright protection in any way.” H.R. REP. NO. 1476, at 60 (1976), *reprinted in* 1976 U.S.C.C.A.N. 5659, 5672.

comment on the laws. The only question, therefore, is whether as a matter of constitutional law, this Court should reject the conclusion of the district court and establish the new principle that Veeck espouses to invalidate SBCCI's otherwise valid copyrights. It should not.

Veeck argues that copyright invalidation is necessary in order to allow the public to "discuss the law." However, this case does not involve any attempt by SBCCI to withhold the work or otherwise prevent discussion of the municipal codes, nor is there any evidence of record that it has used its copyright protection to do so. Absent such evidence, there simply is no issue of free expression raised. *See Schnapper v. Foley*, 667 F.2d 102, 115-116 (D.C. Cir. 1981) (First Amendment claim that copyright in government commissioned work should be voided to guard against government withholding of work rejected where there was no tenable allegation in the case that anyone had been denied access to the work).

Veeck also argues that copyright invalidation is necessary to ensure public availability of government adopted, privately authored works. He invokes the due process principle that individuals cannot be held responsible for complying with the law unless they are given fair notice of what the law requires. As the record in this case demonstrates, however, there simply was no issue as to notice or the availability of the municipal codes, which, as the district court pointed out, Veeck, himself, was easily able to obtain.

As Veeck's easy access to SBCCI's work demonstrates, model codes and standards are frequently more accessible than government drafted works. In sharp contrast to the drafters of a local ordinance who might meet availability requirements exclusively by providing copies for inspection at the municipal clerk's office,⁶ standards developers have every incentive to make their works widely available. Quite apart from the substantial financial incentives to standards developers to achieve wide sales and distribution of their standards, standards developers who develop standards for government use understand that any restriction on access to governmentally adopted standards would result in the loss of confidence and reliance of its beneficiary governments. It is easily foreseeable that, were a standards developer ever to attempt to restrict availability of codes and standards, governments would be unwilling to continue to adopt the developer's work.

Indeed, codes and standards developers typically make their codes and standards available through multiple distribution channels, including, depending on the organization, catalog, telephone, Internet and retail sales, and they offer them in a variety of formats, including individual pamphlets, complete bound sets, loose-leaf subscription services, and various electronic products. In sum, among a

⁶ See, e.g., OR. REV. STAT. § 221.330 (1999) (requiring three copies of any codes adopted by reference to be on file in the office of the city recorder for use and examination by the public).

standards developer's best assurance of revenue, and best arguments for governmental adoption, is the wide and easy availability of its codes and standards. For this reason, despite the long and widespread tradition in the United States of governmental adoption of model codes and standards, Veeck can point to no reported case where lack of notice has been raised as a defense to a failure to comply with a provision contained in a model code or standard. Nor has he presented evidence of lack of notice to anyone in this case.

But even if there did arise a case in which a real question of availability in any constitutional sense were raised, the requested remedy of total copyright invalidation, by destroying the powerful incentive copyright protection provides to create such works, would not be appropriate. As all the recent precedent teaches, so drastic and ultimately destructive a remedy is simply not required to ensure the public's access to the law.⁷

In *PMIC*, for example, the Ninth Circuit affirmed a district court's ruling that the American Medical Association's copyright in a publication known as the Physician's Current Procedural Terminology (the "CPT") was not invalidated when a governmental entity, the Health Care Financing Administration adopted the

⁷ Indeed, while addressing no actual due process notice problem, a rule that the adoption of a standard by a state legislature or administrative body deprived the copyright owner of its property would, as one court has observed, "raise very substantial problems under the Takings Clause of the Constitution." *CCC Info. Servs., Inc.*, 44 F.3d at 74. This Court should construe the copyright law to foreclose these problems. See *Roth v. Pritikin*, 710 F.2d 934, 939 (2d Cir. 1983); accord *NLRB v. Catholic Bishop*, 440 U.S. 490, 501 (1979).

CPT as part of its regulations. *See PMIC*, 121 F.3d at 518-520. The court, noting that the AMA's copyright "pose[d] no realistic threat to public access" and that the AMA "ha[d] no incentive to limit or forgo publication," specifically rejected the assertion that the due process requirement of free access to the law requires a holding of copyright invalidity. *Id.* at 519.

In *CCC Information Services, Inc.*, 44 F.3d at 74, the Second Circuit rejected a similar claim, declining to invalidate the copyright on a privately developed listing of automobile values that several states required insurance companies to use in calculating insurance awards. Agreeing that invalidation of copyright was not necessary to ensure public access, the court pointed to the countervailing good that copyright protection affords in spurring the creation of creative works useful to government. In the court's view, "a hold[ing] that a state's reference to a copyrighted work as a legal standard . . . results in loss of the copyright . . . is antithetical to the interests sought to be advanced by the Copyright Act." *Id.* *See also Texas v. West Publ'g Co.*, 882 F.2d 171, 177 (5th Cir. 1989) (rejecting similar due process claim because "there is no evidence that anyone is being denied access" to the copyrighted work in question).

Even in a First Circuit case on which Veeck attempts to rely, the court, reviewing the grant of a preliminary injunction, expressly declined to rule on the merits of a claim that the BOCA building code, a model building code like that of

SBCCI, had lost its copyright because of state adoption by reference. *See Building Officials & Code Admin. v. Code Tech., Inc.*, 628 F.2d 730 (1st Cir. 1980) (“*BOCA*”). In *BOCA*, the court expressed concern over early precedent, such as *Banks v. Manchester*, 128 U.S. 244 (1888), which ruled that judicial opinions and statutes are in the public domain. Even so, the *BOCA* court acknowledged that an interpretation of these cases as limiting the rule to works created by government itself, “is not without foundation.” *BOCA*, 628 F.2d at 734. Moreover, while reversing the district court’s grant of a preliminary injunction against copying the work, the court stressed that it was not “ruling definitely on the underlying issues,” and left open a possible ruling that would “accommodate modern realities” evident in the “trend towards state and federal adoption” of model standards. *Id.* at 732, 736. As the court observed:

Groups such as BOCA serve an important public function; arguably they do a better job than could the state alone in seeing that complex yet essential regulations are drafted, kept up to date and made available. . . . [T]he rule denying copyright protection to judicial opinions and statutes grew out of a much different set of circumstances than do these technical regulatory codes

Id. at 736.

Rather than wholly invalidating a copyright, it would be far more rational to apply due process principles in an individual case, should one ever arise, of a person actually deprived of notice of laws than to destroy on a blanket basis all of the copyrights of private standards developers together with the broad public

benefit that such copyrights ensure. *See PMIC*, 121 F.3d at 519 (suggesting other remedies for a case of actual unavailability, including fair use and due process defenses for infringers and mandatory licensing at a reasonable royalty.)

As Professor Nimmer has observed in commenting on the argument that privately developed standards should enter the public domain upon adoption into law:

Th[e] limitation on copyright [considered in *BOCA*] was predicated on the public's due process right "to have notice of what the law requires of them so that they may obey it and avoid its sanctions." It is questionable whether this rationale justifies the denial of copyright to a private person or group who produces such a model code. . . . Failure to observe such due process notice requirements would certainly constitute a defense for one charged with violation of the nonpublicized law. It might well also justify, and perhaps require, the recognition of a fair use defense by one who reproduced such copyrighted code for his own personal use. It may be doubted, however, whether it should also immunize from copyright liability a competitive commercial publisher . . . , at least where the copyright owner of the code, or its licensee, has published and adequately disseminated authorized copies of the code. To vitiate copyright, in such circumstances, could, without adequate justification, prove destructive of the copyright interest, in encouraging creativity in connection with the increasing trend toward state and federal adoptions of model codes.

1 Melville B. Nimmer & David Nimmer, *Nimmer on Copyright* § 5.06[C], at 5-91 to 5-92 (1999) (footnotes omitted); *see also CCC Info. Servs., Inc.*, 44 F.3d at 73-74 & n.30 (citing Professor Nimmer's position with approval); *PMIC*, 121 F.3d at 518-520.

As the above-quoted passage suggests, the copyright laws exist, not primarily for the benefit of authors, but for the benefit of the public in that, by giving authors the exclusive rights to their works, copyright serves to stimulate writing and invention that will be of benefit to the public. *See generally* 1 Nimmer & Nimmer, *supra*, § 1.03[A]. Privately developed codes and standards designed for government use and adoption provide the most direct and cogent example imaginable of how copyright protection, by allowing private citizens to underwrite the development costs of these codes and standards, serves to benefit the public. The law need not and should not be interpreted in a way that thwarts this public benefit. *See* discussion *supra* Part A of Argument (discussing the public benefits of private standards development).

C. Because The Ideas Embodied In SBCCI's Codes Can Be Expressed In Many Ways, The Merger Doctrine Does Not Apply.

Veeck appeals to the “merger doctrine” in support of his claim that SBCCI’s codes are not protected by copyright. The argument is meritless.

A copyright protects the expression of an idea but not the idea itself. Under the merger doctrine, however, expression is not protected if it “represent[s] the only means of expressing the ideas” in question. *Educational Testing Servs. v. Katzman*, 793 F.2d 533, 540 (3d Cir. 1986). *See generally* *CCC Info. Servs., Inc.*, 44 F.3d at 68-73. This doctrine is limited to cases in which, as a conceptual matter, “a given idea is inseparably tied to a particular expression.” 3 Nimmer &

Nimmer, *supra*, § 13.03[B][3], at 13-67.⁸ Indeed, cases involving merger are cases in which, unlike here, an idea was *conceptually* susceptible to only one form of expression.⁹ Here, the ideas contained in the SBCCI's codes, as well as other privately developed codes and standards, are plainly susceptible to multiple forms of expression.

Veeck, of course, does not contend that idea and expression merged at the time the SBCCI received a copyright on its works. His argument is rather that merger occurred only later at the point that the work was incorporated into the law of Anna and Savoy. The argument misconstrues the merger doctrine, which

⁸ *Accord Atari Games Corp. v. Nintendo of Am., Inc.*, 975 F.2d 832, 840 (Fed. Cir. 1992) (merger doctrine inapplicable “so long as alternate expression are available”); *Apple Computer, Inc. v. Formula Int’l, Inc.*, 725 F.2d 521, 525 (9th Cir. 1984) (merger doctrine inapplicable when the “idea is capable of various modes of express”) (quotations omitted); *Infodek, Inc. v. Meredith-Webb Printing Co.*, 830 F. Supp. 614, 623 (N.D. Ga. 1993) (“dispositive issue is whether a particular [idea] is capable of being expressed in various different ways”).

⁹ *See Bellsouth Adver. & Publ’g Corp. v. Donnelly Info. Publ’g, Inc.*, 999 F.2d 1436, 1442-43 (11th Cir. 1993) (*en banc*) (organizational structure of yellow pages cannot be copyrighted in which no serious alternatives exist); *Sega Enters. Ltd. v. Accolade Inc.*, 977 F.2d 1510, 1524-26 & n.7 (9th Cir. 1992) (portion of computer program cannot be copyrighted where it is “functional” and not “creative”); *Computer Assocs. Int’l, Inc. v. Altai, Inc.*, 982 F.2d 693, 707-710 (2d Cir. 1992) (same); *Kern River Gas Transmission Co. v. Coastal Corp.*, 899 F.2d 1458, 1464 (5th Cir. 1990) (map publisher cannot copyright the sole means of displaying a pipeline’s location on a map); *Landsberg v. Scrabble Crossword Game Players, Inc.*, 736 F.2d 485, 488-89 (9th Cir. 1984) (denying copyright to those elements of game strategy book that, as a conceptual matter, “must unavoidably be produced” by anyone seeking to describe underlying ideas); *Herbert Rosenthal Jewelry Corp. v. Kalpakian*, 446 F.2d 738, 742 (9th Cir. 1971) (although specific jewelry design can be copyrighted, general “idea” of jeweled bee cannot); *Apple Computer Inc. v. Microsoft Corp.*, 799 F. Supp. 1006, 1023 (N.D. Cal. 1992) (denying copyright to elements of computer software that “serve a purely functional purpose in the same way that the visual displays and user command of the dashboard, steering wheel, gear shift, brakes, clutch and accelerator serve as the user interface of an automobile”), *aff’d in part and rev’d in part*, 35 F.3d 1435 (9th Cir. 1994).

protects the expression of ideas, not laws or other categories of use to which ideas can be put. Clearly, the ideas expressed of the laws of Anna and Savoy are expressible in many ways and that is all that is relevant to an analysis under the merger doctrine.

Veeck, in any case, can cite no authority for his proposition that a user's decision to use a copyright in a particular way (e.g., a governmental entity's decision to incorporate the copyrighted material by reference in regulations) can create a merger and thus terminate a copyright that was originally valid. Indeed, the existing authority is to the contrary.

In *PMIC*, the leading case on the validity of copyrights in privately developed works developed for government use, the Ninth Circuit rejected the merger argument out of hand. *See* 121 F.3d at 520 n.8. The plaintiff in that case argued that the AMA's codes were uncopyrightable "ideas" under § 102(b) of the Copyright Act because a federal agency had mandated their use as part of the Medicaid regulations. In rejecting this argument, the court pointed out that the AMA codes were not the only way to express the facts and ideas involved and that competitors could develop better coding systems and lobby the federal government and private actors to adopt them. As the Ninth Circuit said:

[The AMA's copyright in its medical codes] does not stifle independent creative expression in the medical coding industry. It does not prevent Practice Management or the AMA's competitors from developing comparative or better coding systems and lobbying

the federal government and private actors to adopt them. It simply prevents wholesale copying of an existing system.

Id.

The same can be said for SBCCI's model codes. The SBCCI's copyright in its building code does not stifle independent creative expression in the building code arena. The universe of building standards can be categorized in countless ways and at any level of generality, and the SBCCI must make difficult judgments about the content of and degree of specificity with which its codes should describe different provisions. Indeed, Veeck does not challenge that this is the case.

Belying any claim that copyright of a building code stifles independent creative expression is the fact that SBCCI codes are not the only building/construction codes available for adoption by state and local governments. Currently, the market offers at least two competing sets of building codes, in addition to the SBCCI's building code: the National Codes published by the Building Officials and Code Administrators International, and the Uniform Codes published by the International Conference of Building Officials. Clearly, then, there are, in practice, a variety of model codes from which state and local governments may choose.

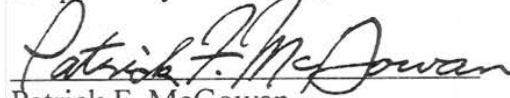
Even if the SBCCI were the dominant or even the only promulgator of such codes, the doctrine of copyright merger would not apply because there are many ways of expressing the ideas embodied in such codes. *Cf. Educational Testing*

Servs., 793 F.2d at 540 (rejecting argument under the merger doctrine that ETS-created tests were invalid or unenforceable because those tests “dominated” the field of college admissions testing). Since the ideas embodied in SBCCI’s code are susceptible of many forms of expression, others can develop competing forms of expression and attempt to convince governments and the public to adopt and use them. The purpose of preventing the stifling of independent creative expression served by the merger doctrine simply does not come into play in this case.

CONCLUSION

For the foregoing reasons, the judgment of the district court should be affirmed.

Respectfully submitted,



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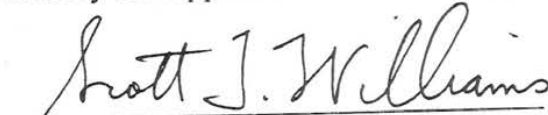
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I hereby certify that true and correct paper and electronic copies of the above BRIEF OF AMICI CURIAE NATIONAL FIRE PROTECTION ASSOCIATION, INC. were served upon all counsel of record, as listed below, via certified mail, return receipt requested, on this 7th day of January, 2000:

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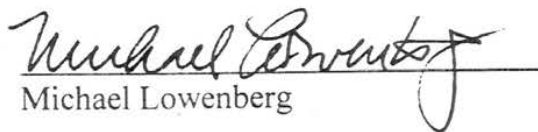
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CERTIFICATE OF COMPLIANCE

Pursuant to FIFTH CIRCUIT RULE 32.2 and .3, the undersigned certifies this brief complies with the type-volume limitations of FED. R. APP. P. 32(a)(7).

1. Exclusive of the portions exempted by FIFTH CIRCUIT RULE 32.2, this brief contains 6105 words.
2. This brief has been prepared using Microsoft Word for Windows 97, version 8.0b in proportionally spaced, serif typeface using Times New Roman 14 point font in text and Times New Roman 12 point font in footnotes.
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Michael Lowenberg

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EXHIBIT 122

**2011
NATIONAL ELECTRICAL CODE®
STYLE MANUAL**

FOREWORD

April 1999

The *National Electrical Code* is used nationally and internationally as the basis for safeguarding persons, buildings, and their contents from hazards arising from the use of electricity. It is vitally important that the text be as explicit as possible and that maximum consistency be achieved in the language used in the text. The *Code* contains those provisions considered necessary for safety and thus is widely used as a basis for legal enforcement in the installation of electrical conductors and equipment in buildings and certain other premises (as detailed in the *Code* itself); this places a major responsibility on those involved in the preparation of the document to use forms of expression that promote uniform interpretation.

The Technical Correlating Committee of the National Electrical Code Committee has recognized these responsibilities and has issued this manual.

Preparation and Date of Adoption. This manual was originally prepared by the Editorial Task Group of the National Electrical Code Committee and adopted by the National Electrical Code Technical Correlating Committee on May 13, 1969. It was amended September 22, 1975, October 11, 1984, October 12, 1989, and May 9, 1994.

In January 1999, the Technical Correlating Committee Task Group on the Usability of the NEC rewrote the manual. It was adopted by the Technical Correlating Committee on March 19, 1999 and by the Standards Council on April 15, 1999. It was amended March 1, 2001, January 15, 2003, and August 9, 2011

Valuable guidance in the preparation of this manual was provided by several members of the Technical Correlating Committee.

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**NATIONAL ELECTRICAL CODE (NEC®)
STYLE MANUAL**

CHAPTER 1 GENERAL

1.1 Purpose. The *National Electrical Code (NEC) Style Manual* is prepared under the guidance of the NEC Technical Correlating Committee and is used to advise members of the Code-Making Panels on the required editorial style and arrangement of the *NEC*. It is intended to be used as a practical working tool to assist in making the *NEC* as clear, usable, and unambiguous as possible.

1.2 Scope. This *Manual* provides editorial and administrative requirements for writing the *National Electrical Code*® (NFPA 70) and the Standard for Electrical Safety in the Workplace (NFPA 70E). Except as otherwise specified in this manual, the *NEC*® and the Standard for Electrical Safety in the Workplace shall comply with the *Manual of Style* for NFPA Technical Committee Documents.

1.2.1 Requirements Not Included. The *NEC Style Manual* does not include many purely editorial and stylistic matters, including, but not limited to, the formatting of tables, capitalization practices, use of hyphens, and units of measurement. For information on these editorial guidelines, see the *Manual of Style* for NFPA Technical Committee Documents..

1.2.2 Format. The *NEC* is formatted differently from other NFPA standards. Examples of these differences include, but are not limited to, arrangement of the document, its internal numbering system, and use of informational notes. The Secretary of the NEC Technical Correlating Committee shall be responsible for recommending to the NEC Technical Correlating Committee resolutions of any apparent conflicts or discrepancies between the *Manual of Style* for NFPA Technical Committee Documents and this manual.

1.3 Regulatory Adoption. Because the *National Electrical Code* is intended to be suitable for adoption as a regulatory document, it is important that it contain clearly stated mandatory requirements in the Code text. This should encourage uniform adoption of the *National Electrical Code* without alterations.

1.4 Examples. The examples shown throughout this manual are intended to be representative of the style and arrangement of the text. The actual text used in the example may or may not match the current document text.

CHAPTER 2 DOCUMENT STRUCTURE AND NUMBERING

2.1 Subdivisions of the NEC. The *National Electrical Code* shall be organized as follows.

2.1.1 Introduction. Article 90 contains the scope of the *NEC* and administrative provisions.

2.1.2 Chapters. Chapters are major subdivisions of the *NEC* that cover broad areas and are divided into articles. Chapters shall be organized as follows:

Chapter 1 General

Article 100 — Definitions

Article 110 — Requirements for Electrical Installations

Chapter 2 Wiring and Protection

Articles 200 – 299

Chapter 3 Wiring Methods and Materials

Articles 300 – 399

Chapter 4 Equipment for General Use

Articles 400 – 499

Chapter 5 Special Occupancies

Articles 500 – 599

Chapter 6 Special Equipment

Articles 600 – 699

Chapter 7 Special Conditions

Articles 700 – 799

Chapter 8 Communications Systems

Articles 800 – 899

Chapter 9 Tables

2.1.3 Articles. Articles are chapter subdivisions that cover a specific subject such as grounding, overcurrent protection, lighting fixtures, and so on. Each article shall have a title. Articles are divided into sections and sometimes into parts.

2.1.4 Parts. If an article is sufficiently large, or where necessary to logically group requirements, it shall be permitted to be subdivided into parts that correspond to logical groupings of information. Parts shall have titles and shall be designated by Roman numerals. (See example.) Parts typically consist of a number of sections; see 2.4.2.1 for section numbering in articles that are subdivided into parts.

Example:

- I Installation
 - II Construction Specifications
 - III Grounding
-

2.1.5 Subdividing Sections. Sections shall be permitted to be subdivided for clarity, with each subdivision representing either a rule or a part of a rule. Up to three levels of subdivisions shall be permitted, and any level shall be permitted to contain a list.

2.1.5.1 List Formats. Lists are a method of structuring the items necessary to complete a rule. Lists in any subdivision level shall be numbered, and listed items shall be single words, phrases, or sentences. Items in a list shall not contain titles.

2.1.5.2 Subdivision Titles. First and second level subdivisions shall have titles. Third level subdivisions shall be permitted to have titles.

2.1.5.3 Subdivision Example. The following illustrates typical subdivision numbering with lists (see also 2.4):

Example:

Chapter — **Chapter 2 Wiring and Protection**

Article — **Article 250 — Grounding**

Part — **II Conductors**

Section — **250.121 Identification and Size of Equipment Grounding Conductors.**
Unless otherwise required in this *Code*, equipment grounding conductors shall be permitted to be bare, covered, or insulated.

Level 1 — **(A) Identification of Conductors.** An insulated or covered conductor larger than No. 6 copper or aluminum shall be permitted to be identified, at the time of installation, by one of the following means:

List item — (1) Stripping the insulation or covering from the entire exposed length.

List item — (2) Coloring the exposed insulation or covering green.

List item — (3) Marking the exposed insulation or covering with green tape or green adhesive labels.

Level 1 — **(B) Size of Conductors.**

Level 2 — **(1) General.** Copper, aluminum, or copper-clad aluminum equipment grounding conductors of the wire type shall not be smaller than shown in Table 250.122.

Level 2 — **(2) Adjustment for Voltage Drop.** If conductors are adjusted to compensate for voltage drop, equipment grounding conductors shall be adjusted according to circular mil area.

Level 2 — **(3) Conductors in Parallel.** If conductors are run in parallel, the equipment grounding conductors shall be sized by either of the following methods.

Level 3 — (a) Each parallel equipment grounding conductor shall be sized on the basis of the ampere rating of the overcurrent protective device. If ground-fault protection for equipment is installed, each parallel equipment grounding conductor run in a raceway shall be to be sized in accordance with Table 250.122.

Level 3 — (b) Parallel equipment grounding conductors in multiconductor cables shall be permitted to be sized in accordance with the Table 250.122 on the basis of the trip rating of the ground-fault protection if the following conditions are met:

List item — (1) Only qualified persons will service the installation.

List item — (2) The trip rating is not greater than the ampacity of a single conductor.

List item — (3) The ground-fault protection is listed for the purpose.

2.1.6 Annexes. Annexes (previously known as appendixes) shall contain references, examples, calculations, tables, and similar nonmandatory material. Annexes do not form part of the requirements of the *National Electrical Code*, and a statement to that effect shall appear at the beginning of each annex. Annexes shall have titles and shall be designated by capital letters.

Example:

Annex C
Conduit and Tubing Fill for Conductors and Fixture Wires
of the Same Size

This annex is not a part of the requirements of this Code but is included for informational purposes only.

Annexes that are used to cross-reference material from one edition of the Code to another edition of the Code shall remain as an annex for a minimum of two code cycles. NFPA staff shall have the responsibility of updating any cross-reference annex.

2.2 Content of NEC Subdivisions.

2.2.1 Scopes. Each article shall have a scope, which shall be the first section of the article. The approval of article scope statements is the responsibility of the Technical Correlating Committee.

Example:

Article 422 — Appliances
 422.1 Scope
Article 280 — Surge Arresters
 280.1 Scope

2.2.2 Definitions. Definitions shall be in alphabetical order and shall not contain the term that is being defined. Definitions shall not contain requirements or recommendations.

2.2.2.1 Article 100. In general, Article 100 shall contain definitions of terms that appear in two or more other articles of the *NEC*.

Examples:

Enclosure. The case or housing of apparatus, or the fence or walls surrounding an installation to prevent personnel from accidentally contacting energized parts, or to protect the equipment from physical damage.

Ground. A conducting connection, whether intentional or accidental, between an electrical circuit or equipment and the earth, or to some conducting body that serves in place of the earth.

2.2.2.2 Definitions in Other Articles. If an article contains one or more definitions, the definition(s) shall be in the second section, shall be listed in alphabetical order, and shall be styled as shown in the following examples.

Examples:

280.2 Definition.

Surge Arrester. A protective device for limiting surge voltages by discharging or bypassing surge current, and it also prevents continued flow of follow current while remaining capable of repeating these functions.

318.2 Definition.

Cable Tray System. A unit or assembly of units or sections and associated fittings forming a rigid structural system used to securely fasten or support cables and raceways.

2.3 Tables and Figures.

2.3.1 Mandatory. Tables and figures, including any accompanying notes, represent mandatory requirements, unless specifically noted as in 2.3.2. Tables and figures shall be referenced in the text and shall be designated by the number of the *NEC* rule in which they are referenced. Each table shall have a title and each figure shall have a caption. Titles and captions shall be as brief as possible, consistent with clarity.

Example:

500.5(D) Marking. Approved equipment shall be marked to show the class, group, and operating temperature referenced to a 40°C ambient. Numbers marked on the equipment nameplates shall be in accordance with Table 500.5(D).

Table 500.5(D) Identification Numbers.

2.3.2 Nonmandatory. When the *NEC* is adopted into law, graphics in the text of the document become mandatory. If a Code-Making Panel wishes to use a table or figure to illustrate only a typical situation, not a mandatory requirement, that table or figure shall be identified as an informational note or be placed in an annex. Each table shall have a title and each figure shall have a caption.

2.4 Numbering Practices. The following two practices are intended to improve *NEC* usability by preventing the continual renumbering of articles and sections from one edition to the next.

2.4.1 Parallel Numbering Within Similar Articles. To the extent possible, Code-Making Panels are encouraged to use the same section numbers (and part numbers, where applicable) for the same purposes within articles covering similar subjects.

Example: A typical family of articles might be organized as follows:

Article 399 — Future Products
 I General
 399.1 Scope
 399.2 Definition
 399.3 Other Articles
 II Installation
 399.10 Uses Permitted
 399.11 Uses Not Permitted
 399.13 Bends
 III Construction Specifications
 399.20 General
 399.21 Sizes
 399.22 Marking

2.4.2 Nonconsecutive Numbering. Articles and sections in the *NEC* are, in general, numbered consecutively. However, gaps or unused numbers are sometimes left for future articles and sections. Assigning numbers to new articles is the responsibility of the *NEC* Technical Correlating Committee, advised by the NFPA Staff Editor. Assigning numbers to new sections within articles is the responsibility of Code-Making Panels, advised by the NFPA Staff Editor.

2.4.2.1 Parts. If an article is subdivided into parts, it is recommended that the section numbering within each part start with the next decade as a minimum.

Example:

Article 498 — Future Equipment
I General
 498.1 – 498.6
II Disconnecting Means
 498.10 – 498.24
III Branch-Circuit Conductors
 498.50 – 498.58
IV Provisions for Combination Loads
 498.100 – 498.110

2.4.3 Numbering Informational Notes. If there are two or more consecutive informational notes, each shall be numbered.

Example

210.12 Arc-Fault Circuit-Interrupter Protection.

(A) Dwelling Units. All 120-volt, single phase, 15 and 20 ampere branch circuits supplying outlets installed in dwelling unit family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, or similar rooms or areas shall be protected by a listed arc-fault circuit interrupter, combination-type, installed to provide protection of the branch circuit.

Informational Note No.1: For information on types of arc-fault circuit interrupters, see UL 1699-1999, Standard for Arc-Fault Circuit Interrupters.

Informational Note No.2: See 11.6.3(5) of NFPA 72-2010, National Fire Alarm and Signaling Code, for information related to secondary power supply requirements for smoke alarms installed in dwelling units.

Informational Note No.3: See 760.41(B) and 760.121(B) for power-supply requirements for fire alarm systems.

2.5 General References to Other Articles. If a listing is made of references to other articles under the section title “Other Articles,” the listing shall be in table format and shall comply with 2.3.

2.6 Exceptions.

2.6.1 Placement and Order. Exceptions shall immediately follow the main rule to which they apply. Where exceptions are made to items within a numbered list, the exception shall clearly indicate the items within the list to which it applies. Exceptions containing the mandatory terms *shall* or *shall not* are to be listed first in the sequence. Permissive exceptions containing *shall be permitted* are to follow any mandatory exceptions and be listed in their order of importance as determined by the Code-Making Panel.

2.6.2 Numbering. Where there are two or more consecutive exceptions, each shall be numbered.

CHAPTER 3 EDITORIAL GUIDELINES

3.1 Mandatory Rules, Permissive Rules, and Explanatory Information.

3.1.1 Mandatory Rules. *Shall, shall not, and shall not be* indicate mandatory NEC rules. Terms such as *is to be, shall be not, and must*, whose meanings are less clear, shall not be used. The terms *may* or *can* shall not be used.

3.1.2 Permissive Rules. *Shall be permitted and it shall be permissible* indicate allowed optional or alternate methods. (Note that these are still mandatory language and constitute rules.) The term *may* shall only be used where it recognizes a discretionary judgment on the part of an authority having jurisdiction.

Example:

The authority having jurisdiction may waive specific requirements in the *Code* or permit alternate methods.

3.1.3 Informational Notes. Informational notes contain explanatory information and shall be located directly after the rule they apply to. Informational Notes shall not be written in mandatory language and shall not contain requirements, make interpretations, or make recommendations. If an Informational Note is needed to explain the text of the code, consideration should be given to rewriting the text of the code to make the rule clear.

Examples of informational notes

Correct (D) 600 Volts Between Conductors. Circuits exceeding 277 volts, nominal, to ground and not exceeding 600 volts, nominal, between conductors shall be permitted to supply the following:

- (1) The auxiliary equipment of electric-discharge lamps mounted in permanently installed luminaires where the luminaires are mounted in accordance with one of the following:
 - a. Not less than a height of 6.7m (22ft) on poles or similar structures for the illumination of outdoor areas such as highways, roads, bridges, athletic fields or parking lots
 - b. Not less than a height of 5.5m (18ft) on other structures such as tunnels

Informational Note: See 410.138 for auxiliary equipment limitations

- (2) Cord-and-plug-connected or permanently connected utilization equipment other than luminaires

(3) Luminaires powered from direct-current systems where the luminaire contains a listed, dc-rated ballast that provides isolation between the dc power source and the lamp circuit and protection from electric shock when changing lamps.

Incorrect (D) 600 Volts Between Conductors. Circuits exceeding 277 volts, nominal, to ground and not exceeding 600 volts, nominal, between conductors shall be permitted to supply the following:

(1) The auxiliary equipment of electric-discharge lamps mounted in permanently installed luminaires where the luminaires are mounted in accordance with one of the following:

a. Not less than a height of 6.7m (22ft) on poles or similar structures for the illumination of outdoor areas such as highways, roads, bridges, athletic fields or parking lots

b. Not less than a height of 5.5m (18ft) on other structures such as tunnels

(2) Cord-and-plug-connected or permanently connected utilization equipment other than luminaires

(3) Luminaires powered from direct-current systems where the luminaire contains a listed, dc-rated ballast that provides isolation between the dc power source and the lamp circuit and protection from electric shock when changing lamps.

Informational Note: See 410.138 for auxiliary equipment limitations.

3.1.4 Exceptions. Exceptions to *NEC* rules shall be used sparingly. If used, exceptions shall convey alternatives or differences to a basic code rule. It is the responsibility of the Code-Making Panel to determine whether the principle can be expressed most effectively as a separate positive code rule or as an exception to a rule. Annex A contains commentary on exceptions.

3.1.4.1 Language. Exceptions shall be permitted to use the terms *shall*, *shall not*, or *shall be permitted* depending on whether they specify a mandatory requirement that is (1) different from the rule, or (2) diametrically opposite to the rule, or (3) whether they permit, but do not require, a variance from the main rule. Exceptions shall be written in complete sentences.

3.1.4.2 Excessive Numbers of Exceptions. When the number of exceptions to a specific code rule becomes excessive, the Code-Making Panel should consider a revision of the basic rule or a rearrangement of the section to better convey the objectives.

3.2 Word Choices.

3.2.1 Unenforceable Terms. The *NEC* shall not contain references or requirements that are unenforceable or vague. The terms contained in Table 3.2.1 shall be reviewed in context, and, if the resulting requirement is unenforceable or vague, the term shall not be used.

Table 3.2.1 Possibly Unenforceable and Vague Terms

Acceptable	Many
Adequate	May
Adjacent	Maybe
Appreciable	Might
Appropriate	Most(ly)
Approximate(ly)	Near(ly)
Available	Neat(ly)
Avoid(ed)	Normal(ly)
Can	Note
Care	Periodic(ally)
Careful(ly)	Practical(ly)
Consider(ed)(ation)	Practices
Could	Prefer(red)
Designed for the purpose	Proper(ly)
Desirable	Ready(ily)
Easy(ily)	Reasonable(y)
Equivalent(ly)	Safe(ly)(ty)
Familiar	Satisfactory
Feasible	Secure(ly)
Few	Several
Frequent(ly)	Significant
Firmly	Similar
Generally	Substantial(ly)
Good	Sufficient(ly)
Lightly	Suitable
Likely	Usual(ly)
Legible(y)	Workmanlike

Examples of unenforceable or vague terms:

Correct: A manual pull station shall be located *within 1 m* of each exit.

Incorrect: A manual pull station shall be located *near* each exit.

Correct: Conduit shall be supported at intervals not exceeding 10 ft.

Incorrect: Conduit shall be adequately supported at periodic intervals.

3.2.2 Expressing Maximum and Minimum Limits. Maximum and minimum limits shall be expressed with the following types of wording.

Examples:

Shall not exceed 300 volts to ground . . .
Shall have a clearance of not less than 5 cm . . .
Shall be supported at intervals not exceeding 1.5 m . . .

3.2.3 Acronyms and Uncommon Abbreviations. All acronyms and any abbreviations that are not in common use shall be spelled out with the abbreviation following in parentheses for the first use of the term in the body of each article. Each subsequent use in the article shall be permitted to be the acronym or abbreviation only.

Examples:

(A) Dwelling Units. All 125-volt, single-phase, 15- and 20-ampere receptacles installed in the locations specified below shall have ground-fault circuit-interrupter (GFCI) protection for personnel.

(B) Nondwelling Units. All 125-volt, single-phase, 15- and 20-ampere receptacles installed in the locations specified below shall have GFCI protection for personnel.

3.2.4 Standard Terms. Standard terms have been established through accepted use or by definition and are to be used in preference to similar terms that do not have such recognition. Annex B provides guidance for syntax, spelling, punctuation, and usage of many standard technical terms.

3.2.5 Special Terms.

3.2.5.1 Ampacity. The term *ampacity*, as defined in Article 100, applies to the current-carrying capacity of conductors only. Therefore, this term shall be used in this sense, but only in this sense. (The ampacity of a No. 14 copper conductor with 60°C insulation is 20.) On the other hand, switches, motors, and similar equipment are not rated in ampacities. Instead, they have current ratings, voltage ratings, horsepower ratings, and so on. Such equipment, therefore, shall not be specified or referred to in “ampacity” values.

3.2.5.2 Authority Having Jurisdiction. The term used to indicate any kind of inspection authority, enforcement authority, or the like, shall be the *authority having jurisdiction*. The use of this term will result in standardization, and it is in keeping with the term used in all other NFPA standards. This term is fully developed and explained in Paragraph 3-3.6.1 of the “NFPA Regulations Governing Committee Projects.”

3.2.5.3 Listed by a Nationally Recognized Testing Laboratory. Use of the terms "Nationally Recognized Testing Laboratory" or "NRTL" shall be avoided. The definition of "listed" in Article 100 provides the details necessary for application in the NEC. The Nationally Recognized Testing Laboratory program, also known as NRTL, is an OSHA program for the accreditation of laboratories that test products for the workplace and is not to be applied generally in the NEC. **When used in NFPA 70 the term "Qualified Electrical Testing Laboratory" is preferred.**

3.2.5.4 Provisions on Guarding. Requirements for guarding shall be stated in as complete a manner as possible and in as nearly standardized form as can be reasonably achieved. For example, the two terms *protected against contact with live parts* and *protected against accidental contact with live parts* do not mean the same thing. It may be necessary for qualified persons to have access to live parts, or it may be desirable to provide varying degrees of protection, depending on the location. Among other things, this distinction could affect the type of ventilation louvers or drains that would be acceptable for some types of equipment. The intent of the type and degree of protection to be required should, therefore, be made clear if possible.

3.2.5.5 Provisions on Protection Against Physical Damage. If *protection against physical damage* is to be one of the requirements, this can be standardized by the use of this terminology instead of using the phrase *provided with mechanical protection* to mean the same thing. In many cases, one or two acceptable methods of providing the intended protection can be stated as examples for better understanding without restricting the rule to a specification-type requirement. There have been some cases, such as in the instance of grounding electrode conductors, where the means provided by the installer for protection against physical damage has impaired the electrical function of the conductor or equipment. This can be largely avoided by an explanatory note if the intent cannot be otherwise made sufficiently clear.

3.2.5.6 Voltage. The term *voltage* is well understood and shall be used in preference to other terms such as *potential*. Because *voltage* is expressed in volts, a requirement should be written to avoid repetition of this term if it is possible to do so without losing clarity.

Example:

Correct: A circuit supplying the primary of an isolating transformer shall not exceed 300 volts between conductors.

Incorrect: The voltage of a circuit supplying the primary of an isolating transformer shall not exceed 300 volts between conductors.

3.2.6 Formulas and Equations. Formulas and equations shall be expressed in standard mathematical symbols.

3.2.7 Units of Measurement.

3.2.7.1 Measurement System of Preference. Metric units of measurement are in accordance with the modernized metric system known as the International System of Units (SI).

3.2.7.2 Dual System of Units. The SI units shall appear first, and the inch-pound units shall immediately follow in parenthesis. In tables the SI and inch-pound units shall appear in separate columns.

3.2.7.3 Permitted Uses of Soft Conversion.

3.2.7.3.1 Trade Sizes. Where the actual measured size of a product is not the same as the nominal size, trade size designators shall be used rather than dimensions. Trade practices shall be followed in all cases.

3.2.7.3.2 Extracted Material. Where material is extracted from another standard, the context of the original material shall not be compromised or violated. Any editing of the extracted text shall be confined to making the style consistent with that of the NEC.

3.2.7.3.3 Industry Practice. Where industry practice is to express units in inch-pound units, the inclusion of SI units shall not be required.

3.2.7.3.4 Safety. Where hard conversion to SI would have a negative impact on safety.

3.2.7.4 Approximate Conversion. The conversion from inch-pound units to SI units shall be permitted to be an approximate conversion.

3.2.7.5 Standard Conversions. See Annex C for information on standard conversions.

3.2.7.6 Units. For dimensions less than 1 m, the SI unit shall be expressed as mm. For dimensions from 1 m to less than 1 km, the SI units shall be expressed in m. For dimensions of 1 km or greater, the SI units shall be expressed as km.

3.3 Writing Style. These guidelines shall be followed to help produce clear, unambiguous, *NEC* language.

3.3.1 General Guidelines.

1. Write in present tense; do not write in future tense.

Example:

Correct: No conductor shall be used in such a manner that its operating temperature exceeds that designated for the type of insulated conductor involved.

Incorrect: No conductor shall be used in such a manner that its operating temperature will exceed that designated for the type of insulated conductor involved.

2. Use simple declarative sentence structure, and keep sentences short. Writing rules in long sentences full of commas, dependent clauses, and parenthetical expressions often creates confusion and misunderstanding. The requirement can be written in two or more short sentences, expressed using a list or table, or both.

Example:

Correct:

(D) Grounded and Grounding Conductors. If a circuit supplies portables or pendants and the circuit includes a grounded conductor, then the following shall apply.

1. Receptacles, attachment plugs, connectors, and similar devices shall be of the grounding type.
1. The grounded conductor of the flexible cord shall be connected to the screw shell of any lampholder or to the grounded terminal of any utilization equipment supplied.

Incorrect:

(D) Grounded and Grounding Conductors. Where a circuit supplies portables or pendants and includes a grounded conductor as provided in Article 200, receptacles, attachment plugs, connectors, and similar devices shall be of the grounding type, and the grounded conductor of the flexible cord shall be connected to the screw shell of any lampholder or to the grounded terminal of any utilization equipment supplied.

3. Use common words and avoid overly complex terminology (see 3.3.4).
 4. Use positive language, rather than negative, wherever possible.
-

Example:

Correct: Boxes used in wet locations shall be listed for wet locations.

Incorrect: Ordinary electrical boxes shall not be used in wet locations.

5. If possible, avoid using dependent clauses, parenthetical phrases, and unclear inverted word order.

Example:

Correct: The definitions in Part I of this article apply throughout the *Code*.

Incorrect: Part I of this article contains definitions intended to apply wherever the terms are used throughout this *Code*.

3.3.2 Lists and Tables. If possible, use lists or tables to present requirements, rather than long text descriptions.

3.3.3 Plural. Unless referring to a single item of equipment, references to electrical components and parts shall be plural rather than singular. This results in greater consistency and makes it clear that the *NEC* provision refers to *all* components or parts of a given type or class.

Examples:

Correct

Luminaires
Receptacles
Switches and circuit breakers
Outlet boxes and enclosures
Installations shall...

Incorrect

a luminaire
a receptacle
a switch or circuit breaker
an outlet box or enclosure
an installation shall...

3.3.4 Word Clarity. Words and terms used in the *NEC* shall be specific and clear in meaning, and shall avoid jargon, trade terminology, industry-specific terms, or colloquial language that is difficult to understand. *NEC* language shall be brief, clear, and emphatic. The following are examples of old-fashioned expressions and word uses that shall not be permitted:

Above or below (referring to text) — avoid using to describe the location of text.

Example:

Correct: ...shall be in accordance with (a), (b), and (c).

Incorrect: ...shall be in accordance with (a), (b), and (c) below.

And such, and the like — it is preferable to rearrange the sentence to use *such as* followed by examples.

As allowed — Use *allowed* instead.

Herein — Usually this word can be dropped without affecting clarity. Otherwise say “in this section” or whatever else is actually meant by *herein*.

If - Use to indicate a condition

Provided that — Use *if* instead.

Thereof — Rewrite sentence to say *of* or *of them*.

Utilize — Use *use* instead.

When - Use to express time.

Where — Use to convey a location or a situation. Not to be used to express time.

3.3.5 Parallel Construction. Parallel construction means stating similar requirements in similar ways for greater consistency. This helps makes the *NEC* clear for users. Lack of consistency often creates confusion, causing users to ask: *Does this difference in wording represent a different requirement? Or is it simply two different ways of trying to say the same thing?* There are several kinds of parallel construction:

Organization and Numbering. If practicable, the subsections of similar articles should be numbered in the same order (see 2.4.1).

Sections. Different sections, within the same article, that reflect similar or closely related subjects, should have similar structures.

Lists. All items in a list should be parallel (that is, singular or plural, written in the same verb tense, using phrases or sentences but not a mix).

CHAPTER 4 REFERENCES AND EXTRACTS

4.1 References to Other NEC Rules. Use references to improve clarity of the rule. Avoid redundant use of references. Do not use a reference if the requirement is already covered by 90.3. Explanatory references shall be in informational notes.

4.1.1 References to a Part Within an Article. References shall not be made to an entire article, such as “grounded in accordance with Article 250” unless additional conditions are specified. References to parts within articles shall be permitted.

Example:

If a switch or circuit breaker serves as the disconnecting means, it shall be within sight from the motor controller and shall comply with Part IX of Article 430.

4.1.2 Other References. Use references to other *NEC* rules to avoid repeating a requirement. If used, references shall include only the number of the rule being referenced; the words *section*, *subsection*, and *paragraph* shall not be used. References shall indicate the subject of the rules being referenced; the subject shall follow the number.

Example:

Wiring and equipment in Class I, Division 1 locations shall be grounded as specified in Article 250 and with the following additional requirements...

Informational Note: See 336.10 for the definition of *first floor*.

Informational Note: See 440.22(B)(2), Exception No. 2, for branch-circuit requirements for cord- and plug-connected equipment.

4.2 References to Other Standards. References to other standards shall not be in mandatory Code text. References to product standards shall be in an informative annex. References to other Standards shall be in the Informational Notes.

4.3 Extracts.

4.3.1 Extracting Material from an NFPA Document and Including It in the NEC. Extracting provides an advantage over multiple references to requirements contained within other NFPA documents. Extracting has the disadvantage of creating a situation where the text of the source document and the user document are not identical due to different revision cycles.

4.3.2 Extract Requirements. To extract material from another NFPA document, the following requirements shall be met.

4.3.2.1 Reason. There shall be a specific technical reason for the extract.

4.3.2.2 Context. A section or paragraph being extracted from another document shall represent a complete thought and shall be entirely extracted. The context of the original material shall not be compromised or violated. Any editing of the extracted text shall be confined to making the style consistent with that of the *NEC* and then only with the concurrence of the committee having primary jurisdiction. Such concurrence shall be obtained through the staff liaison for the source document.

4.3.2.3 Identification. The number, title, and edition of the NFPA document from which the extract is taken shall appear at the beginning of the article in which the extract is used. The document number and paragraph from which the extract is taken shall appear in brackets at the end of the section in which the extract is used.

Example:

Article 514 — Gasoline Dispensing and Service Stations

Informational Note: Rules that are followed by a reference to [NFPA 30, xxx] in brackets contain text that has been extracted from NFPA 30-1996, *Automotive and Marine Service Station Code* (xxx represents the specific sections of that document referenced). Only editorial changes were made to the extracted text to make it consistent with this Code.

514.2 Class I Locations. Table 514.2 shall be applied where Class I liquids are stored, handled, or dispensed and shall be used to delineate and classify service stations. A Class I location shall not extend beyond an unpierced wall, roof, or other solid partition.
[NFPA 30, 7-1 and 7-3].

514.5(B) Attended Service Stations. Emergency controls as specified in Section 514.5(A) shall be installed at a location acceptable to the authority having jurisdiction (AHJ), but controls shall not be more than 100 ft (30 m) from dispensers. [NFPA 30, 9-4.5]

4.3.3 Interpretations of Extracted Material in the NEC. Requests for interpretations of, or proposed revisions to, the extracted text shall be referred to the NFPA technical committee that is responsible for the source document.

CHAPTER 5 EDITORIAL ADMINISTRATIVE RESPONSIBILITIES

5.1 General. Both NFPA committee members and staff shall be responsible for ensuring compliance with this manual.

5.2 Responsibilities of Committee Members.

5.2.1 Code-Making Panels. Panels shall be responsible for ensuring that the *Code* text agreed on at meetings complies with all requirements of this manual. They shall rely on the guidance of NFPA staff.

5.2.2 NEC Technical Correlating Committee. The NEC Technical Correlating Committee shall act as needed to ensure that all text appearing in the Report on Proposals (ROP), Report on Comments (ROC), and final *National Electrical Code* meets the requirements of this *Manual*.

5.3 Responsibilities of NFPA Staff.

5.3.1 NEC Staff Editor. NFPA shall assign a staff editor to assist the NEC Technical Correlating Committee in developing the final text of the *NEC*. This editor shall be responsible for advising committees, panel liaisons, and the NEC Technical Correlating Committee Secretary on matters of *NEC* style.

5.3.2 Panel Liaisons. NFPA staff serving at meetings of Code-Making Panels shall advise panels on matters of *NEC* style.

5.3.3 NEC Technical Correlating Committee Secretary. The Secretary shall be responsible for advising the NEC Technical Correlating Committee on creating *Code* text that complies with the requirements of this manual. If text approved by Code-Making Panels does not comply, the Secretary shall recommend administrative revisions needed to bring the text into compliance, while preserving the panel's intent.

Annex A Editorial Guidance on Exceptions

Exceptions should be re-written into positive language, *if positive language achieves clarity*. The elimination of all exceptions is not intended, nor is it desirable. In some cases, deleting the word *exception* and incorporating the unedited language into a main rule may not lead to clarity. The resulting rule may appear to be self-contradicting instead.

But, in many cases, positive language is much clearer. Two good examples may be found in Sections 240-3 and 240-21. In these instances, the *Code* language once consisted of a short main rule followed by a number of exceptions.

Other good examples of writing exceptions into positive language may be found in the ROP for the 1999 *Code* cycle. Proposed 520-68(A) consisted of a main rule with four exceptions. The main rule was changed to (1) entitled "General." It is clear that this rule would generally apply. The exceptions then became (2) stand lamps, (3) high temperature applications, and (4) breakouts. In 520-68(B), an exception was clearly the easiest way to deal with the difference from the main rule, and Panel 15 retained the exception.

520.68. Conductors for Portables.

(A) Conductor Type.

(1) General. Flexible conductors, including cable extensions, used to supply portable stage equipment shall be listed extra-hard usage cords or cables.

(2) Stand Lamps. Reinforced cord shall be permitted to supply stand lamps where the cord is not subject to severe physical damage and is protected by an overcurrent device rated at not over 20 amperes.

~~Exception No. 1: Reinforced cord shall be permitted to supply stand lamps where the cord is not subject to severe physical damage and is protected by an overcurrent device at not over 20 amperes.~~

(3) High Temperature Applications. A special assembly of conductors in sleeving no longer than 3.3 ft (1 m) shall be permitted to be employed in lieu of flexible cord if the individual wires are stranded and rated not less than 125°C (257°F) and the outer sleeve is glass fiber with a wall thickness of at least 0.025 in. (0.635 mm).

Portable stage equipment requiring flexible supply conductors with a higher temperature rating where one end is permanently attached to the equipment shall be permitted to employ alternate, suitable conductors as determined by a qualified testing laboratory and recognized test standards.

~~Exception No. 2: A special assembly of conductors in sleeving no longer than 3.3 ft. (1 m) shall be permitted to be employed in lieu of flexible cord if the individual wires are stranded and rated not less than 125 degrees C (257°F) and the outer sleeve is glass fiber with a wall thickness of at least 0.025 in. (0.635 mm).~~

~~Exception 3: Portable stage equipment requiring flexible supply conductors with a higher temperature rating where one end is permanently attached to the equipment shall be permitted to employ alternate, suitable conductors as determined by a qualified testing laboratory and recognized test standards.~~

(4) Breakouts. Listed, hard usage (junior hard service) cords shall be permitted in breakout assemblies where all of the following conditions are met:

- a. The cords are utilized to connect between a single multiple connector containing two or more branch circuits and multiple two-pole, 3-wire connectors.
- b. The longest cord in the breakout assembly does not exceed 20 ft (6.1 m).

c. The breakout assembly is protected from physical damage by attachment over its entire length to a pipe, truss, tower, scaffold, or other substantial support structure.

d. All branch circuits feeding the breakout assembly are protected by overcurrent devices rated at not over 20 amperes.

~~Exception No. 4: Listed, hard usage (junior hard service) cords shall be permitted in breakout assemblies where all of the following conditions are met:~~

~~a. The cords are utilized to connect between a single multipole connector containing two or more branch circuits and multiple two pole, 3 wire connectors.~~

~~b. The longest cord in the breakout assembly does not exceed 20 ft. (6.1 m).~~

~~c. The breakout assembly is protected from physical damage by attachment over its entire length to a pipe, truss, tower, scaffold, or other substantial support structure.~~

~~d. All branch circuits feeding the breakout assembly are protected by overcurrent devices rated at not over 20 amperes.~~

b. Conductor Ampacity. The ampacity of conductors shall be as given in Section 400-5, except multiconductor listed extra-hard usage portable cords, that are not in direct contact with equipment containing heat-producing elements, shall be permitted to have their ampacity determined by Table 520-44. Maximum load current in any conductor shall not exceed the values in Table 520-44.

Exception: Where alternate conductors are allowed in Section 520-68(a)(3), ~~Exception Nos. 2 and 3~~, their ampacity shall be as given in the appropriate table in this *Code* for the types of conductors employed.

Annex B Standard Terms

The following list provides guidance for syntax, spelling, punctuation, and usage for many of the standard terms used in the NEC. Many words are listed with an abbreviation to indicate usage. For example, adjective = a, noun = n, and verb = v.

A

abovegrade (a)
aboveground (a)
acknowledgment (no *e*)
adapter
adjustable-speed (a)
affect (v) = to influence; effect (n) = result
air conditioner (n)
air-condition (v)
air-conditioning (a)
airflow (a,n)
airtight (a)
airspace (a)
air-handling (a)
alternating current (n) (abbrev. ac)
alternating-current (a) (abbrev. ac)
American Wire Gage (abbrev. AWG)
ampacity
ampere (see units of measurement)
20-ampere-rated receptacle
and/or (try to avoid)
apparatus (singular and plural)
approved
arc fault (n)
arc-fault(a)
arrester (not *arrestor*)
at least (avoid; use *not less than* to indicate minimum dimension)
autoignition
authority having jurisdiction (abbrev. AHJ)
automatic-reset (a)

B

backfeed
backfill (n,v)
backup (a,n)
back-wiring spaces
belowgrade (a)
belowground (a)
bipolar
braid-covered (a)
branch circuit (n)
branch-circuit (a)
branch-circuit ground-circuit
branch-circuit overcurrent device
buildup (n)
build up (v)
busbar
buses
busing

C

cable tray
cablebus
capacitors

ceiling-suspended (paddle) fan
circuit-grounding connection
circuit-interrupting device
circuit-protective device
circular mil (a)
Class I location
Class I, Division 2, location
clean-up (n)
cleanup (v)
closed-circuit (a)
Code (initial cap and italic when referring to the *NEC*)
cold-storage warehouse
combination-load equipment
common-return (a)
communications system, utilities, equipment, and so on (not *communication*)
concrete-encased electrode
conductive-film heating elements
continuous current rating
control boards
control circuit (a)
constant-current systems
copper (Cu)
copper-clad (a)
cord- and plug-connected appliances
corner-grounded delta systems
corrosion-resistant (a)
counter space
counter-mounted (a)
countertop
crawl space
cross members
cross-connect arrays
cross section (n)
cross-sectional (a)
cubic inches (in.) (see units of measurement)
current-carrying (a)
current-limiting (a)
cut off (v)
cutoff (a,n)
cutouts (n)

D

data (singular and plural, use with plural verb)
dead-front switchboards
de-energize
deicing
delta [use symbol (Δ) in equations]
delta-connected (a)
delta corner grounded
derating
Design B motor
dipole (a)
direct buried (n)
direct-buried (a)
direct current (n) (abbrev. dc)
direct-current (a) (abbrev. dc)
disconnecting means (not disconnection means)
dripproof
drywall
dual-element fuses
ducts (as in air-handling ducts, not for use with raceways)
ductwork

dust-ignitionproof (a)
dustproof (a)
dusttight (a)

E

effect (n) = result; affect (v) = to influence
e.g. (avoid using, use instead *for example*)
electric/electrical (use to be determined by staff)
electrical (as applied to requirements, standards, codes)
electric-discharge lighting
energized (electrically connected to a source of voltage)
engine-generator set
ensure (not *insure*)
equipment (singular and plural)
equipment grounding conductor
etc. (try to avoid, use *and so on, and so forth, or such as*)
Exception No. 1 (when referring to specific exception)
Exception Nos. 1 and 2 (more than one exception)
exception (general, lowercase if used alone)
explosionproof
extra-hard usage

F

faceplate (n)
face-up position
fault-interrupting device
fault-current forces
fiberglass reinforced
field connection box
field-installed (a)
fire alarm circuit
fire-extinguishing equipment
fire-resistant construction
fireproof
firestopped
fixed, electric space-heating equipment
fixed-load (a)
fixed stage equipment
flame retardant (n)
flame-retardant (a)
flat-top raceways
fluxes
foamed-in-place material
forced-air system
full-load current
full-load rating
full-voltage resistor
fuseholder

G

gal (plural), 3-gal (a)
gas-air (a)
gauge, not gage
general-purpose (a)
general-use (a)
gray buses
grain-drying systems
grid-connected systems
grille
ground-fault circuit interrupter (n) (abbrev. GFCI)
ground-fault circuit-interrupter (a) (abbrev. GFCI)
ground-fault (a)

ground fault (n)
ground-fault protective device
grounding electrode conductor
guarding
guest rooms

H

hand-carried (n)
hand-held (a)
hand-supported (a)
handhole (n)
handlamp (n)
hazardous (classified) location
headroom (n)
heat-generating equipment
heat-resistant (a)
heavy-duty (a)
hertz (rather than cycles per second) (see units of measurement)
high-heat type
high-impedance grounded neutral system
high-leg (a)
high-pressure (a)
high-tension (a)
higher-rated (a)
horsepower (see units of measurement)
hour (do not abbreviate)

I

i.e. (avoid using, use *that is*)
if (indicates condition -- can usually be used instead of *provided, provided that, or where*)
igniter
ignitable (not *ignitable*)
impedance
impedance grounded neutral system
in-between (a,n)
indexes (not *indices*)
informational note (lower case when used alone in text)
inrush current
instantaneous-trip (a)
internal-combustion-driven (a)

K

knob-and-tube wiring

L

lampholder
lead-sheathed (a)
less-flammable transformers
let-through (n)
light-emitting diode (abbrev. LED)
likely (use instead of *liable*)
likely to become energized -- failure of insulation on
line-to-ground fault current
line-to-neutral loads
liquidtight (a)
live parts (electric conductors, buses, terminals, or components that are uninsulated or exposed and shock hazard exists)
load-interrupter (a)
load-side (a)
locked-rotor (a,n)
locknut (n)
long-time rating

low-power-factor (a)
low-voltage (a)
lower-rated (a)

M

make-or-break (a)
manhole
maximum
meatpacking (a,n)
messenger-supported (a)
metal (instead of metallic)
metal-clad (a)
metal-enclosed switchgear (n)
metal-sheathed (a)
metal-shield connectors (n)
metallic (use only when directly related to material)
mineral-insulated (a)
minimum
minute (do not abbreviate)
mixer-amplifier (n)
motor control (a)
motor-circuit switch (n)
motor-compressors (n)
motor-driven (a)
motor-generator (a)
motor-generator set (abbrev. MG set)
motor-starting currents
multibuilding
multiconductor (instead of multiple-conductor or multi-conductor)
multimedia
multioutlet
multiphase
multipole

N

nameplate
nameplate rating load
NEC[®] (always italic, with registered trademark on first reference)
network-powered (a)
No. 20 gauge sheet metal
non-current-carrying (a)
non-grounding-type (a)
non-power-limited (a)
nonaccessible
noncontinuous
noncurrent
nondwelling unit (a)
nonexplosionproof
nonflexible
noninductive
noninterchangeability
nonmetallic
nonmetallic-sheathed (a)
nonshielded cable
nontime
not over (instead of *not more than*)
not exceeding (instead of *not more than*)
not less than

O

off-premises source
oil-break (a)
oil-filled reactors
on-premises source
open-conductor supports
open-resistance (a)
optical fiber (a)
other than a dwelling unit (avoid, use *nondwelling*)
overcurrent device
overcurrent protective device
overtemperature (n)
over-temperature (a)
overvoltage (n)

P

panelboard
parallel (instead of multiple conductors)
part-winding start induction
pendant
phase-to-phase (a)
photovoltaic
plug-in units
pole-mounted (a)
positive-pressure ventilation
power conversion system (abbrev. PCS)
power factor (abbrev. PF)
power-conditioning unit (abbrev. PCU)
power-limited (a)
power-supply cord
practicable (means feasible)
practical (means useful)
pre-amplifier
pressure terminal connectors
pressure splicing connectors
protection against physical damage (state conditions)
protector

PVC-coated (a)

R

raceway
re-fused (a)
rectifier-derived dc system
remote-control (a)
resistance temperature device (abbrev. RTD)
resistor
revolutions per minute (abbrev. rpm)
road show (a,n)
root-mean-square (a)
runoff (n)

S

screw shell
screw shell devices
second (referring to time; do not abbreviate)
secondary-circuit fault protection
secondary-to-primary (a)
semiconducting (a)
service-disconnect enclosure
service disconnecting means
service-drop conductors
service-entrance conductors
service-lateral conductors
service-supplied ac (a)
set screw type (a)
set screw (n)
sheet metal (a)
short circuit (n)
short-circuit and ground-fault protective device
short-circuit current ratings
short-time duty
shunt-trip
sidelight
side-wiring spaces
silicon controlled rectifier (abbrev. SCR)
single-conductor cable
single-phase (not 1-phase, but 2-phase, 3-phase, etc.)
single-pole (a)
skin-effect heating
small-appliance branch circuit
solid-state (a)
space-heating equipment
specific-purpose (a)
stage-lighting (a)
stage set lighting
steady-state current
steel-frame (a)
storage battery charging equipment
strain-relief (a)
strut-type (a)
sunlight-resistant (a)
sunroom
supply-side equipment
surface metal raceway
surge arrester (n)
surge-arrester (a)
surge-protective capacitors
switchboards

T

tamper-resistant (a)
temperature-rated (a)
tenpenny nail
that (use where phrase is directly related to statement; do not set off with comma)
through (instead of *thru* or *from* and *to*)
time-current characteristics
time-delay fuse
toward (not towards)
trip-type (a)
turnbuckle (n)
Type MI cable

U

under-carpet (a)
upon (overused, try to avoid; *on* usually correct)

V

voltage
voltage-drop (a)
volt (see units of measurement)
voltmeter

W

wall switch-controlled (a)
weatherproof
wet-pit (n)
when (condition of time)
where (location or situation)
which (additional information in a phrase; set off with commas)
3-wire (a)
wire-bending space
workmanlike (avoid, unenforceable)
workplace
workspace
wye circuit (n)
wye-connected (a)

X

X-ray (not X-Ray)

Units of Measurement

Code text

In the *Code* text, all units of measure, when accompanied by a number value, will be styled as follows:

feet (foot)		ft
meter		m
inch		in.
centimeter		cm
millimeter		mm
square feet		ft ²
square meter		m ²
square inch		in. ²
square centimeter	cm ²	
square millimeter	mm ²	
cubic feet per minute		ft ³ /min
pounds		lb
kilograms		kg
degrees Celsius		°C
degrees Fahrenheit		°F
degree (angle)		degrees
percent		percent
thousand circular mils		kcmil
horsepower		hp (spelled out in heads)
hertz		Hz
kilovolt		kV
kilowatt		kW
kilovolt-amperes		kVA
kilovolt-amperes reactive		kVAr
volt		volt [abbreviate volt (V) when used with a number to mean rating]
ampere		ampere
watt		watt
volt-ampere		volt-ampere (spell out in heads)
megavoltampere		MVA
milliampere		mA
millivolt		mV
millivoltampere		mVA
milliwatt		mW
micrometer		µm
microjoule		µJ
joule		J
kilojoule	kJ	
gallon		gal

Display text (tables, figure callouts, equations, and examples)

Units of measure are abbreviated as follows in display text. Exception: If units are used without a number preceding in a table title or table column head, units should be spelled out.

kilovolt	kV
kilowatt	kW
volt	V
ampere	A
volt-ampere	VA
kilovolt-ampere	kVA
percent	%
thousand circular mils	kcmil
degrees Celsius	°C
degrees Fahrenheit	°F

Hyphenation

Hyphenate all units of measurement when used as adjectives before a noun, except when multiple units of measurement are used in the same phrase.

Example: a 5.5-kW, 240-V dryer
a 2 in. x 2 in. x 2 in. box

Numbers

0.1 (use place-holding number before decimal)

0 through 2000 (use *through* to express range)

1000 (no comma in 4-digit numbers)

10,000

2 ½ (use case fraction)

first (not 1st)

Words or Terms Defined

When words or terms are used as themselves, they are italic.

Examples:

See Article 100 for a definition of *bonding jumper*.

The term *minimum* is used in the requirement.

**Annex C
 Conversion Reference Table**

U.S. Customary Unit	Existing SI Unit	Proposed SI Unit	Equivalent U.S. Unit
¹ / ₃₂ in.		0.8 mm	0.031 in.
0.06 in.	1.52 mm	1.5 mm	0.059 in.
0.0625 in.	1.59 mm	1.59 mm	0.063 in.
¹ / ₁₆ in.		1.6 mm	0.063 in.
0.090 in.	2.29 mm	2.3 mm	0.091 in.
¹ / ₈ in.	3.18 mm	3 mm	0.118 in.
¹ / ₄ in.	6.35 mm	6 mm	0.24 in.
0.375 in.	9.52 mm	9.5 mm	0.374 in.
³ / ₈ in.		10 mm	0.394 in.
¹ / ₂ in.	12.7 mm	13 mm	0.51 in.
⁵ / ₈ in.	15.87 mm	16 mm	0.63 in.
³ / ₄ in.	19 mm	19 mm	0.75 in.
¹⁵ / ₁₆ in.	23.8 mm	24 mm	0.945 in.
1 in.	25.4 mm	25 mm	0.98 in.
1 ¹ / ₄ in.	31.8 mm	32 mm	1.26 in.
1 ¹ / ₂ in.	38 mm	38 mm	1.50 in.
1 ³ / ₄ in.	44.5 mm	45 mm	1.77 in.
1 ⁷ / ₈ in.		48 mm	1.89 in.
2 in.	50.8 mm	50 mm	1.97 in.
2 ¹ / ₈ in.		54 mm	2.13 in.
2 ¹ / ₄ in.		57 mm	2.24 in.
2 ³ / ₈ in.		60 mm	2.36 in.
2 ¹ / ₂ in.	64 mm	65 mm	2.56 in.
3 in.	76 mm	75 mm	2.95 in.
3 ¹ / ₂ in.		90 mm	3.54 in.
3 ³ / ₄ in.		95 mm	3.74 in.
4 in.	102 mm	100 mm	3.94 in.
4 ¹ / ₂ in.		115 mm	4.53 in.
4 ¹¹ / ₁₆ in.		120 mm	4.72 in.
5 in.		125 mm	4.92 in.
5 ¹ / ₂ in.		140 mm	5.51 in.
6 in.	152 mm	150 mm	5.91 in.
6 ¹ / ₂ in.		165 mm	6.5 in.
7 in.		175 mm	6.89 in.
7 ¹ / ₂ in.		190 mm	7.48
8 in.	203 mm	200 mm	7.87 in.
8 ¹ / ₂ in.		215 mm	8.46 in.
9 in.	229 mm	225 mm	8.86 in.
10 in.		250 mm	9.84 in.
11 ¹ / ₂ in.		290 mm	11.42 in.
12 in.	305 mm	300 mm	11.81 in.
13 in.		325 mm	12.8 in.
14 in.		350 mm	13.78 in.

15 in.	381 mm	375 mm	14.76 in.
16 in.	406 mm	400 mm	15.75 in.
17 in.		425 mm	16.73 in.
18 in.	457 mm	450 mm	17.72 in.
19 in.		475 mm	18.7 in.
20 in.		500 mm	19.69 in.
22 in.	557 mm	550 mm	21.65 in.
24 in.	610 mm	600 mm	23.62 in.
26 in.	659 mm	650 mm	25.59 in.
27 in.		675 mm	26.57 in.
30 in.	762 mm	750 mm	29.53 in.
36 in.	914 mm	900 mm	35.73 in.
38 in.		950 mm	37.40 in.
40 in.	1.02 m	1.0 m	39.37 in.
42 in.	1.07 m	1.0 m	39.37 in.
44 in.		1.1 m	43.30 in.
54 in.		1.4 m	55.12 in.
96 in.	2.44 m	2.5 m	98.43 in.
1 ft	305 mm	300 mm	0.98 ft
2 ft	610 mm	600 mm	1.97 ft
2 ½ ft	762 mm	750 mm	2.46 ft
3 ft	914 mm	900 mm	2.95 ft
3.5 ft	1.07 m	1.0 m	3.28 ft
4 ft	1.22 m	1.2 m	3.94 ft
4 ½ ft	1.37 m	1.4 m	4.59 ft
5 ft	1.52 m	1.5 m	4.92 ft
5 ½ ft	1.68 m	1.7 m	5.58 ft
6 ft	1.83 m	1.8 m	5.91 ft
6 ft 6 in.		2.0 m	6.56 ft
6 ½ ft	1.98 m	2.0 m	6.56 ft
6 ft 7 in.	2.0 m	2.0 m	6.56 ft
7 ft	2.13 m	2.1 m	6.89 ft
7 ft 6 in.	2.29 m	2.3 m	7.55 ft
8 ft	2.44 m	2.5 m	8.20 ft
9 ft	2.74 m	2.7 m	8.858 ft
10 ft	3.05 m	3.0 m	9.84 ft
12 ft	3.66 m	3.7 m	12.14 ft
14 ft	4.27 m	4.3 m	14.11 ft
15 ft	4.57 m	4.5 m	15.09 ft
16 ft	4.88 m	4.9 m	16.08 ft
17 ft	5.2 m	5.2 m	17.06 ft
18 ft	5.49 m	5.5 m	18.05 ft
20 ft	6.1 m	6.0 m	19.69 ft
21 ft	6.4 m	6.4 m	20.997 ft
22 ft	6.7 m	6.7 m	21.98 ft
25 ft	7.62 m	7.5 m	24.61 ft
27 ft	8.23 m	8.0 m	26.25 ft
30 ft	9.14 m	9.0 m	29.53 ft

35 ft	10.67 m	11 m	36.09 ft
40 ft	12.2 m	12 m	39.37 ft
50 ft	15.2 m	15 m	49.22 ft
60 ft		18 m	59.06 ft
70 ft		21 m	68.9 ft
75 ft	23 m	23 m	75.46 ft
80 ft	24.4 m	25 m	82 ft
100 ft	30.5 m	30 m	98.43 ft
135 ft		41 m	134.48 ft
140 ft	42.7 m	42 m	137.76 ft
150 ft		45 m	147.65 ft
200 ft	61 m	60 m	196.86 ft
1000 ft	305 m	300 m	984.3 ft

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EXHIBIT 123



Errata

NFPA 70[®]

National Electrical Code[®]

2011 Edition

Reference: Various

Errata No.: 70-11-1

The National Electrical Code Correlating Committee notes the following errors in the 2011 edition of NFPA 70, *National Electrical Code*.

How to Use this Errata Sheet

This is a list of errata to the first printing of the 2011 *NEC*[®]. A first printing is indicated by the numeral 1 as the last digit in the line of number appearing at the bottom of the first page.

1. Page 70-36 **110.14(C)(1):** Revise 310.15(B)(6) to 310.15(B)(7)
2. Page 70-78 **Figure 230.1:** Revise “Source” to “Serving Utility” and 230.49 to 230.32
3. Page 70-86 **230.90 Exception No. 5:** Revise 310.15(B)(6) to 310.15(B)(7)
4. Page 70-102 **Table 250.3:** Revise 300.50(B) to 300.50(C)
5. Page 70-116 **250.68(C)(2)(b):** Revise to read : “By bonding the structural metal frame to one or more of the grounding electrodes, as specified in 250.52(A)(5) or (A)(7) that comply with 250.53(A)(2).”
6. Page 70-129 **250.180:** Revise 250.190 to 250.191
7. Page 70-139 **300.5(C) Exception No. 2:** Revise 330.10(11) to 330.10(A)(11)
8. Page 70-148 **310.10(E) Exception No. 2 (d):** Revise Table 310.13(D) to Table 310.104(D)
9. Page 70-148 **310.10(F):** Remove deletion bullet and add second paragraph to read : “Cables rated above 2000 volts shall be shielded.”
10. Page 70-154 **Table 310.15(B)(16):** Add double asterisk to 18 AWG and 16 AWG copper
11. Page 70-178 **314.16(C)(1):** Revise 314.16(C)(2) to 314.16(C)(3)
12. Page 70-240 **392.18(E):** Revise 392.10(D) to 392.18(D)

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13. Page 70-282 **410.36(A):** Revise 314.27(A)(A)(2) to 314.27(A)(2)
14. Page 70-287 **410.130(D):** Revise Part XIII to Part XII
15. Page 70-288 **410.140(D):** Revise Part XIV to Part XIII
16. Page 70-327 **430.75(A) Exception No. 1 (a):** Revise Part XI to Part XII
17. Page 70-397 **504.70 Exception:** Revise 501.15(F)(3) to 501.17
18. Page 70-435 **Figure 516.3(C)(1):** Revise 3050 m to 3050 mm
19. Page 70-435 **Figure 516.3(C)(2):** Revise 3050 m to 3050 mm in two locations
20. Page 70-562 **645.10(B)(5):** Revise 645.5(D)(2) or (D)(3) to 645.5(E)(2) or (E)(3)
21. Page 70-572 **670.3(B):** Revise 670.4(B) to 670.4(C)
22. Page 70-583 **680.25(B)(1):** Revise 250.30(A)(8) to 250.30(A)(3)
23. Page 70-708 **840.47:** Revise section number from 830.47 to 840.47

Issue Date: April 8, 2011

(Note: Electronic products and pamphlet reprints may have this errata incorporated. For current information about the NFPA Codes and Standards, including this errata, please see www.nfpa.org/codelist)

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EXHIBIT 124



Errata

NFPA 70[®]

National Electrical Code[®]

2011 Edition

Reference: Various

Errata No.: 70-11-2

The National Electrical Code Correlating Committee notes the following errors in the 2011 edition of NFPA 70, *National Electrical Code*.

How to Use this Errata Sheet

This is a list of errata to the first printing of the 2011 *NEC*[®]. A first printing is indicated by the numeral 1 as the last digit in the line of numbers appearing at the bottom of the first page.

1. Page 70-176: **Table 312.6(B), Note 3:** Change reference from 310.14 to 310.106(B).
2. Page 70-190: **324.42(B):** Change the reference in the last line from 800.133(A)(1)(c), Exception No. 2. to 800.133(A)(1)(d), Exception No. 2.
3. Page 70-233: **382.10(A):** Revise last two references from 406.4(D)(3)(b) & 406.4(D)(3)(c) to 406.4(D)(2)(b) & 406.4(D)(2)(c).
4. Page 70-234: **382.42(B):** Change cross reference from 800.133(A)(1)(c) Exception No. 2. to 800.133(A)(1)(d) Exception No. 2.
5. Page 70-282: **410.36(A):** Correct the second cross reference from 314.27(A)(A)(2) to 314.27(A)(2).
6. Page 70-342: **440.8:** Correct cross reference from 430.87 Exception to 430.87, Exception No. 1.
7. Page 70-348: **450.3(B), Exception:** Change cross reference to 430.72(C)(1) through (C)(5).
8. Page 70-815: Change running head to “Informative Annex E”.

Issue Date: January 24, 2012

(Note: Electronic products and pamphlet reprints may have this errata incorporated. For current information about the NFPA Codes and Standards, including this errata, please see www.nfpa.org/codelist)

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EXHIBIT 125

AN INTRODUCTION TO THE NFPA STANDARDS DEVELOPMENT PROCESS





Safety Is Everybody's Business

Disasters can occur anywhere, and they often occur when we least expect them. NFPA® codes and standards are there to provide us with ways to prevent their occurrence, manage their impact, and protect us. One of the most notable features about NFPA's Standards Development Process is that it is a full, open, consensus-based process. "Full consensus" means that anybody can participate and expect fair and equal treatment. This is because safety is everybody's business.



NFPA's unique standards development process incorporates a balance of interests, ensuring that all affected parties have a voice.

A Uniquely Open Process

Today's NFPA® codes and standards trace their origins to the nineteenth century development of automatic sprinkler systems. From the beginning, sprinklers performed well as extinguishing devices; however, they originally were installed in so many different ways that their reliability was uncertain.

In 1895, a small group of concerned citizens representing sprinkler and fire insurance interests gathered in Boston, Massachusetts, to discuss the different approaches. They knew that nine radically different standards for pipe sizing and sprinkler spacing could be found within 100 miles of the city. This installation nightmare had to be resolved. The group eventually created a standard for the uniform installation of sprinklers. This standard, which eventually became NFPA 13, *Standard for the Installation of Sprinkler Systems*, prompted the creation of NFPA as an organization and was NFPA's first safety document. Today NFPA develops some 300 safety codes and standards that deal with a range of subjects related to fire, electrical, chemical, building, and life safety.

NFPA codes and standards can be found in use throughout the world. Whether it's in a computer room in the Pentagon, a research station in Antarctica, a power plant in the Middle East, the space shuttle, the hometown drycleaner or perhaps a historical library in Scotland, NFPA codes and standards are used to provide safety to life and protection of property.

What the Process can do for you

Who Is NFPA?

Founded in 1896, NFPA grew out of that first meeting on sprinkler standards. The *Bylaws* of the Association that were first established in 1896 embody the spirit of the codes and standards development process. Article 2 of these bylaws states in part:

“The purposes of the Association shall be to promote the science and improve the methods of fire protection and prevention, electrical safety and other related safety goals; to obtain and circulate information and promote education and research on these subjects; and to secure the cooperation of its members and the public in establishing proper safeguards against loss of life and property.”

The NFPA mission today is accomplished by advocating consensus codes and standards, research, training, and education for safety related issues. NFPA’s *National Fire Codes*® are administered by more than 250 Technical Committees comprised of approximately 8,000 volunteers and are adopted and used throughout the world. NFPA is a nonprofit membership organization with more than 70,000 members from over 100 nations, all working together to fulfill the Association’s mission.

What type of people are NFPA members? NFPA membership is comprised of architects and engineers (22%); business and industry (5%); health care facilities (12%); fire service (20%); insurance (3%); federal, state, and local government (9%); safety equipment manufacturers and distributors (12%); trade and professional associations (6%); and other fields and disciplines (11%).

The Making of an NFPA Code or Standard

The NFPA Board of Directors has general charge of all of the activities of the NFPA. The Board of Directors issues all of the rules and regulations that govern the development of NFPA codes and standards. The Board also appoints a 13-person Standards Council to oversee the Association’s standards development activities, administer the rules and regulations, and serve as an appeals body.

Members of the Standards Council are thoroughly familiar with the standards development functions of the Association and are selected from a broad range of interests. Appointed by and reporting to the Standards Council are the more than 250 Technical Committees and Panels that serve as the primary consensus bodies responsible for developing and revising NFPA codes and standards. In addition to acting on their own proposed changes, these Technical Committees and Panels act on proposed changes to NFPA documents that can be submitted by any interested party.

To conduct their work, Committees and Panels are organized into projects with an assigned scope of activities. Depending on the scope, a project may develop one code or standard or a group of related codes and standards, and the project may consist of a single Technical Committee or multiple Committees and Panels coordinated by a Correlating Committee that oversees the project to resolve conflicts and ensure consistency.

Rules and Participants

The primary rules governing the processing of NFPA codes and standards are the *NFPA Regulations Governing the Development of NFPA Standards*.

Other applicable NFPA rules include the *Bylaws*, the *Technical Meeting Convention Rules*, the *Guide for the Conduct of Participants in the NFPA Standards Development Process*, and the *Regulations Governing Petitions to the Board of Directors from Decisions of the Standards Council*. All rules and regulations are available on request from NFPA or can be downloaded from NFPA's website at www.nfpa.org/regs. This pamphlet is intended to give general information on NFPA's standards development process. All participants, however, should refer to the actual rules and regulations for a full understanding of this process and for the rules that govern participation.

Participants in NFPA's standards development process are as follows:

- *Interested parties including the general public*
- *Technical Committees, Panels, Correlating Committees*
- *NFPA Membership*
- *Standards Council*
- *NFPA Board of Directors*

For more than one hundred years, NFPA has kept in step with the needs of the safety community, serving as an authoritative source for information, education, and timely research worldwide.



Starting a New Project

Anyone can submit a request for a project to develop a new code or standard in accordance with NFPA Regulations, provided the necessary information is submitted on the New Project Initiation Form (www.nfpa.org/newprojectidea). The Standards Council reviews all requests and, if appropriate, directs that a notice be published in *NFPA News*, and on the NFPA website (www.nfpa.org). This notice asks for:

- *input or need on the proposed project;*
- *information on organizations that may be involved in the subject matter;*
- *a listing of available resource material; and*
- *an indication of who is willing to participate in the project if it is approved.*

The Standards Council reviews all input and information it receives about the proposed new project and, if the Standards Council determines the proposed project should proceed, it either assigns the project to an existing Technical Committee or Panel, or establishes a new one.

The mission of the nonprofit NFPA is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating consensus codes and standards, research, training and education.



Establishing a Consensus Body

In the NFPA standards development process, NFPA Technical Committees and Panels serve as the principal consensus bodies responsible for developing and updating all NFPA codes and standards. Committees and Panels are appointed by the Standards Council and typically consist of no more than thirty voting members representing a balance of interests. NFPA membership is not required in order to participate on an NFPA Technical Committee, and appointment is based on such factors as technical expertise, professional standing, commitment to public safety, and the ability to bring to the table the point of view of a category of interested people or groups. Each Technical Committee is constituted so as to contain a balance of affected interests, with no more than one-third of the Committee from the same interest category. The categories generally used by the Standards Council to classify Committee members are summarized below. The Committee must reach a consensus in order to take action on an item.

Classification of Committee Members



Insurance



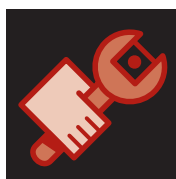
Consumer



Enforcing
Authority



Labor



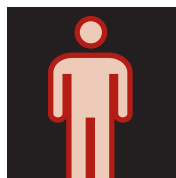
Installer/
Maintainer



Manufacturer



Applied Research/
Testing Laboratory



User



Special
Expert

The Standards Development Process

The NFPA process encourages public participation in the development of its codes and standards. All NFPA codes and standards (also referred to here as NFPA “Standards”) are revised and updated every three to five years in revision cycles that begin twice each year and that normally take approximately two years to complete. Each revision cycle proceeds according to a published schedule that includes final dates for all major events in the process. The process contains four basic steps as follows:

1. Input Stage;
2. Comment Stage;
3. Association Technical Meeting;
4. Council Appeals and Issuance of Standard.

Standards Development Process Facts:

- *Standards are updated every three to five years.*
- *Approximately 8,000 volunteers serve on NFPA Technical Committees.*
- *Technical Committees and Panels represent a variety of balanced interests.*
- *Approximately 250 different Technical Committees and Panels are responsible for document development.*



STEP 1 - Input Stage

Public Input. As soon as the current edition is published, the development of the revised edition begins. A new or revised NFPA Standard enters one of two revision cycles available each year (annual or fall cycle). The revision cycle begins with the acceptance of Public Input, the public notice asking for any interested party to submit input on an existing Standard or a committee-approved new draft Standard. The Call for Public Input is published in *NFPA News*, the *U.S. Federal Register*, the American National Standards Institute's *Standards Action*, on NFPA's website, and other publications. The electronic submission system is available on NFPA's website on the document's information page at www.nfpa.org/document# (example: www.nfpa.org/101). After the Public Input closing date, the Committee or Panel has a period after the closing date to hold their First Draft Meeting.

First Draft Meeting. After the Public Input closing date, the Technical Committee or Panel holds their First Draft Meeting where the Committee revises the Standard. The Committee considers and provides a response to all Public Input. The Committee will use the input in order to help develop First Revisions to the Standard which results in a complete and fully integrated draft known as the First Draft. The First Draft has initial agreement by the Committee based on a simple majority vote during the Meeting to establish a consensus. The final position of the Committee is established by a ballot.

Committee Ballot on First Draft. The First Revisions developed at the First Draft Meeting are balloted; this means that the text the Committee wants revised in the Standard is on the ballot for approval by the Committee. Committee-approved revisions are called First Revisions, and each must be approved by two-thirds of the Committee to appear in the First Draft. Any First Revisions that do not pass the ballot appear in the First Draft Report as Committee Inputs.

First Draft Report Posted. The First Draft Report is posted on the NFPA website. The First Draft Report serves as documentation of the Input Stage and is published for public review and comment. The First Draft Report consists of the First Draft, Public Input, Committee Input, Committee and Correlating Committee Statements, Correlating Input, Correlating Notes, and Ballot Statements. The Report also contains a list of Technical Committee and Correlating Committee Members. The public reviews the First Draft Report in order to submit Public Comments on the First Draft, leading to the next stage of the process.

STEP 2 - Comment Stage

Public Comment. Once the First Draft Report becomes available, there is a public comment period during which anyone may submit a Public Comment on the First Draft. Any objections or further related changes to the content of the First Draft must be submitted at the Comment stage. After the Public Comment closing date, the Committee has a period of time to hold their Second Draft Meeting.

No Public Comments Received-Consent Document. Where no Public Comments are received and the Committee agrees that no Second Revisions are needed, the document does not continue through the Comment Stage and is sent directly to the Standards Council for issuance. Such documents are referred to as Consent Standards. When Public Comments are received and/or the Committee has additional revisions, a Second Draft Meeting is held and the Comment Stage continues.

Second Draft Meeting. After the Public Comment closing date, the Technical Committee or Panel holds their Second Draft Meeting. The Committee starts with the First Draft and makes any additional revisions to the draft Standard. All the Public Comments are considered, and the Committee provides an action and response to each Public Comment. The Committee will use the Public Comments in order to help develop Second Revisions to the Standard which results in a complete and fully integrated draft known as the Second Draft. Like the First Draft, the Second Draft has initial agreement by the Committee based on a simple majority vote during the Meeting to establish a consensus. The final position of the Committee is established by a ballot.

Committee Ballot on Second Draft. The Second Revisions developed at the Second Draft Meeting are balloted; this means that the text the Committee wants revised in the Standard is on the ballot for approval by the Committee. Committee-approved revisions are called Second Revisions, and each must be approved by two-thirds of the Committee to appear in the Second Draft. Any Second Revisions that do not pass the ballot appear in the Second Draft Report as Committee Comments.

Second Draft Report Posted. The Second Draft Report is posted on the NFPA website. The Second Draft Report serves as documentation of the Comment Stage and is published for public review. It consists of the Second Draft, Public Comments with corresponding Committee Actions and Committee Statements, Correlating Notes and their respective Committee Statements, Committee Comments, Correlating Revisions, and Ballot Statements. The Report also contains a list of Technical Committee and Correlating Committee Members. The public reviews the Report in order to decide if they want to submit a NITMAM (see Step 3).

STEP 3 - Association Technical Meeting

Following the completion of the Input and Comment stages, there is further opportunity for debate and discussion of issues through the Association Technical Meeting (Technical Meeting) that takes place at the NFPA Conference & Expo® each June.

Notice of Intent to Make a Motion (NITMAM). Where authorized, anyone who is not satisfied with the work of the Committee can submit a NITMAM. A NITMAM is an amending motion that will be heard by the NFPA Membership for consideration and debate at the Association Technical Meeting; these motions are attempts to change the resulting final Standard from what the Committee submitted for consideration as the Second Draft. Those Standards with no NITMAMs move directly to Standards Council for issuance (see Step 4). The Association Technical Meeting provides an opportunity for the NFPA membership to amend the Technical Committee Reports (i.e., the Committee's or Panel's work) on each proposed new or revised Standard.

Before making an authorized motion at an Association Technical Meeting, the intended maker of the motion must file, in advance of the session, and within the published deadline, a NITMAM. A Motions Committee appointed by the Standards Council then reviews all notices and certifies all proper amending motions. The Motions Committee can also, in consultation with the makers of the motions, clarify the intent of the motions and, in certain circumstances, combine motions that are dependent on each other so that they can be made in one single motion. A Motions Committee report is published in advance of the Association Technical Meeting listing all certified motions. Only Certified Amending Motions, together with certain allowable Follow-Up Motions (that is, motions that have become necessary as a result of previous successful amending motions) are permitted at the Association Technical Meeting.

The specific rules for the types of amending motions that can be made and who can make them are set forth in NFPA's rules, which should always be consulted by those wishing to bring an issue before the membership at an Association Technical Meeting.

What Amending Motions are Allowed. The motions allowed by NFPA rules provide the opportunity to propose amendments to the text of a proposed Standard based on published Second Revisions, Public Comments, and Committee Comments. Allowable motions include motions to accept Public and Committee Comments in whole or in part, to reject a Second Revision (change accepted by the Committee) in whole or in part and can include the related portions of First Revisions. In addition, under certain specified instances, motions can be made to return an entire NFPA Standard to the Committee. This means the Standard will not be issued at this time and will be returned to the Committee to continue its work.

Who Can Make Amending Motions. Those authorized to make motions are also regulated by NFPA rules. In the case of a motion to Accept a Public Comment or an Identifiable Part of a Public Comment, the maker of the motion is limited by NFPA rules to the original submitter of the Comment or his or her duly authorized representative. In all other cases, anyone can make these motions. For a complete explanation, NFPA rules should be consulted.

Action on Motions at the Association Technical Meeting. In order to actually make a Certified Amending Motion at the Association Technical Meeting, the maker of the motion or his or her designated representative must sign in at least one hour before the Technical Meeting begins. In this way a final list of motions can be set in advance of the Technical Meeting. The presiding officer in charge of the Technical Meeting opens the floor to motions on the Standard from the final list of Certified Amending Motions as sequenced by the Motions Committee followed by any permissible Follow-Up Motions. Debate and voting on each motion proceeds in accordance with NFPA rules. NFPA membership is not required in order to make or speak to a motion, but voting is limited to NFPA members who have joined at least 180 days prior to the session and have registered for the Technical Meeting. At the close of debate on each motion, voting takes place, and the motion requires a majority vote to carry. In order to amend a Technical Committee Report, successful amending motions must be confirmed by the responsible Technical Committee or Panel, which conducts a written ballot on all successful amending motions following the meeting and prior to the Standard being forwarded to the Standards Council for issuance.

STEP 4 - Council Appeals and Issuance of Standard

One of the primary responsibilities of the NFPA Standards Council, as the overseer of the NFPA standards development process, is to act as the official issuer of all NFPA codes and standards.

Consent Standards. Some Standards receive no controversial proposed changes, and therefore, no NITMAMs are filed. In some cases, NITMAMs are submitted on Standards up for revision, but none of the NITMAMs are certified as proper by the Motions Committee. In both these cases where no NITMAMs are submitted or no NITMAMs are certified as proper for a specific Standard, the Standard is not placed on the agenda for the Association Technical Meeting, but is instead sent directly to the Standards Council for issuance. Such Standards are referred to as Consent Standards.

Issuance of Standards. When the Standards Council convenes to issue an NFPA Standard it also hears any appeals related to the Standard. Appeals are an important part of assuring that all NFPA rules have been followed and that due process and fairness have been upheld throughout the standards development process. The Council considers appeals both in writing and through the conduct of hearings at which all interested parties can participate. It decides appeals based on the entire record of the process as well as all submissions on the appeal. After deciding all appeals related to a Standard before it, the Council, if appropriate, proceeds to issue the Standard as an official NFPA Standard. Subject only to limited review by the NFPA Board of Directors, the decision of the Standards Council is final, and the new NFPA Standard becomes effective twenty days after Standards Council issuance.

Sequence of Events for the Standards Development Process

As soon as the current edition is published, a Standard is open for Public Input.

Step 1 – Input Stage

- Input accepted from the public or other committees for consideration to develop the First Draft
- Committee holds First Draft Meeting to revise Standard (23 weeks)
Committee(s) with Correlating Committee (10 weeks)
- Committee ballots on First Draft (12 weeks)
Committee(s) with Correlating Committee (11 weeks)
- Correlating Committee First Draft Meeting (9 weeks)
- Correlating Committee ballots on First Draft (5 weeks)
- First Draft Report posted

Step 2 – Comment Stage

- Public Comments accepted on First Draft (10 weeks)
- If Standard does not receive Public Comments and the Committee does not wish to further revise the Standard, the Standard becomes a Consent Standard and is sent directly to the Standards Council for issuance (see Step 4)
- Committee holds Second Draft Meeting (21 weeks)
Committee(s) with Correlating Committee (7 weeks)
- Committee ballots on Second Draft (11 weeks)
Committee(s) with Correlating Committee (10 weeks)
- Correlating Committee First Draft Meeting (9 weeks)
- Correlating Committee ballots on First Draft (8 weeks)
- Second Draft Report posted

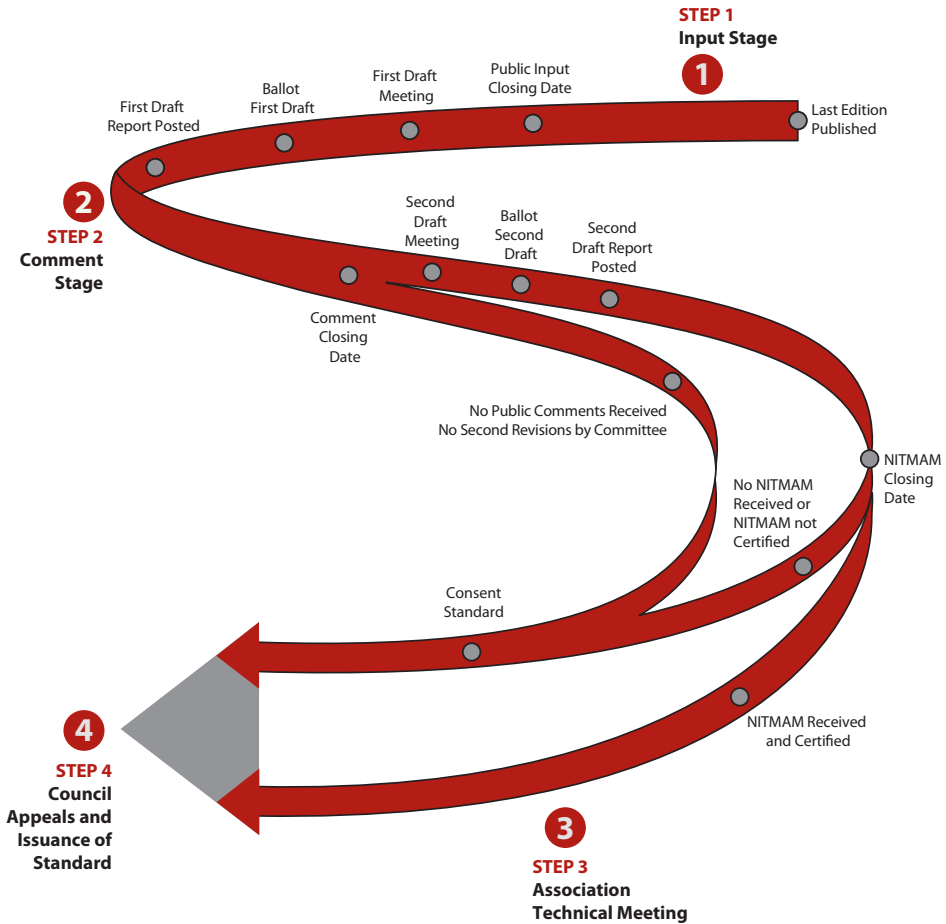
Step 3 – Association Technical Meeting

- Notice of Intent to Make a Motion (NITMAM) accepted (5 weeks)
- NITMAMs are reviewed and valid motions are certified for presentation at the Association Technical Meeting
- Consent Standard bypasses Association Technical Meeting and proceeds directly to the Standards Council for issuance
- NFPA membership meets each June at the Association Technical Meeting and acts on Standards with “Certified Amending Motions” (certified NITMAMs)
- Committee(s) and Panel(s) vote on any successful amendments to the Technical Committee Reports made by the NFPA membership at the Association Technical Meeting

Step 4 – Council Appeals and Issuance of Standard

- Notification of intent to file an appeal to the Standards Council on Association action must be filed within 20 days of the Association Technical Meeting
- Standards Council decides, based on all evidence, whether or not to issue the Standard or to take other action

The Standards Development Process



Notes on Sequence of Events for the Standards Development Process:

- Time periods are approximate; refer to published schedules for actual dates.
- It takes approximately 101 weeks for Annual revision cycle documents receiving certified amending motions.
- It takes approximately 141 weeks for Fall revision cycle documents receiving certified amending motions.

Resources

NFPA Offers Resources to Support its Standards Development Process and Improve Public Safety

NFPA documents are constantly evolving based on extensive public input and the dedicated involvement of highly qualified committee and panel volunteers. NFPA Technical Committees and others work to keep their documents current with the latest knowledge and technologies. In addition to the time and resources contributed by the thousands of dedicated volunteers, the Association helps facilitate the work of the Technical Committees and otherwise promotes NFPA's public safety mission with these important resources:

1. Statistical Data: The Fire Analysis and Research Division's One-Stop-Data-Shop (OSDS) produces a large range of annual reports and special studies on the aspects of the nation's fire problems. The data from the OSDS may be requested by Technical Committee Chairs or Staff Liaisons regarding a specific fire hazard or safety issue. National estimates of specific fire problems are generally compiled from the NFPA survey with details from the United States Fire Administration's National Fire Incident Reporting System (NFIRS). Various other data resources are also used as appropriate.

2. Event Analysis: In order to provide new information and learn lessons that can assist NFPA Technical Committees and others, the NFPA Fire Investigations Department conducts on-site investigations of disasters or near-disasters occurring all around the world. The department's reports analyze significant events (e.g., fires or explosions) focusing on how NFPA codes and standards were utilized and how NFPA codes and standards might have provided additional protection in cases where the documents were not followed.

3. Research: The Fire Protection Research Foundation (FPRF) is an important resource for the NFPA codes and standards making process. The FPRF conducts independent research on specific topics of relevance to NFPA's technical committee and code-making panel projects. Research reports are published and are utilized by Technical Committees as a resource for pertinent up-to-date information. From time to time, Committees will directly seek specific research to be done regarding the subject covered by their document. The FPRF will determine whether or not the specific study has been done before, and if it has not, they can facilitate obtaining the needed information from research, testing, consulting, or other sources. Some of these projects are completed using the FPRF/NFPA Code Fund, which is supported each year by a financial contribution from NFPA. Any representative from the Technical Committees can submit ideas to the Code Fund. The submitted project ideas are reviewed on an annual basis.

4. Empowerment Through Education: The NFPA Public Education Division is the source of fire and other hazard information to reduce residential fire deaths, injury, and property loss. The division focuses on three objectives:

- Position the NFPA Public Education Division as the primary source for fire and life safety information.
- Continuously improve strategies to train the fire service how best to reach high-risk populations.
- Increase awareness of and involvement in Fire Prevention Week.

Activities within the division include reaching out to local fire departments and schools through fire safety campaign kits and an annual Scholastic project, networking with state/provincial fire safety educators, providing fire safety information on nfpa.org and fun activities on sparky.org, advancing various training opportunities at the NFPA Conference & Expo, producing the monthly Safety Source e-newsletter, and maintaining technically correct fire safety messaging through the Educational Messages Advisory Committee. High-risk outreach activities engaging the very old, very young, urban and rural poor, and people with disabilities are an integral part of NFPA's public education efforts. These activities include outreach to urban communities, older adults, people with disabilities and Latino populations. NFPA's public education programs include the Learn Not to Burn® Preschool Program and Remembering When™: A Fire and Falls Prevention Program.

NFPA is the official sponsor of Fire Prevention Week each year to increase public awareness of the importance of fire safety education. Fire Prevention week is held throughout the U.S. and Canada during the week of October 9, to commemorate the anniversary of the Great Chicago Fire. For more than 85 years, NFPA has established the theme and developed the proclamation signed by the President of the United States each year. NFPA also devotes resources to a campaign of theme-related products and materials to help communities promote local programs related to Fire Prevention Week.

5. Literature Archives: The Charles S. Morgan Technical Library is one of the main resources used by Technical Committees to obtain both current and archival information pertinent to NFPA codes or standards. Library staff can assist committee members in tracing changes to codes, providing previous substantiation and supporting documents, and researching the origins of an article or paragraph. The library contains a large fire science collection, with more than 28,000 books, technical reports, videos, journals, and non-NFPA codes. Unique to the collection are Proceedings from NFPA and NBFU annual meetings, papers presented at NFPA annual meetings, original NFPA and NBFU standards going back to 1896, older technical committee reports and comments, and copies of NFPA publications.

6. Annual Conference: NFPA's Conference & Expo takes place each June and is one of the premier events of its kind. The Conference & Expo entails both the NFPA Annual Meeting and the Association Technical Meeting where NFPA proposed codes and standards are brought to the NFPA membership for debate and voting. It also features guest speakers and hundreds of educational programs as well as the country's largest exposition on fire and life safety products and services.

7. Worldwide Communications: NFPA Public Affairs Department oversees the corporate communications activities of the Association and coordinates public awareness and media inquiries, especially following highly publicized fire incidents and other disasters when the news media and others look to NFPA for information.

8. Technology Features: One of today's most important communication tools is the NFPA website, which provides direct support for the standards development process including the electronic submission system of public input and comments. To view document and committee specific information for a relevant NFPA code or standard, go to the document information pages on our website at: www.nfpa.org/document# (example: www.nfpa.org/101).

9. Community Partnerships: To better serve the safety community, other constituents, and its members, NFPA has established Regional Offices throughout North America and an International Operations Division which has offices in Asia, Europe, and Latin America. The primary objective of these offices is to assist constituents with the adoption and formal recognition for the use of NFPA codes and standards. NFPA endeavors to reach every audience with necessary safety information and publishes a wide range of handbooks, reference books, textbooks, videos, field guides, and training manuals.

10. Technical Questions: NFPA's 35+ person Technical and Engineering Staff serve as the staff liaisons to the NFPA Technical Committees that develop the codes and standards. These staff members are available to NFPA members and public sector officials to answer questions about the codes and standards. Each year, the staff handles tens of thousands of inquiries. For more information about submitting your questions, go to the "Technical Questions" tab on the document information pages.

11. Higher Learning: The Professional Development Department conducts specialized training seminars and workshops on NFPA codes and standards and other safety-related subjects. These popular sessions are offered to the general public but are often held for a particular audience. Training seminars and workshops occur regularly around the world and provide the latest information on the application of NFPA codes and standards as well as other state-of-the-art safety related technologies.

12. Certification: NFPA's Certification Department presently offers four recognized certification programs designed to document the minimum competency of and professional recognition to those individuals within the specified field of practice. Based on NFPA codes, standards, and technical publications, the programs are: Certified Fire Protection Specialist, Certified Fire Inspector I and II, and Certified Fire Plan Examiner. Information for each of the programs is available at www.nfpa.org/certification.

The Life Safety Code® and National Electrical Code® are in use in all 50 states in the U.S. and in numerous other countries.

How NFPA Codes and Standards are Used

NFPA codes and standards are widely adopted and used as a basis for safety regulation by government agencies as well as for private use and guidance by insurance companies, industry, and professionals and others in the areas of fire, electrical, building, and life safety. For example, NFPA aviation documents are referenced by airports throughout the world. As a further example, in the United States scores of NFPA codes and standards have been referenced by the federal government's Occupational Safety and Health Administration, the Veterans Administration, the Department of Health and Human Services, the Department of Defense, and other federal agencies.

NFPA develops "full consensus" codes and standards — codes and standards built on a foundation of maximum participation and substantial agreement by a broad range of interests. This philosophy has led to the production of reasonable, usable codes and standards that promote public safety, yet do not stifle design or development. NFPA prides itself in supporting a flexible system that depends largely on volunteers and therefore produces timely, high quality, consensus based safety codes and standards at no cost to taxpayers. Safety is everybody's business. Everyone deserves to be heard when it comes to safety. That's why, after more than 100 years, the NFPA codes and standards process has evolved into one of the fairest and most effective technical document development systems the world has ever seen.

Further Information

For further information on the NFPA standards development process, please visit the NFPA homepage at www.nfpa.org or consult the current edition of the *NFPA Standards Directory*. The homepage and the *Standards Directory* contain the *Regulations Governing the Development of NFPA Standards*, updated schedules for processing documents for the Annual and Fall revision cycles, the *Guide for the Conduct of Participants in the NFPA Standards Development Process*, and other important standards development related information.

To obtain general information regarding the standards development process, contact:

NFPA Codes & Standards Administration Department

One Batterymarch Park
Quincy, MA 02169-7471 USA
Phone: 617-770-3000 (until 5:00 PM EST)
Fax: 617-770-3500
email: stds_admin@nfpa.org

Other general information on the NFPA can be obtained by contacting:

NFPA Headquarters:

One Batterymarch Park, Quincy, MA 02169-7471 USA
Phone: 617-770-3000 (until 5:00 PM EST) Fax: 617-770-0700
<http://www.nfpa.org>

NFPA Customer Contact Center for Service/Sales/Membership/Technical Questions:

custserv@nfpa.org

U.S. & Canada

Phone: 800-344-3555 (8:30-5:00 PM EST)
Fax: 800-593-6372

Outside U.S. & Canada

Phone: 508-895-8300
Fax: 508-895-8301

NFPA International Department Departamento Internacional:

In Spanish / en español
Phone: 617-984-7700 Fax: 617-984-7777
global@nfpa.org

An international nonprofit membership organization established in 1896 and dedicated to reducing the worldwide burden of fire and other hazards on the quality of life by providing and advocating consensus codes and standards, research, training, and education.

Publishers of the National Fire Codes®, including the National Electrical Code® and the Life Safety Code®.

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EXHIBIT 126

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Standards Committee

Procedures for ASHRAE Standards Actions PASA

Originated: June 30, 1994
Latest Revision Approved by ASHRAE BOD: January 28, 2015
Latest Approval by ANSI: April 29, 2015

FOREWORD

The original edition of the *Procedures for ASHRAE Standards Actions* (PASA), dated June 30, 1994 superseded all previous documentation for communicating ASHRAE's procedures as a basis for continuation (re-accreditation) under the ANSI Organization Accreditation Method. PASA changes must be approved by the ASHRAE Board of Directors and ANSI.

ASHRAE publishes the following types of voluntary consensus standards:

ASHRAE Standard Method of Measurement or Test
ASHRAE Standard Design
ASHRAE Standard Practice
ASHRAE Standard Rating

Most ASHRAE Standards are of the Method of Measurement or Test type. ASHRAE Standard Design and Standard Practice documents receive the most use by consulting engineers and architects, requests for committee participation, public review comments, and adoption by code bodies. HVAC equipment manufacturers use all three types of ASHRAE Standards. The project committee voting memberships represent a balance of interest (at least User, Producer, and General) so that no one category has a majority. ASHRAE Standards are used by persons in all three-interest categories.

ASHRAE's Standard Project Committees may include persons who are not members of ASHRAE (e.g., physiologists, medical doctors, chemists, etc.).

The [Summary of changes table](#) has been moved to the end of the document.



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PROCEDURES FOR ASHRAE STANDARDS ACTIONS

1 INTRODUCTION

Founded in 1894, the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) is a technical society of more than 50,000 members, organized and operated for the exclusive purpose of advancing the arts and sciences of heating, refrigeration, air conditioning and ventilation, the allied arts and sciences, and related human factors for the benefit of the general public. ASHRAE sponsors a research program, develops standards, publishes technical data, and organizes meetings and educational activities for both its members and others professionally concerned with refrigeration processes and the design and maintenance of indoor environments. The Society also strives to promote increased public awareness of the requirements for healthful and comfortable indoor environments.

2 SCOPE

These Procedures direct ASHRAE's standards activities in the field of heating, refrigeration, air conditioning and ventilation, and the allied arts and sciences. These Procedures apply to activities related to the development of consensus for approval, revision, reaffirmation, withdrawal, and maintenance of ASHRAE Standards, and to relations with standards-related committees of other organizations.

ASHRAE leaves to trade associations the writing of rating standards unless a suitable rating standard will not otherwise be available.

3 DEFINITIONS, ABBREVIATIONS AND ACRONYMS, AND CLASSIFICATIONS

[Annex A](#) provides definitions, abbreviations and acronyms, and classifications of ASHRAE Standards.

4 APPROVAL OF PROPOSED STANDARDS

4.1 RESPONSIBILITY

The Standards Committee is responsible for formation of project committees and the development, preparation, interpretation, revision, reaffirmation, withdrawal – and submittal to the Board of Directors or its designee for approval – of ASHRAE Standards Actions. The Board of Directors or its designee will counsel and offer guidance to the Standards Committee on policy level standards.

Each member of the Standards Committee is appointed to one or more subcommittees by the chair. These subcommittees are responsible for:

- tracking the status of project committees,
- recommending ASHRAE appointments to standards-writing committees of other organizations, monitoring their activities, and maintaining ASHRAE participation in the canvass balloting activities of other standards-writing organizations, and
- ensuring the timely maintenance of existing standards in accordance with ASHRAE procedures; forming interpretations committees for standards when project committees do not exist; considering requests for development of joint sponsorship agreements; and acting in coordination with cognizant



ASHRAE Technical Committees, Task Groups or Technical Resource Groups (TC/TG/TRG) to recommend reaffirmation or withdrawal of standards.

Project Committees are appointed to develop and revise standards in accordance with approved written procedures. The project committees are responsible for the technical content of standards and addenda. The Standards Committee supervises the work of project committees to ensure that approved procedures have been followed.

4.2 STANDARDS COMMITTEE MEMBERSHIP

4.2.1 Standards Committee

The Standards Committee is a standing general committee and its members are elected by the Board of Directors. The members are selected from various interest groups to prevent dominance of any single interest and may include persons from groups such as manufacturers, consultants, educators, trade associations, government, testing/research laboratories, utilities, code bodies, contractors, consumer/users, and environmentalists. Members of the Standards Committee must be of Fellow, Member, or Associate Member grade. Members of Standards Committee may be Life Members or Presidential Members.

4.2.2 Standards Committee Subcommittees

The Standards Committee has the following subcommittees: a) the International Standards Advisory Subcommittee (ISAS), b) the Intersociety Liaison Subcommittee (ILS) c) the Planning, Policy and Interpretations Subcommittees (PPIS), d) the Standards Project Liaison Subcommittee (SPLS), e) the Code Interaction Subcommittee (CIS) , and f) the Standards Reaffirmation Subcommittee.(SRS)

4.2.2.1 International Standards Advisory Subcommittee (ISAS)

ISAS is responsible for monitoring, reporting and submitting recommendations to the Intersociety Liaison Subcommittee concerning ASHRAE's regional and international standards activities. ISAS is comprised of StdC and non-StdC members with knowledge of International Standards Development.

4.2.2.2 Intersociety Liaison Subcommittee (ILS)

ILS oversees the Society's participation in the standards work of other standards development organizations, the American National Standards Institute (ANSI), and ANSI's Technical Advisory Groups on ISO and IEC standards. ILS is comprised of StdC members only.

4.2.2.3 Planning, Policy and Interpretations Subcommittee (PPIS)

PPIS oversees the maintenance and revision of all standards writing and processing procedures and policies, recommending approvals of new Titles Purposes and Scopes and handling interpretations of existing standards when no project committee exists and evaluates requests for joint sponsorships of SCDs. PPIS is comprised of StdC members only.

4.2.2.4 Standards Project Liaison Subcommittee (SPLS)

SPLS oversees the development of standards committee documents (SCDs), training of PC Chairs, oversees work plans, and waivers of the ASHRAE Units policy. SPLS is comprised of StdC members only.

4.2.2.5 Code Interaction Subcommittee (CIS)

CIS oversees the participation by ASHRAE in the development of model codes and standards by other SDOs that have relevance to ASHRAE technical interests. CIS is comprised of StdC and non-StdC members with knowledge of model code development and the deployment of building regulations.

4.2.2.6 Standards Reaffirmation Subcommittee (SRS)



SRS serves as the project committee (consensus body) for reaffirmation, withdrawal or revision (when updating references will not make a substantive change to the standard or guideline) of existing ASHRAE standards.

SRS is a project committee of at least five (5) members, including at least three members of the StdC and applicants responding to a call for members posted in ASHRAE Standards Actions. SRS acts, in limited circumstances, as a project committee for existing standards and is subject to the rules of project committees for reaffirmations, withdrawals, and revisions only to update references, that are not themselves reaffirmations and do not cause a substantive change to the standard. SRS must comply with all ANSI requirements for openness, balance and due process. SRS may act in lieu of a PC, with the advice of the cognizant TC/TG/TRG, to recommend, reaffirm, withdraw or revise an existing standard based on updated references (that do not cause a substantive change to the standards) or add a second system of units to an existing standard, thereby making the existing standard useable in either SI or IP units. (See **Standards Action Annex A.**)

4.3 ESTABLISHMENT OF PROJECT COMMITTEES

4.3.1 Project Committees

Project committees are authorized by the Standards Committee as either Standard Project Committees (SPCs), which are ad hoc committees, or Standing Standard Project Committees (SSPCs). Project committees are the consensus-forming bodies of the Society and no single interest may have a majority vote unless waived in writing (including electronic communication) by the other interests (see balance, [Annex A](#)). Efforts to recruit materially affected and interested parties from diverse interest categories to become members of a non-balanced SPC shall be on-going and documented.

A member of the SPLS is appointed as StdC Liaison to the new project committee. A call-for-members announcement is conducted. Drawing from the resulting applications and recruiting efforts, candidate committee members are recommended in consideration of their personal expertise and their effect on committee balance. Recommended members and non-policy level PC Chairs are approved by a majority vote of a designated subcommittee of Standards Committee, normally SPLS. Standards Committee must concur by majority vote for all policy level PC Chairs.

4.3.2 Project Committee Voting Status

Project Committees may have project committee voting members (PCVM), non-voting members (NVM), project subcommittee voting members (PSVM), or consultants.

4.3.3 PC Activity Initiation

At the first official business meeting of a new PC, the PC shall vote on whether to concur with, or propose changes to, the original TPS. The PC may conduct business (for example, pass motions) only after the membership roster with at least 5 voting members has been approved by SPLS or the StdC. However, the PC Chair may hold organizational meetings for individuals interested in becoming members of the PC, and the group may begin developing the standard or guideline.

4.3.4 Use of Subcommittees

The PC Chair may organize the committee structure using formal subcommittees. If subcommittees are used, the Chair's recommendation for subcommittee Chair must be approved by SPLS. Responsibilities of various PC subcommittees typically are to develop drafts of one or more assigned clauses of a standard, annexes, or addenda; prepare a system of units; prepare text in appropriate language; establish educational activities; develop draft responses to requests for interpretation; or develop proposed responses to comments resulting from public review. Subcommittee actions shall be submitted as recommendations for action by the parent PC.



4.3.5 Project Committee Officers

PC officers consist of a Chair, Secretary, and in some cases also Vice Chair(s) and Subcommittee Chair(s). The Chair and any Vice Chairs or Subcommittee Chairs must be ASHRAE members. Only individual members as defined in Section 4.3.6 are eligible to serve as Chair, Vice Chair or a Subcommittee Chair. The Chair shall appoint a Secretary and recommend a Vice Chair, if the size or activity of the PC warrants one.

4.3.6 PC Members

A PC shall have individual members and designated PCs may have organizational members. Individual members are appointed as “personal members,” not as representatives of any organization, corporation, partnership, or employer. An organizational member designates a representative, and at the organization’s discretion, an alternate, to serve in the absence of the representative, to participate in PC activities in the same manner as an individual member, except that the representative and alternate may not serve as a Chair or Vice Chair of a committee in accordance with 4.3.10. There shall not be more than one PCVM from any one company, association, agency, or entity.

4.3.7 Participation in Committee Activities

Each PC member is expected to attend meetings and participate in other committee activities, such as conference calls, letter ballots, e-mail correspondence, etc. Failure to regularly do so, without an acceptable reason, shall be sufficient cause for the PC Chair to recommend to SPLS removal of a person from the PC membership roster.

4.3.8 Removal for Cause

The PC Chair may recommend removal of a PC member from the roster for due cause, by submitting a recommendation and justification in writing to the SPLS Liaison and Manager of Standards (MOS). PC Chair recommendations for termination of the membership can be based on a failure to actively participate in the PC proceedings or meet PC responsibilities, including but not limited to: missing two consecutive PC meetings without prior written approval from the PC Chair; failure to attend at least 50% of scheduled PC meetings within any twelve month period; and/or failure to return at least 60% of the letter ballots within any twelve month period. The MOS will transmit the recommendations of the PC Chair and SPLS Liaison and related correspondence to SPLS for action in a meeting or by letter ballot. The SPLS Chair may call an executive session of the SPLS or the PC to discuss the matter. Failure to fully disclose any conflict of interest shall be grounds for removal from the PC.

4.3.9 Removal for Cause Initiated by SPLS

SPLS may, without a recommendation of the PC Chair, recommend removal of one or more PC members from the roster for any of the reasons stated in 4.3.8. SPLS may also recommend removal of a PC member from the roster of one or more PCs due to a *conflict of interest* (defined in [Annex A](#)) or a violation of the ASHRAE Code of Ethics by submitting a recommendation and justification in writing to the MOS.

4.3.10 Organizational Members

Subject to approval of SPLS, the PC Chair may nominate an organization as an organizational member (OM). The designated organizational representative (OR) of the OM may serve as a PCVM or a PSVM of the PC. For consideration of appointment as an OM, the organization should normally be a governmental agency, public interest group, or organization that represents a number of entities such as a trade association. Organizations such as educational institutions or corporations and partnerships engaged in commerce shall not be eligible for OM status.

Organizations are informed of the availability of organizational memberships on specific PCs by one or more of the following:

- a) notice in ASHRAE Insights, ASHRAE Journal, ANSI Standards Action, etc.;



- b) posting on the ASHRAE Web Site;
- c) press releases to the applicable trade press; or
- d) direct communication to potential materially-affected organizations.

4.3.11 Criteria for Considering Organizational Members

The PC Chair should consider the following criteria in nominating organizations for OM status on a PC:

- a) the degree to which members of the organization are materially affected by the requirements of the standard;
- b) the ability of the representative of the organization to represent the interests of the members of the organization;
- c) the capability of the organization to provide an individual with appropriate technical or scientific qualifications to serve as their representative, and if desired, another individual with appropriate technical or scientific qualifications to serve as an alternate organizational representative (AOR);
- d) that an official representative of the organization has endorsed the member and the alternate to serve on the project committee; and
- e) the willingness of the organization to abide with the terms of organizational membership.

4.4 Project Committee Size

The PC shall consist of no less than 5 PCVMs with no upper limit, including the Chair. In addition to the PCVMs, the PC membership may also include PSVMs if the PC is organized into subcommittees or NVMs if not organized into subcommittees.

5 RELATIONSHIPS WITH OTHER STANDARDS-DEVELOPING ORGANIZATIONS

5.1 General

The Standards Committee supervises ASHRAE's participation in the standards work of other organizations including the American National Standards Institute (ANSI) and international and regional standards organizations including the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC).

5.2 Joint Sponsorship

A request to jointly sponsor a standard shall be evaluated by the Standards Committee, considering overlap of expertise and responsibility. The evaluation must be reported to Technology Council. A recommendation for joint sponsorship including a recommendation for the lead organization shall be forwarded to the Technology Council and Board of Directors for approval. A recommendation against joint sponsorship shall be forwarded as an information item to the Board of Directors. If joint sponsorship is approved by the Board of Directors, standards-writing and approval procedures must be negotiated with the other organization by the MOS on behalf of the Standards Committee.

The standards-writing and approval procedures should be those of the lead organizations. If ASHRAE procedures are not adopted, the adopted procedures must be compatible with ASHRAE procedures in regard to openness of proceedings, public review of drafts, and delegation of technical content to the project committee.

6 COMPLIANCE WITH AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) REQUIREMENTS FOR ACCREDITATION

Since 1976, ASHRAE has been accredited by ANSI as a developer of American National Standards and continuation of this accreditation shall be maintained based on ASHRAE procedures and practices for standards development meeting the criteria for accreditation given in ANSI Essential Requirements: Due process requirements for American National Standards (referenced hereafter as ANSI-Essential Requirements).



7 CRITERIA FOR APPROVAL, WITHDRAWAL, AND DISCONTINUANCE OF ASHRAE STANDARDS

7.1 INTRODUCTION

Approval of an ASHRAE Standard requires verification that the requirements for due process and consensus have been met. Approval thus ensures that each ASHRAE Standard is generally acceptable to the directly and materially affected interests.

7.2 GENERAL

Standards shall be designated, developed, published, and maintained in accordance with these Procedures.

7.2.1 Public Review

7.2.1.1 Advisory Public Review (APR)

A PC may vote by majority of the voting membership to recommend to the SPLS Liaison and SPLS Chair that a draft SCD, or portion thereof, be subjected to an APR if the PC believes that the draft contains new, unusual or potentially controversial elements that the PC believes would benefit from increased public scrutiny prior to finalizing the draft for publication public review (no continuation letter ballot, no roll call vote record, no marked up roster, or submittal form is needed). Any comments received as a result of an APR are deemed to be "supportive" and do not need to be "resolved". Apart from acknowledging receipt of each comment, communication with the commenters is optional but may be undertaken to clarify a comment's intent or to invite further participation in the standard development process. The underlying concept of the APR is to gain increased public participation early in the development process and thus to deal with, and potentially resolve, controversy before publication approval is sought. APRs are not submitted through the ANSI process.

7.2.1.2 Normal Track Public Review (NTPR)

A standards action approved by the PC for publication public review that meet any of the following criteria shall be processed as a normal track:

- a) there are negative votes with reason within the PC;
- b) a credible threat of legal action (in writing) against ASHRAE has been made related to the proposed draft;
- c) the proposed draft is related to a Policy Level Standard ; and
- d) the SPLS Liaison has notified the MOS within ten calendar days, from the receipt of the package, with specific justification, that the PC has violated due process.

SPLS must approve the SCD before it can be issued for public review.

7.2.1.3 Fast Track Public Review (FTPR)

A standards action approved by the PC for publication public review that meet all of the following criteria shall be processed as a fast track:

- a) there are no negative votes within the PC;
- b) no credible threat of legal action (in writing) against ASHRAE has been made related to the proposed draft;
- c) the proposed draft is not related to a Policy Level Standard (Policy Level PC Chair may request an exception. The SPLS Chair must grant or deny the exception within ten working days of submittal); and
- d) the SPLS Liaison has not notified the MOS within ten calendar days, from the receipt of the package, with specific justification, that the PC has violated due process.

No additional approvals for issuing the SCD for public review are required.



7.2.2 Publication Approval

Approval of Standards Action by the ASHRAE Board of Directors that have unresolved objectors (commenters or negative PC votes with reason) or a threat of legal action shall be preceded by formally voted recommendations by the project committee and Standards Committee.

Approval of Standards Actions by Technology Council that are policy level SCDs that have no unresolved objectors and no threat of legal action shall be preceded by formally voted recommendations by the project committee and Standards Committee. These Standards Actions shall be reported as an information item to the ASHRAE Board of Directors.

Approval of Standards Actions that are not policy level, that have no unresolved objectors and no threat of legal action shall be preceded by formally voted recommendations by the project committee and processed for publication by ASHRAE Staff. These Standards Actions shall be reported as an information item to the Standards Committee and the ASHRAE Board of Directors.

The SCD shall be deemed to have been approved by the BOD upon approval of its designee.

7.2.3 Quorum Requirements

To conduct standards-related business at a meeting of a project committee, StdC or its subcommittees, Technology Council or the Board of Directors, a quorum must be present. A quorum exists if a majority of the voting membership is present.

7.2.4 Voting Requirements for Standards Actions

Standards actions recommendations must be approved by the project committee (consensus body) with (1) affirmative recorded votes by the majority of the membership of the project committee and (2) affirmative votes from at least two-thirds of those voting, excluding abstentions of the project committee. When recorded votes are taken at meetings, project committee members who are absent shall be given the opportunity to vote before or after the meeting. Persons who cast negative votes on a standards action shall be requested to comment on reasons for their negative votes. If the vote passes with one or more negative votes with reasons for those negative votes, the results shall be held in abeyance until the comments and attempts at resolution of comments (including those unresolved comments received in response to the formal ASHRAE public review (See Section 7.4.6) are transmitted to all eligible voters and they are given an opportunity to change their vote, reaffirm their vote, or to vote. A written response to negative voters with reason voting at a meeting or via letter ballot shall be issued advising each of the disposition of the objection and the reasons why.

Standards Committee, Technology Council and the Board of Directors recommendations for standards actions must be approved by a majority of those voting at a meeting of the Standards Committee, and Board of Directors, or by letter ballot.

7.2.5 Voting Rules for Letter Ballots By Project Committees

The Chair of the PC (or its subcommittees) may authorize a letter ballot to be issued on any matter. Actions of the PC and subcommittees conducted by letter ballot require approval by a majority of the voting membership of the committee. Standards actions, and issuance or revision of an official interpretation require affirmative votes of the majority of the membership and of at least two-thirds of those voting, excluding abstentions. When a letter ballot is conducted via e-mail it is intended that members will not use "Reply to All," but reply only to the sender of the e-mail. A written response to objectors on a letter ballot vote shall be issued, advising each of the disposition of the objection and the reasons why.

7.2.6 Negative Votes on Letter Ballots of PCs and Project Subcommittees



Persons who cast negative votes on a letter ballot shall be asked if they wish to comment on reasons for their negative votes. If the vote passes with one or more negative votes, the results shall be held in abeyance until the comments are transmitted to all eligible voters and they are given an opportunity to reaffirm their vote, change their vote or to vote (by letter ballot or at the next meeting). If a reason is not provided for a negative vote, the eligible voters are informed of the negative vote by distribution of the letter ballot results.

The Chair of the entity voting by letter ballot may offer rebuttal to the comments of the negative voters. After the eligible voters have had ample opportunity (not in excess of two weeks if by letter ballot) to reaffirm their votes, change their votes or to the vote, the results shall be final. If negative votes with comments are received on the second round, all eligible voters will be informed but no further opportunities to change votes will occur.

7.3 MAINTENANCE OF STANDARDS

ASHRAE Standards shall be maintained under periodic maintenance procedures except when use of continuous maintenance procedures has been voted by the Standards Committee. (See definitions of continuous maintenance and periodic maintenance in [Annex. A.](#))

When a PC does not exist, a designated subcommittee of StdC shall (a) form Interpretation Committees to respond to requests for interpretation, and (b) with the advice of the cognizant Technical Committee, Task Group, or Technical Resource Group, shall provide recommendations to the Standards Committee concerning the need for reaffirmation, revision based on updated references or adding a second system of units to a standard, thereby making the standard useable in either SI or IP units, withdrawal or the need to form a new project committee to revise a standard. (See TC, TG, and TRG, [Annex. A.](#))

7.4 DUE PROCESS REQUIREMENTS

The following represent the due process requirements for development of consensus.

7.4.1 Openness

7.4.1.1 Access

Meetings of the Standards Committee, PCs, and their subcommittees are open to all members of ASHRAE and to members of the public who are directly and materially affected by ASHRAE's standards activities. When there is a discussion of a sensitive issue or of a personal nature, the chair of any of these committees or subcommittees may declare an Executive Session, during which only members of the committee or subcommittee and such other individuals invited by the chair shall be present.

7.4.1.2 Barriers

There shall be no undue financial barriers to participation in project committees. Participation shall not be conditional upon membership in ASHRAE or in any standard cosponsoring organization, or unreasonably restricted on the basis of technical qualifications or other such requirements. (See **due process** in [Annex A.](#))

7.4.1.3 Notice

Timely and adequate notice of the initiation and development of a new standard or a substantively revised standard and the establishment of a new PC shall be on the ASHRAE web site. In addition, proposals for new American National Standards and proposals to revise, reaffirm, or withdraw approval of existing American National Standards shall be transmitted to ANSI for listing in Standards Action. Notices should include a clear and meaningful description of the purpose of the proposed activity.

7.4.2 Lack of Dominance

The standards development process shall not be dominated by any single interest category, individual or organization. Dominance means a position or exercise of dominant authority, leadership, or influence by reason of superior leverage, strength, or representation to the exclusion of fair and equitable consideration of other viewpoints. Unless a claim of dominance is submitted in writing (electronic communications) by a directly and materially affected party, no test for dominance is required. (See Section 7.4.3, and **balance**, **dominance**, and **interest category** in [Annex A](#).)

7.4.3 Balance and Interest Categories

Historically the criteria for balance are that a) no single interest category constitutes more than one-third of the membership of a consensus body dealing with safety-related standards or b) no single interest category constitutes a majority of the membership of a consensus body dealing with other than safety-related standards.

The interest categories appropriate to the development of consensus for a standard are a function of the nature of the standard being developed. In defining the interest categories appropriate to the standards activity, consideration shall be given at least to the following:

- Producer
- User
- General

Where appropriate, more detailed categories or subcategories may be considered.

7.4.4 Additional Procedures

ASHRAE shall, as deemed appropriate and needed, provide additional forms, commentary, examples, educational materials, and related information that will support the application and use of these procedures.

7.4.4.1 Appeals to BOD

[Annex B](#) provides an appeal mechanism for procedural complaints regarding any BOD action or inaction.

7.4.4.2 Complaints of Inactions by the Standards Committee, its Subcommittees or Project Committees

In addition to formal appeal of Board standards actions or inactions, failure of the Standards Committee, its subcommittee(s), or a Project Committee to consider a written request may be addressed by writing (including electronic communication) to the Manager of Standards at any time. (See [Annex D](#).)

7.4.5 Public Review Period

The public review comment period shall normally be the minimum allowed by ANSI unless more time is justified. Limited revisions (ISCs) and addenda up to 5 pages may have a 30 day comment period.

7.4.6 Consideration of Public Review Comments Received

All comments to public review drafts shall be submitted electronically via the online comment database. An exception to this rule may be granted by the MOS if the commenter can demonstrate that he/she does not have ready access to the internet. The PC Chair or his/her designee shall submit responses to commenters electronically in the medium specified by MOS.

Public Review Comments received during open public review shall be reported to all members of the PC. Prompt consideration shall be given to all public review comments, including those received through ANSI. An effort to resolve all negative public review comments shall be made, and each negative commenter shall be advised in writing (including electronic communication) of the disposition of the objections and reasons there for. (See **substantive change** in [Annex A](#).) After consideration of comments or because of new information received, the PC may make changes to the draft. Any substantive changes in the draft must be approved and

voted on by the PC for publication public review. The PC may consider any public review comments received after the close of the public review period, or shall consider them as a new proposal.

7.4.6.1 Late Comments Received Under Periodic Maintenance

Comments received after close of open public review under ASHRAE's periodic maintenance procedures may be held for consideration at the next revision at the discretion of the PC.

7.4.6.2 Comments Received Under Continuous Maintenance

An SSPC that is designated by the Standards Committee as operating under continuous maintenance procedures shall take documented, consensus action on each request for change to any part of its standard.

7.4.7 Consideration of Standards Proposals

Prompt consideration shall be given by the Standards Committee to proposals made for developing new standards or revising, reaffirming, or withdrawing existing standards.

7.4.8 Records

Records shall be maintained to provide evidence of compliance with the record retention policy in the ANSI Procedures. Records concerning new, revised, or reaffirmed periodic maintenance standards shall be retained for one complete standards cycle, or until the standard is revised. Records concerning new, revised or reaffirmed continuous maintenance standards shall be retained for a minimum of five years or until the standard is completely revised or reaffirmed. Records concerning withdrawn standards shall be retained for at least five years from the date of withdrawal.

7.5 CONSENSUS

Evidence of consensus associated with the approval of an SCD by the PC shall be documented.

7.6 CRITERIA FOR APPROVAL

With respect to any proposal to approve, revise, or reaffirm an ASHRAE standard, evidence shall be considered that:

- (a) the applicable procedures were followed.
- (b) the SCD is within the scope of ASHRAE's ANSI registered standards activities,
- (c) notice of the development process for the standard was provided to ANSI in accordance with PINS or its equivalent,
- (d) any identified conflict with another ASHRAE or American National Standard was addressed in accordance with the ANSI ER,
- (e) other known national standards were examined with regard to harmonization and duplication of content, and if duplication exists, there is a compelling need for the standard,
- (f) ANSI's patent policy is met,
- (g) ANSI's policy on commercial terms and conditions is met if applicable,
- (h) consensus was achieved, including evidence of the following:
 - i. the applicable procedures were followed;
 - ii. the SCD is within the scope of the registered standards activity;
 - iii. declaration that conflicts with another ANS have been addressed per procedures;
 - iv. a roster of the consensus body indicating the votes of each member, each member's interest category and a summary of the vote; and
 - v. identification of all unresolved negative views and objections, with the names of the objector (s), and a report of attempts toward resolution.
- (i) Any appeal meeting the criteria of B1 through B6 of [Annex B](#) was completed.

In addition, ASHRAE shall consider any evidence provided that the proposed standard is contrary to the public interest, contains unfair provisions, is unsuitable for national use, contradicts federal law(s), or is technically inadequate.

ASHRAE shall not approve standards that duplicate existing or proposed American National Standards unless there is a compelling need.

7.7 CRITERIA FOR WITHDRAWAL OF STANDARD

7.7.1 Requirements

In considering a proposal for withdrawal of an existing ASHRAE Standard, the Standards Committee shall consider evidence that:

- (a) due process requirements were met,
- (b) consensus was achieved concerning the withdrawal of the existing standard, or consensus is lacking for its continued approval,
- (c) the proposal for withdrawal as an ANSI/ASHRAE Standard was provided to the administrator(s) of the appropriate USA Technical Advisory Group(s) and
- (d) any appeal to ASHRAE was completed.

7.7.2 Withdrawal for Cause

In the case of a proposal to withdraw an existing ASHRAE Standard for cause, the Standards Committee shall consider evidence that:

- (a) a significant conflict exists with an American National Standard,
- (b) ANSI's patent policy was violated,
- (c) opportunity for consideration of revision was given but revision was not completed, or
- (d) the ASHRAE Standard:
 1. is contrary to the public interest,
 2. contains unfair provisions,
 3. is technically inadequate, or
 4. is unsuitable for national use.

7.7.3 Other Bases for Withdrawal of Approval

The ASHRAE Board of Directors or its designee also may withdraw approval of an ASHRAE SCD upon (a) advice of counsel, based on evidence of a legal nature, or (b) consideration of facts that have subsequently come to the attention of the Board.

7.8 STANDARD PROJECT DISCONTINUANCE

7.8.1 Project Discontinuation Due to Lack of Membership

If a PC Chair and membership are not submitted by the TC or SPLS Liaison within twelve months after the project is approved, the MOS shall:

- a) automatically discontinue if this is a new project where the formation of a PC and TPS have been approved, or
- b) where a revision committee has been authorized, automatically refer the disposition to SRS for either reaffirmation publication public review or withdrawal public review.

Waivers for project discontinuation shall be approved by SPLS and StdC. If the project is discontinued ASHRAE shall notify ANSI.

7.8.2 Project Discontinuation Due to Lack of Performance



If the PC has not officially met for 12 months or is not advancing the development of the SCD in a timely manner then the SPLS Liaison shall determine whether another Chair should be sought or, whether the matter should be sent back to PPIS to re-evaluate the need for the project. If the project is discontinued ASHRAE shall notify ANSI.

7.9 Final Notice

Notice of the final action on standards shall be announced on the ASHRAE web site.

7.10 Emergency Interim Standards Action

Emergency Interim Standards Action may be taken by the Society President, without completing all elements of due process, on an ASHRAE standard that has been published or has received publication approval by the Board of Directors. An Emergency Interim Standards Action has effect for limited duration and is for the exclusive purpose of correcting errors, other than errata, when failure to take timely corrective action would:

- a) substantively undermine the purpose or technical credibility of the standard, taken as a whole, or
- b) constitute undue risk to health or safety of the public or users of the standard.

The Manager of Standards shall notify ANSI if Emergency Interim Standards Action has been taken on a published or candidate American National Standard.

When an Emergency Interim Standards Action is taken, the Standards Committee shall initiate concurrent development of a revision or addendum, or initiate withdrawal procedures, to permanently correct the problem using ASHRAE's consensus procedures. If corrective standards action is not approved by the Board of Directors for publication within two years, the Emergency Interim Standards Action shall be immediately terminated. (See [Annex D](#).)

7.11 Interpretation Requests of Standards

Interpretation requests for a standard must be submitted to the MOS in writing. The Assistant Manager of Research & Technical Services or the Chair of the current or past cognizant PC or the Chairs designee may respond in writing to written requests for unofficial personal interpretations. Cognizant SSPCs, if they exist, and SPCs that have not yet been disbanded will be asked to respond to requests for official interpretations in writing. If no PC exists, StdC will form an Interpretations Committee (IC) to respond. Procedures for interpretations of published SCDs are provided in StdC MOP Reference Manual Section 10. An issuance or revision of an official interpretation requires affirmative votes for the majority of the memberships of each approving and of at least two-thirds of those voting, excluding abstentions.

7.12 Interpretation Requests of ASHRAE Standards Development Procedures

Interpretations requests for ASHRAE's standards development procedures must be submitted to the MOS in writing. ASHRAE Staff may respond in writing to written requests for unofficial personal interpretations. Requests for official interpretations of procedures shall be submitted to PPIS. An issuance of an official interpretation requires affirmative votes for the majority of the memberships of PPIS and of at least two-thirds of those voting, excluding abstentions.

8 PROCEDURES FOR SYNCHRONIZATION OF THE ASHRAE AND INTERNATIONAL STANDARDS REVIEW AND APPROVAL PROCESS

When opportunities arise, the Standards Committee will encourage PCs to synchronize the review and approval process for ASHRAE and international standards consistent with ANSI procedures. If it is recommended that ASHRAE should use the expedited procedures for the identical adoption of an International Standards Organization (ISO) or International Electrotechnical Commission (IEC) standard the procedures in ANSI Procedures for the National Adoption of ISO and IEC Standards as American National Standards shall apply.



9 PATENTS

ASHRAE agrees to comply with the Patent Policy as stated in ANSI Essential Requirements.

10 COMMERCIAL TERMS AND CONDITIONS

ASHRAE agrees to comply with the Commercial Terms and Conditions policy as stated in ANSI Essential Requirements.

11 ANTITRUST POLICY

ASHRAE agrees to comply with the Antitrust Policy as stated in ANSI Essential Requirements.

12 PINS

At the initiation of a project to develop or revise an ASHRAE American National Standard, ASHRAE shall use the ANSI Project Initiation Notification System (PINS) form. Comments will be addressed in accordance with clause 2.5 of the current version of the ANSI ER.

This normative annex is part of the Procedures (PASA)

ANNEX A: DEFINITIONS, ABBREVIATIONS AND ACRONYMS, AND CLASSIFICATIONS

A1 DEFINITIONS

addenda: revisions to a standard in the form of a supplement.

alternate organizational representative (AOR): an individual empowered by an organizational member of a project committee to act on their behalf in the activities of the project committee when the representative of the organizational member is absent.

annex: an appendix or attachment. See **informative annex** and **normative annex**

balance: a condition existing when a) no single interest category constitutes more than one-third of the membership of a consensus body dealing with safety or b) no single interest category constitutes a majority of the membership of a consensus body. (Also see 7.3.3)

clause: the basic component in the subdivision of the text of a standard. See **subclause** and **paragraph**.

code intended standard: A standard intended to be adopted as a code using code language.

code language document: A document that presents a set of requirements related to the design, application, or use of HVAC&R and related technologies where all or portions of the document may be enacted as mandatory enforceable requirements by a political jurisdiction. Portions intended to be enforced (*normative*) are written in mandatory, enforceable language. Portions not intended to be enforced are identified as *informative* and are to be located in informative notes, in informative annexes (appendices) or in other advisory documents. See annex, informative annex, informative notes and normative annex.

cognizant TC/TG/TRG: the ASHRAE Technical Committee, Task Group, or Technical Resource Group within whose scope a particular standard's technical content most logically falls. The cognizant TC/TG/TRG provides technical advice to the Standards Committee when a Standard Project Committee does not exist.

conflict (between standards): refers to a situation where, viewed from the perspective of an implementer, the terms of one standard are inconsistent with the terms of another standard such that implementation of one standard necessarily would preclude proper implementation of the other standard in accordance with its terms.

Conflict of interest: any incompatibility between an individual's private interests and his or her fiduciary duties as an ASHRAE volunteer.

consensus: substantial agreement, in the judgment of a duly appointed authority, reached by directly and materially affected interest categories. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that an effort be made toward their resolution. It is not required that each separate interest subcategory reach consensus on the standard. For ASHRAE standards projects and any jointly sponsored standards projects that use ASHRAE Procedures, the project committee is the consensus forming body. "Duly appointed authority" means the Board of Directors of ASHRAE and, in the case of jointly sponsored standards, the Boards of Directors of ASHRAE



and the joint sponsor(s). For American National Standards, “duly appointed authority” means the ANSI Board of Standards Review.

continuous maintenance: maintenance of a standard by an SSPC for which procedures have been established to consider and process proposed changes as they are received.

dominance: a position or exercise of dominant authority, leadership, or influence by reason of superior leverage, strength, or representation to the exclusion of fair and equitable consideration of other viewpoints.

draft types:

advisory public review draft: a draft submitted for public review that contains unusual, potentially controversial or new elements that the **project committee** believes would benefit from increased public scrutiny prior to finalizing the draft for publication public review.

publication public review draft: a draft approved for public review that will proceed directly to publication if, as a consequence of the review, no **substantive changes** are made to the draft.

working draft: an unapproved draft produced for consideration by the **project committee** or a subcommittee.

due process: a course of proceedings carried out in accordance with established rules and principles. Due process allows for equity and fair play for all participants. It means that any person with a direct and material interest in a standard has a right to participate by (a) expressing a position and its basis, (b) having that position considered, and (c) appealing if adversely affected.

Emergency Interim Standards Action: action taken by the Society President, without completing all elements of due process, on an ASHRAE standard that has been published or has received publication approval by the Board of Directors. An Emergency Interim Standards Action has effect for limited duration and is for the exclusive purpose of correcting errors, other than errata, when failure to take timely corrective action would:

- (a) substantively undermine the purpose or technical credibility of the standard taken as a whole, or
- (b) constitute undue risk to health or safety of the public or users of the standard.

errata: a list of errors discovered after a document is published.

Examples: typographical errors

- misprints
- misspellings
- grammatical errors
- omission of material approved by the StdC
- erroneous inclusion of material

fast track: an approval procedure for a **standards committee document** that meets these criteria:

- a. there are no negative votes within the PC;
- b. no credible threat of legal action (in writing) against ASHRAE has been made related to the proposed draft;
- c. the proposed draft is not related to a Policy Level Standard (Policy Level PC Chair may request an exception. The SPLS Chair must grant or deny the exception within ten working days of submittal); and
- d. the SPLS Liaison has not notified the MOS within ten calendar days, from the receipt of the package, with specific justification, that the PC has violated due process.

(See **normal track**)



five-year review: a review of need for **standards action**, scheduled so that processing and final approval of the resulting recommended action may reasonably be expected within five years from the date of Board approval of publication of ASHRAE Standards and Guidelines, or within five years of ANSI approval as an American National Standard.

foreword: introductory remarks, not part of the standard.

independent substantive change (ISC): a substantive change that is independent of any other substantive change and that does not significantly affect any other requirement in the standard. See **substantive change**.

informative annex: additional information of a non-mandatory nature. Changes to informative annexes are considered non-substantive. Informative annexes can be changed or deleted without requiring public review. See **normative annex and notes**.

informative language: language used in those elements of an SCD for which compliance is not required, often characterized by the use of “should” or “may.”

Informative notes: explanatory information, appearing in a standard, that does not contain requirements or any information considered indispensable for the use of the standard. Informative notes are to begin with the word “(Informative Note(s))” and be placed after the section of the standard to which the note applies. If the “informative note” is more than two sentences, the information shall be placed in an informative annex and referred to by the informative note. Where there is more than one informative note, the notes must be numbered sequentially.

interest: the perspective of a member of a project committee, as judged by his or her present and past sources of income, fees, or reimbursements of related expenses, in the context of the purpose and scope of the project committee. The perspective may also be judged by the recorded views of the individual, or of any organization he/she is employed by or of which he/she is a member.

interest category: a category identified to represent a specific interest.

interest categories: a classification of project committee member **interests**. For some projects, it may be appropriate to designate subcategories of one or more interest category. Default interest categories are:

Producer: A member who represents the interest of those that produce materials, products, systems, or services covered in the project scope.

User: A member who represents the interest of those that purchase or use materials, products, systems, or services other than for household use covered in the project scope.

General: A member who cannot be categorized in any other approved interest category covered in the project scope.

Additional examples of interest categories and subcategories that have been used can be obtained from the MOS.

International Organization for Standardization (ISO): an international non-treaty standards organization based in Geneva, Switzerland. Its members, national standards bodies, promulgate standards covering all fields except electrical. The American National Standards Institute is the U.S. member body.

international organizational liaison (IOL): a non-voting representative of an international trade or professional organization, international standards committee, or other group with an interest in the work of the PC.

interpretation: the written explanation of the meaning of specific provisions of a standard or guideline, as determined by the project committee or the interpretations committee in response to an inquiry.

interpretations committee (IC): a committee of technically qualified individuals whose function is to interpret an ASHRAE standard or guideline.

mandatory language: language that prescribes the requirements of a standard in a manner that is clear and unambiguous. It provides a basis for determining, without a doubt, whether or not compliance with the standard has been achieved. It is often characterized by the use of “shall” or “must.”

non-substantive changes: non-substantive changes are limited to:

- a) changes to the main body of text of the standard or guideline to update information references; to correct errata, punctuation or grammar, typographical errors or style; or to add equivalent SI or I-P values;
- b) changes to the foreword, membership rosters, or other adjuncts not part of the standard or guideline; and
- c) changes to informative appendices or annexes not part of the standard or guideline.

normal track: an approval procedure applied to a **standards committee document** that meets one or more of these criteria:

- a) receives one or more negative votes upon approval for publication or
- b) where ASHRAE receives a written legal threat or
- c) is a policy level standard.

(See **fast track**)

normative annex: additional information of a mandatory nature which, for reasons of convenience, is placed after the main body of the document. See **informative annex**.

Non-Voting Member (NVM): An NVM is an additional type of membership for PCs not formally organized into subcommittees. NVMs are not eligible to vote on PC motions. NVMs are not included in interest balance or quorum requirements.

organization: a group of people representing a particular **interest** such as a trade association, public interest group, or government agency.

Organizational Member (OM): An OM is an organization with a voting representative on the PC that represents the interests of that particular organization rather than serving as an individual.

policy level document: a **standards committee document** designated as “policy level” by the Board of Directors or the Board’s designee.

Project Committee Voting Member (PCVM): PCVMs are eligible to vote on PC motions. PCVMs are also eligible to vote on subcommittee motions to which the PCVM is appointed.

Project Subcommittee Voting Member (PSVM): PSVMs are eligible to vote on subcommittee motions to which the PSVM is appointed. PSVMs are not eligible to vote on PC motions. PSVMs are not included in interest balance and quorum requirements for the PC.



periodic maintenance: review and action on a nominal 5-year cycle to revise a standard or to reaffirm or withdraw a standard.

project committee (PC): a Standard Project Committee or Standing Standard Project Committee.

public review comment: views and/or objections to standards or addenda to standards submitted in accordance with procedures specified in the public review draft during a public review.

rating: the assigned values of those performance characteristics, under stated conditions, by which a piece of equipment may be chosen to fit its application. These values apply to all equipment of like nominal size and type (identification) produced by the same manufacturer.

standard rating: a rating based on tests performed at standard rating conditions.

application rating: a rating based on tests performed at application rating conditions (other than standard rating conditions).

rating conditions: a set of operating conditions under which a level of performance is determined or measured.

standard rating conditions: rating conditions used as the basis of comparison of performance characteristics.

shall: a verb use to indicate a requirement.

should: a verb used to indicate a recommendation.

SPLS liaison: a member of the **Standards Project Liaison Subcommittee** (SPLS) assigned to act as a Standards Committee advisor to a **project committee**.

standard: a document established by authority or rule that defines properties, processes, dimensions, materials, relationships, procedures, concepts, nomenclature, or test methods for rating purposes. Adherence to due process in its development and achievement of consensus are conditions of approval.

standards action: an action recommending or approving publication of a new, revised, or reaffirmed standard or withdrawal of a standard.

Standards Action: a periodical published by ANSI to inform interested persons about American National Standards (ANSs), including proposals to initiate projects to develop or revise ANSs, announce intent to reaffirm or withdraw existing ANSs, communicate status of international standards, announce public review of proposed or revised procedures of ANSI accredited standards developers, etc.

Standard Project Committee (SPC): a committee of technically qualified individuals with a balanced representation of interests whose function is to formulate, review, reaffirm, or revise an ASHRAE standard. The SPC is the consensus-forming body and is responsible for the technical content of the standard. It is discharged upon publication of the standard.

Standing Standard Project Committee (SSPC): a committee similar in membership and function to a Standard Project Committee except that the committee has a continuing assignment of duties and responsibilities with respect to a standard. It is expected to provide addenda as needed, generate revision on a regular basis, and render interpretations.

subcommittee, project committee: a group of individuals appointed by the project committee chair from among the project committee membership who vote on subcommittee activities and whose responsibility it is to develop drafts of one or more assigned sections of a standard, annexes, or addenda; develop draft responses to requests for interpretation; or develop proposed responses to comments resulting from public review; all submitted as recommendations for action by the parent project committee.

substantive change: a change that involves an important (has value, weight or consequence), fundamental (is the foundation, without which it would collapse), or essential (belongs to the very nature of a thing) part or changes the meaning of the material or that directly and materially affects the use of the standard. Changes that may be found substantive when examined in context.

- (a) “shall” to “should” or “should” to “shall;”
- (b) addition, deletion or revision of mandatory requirements, regardless of the number of changes; or
- (c) addition of mandatory compliance with referenced standards.

Changes or deletions made to portions of a draft not intended as part of the approved standard (e.g., a foreword, informative annex or note), are not considered substantive.

See **independent substantive change**.

system of units: inch-pound units (I-P) or International System of Units (SI).

Technical Resource Group (TRG): a committee of technical experts appointed by TAC, to prepare or review technical material for standards, the ASHRAE Handbook, Journal articles and technical papers.

unit conversions - definitions:

alternate system of units: the system of units listed second (expressed in parentheses when dual systems, I-P and SI are used, expressed in either consistent rational or equivalent values.)

equivalent: exact arithmetic conversions, also called “soft conversion.”

primary system of units: the system of units listed first (expressed in rational values).

rational: based on, or derived from, logical or coherent numbers. Rational values are usually, but not necessarily, rounded numbers. Rational values are not necessarily bound by mathematical equivalency of the primary and secondary units systems. The conversion process is sometimes called “hard conversion.”

unresolved public review commenter: an individual who, during the comment period, submitted public review comments to a proposed or revised draft standard, guideline or addendum, was not satisfied with the committee response to those comments and, within the time period and procedure specified in the response, requested to remain “unresolved”.

A2 ABBREVIATIONS AND ACRONYMS

ANS	American National Standard
ANSI	American National Standards Institute
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.
BOD	Board of Directors
CIS	Code Interaction Subcommittee
IC	interpretations committee
IOL	international organizational liaison
I-P	inch-pound units: units using inches, pounds, and other designations; as opposed to SI units in the metric system. Examples are: foot, Btu, horsepower, gallon.
ISC	independent substantive change
ISO	International Organization for Standardization
MOS	Manager of Standards
PC	Project committee. Refers to both an SPC and an SSPC. The use of this acronym means that a procedure applies to both.
PCVM	project committee voting member
PPIS	Planning, Policy and Interpretation Subcommittee
PSVM	project subcommittee voting member
SCD	Standards Committee Document
SI	Le Systeme International d'Unites; the international agreement on the metric system of units. A practical system of units divided into three classes: <i>base</i> units, <i>derived</i> units and <i>supplementary</i> units. The base units are composed of the units of the following seven quantities: length (meter), mass (kilogram), time (second), electric current (ampere), thermodynamic temperature (Kelvin), amount of substance (mole), and luminous intensity (candela).

The second class of SI units contains *derived units*, i.e., units that can be formed by combining base units according to the algebraic relations linking the corresponding quantities. The names and symbols of some units thus formed in terms of base units can be replaced by special names and symbols which can themselves be used to form expressions and symbols of other derived units.

A third class of SI units, called *supplementary units*, contain the SI units of plane and solid angle. (Ref. Le Systeme International d'Unites)



- SPC** Standard Project Committee. The use of this acronym means that a procedure applies only to an SPC and not to an SSPC.
- SSPC** Standing Standard Project Committee. The use of this acronym means that a procedure applies only to an SSPC and not to an SPC
- SPLS** Standards Project Liaison Subcommittee
- SRS** Standards Reaffirmation Subcommittee
- StdC** Standards Committee
- TAC** Technical Activities Committee
- TC** Technical Committee appointed by the TAC
- TRG** Technical Resource Group appointed by TAC
- TG** Task Group appointed by the Technical Activities Committee
- TPS** Title, Purpose and Scope



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This normative annex is part of the Procedures (PASA)

ANNEX B: APPEALS OF BOARD OF DIRECTORS' STANDARDS ACTIONS OR INACTIONS

B1 SCOPE

This procedure applies to appeals of ASHRAE Standards and of jointly sponsored standards for which ASHRAE is the lead sponsor.

B2 APPEALABLE MATTERS

An action or inaction of the Board of Directors (BOD) to adopt a new ASHRAE standard, an addendum to an existing standard, or to revise, reaffirm, or withdraw an existing ASHRAE standard is subject to appeal.

B3 WHO MAY APPEAL

Any person directly and materially affected by the publication of a new, revision, reaffirmation, or withdrawal of an ASHRAE standard, or lack of such action, may appeal the BOD action or inaction. The appellant must be an unresolved public review commenter, associated with a new, revision, reaffirmation or withdrawal of the ASHRAE standard being appealed, or a PC member who cast a negative vote with reason(s) in relation to his/her vote on the consensus body associated with the creation, revision, reaffirmation or withdrawal of the ASHRAE standard being appealed.

B4 SCOPE OF APPEAL AND BURDEN OF PROOF

An appeal of a BOD standards action or inaction shall be solely based upon procedural grounds. When appeals are filed, the appellant shall demonstrate that ASHRAE Standards development procedures were not followed. Appeals arguments that are based on actions that took place in previous revision cycles will not be considered.

B5 CONTENT OF APPEALS

Each appeal shall:

- (a) Identify the appellant, and include the appellant's contact information;
- (b) Substantiate that the appellant is directly and materially affected by action(s) being appealed;
- (c) Identify with precision the standard or portions thereof, and the procedure(s), alleged improper action or inaction appealed;
- (d) State concisely the basis for the appeal, the remedial action requested, and the nature of any injury to appellant which might accrue from the matter appealed;
- (e) Include any summary supporting data or documentation relied upon as the basis for the appeal;
- (f) Consolidate information to be as concise as possible;
- (g) Only include information that was made available to the PC prior to the final vote of the PC;
- (h) Include the filing fee.

B5.1 FILING FEE

Each appeal shall be accompanied by a filing fee in the amount established by the Technology Council. The filing fee is predetermined and shall be listed on the Appeals Submittal Form. The fee may be waived or reduced by the Chair of the Technology Council upon sufficient evidence of hardship submitted by the appellant. If the filing fee is not submitted by the appeal filing deadline date by the appellant then the appeal shall be dismissed unless an exception has been granted prior to the close of business on the filing deadline date.

B5.2 COPIES

It shall be the responsibility of the appellant to submit an electronic copy and if requested by the Manager of Standards, up to twenty-five (25) paper copies of each appeal filed at the time of the original electronic submittal.

B6 NOTIFICATION PROCEDURES

Within 15 days following BOD action on a standard, that results in approval of a new, revision, reaffirmation or withdrawal of a standard or addenda to a standard, the Manager of Standards (MOS) shall notify in writing (including electronic communication) all unresolved public review commenters and/or a PC member who cast negative votes with reason(s) in relation to his/her vote on the consensus body of the BOD action and inform them of their right to appeal that action.

B6.1 An appeal, must be received by the Manager of Standards (MOS) of ASHRAE within 15 working days of the date on the notification letter regarding the BOD action. The Chair of the Appeals Board may grant an extension, if requested prior to the close of the initial 15 working day period and if sufficient justification is provided.

B6.2 Normally, any standards action by the BOD will be suspended during pendency of appeal(s), appropriately filed. The President may, however, maintain the BOD action until and if the Appeals Panel decides to dismiss the appeal, without a hearing, up to a maximum of 90 days. If the Panel decides to dismiss the appeal without a hearing, the President may maintain the action until the next meeting of the Board of Directors. The appealed BOD action shall be immediately suspended if the Appeals Panel does not dismiss the appeal.

B6.3 The MOS shall acknowledge receipt of the appeal, copy acknowledgement to the Chief Staff Officer, notify the President, and send copies of the appeal to the Appeals Board Chair and to the Chairs of Technology Council, Standards Committee and the Project Committee (PC) which developed or revised the standard, if applicable. Upon receipt of the appeal, an Appeals Panel will be established in accordance with Section B8 for the purpose of determining if the appeal will be heard or if the appeal will be dismissed without a hearing.

B7 APPEALS BOARD

B7.1 An Appeals Board and a chair of the Board shall be appointed by the ASHRAE President, with the approval of the Board of Directors. The Appeals Board shall have 15 members. The Appeals Board shall consist of past members of the BOD, past members of the Standards Committee or Technology Council, and/or persons who are knowledgeable about the ANSI Standards development process.



B7.2 Terms of Membership

Terms shall be staggered so that approximately one-third of the membership of the Appeals Board is appointed each year. Members shall be appointed for a term of three years commencing on July 1, and shall be eligible for reappointment for one additional 3-year term, for a total of two consecutive terms. A member of the Appeals Board may serve beyond the normal two-term limitation if the member is serving as chair, provided the term of chair is contiguous with the six-year tenure as a member. The total maximum length of service under such circumstances would be nine years.

B7.3 Vacancies

A vacancy in the membership of the Appeals Board shall be filled for the remainder of the term by an individual appointed by the ASHRAE President.

B7.4 Conflict of interest

A member of the ASHRAE Appeals Board shall act at all times in a manner that promotes confidence in the integrity and impartiality of ASHRAE's processes and procedures and should avoid a conflict of interest or the appearance of a conflict of interest in connection with all ASHRAE Appeals activities. Should the Appeals Board Chair have a conflict of interest with any appeal he/she shall select another member of the Appeals Board to serve in his/her place with respect to consideration of that appeal.

If a materially affected party (either the appellant or the respondent) asserts that it believes a member of the ASHRAE Appeals Board has a conflict of interest, that materially affected party is required to state the reason(s) for its belief. That information shall then be forwarded to the member of the ASHRAE Appeals Board identified as having a possible conflict for that person's response. If that member disagrees with the assertion, then the Chair of the ASHRAE Appeals Board shall make a final determination as to whether a conflict of interest exists.

Members of the ASHRAE Appeals Board who are disqualified from a particular discussion shall not participate in the arguments, deliberations or decisions.

B7.5 When appeals of jointly sponsored standards are being considered by ASHRAE as lead sponsor or by ANSI, the joint sponsor shall assist in preparing or responding to appeals in its field of expertise.

B8 CONSIDERATION OF APPEALS

B8.1 When an appeal is received by ASHRAE Headquarters in accordance with Section B6.3 six members of Appeals Board shall be randomly selected from a pool of all Appeals Board members that do not have a conflict to hear the appeal. At least four of those selected shall be appointed as the Appeals Panel and the other 2 shall be appointed as alternates. The Appeals Panel alternates will participate in the hearing activities in the event that one of the four other members are unable to serve. The Appeals Board chair will chair the Appeals Panel.

B8.2 Members of the Appeals Panel shall not have been a PCVM or PSVM on the project committee that is the subject of the appeal during the three years prior to the standards action under appeal. Members of the Appeals Panel shall not have voted on the draft that is the subject of the appeal as a member of the Standards Committee or Board of Directors.

B8.3 The Appeals Panel shall first decide if the appeal shall be dismissed without a hearing. Non-compliance with Section B5 or lack of grounds for an appeal may be reasons for dismissal. To assist in

this decision, the Appeals Panel Chair may request a rebuttal statement from the respondent (the Chair of the Standards Committee or his/her designee, or the Chair of the PC or his/her designee), as appropriate. The Appeals Panel Chair shall inform the appellant within 30 days of the receipt of the rebuttal whether the appeal will be dismissed without a hearing, decided after a hearing, or decided without a hearing.

B8.4 If the appeal is not dismissed, the BOD action which has been appealed shall be immediately suspended, if not already suspended according to the first sentence of B6.2, and each claim in the appeal shall be considered separately and basic grounds given for each decision. The Appeals Panel shall decide whether a hearing is warranted or if a decision can be made and reported to the President on the appeal without a hearing.

B9 HEARING OF APPEALS

B9.1 Notice

If the appeal is to be heard, the Appeals Panel chair shall arrange for consideration of the appeal by meeting, or documented telephone conversations. Both the appellant and the respondents (the Chair of the Standards Committee or his/her designee, or the Chair of the PC or the Chair's designee, as appropriate) shall be given at least 45 days notice of the hearing date (from the date on the notification letter), location, and time for a hearing or 30 days notice of the hearing date (from the date on the notification letter) for a hearing conducted by conference call. The 30 or 45 days may be waived if the appellant and the respondents agree in writing (including electronic communication). During this period a rebuttal of the written statement of appeal shall be submitted to the MOS who shall distribute it to the Appeals Panel and to the Appellant. The rebuttal, if not previously requested, from the respondent(s) shall be due within 15 working days of the date on the letter of notification. The Chair of the Appeals Panel may grant an extension if requested prior to the close of the initial 15 working day period and if sufficient justification is provided. The rebuttal statement shall be sent to the MOS, who shall distribute it to the appellant and the Appeals Panel.

B9.2 The Hearing

At the hearing, the appellant and respondent(s) shall provide the Chair of the Appeals Panel with 15 copies of an outline of their oral presentation or a copy of what will be displayed for their electronic presentation. No new issues outside of those issues raised in the submitted appeal may be presented at the hearing. Only documentation that the Appellant/Respondent has already been given, which supports raised issues, will be permitted in the presentation. Both the Appellant and the Respondent are permitted to have people speak on their behalf (i.e.: experts). However, each party is only allowed a designated amount of time and that time will be shared by any and all people speaking for that party. No additional time will be granted for guests, speakers, experts, etc.

B9.3 A Standards Committee Liaison and the BOD Ex-Officio member of the Standards Committee shall be invited by MOS to attend the hearing. The hearing shall be open to representatives of directly and materially affected persons, although the number of any interest group may be limited at the discretion of the Appeals Panel Chair. Anyone planning to attend the hearing shall notify the MOS within a minimum of 15 days prior to the hearing date. The deliberations of the Appeals Panel shall be held in Executive Session.

B10 APPEALS PANEL DECISION

The Appeals Panel shall decide within 45 days of the hearing, by majority vote, that the appeal, or any parts of the appeal, be upheld or denied. The Appeals Panel Chair shall, within 14 days following the Appeals Panel's decision, notify the appellant(s), Chief Staff Officer, Director of Technology, Manager of

Standards, President, Chair of Technology Council, Chair of the Standards Committee, and Chair of the PC of the decision. The decision of the Appeals Panel to uphold, deny, or dismiss an appeal shall be final. If the appeal is dismissed or denied by the Appeals Panel, the action of the BOD, which was appealed shall become effective immediately.

This normative annex is part of the Procedures (PASA)

**ANNEX C: COMPLAINTS OF ACTIONS OR INACTIONS BY THE STDC, ITS
SUBCOMMITTEES OR PCs**

In addition to formal appeal of BOD Standards actions or inactions (PASA Annex B), failure of the StdC, its subcommittee(s), or a PC to consider a written request may be addressed by writing to the MOS at any time.

- a) A written complaint shall be sent to the MOS and the MOS shall forward it to the Chair of the Committee in question. The MOS shall acknowledge receipt of the complaint (i.e., Subject Committee Chair).
- b) The Subject Committee Chair shall provide a written response to the complainant, with a copy to the MOS within 15 working days of receipt of the complaint. A waiver to the response period may be requested by the Chair or ASHRAE Staff to the Chair of the next higher body. (e.g. StdC Chair for a PC Chair). The waiver request shall be promptly addressed.
- c) The complainant shall notify the Subject Committee Chair and MOS in writing within 15 days from the receipt of the response whether or not the response resolves the complaint. If no response is received then the higher body, the complainant and the Subject Committee Chair will be notified that the complaint is resolved.
- d) If the response does not resolve the complaint, the complaint shall be forwarded to the next higher body. The next higher body shall place it on its next agenda for consideration but a meeting shall be called no later than 15 working days after receipt of the complaint.
- e) When the complaint has been heard by the next higher body, the Chair of that body shall notify the complainant in writing, with a copy to MOS, and to the Chair of the committee in question of the committee's decision within 15 days. (The next higher body is the committee, which approves the actions of the committee in question).
- f) The final level to resolve the complaint shall conclude at Technology Council. Should the unresolved complaint reach Technology Council, Technology Council shall have the authority to decline to hear the complaint.

This normative annex is part of the Procedures (PASA)

ANNEX D: UNITS POLICY

The units use or application policy shall include, as a minimum, time-dated directions on the use of SI and I-P in all ASHRAE publications.

TC 1.6 shall serve as the authority on SI and I-P usage and application.

Research projects; codes, standards, guidelines, and addenda thereto; special publications; Insights articles; Journal articles; and Handbooks shall be prepared using the International System of Units (SI) and/or inch pound units (I-P) in formats approved by the Publishing and Education Council.

The Publishing and Education Council shall review annually the approved formats to be used in ASHRAE publications, considering suggestions from members and committees, and shall establish any changes in the approved formats.

The Publishing and Education Council shall consider this Units Policy annually and shall recommend to the Board of Directors the formats to use in ASHRAE publications.

- (a) The format for ASHRAE publications shall be dual units, except in cases determined by the Publishing and Education Council, where two separate versions are to be published, where one is rational SI and the other is rational I-P. For selected ASHRAE standards and guidelines, the Standards Committee may approve use of SI units only.
- (b) In dual unit publications, the units used in calculating the work being reported shall be listed first. The alternate system of units should follow in parentheses. Authors shall round off equivalents in the alternate system of units so that they imply the same accuracy as is implied with primary units. Exceptions require the approval of the Director of Publishing and Education. Handbook volumes shall be published in separate SI and I-P editions.

This normative annex is part of the Procedures (PASA)

ANNEX E: Procedures – Emergency Interim Standards Action

E1 Justification

The burden of demonstrating need for an Emergency Interim Standards Action rests with the proposer. Interested persons may submit proposals for Emergency Interim Standards Actions to the MOS.

Proposals must include the following information:

- a) identify the proposer, affiliation and contact information;
- b) identify the standard or guideline and clause containing the error,
- c) describe the error claimed and provide supporting information or data, if any,
- d) recommend a change in text, equation, etc. that would eliminate the error or reduce it to acceptable limits and provide supporting information or data, if any,
- e) show compliance with the criteria of Section 6.9(a) or 6.9 (b), and
- f) identify the type of harm that has been or may be caused by the error.

Proposals that meet the criteria of Section 6.9 shall be forwarded to the body designated in E5.

E2 PC or PPIS Recommendation

When a PC having jurisdiction exists, the PC shall submit a recommendation to the MOS on disposition of a proposed Emergency Interim Standards Action at a PC meeting or by letter ballot within 14 days. When a PC does not exist, PPIS shall act in lieu of a PC.

E3 MOS Recommendation

If the PC or PPIS fails to submit a recommendation within 14 days, the MOS shall submit his/her recommendation.

E4 Review and Comment

Upon receipt of a recommendation resulting from E2 or E3, the MOS shall circulate the proposed Emergency Interim Standards Action and recommendation within seven days to the StdC, the Director of Technology, and the MOS for review and comment.

E5 President Will Act

A package composed of the proposed Emergency Interim Standards Action, recommendations resulting from E2 or E3, and recommendations from the Standards Committee Chair, Director of Technology, and MOS, whether positive or negative, shall be submitted within 14 days of receipt by the MOS for the President's consideration and decision.

E6 Notifications

The MOS shall issue notification of the President's decision to the proposer, the Editor of the ASHRAE Journal, and ANSI, and shall initiate implementation of the decision as appropriate.

Revision	Changes	BOD Approval Date
Original Release	The original edition of the <i>Procedures for ASHRAE Standards Actions Under the ANSI Organization Method</i> (PASA), dated June 30, 1994 superseded all previous documentation for communicating ASHRAE's procedures as a basis for continuation (re-accreditation) under the ANSI Organization Accreditation Method.	June 29, 1994
A	The first revision was approved by the Board of Directors on February 2, 1995 and incorporated nine changes for clarifications and in response to comments resulting from ANSI public review of PASA.	February 2, 1995
B	On April 28, 1995, staff incorporated clarifying revisions to the figures in informative Appendix C and added a new Figure 6. ANSI reaccredited ASHRAE on August 4, 1995 based on this edition.	April 28, 1995
C	The third revision was approved by the ASHRAE Board of Directors on June 27, 1996 and incorporated twelve changes in response to recommendations in the ExSC Appeals Panel decision letter dated April 23, 1996, the draft ANSI Report of Audit of ASHRAE procedures and operations dated June 10, 1996, and the need for clarification.	June 27, 1996
D	The fourth revision included broadening the section on membership, by allowing for possibilities for organizational membership. Additionally, this revision incorporates some changes involving written responses to commenters and resolution of commenters. The ASHRAE Board of Directors approved this version January 27, 1999. ANSI reaccredited ASHRAE on May 7, 1999.	January 27, 1999
E	This revision includes changes to allow the newly approved <i>Board Policy Committee for Standards</i> to have oversight authority for certain project committees. It also deleted references to specific sections of ANSI procedures so that revision to PASA would not be necessary when section numbering in the ANSI procedures changed. The ASHRAE Standards ftp site (ftp.ashrae.org/stds-info) is now utilized as the means for advertising standards activities, in lieu of the ASHRAE <i>Journal</i> . The records retention policy has been clarified, and the references to formal Mediation Meetings have been removed. Finally, the appeals procedures were modified to more closely match the ANSI appeals procedures. ANSI reaccredited ASHRAE on November 21, 2001.	June 29, 2000
F	Editorial revision of Section 6.2.1.2 made to reflect the oversight authority of the Board Policy Committee for Standards.	February 1, 2001
G	Editorial revision of Sections 4.1 and 6.2 made to reflect removal of Appendix C.	June 27, 2001
H	This revision included changes in Sections 6.2.1.2-6.2.1.3.2 to require letter ballot votes for publication approval by the Consensus Body. Appendix B3 was revised to further clarify the appeals process.	January 17, 2002
I	This revision includes changes in Sections 5, 6.3.6, 6.2.1.3, the Appendix A1 definition of "balance," and the addition of Section 8 – Patents. Appendix B was revised to assign final approval of appeals to the Board Policy Committee for Standards.	June 27, 2002
J	This revision includes changes in sections 4.1, 6.2.1, 6.2.2, A1, and A2 to change the reference from Technical Evaluation Committees (TEC's) to Technical Resource Groups (TRG's). Changes were also made to sections 6.3.1.3 and 6.7 to remove the reference to the ASHRAE ftp site.	January 30, 2003



K	This revision includes the addition of a sentence to section 6.3.4.2 (Complaints of Inactions) that clarifies who addresses complaints.	July 3, 2003
L	This revision addresses the following issues: the clarification of ANSI requirements, removal of the Board Policy Committee for Standards (BPCS) oversight responsibility and changes to the appeals process.	July 1, 2004
M	This revision replaces language that was inadvertently deleted in the Nashville revision, to provide the provision to appoint the Appeals Panel Chair.	June 30, 2005
N	This revision includes revisions to section 4.3.2 (Joint Sponsorship) so that the MOS can negotiate terms of the joint sponsorship agreements. Changes were made to B6, B9.1, and B9.2 to clarify the appeals process. Section B9.2, The Hearing, was added to clarify the rules during the Appeals hearing.	January 26, 2006
O	This revision includes revisions to Section 4.3.2 (Joint Sponsorship) and removes approval by Technology Council and the BOD of the final negotiated cosponsorship agreement.	March 20, 2006
P	This revision includes adding the terms “including electronic communication” to Section 4.2.1.1, Section 6.4.3.2, and B9.1. This also includes revisions to 4.3.2 to clarify the language regarding Joint Sponsorship approval. Section 9, Commercial Terms and Conditions, was added. The definition of contact information was added to Appendix A. Revisions were made to Section B5 to add request for contact information and to limit the materials that are allowed in appeals.	June 29, 2006
Q	This revision includes adding the cm records retention policy to Section 6.3.8, adding Section 6.7, Interpretation Requests, and adding Annex C, Units Policy to PASA per the request of ANSI.	March 2, 2007
R	This revision in the Introduction section includes, moving part of the information to an informative forward.	October 24,2008
S	This revision in Section 3, changes Appendix to Annex.	October 24, 2008
T	This revision in Section 5 deletes text from ANSI Essential Requirements	October 24, 2008
U	This revision in Section 6.2.1, (Approval) includes Technology Council in the approval of publication drafts	October 24, 2008
V	This revision includes in Section 6.2.1.2, (Voting Requirements for Standards Actions), changing the vote from letter ballot to recorded votes, adding Technology Council and allowing the Board or its designees to vote.	October 24, 2008
W	This revision includes the deletion of Section 6.2.1.3	October 24, 2008
X	This revision includes in Section 6.2.2 (Modification of Standards) the addition of the need for a revision to a standard.	October 24, 2008
Y	This revision to Section 6.2.4 (Substantive Changes) deletes the entire section.	October 24, 2008
Z	This revision to Section 6.3.2 (Balance and Lack of Dominance) changes it to read like ANSI Essential Requirements 2008.	October 24, 2008
A	This revision to Section 6.3.3 (Interest Categories) deletes language in order to simplify the interest categories.	October 24, 2008
AB	This revision to section 6.3.4.1 (Appeals to BOD), includes the change from Appendix to Annex and includes the deletion of identifiable, realistic and readily available text.	October 24, 2008



AC	This revision to Section 6.3.6(Consideration of Comments Received) includes the addition of language specifying Public Review. Title reflects as Consideration of Public Review Comments Received and within the paragraph, “public review” was inserted.	October 24, 2008
AD	This revision to Section 6.4 (Consensus) was rewritten to require documentation that the consensus is in accordance with ANSI Essential Requirements and PASA.	October 24, 2008
AE	This revision to Section 6.5 (Criteria for Approval) modified letter (i) to change Appendix to Annex.	October 24, 2008
AF	This revision to Section 8 (Patents) was editorially modified. Removed the text “such” and “or guideline” from the first sentence.	October 24, 2008
AG	This revision to Appendix A includes: <ul style="list-style-type: none"> • The deletion of ASHRAE Information Representative • Modification of the definition of balance by deleting “dealing with product standards.” • Modified definitions of continuous maintenance definition and interest category • Modified definition of informative annex • Modified interest categories definition; deleted the definition for all subcategories, user, producer and general • Added a Method of Test Standard definition • Modified the definition for normative annex • Modified the definition for public review comment • Deleted testing standard definition • Modified unresolved commenter definition • Deleted Section A3 	October 24, 2008
AG	This revision to Appendix B includes: <ul style="list-style-type: none"> • Appendix B2, deleted the availability of EISA’s to be appealed to the Board as this can be handled through the complaint process • Appendix B3, modified who the appellant must be and how the vote should be casted • Appendix B5.2, inserted the word “copies” • Appendix 6, specified who the MOS should notify, public review commenters and/or a PC member who cast negative votes with reason(s) in relation to his/her vote on the consensus body • Appendix B10, added language requiring that the Appeals Panel vote within 45 days of the hearing whether or not the appeal is upheld or denied. 	October 24, 2008
AH	This revision to Section 4.1 includes the addition of the word <i>publishing</i> .	February 25, 2011
AI	This revision to Section 6 title includes the addition of language for discontinuing ASHRAE standards.	February 25, 2011
AJ	This revision to Section 6.3.6 includes language in the first paragraph straight from the PC MOP regarding information about the online comment database.	February 25, 2011



AK	<p>The revision to Section 6.5 includes added and deleted language. The additions are from the ANSI Essential Requirements and are listed below:</p> <ul style="list-style-type: none"> • Notice of the development process for the standard was provided to ANSI in accordance with PINS or its equivalent • Identification of all unresolved negative views and objections, with names of the objector(s), and a report of attempts toward resolution • The standard is within the purpose and scope approved by the Standards Committee • ...and if duplication exists, there is a compelling need for the standard • ANSI’s policy on commercial terms and conditions is met if applicable <p>The deletion of Section 6.5 includes:</p> <ul style="list-style-type: none"> • StdC prohibitions of commercial references, exclusive use of proprietary materials, or prescribing a proprietary agency for quality control or testing are met, and 	February 25, 2011
AL	<p>The revision to Section 6.7, 6.7.1 and 6.7.2 includes the addition of language regarding the criteria for project discontinuance. The previous sections 6.7 and 6.8 been renumbered due to this addition to 6.8 and 6.9 respectively.</p>	February 25, 2011
AM	<p>Section 6.10 was added, it includes the word <i>writing</i> to clearly specify the method in which interpretation requests are received and responded to. It also editorially corrects the spelling of the word <i>revision</i>.</p>	February 25, 2011
AN	<p>The revision of Section 8 deletes the entire paragraph and adds a blanket statement “ASHRAE agrees to comply with the Patent Policy as stated in the ANSI Essential Requirements.”</p>	February 25, 2011
AO	<p>The revision of Section 9 deletes the entire paragraph and adds a blanket statement “ASHRAE agrees to comply with the Commercial Terms and Conditions Policy as stated in ANSI Essential Requirements.”</p>	February 25, 2011
AP	<p>This revision adds a Section 10 which includes information regarding PINS. It states” At the initiation of a project to develop or revise and ASHRAE American National Standard, ASHRAE shall use the ANSI Project Initiation Notification System (PINS) form.</p>	February 25, 2011

AQ	<p>The revision to Annex A includes deletions of definitions. Deleted definitions include:</p> <ul style="list-style-type: none"> • ASHRAE Alternate – a designated alternate to the ASHRAE Representative appointed by the Standards Committee of another organization and empowered to vote on behalf of ASHRAE on matters dealing with standards. (See ASHRAE Representative) • ASHRAE Representative – an official representative of ASHRAE appointed by the Standards Committee to a committee of another organization and empowered to vote on behalf of ASHRAE on matters dealing with standards. • Contact information – name, affiliation, mailing address, email address, daytime telephone numbers and facsimile numbers • Independent substantive change – a substantive change that is independent of any other substantive change and that does not significantly affect any other requirement in the standard. See substantive change. • Method of Test Standard – a standard setting forth the methods of measuring capacity or other characteristics of a specified material, component, or system, together with a specification of instrumentation, procedure, and calculations. • TC Technical Committee appointed by the TAC 	February 25, 2011
AR	<p>The revision to Section A2 includes the addition of the terms below:</p> <ul style="list-style-type: none"> • BOD Board of Directors • PPIS Planning, Policy and Interpretations Subcommittee • SCD Standards Committee Document • SPLS Standards Project Liaison Subcommittee • SRS Standards Reaffirmation Subcommittee • TPS Title, Purpose and Scope <p>The revision to Section A2 also includes a deletion of the terms below:</p> <ul style="list-style-type: none"> • TC/TG/TRG a TC, TG or TRG • TC Technical Activities Committee 	February 25, 2011
AS	<p>The revision to Section 6.2.1 removes one of the approving bodies, Technology Council.</p>	February 25, 2011
AT	<p>The revision to Section 6.2.1.2 removes Technology Council and clarifies comment resolution attempts. It also notes that comments received that are not relevant to the proposed standards action under consideration shall be treated as a new proposal.</p>	February 25, 2011
AU	<p>The revision to Section 6.5 ensures that all procedures were followed and it provides the procedures for documenting consensus.</p>	February 25, 2011
AV	<p>This revision adds a sentence to Section 10 which states: Comments will be addressed in accordance with clause 2.5 of the current version of the ANSI ER.</p>	February 25, 2011
AW	<p>The revision to Annex A adds definitions for informative language and notes. It also updates the current definitions; continuous maintenance, informative annex, normative annex, shall, should, standard, and unresolved public review commenter.</p>	February 25, 2011
AX	<p>The revision to Section B9.1 decreases the notice time to 30 days for appeal hearings if the appeal hearing is being held via conference call.</p>	February 25, 2011



AY	The revision to Section 4.2.1.1 makes PASA consistent with ASHRAE's Project Committee Manual of Procedures.	May 15, 2012
AZ	The revision to Section 6.3.5 makes PASA consistent with ANSI ER.	May 15, 2012
BA	The revision to Annex B would provide a larger pool of members to expeditiously hear appeals.	May 15, 2012
BC	The revision to Section 6.2.1.2 brings PASA in line with StdC MOP and StdC Reference Manual.	June 27, 2012
BD	The revision to Section 6.3.6 is a direct result from the ExSC comments during the last public review of PASA. Procedures are included from when a Project Committee makes substantive changes to the draft after consideration of comments or when new information is received.	June 27, 2012 (PASA Reaccredited 10/12/12)
BE	Editorial change to Section 6.3.6.2, deleted last part of the sentence that states "in accordance with the continuous maintenance schedule."	September 27, 2013
BF	The revision to Section 4 adds additional information regarding Standards Subcommittees and its function as well as membership, most of this information was pulled from the PC MOP per ANSI's request to streamline our documents.	PASA Reaccredited October 22, 2014
BG	The revision to Section 7.2.1 adds information regarding the different types of Public Review and the publication approval level requirements. Section 7.2.4 also clarifies the voting requirements for Standards Actions, 7.4.2 and 7.4.3 clarifies lack of dominance and balance and interest categories. Section 7.6 clarifies criteria for approval. Section 7.8 allows SPLS and StdC to approve waivers for discontinuing a project. Section 7.11 supplies additional guidance for interpretation requests. PPIS can approve interpretations to the Standards Development Procedures.	PASA Reaccredited October 22, 2014
BH	Annex A and A2 was revised to include additional definitions. Annex B was revised to clarify appealable matters, content of the appeal, filing fee, notification procedures, and conflict of interest. Annex C (Complaints of Actions or Inactions by the StdC, its Subcommittees or PC's) and Annex E (Emergency Interim Standards Action) were added into PASA.	PASA Reaccredited October 22, 2014
BI	Annex A - editorial updates were made to the definitions: <i>notes</i> and <i>code language document</i> . "Notes" is now "Informative Notes".	November 10, 2014
BJ	Section 4.2.2.6 clarified SRS will comply with ANSI requirements of openness, balance and due process. Section 7.11 adds the Chair's designee can also issue official interpretations of standards. Section 11 Antitrust Policy was added to PASA. Annex A, informative notes was clarified. Annex B removes the option for technical appeals.	PASA Reaccredited April 29, 2015
BK	Section 7.4.4.1 was editorially corrected to mirror Annex B. (removes technical appeals)	PASA – editorial September 3, 2015

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EXHIBIT 127

FORM FOR PROPOSALS FOR 2011 NATIONAL ELECTRICAL CODE®

INSTRUCTIONS — PLEASE READ CAREFULLY
Type or print **legibly** in **black ink**. Use a separate copy for each proposal. Limit each proposal to a **SINGLE** section. All proposals **must be received by NFPA by 5 p.m., EST, Friday, November 7, 2008**, to be considered for the 2011 National Electrical Code. Proposals received after 5:00 p.m., EST, Friday, November 7, 2008, will be returned to the submitter. If supplementary material (photographs, diagrams, reports, etc.) is included, you may be required to submit sufficient copies for all members and alternates of the technical committee.

FOR OFFICE USE ONLY
Log #:
Date Rec'd:

Please indicate in which format you wish to receive your ROP/ROC electronic paper download
(Note: If choosing the download option, you must view the ROP/ROC from our website; no copy will be sent to you.)

Date Name Tel. No.
Company
Street Address City State Zip

Please indicate organization represented (if any)

1. Section/Paragraph

2. Proposal Recommends (check one): new text revised text deleted text

3. Proposal (include proposed new or revised wording, or identification of wording to be deleted): [Note: Proposed text should be in legislative format; i.e., use underscore to denote wording to be inserted (inserted wording) and strike-through to denote wording to be deleted (~~deleted wording~~).]

.....

4. Statement of Problem and Substantiation for Proposal: (Note: State the problem that would be resolved by your recommendation; give the specific reason for your Proposal, including copies of tests, research papers, fire experience, etc. If more than 200 words, it may be abstracted for publication.)

.....

5. Copyright Assignment

- (a) I am the author of the text or other material (such as illustrations, graphs) proposed in this Proposal.
- (b) Some or all of the text or other material proposed in this Proposal was not authored by me. Its source is as follows (please identify which material and provide complete information on its source):

I agree that any material that I author, either individually or with others, in connection with work performed by an NFPA Technical Committee shall be considered to be works made for hire for the NFPA. To the extent that I retain any rights in copyright as to such material, or as to any other material authored by me that I submit for the use of an NFPA Technical Committee in the drafting of an NFPA code, standard, or other NFPA document, I hereby grant and assign all and full rights in copyright to the NFPA. I further agree and acknowledge that I acquire no rights in any publication of the NFPA and that copyright and all rights in materials produced by NFPA Technical Committees are owned by the NFPA and that the NFPA may register copyright in its own name.

Signature (Required)

PLEASE USE SEPARATE FORM FOR EACH PROPOSAL • NFPA Fax: (617) 770-3500

Mail to: Secretary, Standards Council, National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471

7/17/2007

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EXHIBIT 128

FORM FOR PROPOSALS FOR 2008 NATIONAL ELECTRICAL CODE®

Mail to: Secretary, Standards Council
National Fire Protection Association
1 Batterymarch Park, P.O. Box 9101
Quincy, Massachusetts 02169-7471

Fax to: (617) 770-3500

FOR OFFICE USE ONLY
Log # _____
Date Rec'd _____

- Notes: 1. All proposals must be received by 5:00 p.m. EST on Friday, November 4, 2005.
Proposals received after 5:00 p.m. EST, Friday, November 4, 2005, will be returned to the submitter.
2. Type or print legibly in black ink. Limit each proposal to a SINGLE section. Use a separate copy for each proposal.
3. If supplementary material (photographs, diagrams, reports, etc.) is included, you may be required to submit sufficient copies for all members and alternates of the technical committee.

Please indicate in which format you wish to receive your ROP/ROC: [] electronic [] paper [] download

Date _____ Name _____ Tel. No.: _____

Company _____

Street Address _____

Organization Represented (if any) _____

1. Section/Paragraph _____

2. Proposal Recommends (check one) [] new text [] revised text [] deleted text

3. Proposal (include proposed new or revised wording or identify wording to be deleted). Note: Proposed text should be in a legislative format: i.e., use underscore to denote wording to be inserted (inserted wording) and strike-through to denote wording to be deleted (deleted wording).

4. Statement of Problem and Substantiation for Proposal. Note: State the problem that will be resolved by your recommendation; give the specific reason for your proposal and include copies of the tests, research papers, fire experience, etc. If more than 200 words, it may be abstracted for publication.

5. [] This Proposal is original material. Note: Original material is considered to be the submitter's own idea based on or as a result of his/her own experience, thought, or research and, to the best of his/her knowledge, is not copied from another source.

[] This Proposal is not original material; its source (if known) is as follows: _____

If you need further information on the standards-making process, please contact the Standards Administration Department at (617) 984-7249. For technical assistance, please call NFPA at (617) 770-3000.

I hereby grant the NFPA all and full rights in copyright, in this proposal, and I understand that I acquire no rights in any publication of NFPA in which this proposal in this or another similar or analogous form is used.

Signature (required)

PLEASE USE SEPARATE FORM FOR EACH PROPOSAL

EXHIBIT 129

(FILED UNDER SEAL)

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EXHIBIT 130

From: Pace, John </O=ASTM/OU=FIRST ADMINISTRATIVE GROUP/CN=RECIPIENTS/CN=JPACE>
Sent: Tuesday, March 24, 2009 5:29 AM
To: Hooper, Kathe <khooper@astm.org>
Subject: Fw: Question related to copyright

Fyi ... I thought I had cc'd you!

-----Original Message-----

From: Pace, John
To: FRVANBUREN@dow.com <FRVANBUREN@dow.com>
Sent: Mon Mar 23 17:49:07 2009
Subject: RE: Question related to copyright

Dear Mr. Van Buren:

I am responding on behalf of Kathe Hooper as she oversees all licensing and special permissions requests for ASTM International.

First, Kathe has correctly stated ASTM Organizational policy: ASTM does not allow the posting of any of our copyrighted standards or other intellectual properties on the open Internet for possible free access or download.

Second, the Disclaimer and Copyright notice of the European Patent Office does not provide sufficient protection nor use restraint if we allowed such such a request. There is no definition or limit as to who may access or download the copyrighted information from the EPO website, and there is no "click thru" license agreement addressing who would assume liability on further downstream use and control of the ASTM intellectual property.

If DOW wishes to assume responsibility to include lost revenues incurred by ASTM from such free posting, we can arrange with DOW and the EPO to have posted on this site a cover page of the standard with the abstract and metadata, and a link whereby any individual who needs a copy may obtain the pdf version via a click thru agreement, and the resulting pdf standard version download will come directly from the ASTM server. For such downloads, ASTM would keep record and charge DOW on all copies downloaded on a monthly basis until the arrangement was officially terminated.

If you wish to pursue this arrangement, we will be more than willing to cooperate and work with you.

Best Regards-
John Pace

John Pace
Vice President, Publications and Marketing
ASTM International
610-832-9632
jpace@astm.org

From: Van Buren, Frederik (FR) [<mailto:FRVANBUREN@dow.com>]
Sent: Wednesday, March 18, 2009 12:37 PM
To: Hooper, Kathe
Subject: RE: Question related to copyright

Dear Mrs. Hooper,

Your refusal is regrettably difficult to accept for us. Therefore I will provide you with some additional explanation on the factual situation.

We as an opponent in an European patent opposition are obliged to provide the documents mentioned in our notice of opposition as a hardcopy. Otherwise the opposition board of the European Patent Office will not consider the document. So this is one of the responsibilities of Dow in an European Patent Opposition.

As mentioned before the documents are placed by the European Patent Office on a public website (European patent oppositions are essentially of public nature). However, the following is explicitly mentioned at this section of the EPO website (section in red by me):

Disclaimer and copyright

The Online File Inspection service gives users access to the information contained in the European Patent Office (EPO) databases connected to the service. The EPO cannot assume liability for the correctness, completeness or quality of the information thus accessed, nor can it guarantee that it is up to date. Documents viewed via this service, particularly non-patent literature items, may be subject to copyright. Before copying or using such documents in other electronic or printed publications, it is up to users of the Online Public File Inspection service to check whether the permission of the author, publisher or other right holder is required. Where no third-party rights exist or are affected, the EPO gives permission for the information retrieved to be reproduced together with an indication of the source, provided that the content is correctly reproduced.

So the EPO has explicitly included this copyright notice.

The step of submitting supporting information by the opponent at the EPO is uncoupled from the responsibilities of the EPO and visitors of this section of the EPO website. The copyright aspects of downloading information from the website of the EPO have been addressed by the EPO.

I hope this additional information will allow you to provide me with information how to obtain your permission for supplying the EPO with the necessary copy of the ASTM standard. Please do not hesitate to contact me if you would like to have additional information.

Kind regards,

Frits van Buren

Dr. F.R. van Buren
Intellectual Capital Management
PTC-1 / 439 building - office 103
Dow Benelux B.V.
P.O. Box 48
4530 AA Terneuzen
The Netherlands
T + 31 115 672372 - F + 31 115 673315
frvanburen@dow.com
Handelsregisternr. 24104547

From: Hooper, Kathe [<mailto:khooper@astm.org>]
Sent: Monday, March 16, 2009 8:14 PM
To: Van Buren, Frederik (FR)
Subject: RE: Question related to copyright

Dear Mr. van Buren:

This is in response to your email of 12 March (copy below).

We are unable to grant permission as ASTM policy does not permit the posting of ASTM standards on public websites.

Kindest regards,

Kathe Hooper (Mrs.)
ASTM International
100 Barr Harbor Drive, PO Box C700
West Conshohocken, PA 19428-2959
phone: 610-832-9634
fax: 610-832-9635

email: khooper@astm.org

From: Van Buren, Frederik (FR) [<mailto:FRVANBUREN@dow.com>]
Sent: Thursday, March 12, 2009 10:43 AM
To: Custserv
Subject: Question related to copyright

Dear Mrs. or Mr.,

March 03, 2009 a colleague of me (J. Kirsting - Dow Chemical - USA) ordered standard ASTM 1238 - 85 from IHS.

On this standard it is mentioned:

Copyright ASTM International

Provided by IHS under license with ASTM

No reproduction or networking permitted without license from IHS.

and

Sold to: Dow Chemical, 01742693

Not for resale, 2009/3/3 20:57:9 GMT

For an European patent opposition we need to file a hardcopy of this standard at the European Patent Office (EPO) in Munich in Germany. The documents filed at an opposition are placed on a public section of the website of the EPO as pdf files. There they can be read and downloaded.

I would like to have your permission for filing a copy of this standard at the European Patent Office in Munich.

I first submitted this question at IHS, but they referred to you for further information.

Kind regards,

Frits van Buren

Dr. F.R. van Buren

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EXHIBIT 131

From: Hooper, Kathe </O=ASTM/OU=FIRST ADMINISTRATIVE GROUP/CN=RECIPIENTS/CN=KHOOPER>
Sent: Thursday, July 9, 2009 3:33 PM
To: 'Victor Palacios' <vic_3@hotmail.com>
Subject: RE: Request (nao)

Dear Mr. Palacios:

Thank you for all your email and the information provided.

After further review of your request, ASTM is unable to grant permission to reproduce ASTM standards B584 and B208 in your thesis. You may reference the standards (by designation number and title) and refer readers to the ASTM website (www.astm.org) where they may purchase the standards.

Thank you for your interest in ASTM standards.

Kind regards,

*Kathe Hooper
ASTM International
100 Barr Harbor Drive, PO Box C700
West Conshohocken, PA 19428-2959
phone: 610-832-9634
fax: 610-832-9635
email: khooper@astm.org*

From: Victor Palacios [mailto:vic_3@hotmail.com]
Sent: Wednesday, July 08, 2009 5:38 PM
To: Hooper, Kathe
Subject: RE: Request (nao)

Dear Mrs. Kathe Hooper:

My mailing address is:

"Talleres Unidos Cevallos"
Eloy Alfaro 1702 y Argentina
Guayaquil, Ecuador
Postal Code: EC090101

Please be so kind to let me know the fees I need to cancel and all the information about the money transfer.
Thank you very much for all your help.
Kind regards,

Victor Palacios

De: Hooper, Kathe [<mailto:khooper@astm.org>]
Enviado el: miércoles, 08 de julio de 2009 15:28
Para: Victor Palacios
Asunto: RE: Request (nao)

Dear Victor,

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Kathe Hooper
ASTM International
100 Barr Harbor Drive, PO Box C700
West Conshohocken, PA 19428-2959
phone: 610-832-9634
fax: 610-832-9635
email: khooper@astm.org

From: Victor Palacios [mailto:vic_3@hotmail.com]
Sent: Monday, July 06, 2009 4:54 PM
To: Hooper, Kathe
Subject: RE: Request (nao)

Dear Mrs. Kathe Hooper:

The digital copies will be delivered in CD-ROM.

Thanks for your help.

Victor Palacios

De: Hooper, Kathe [mailto:khooper@astm.org]
Enviado el: lunes, 06 de julio de 2009 14:52
Para: Victor Palacios
Asunto: RE: Request (nao)

Dear Mr. Palacios,

Thank you for your response. I have an additional question regarding the digital copies (PDF). How will you deliver the PDF files (i.e. CD-ROM, DVD?)

Thank you.

Kind regards, Kathe

Kathe Hooper
ASTM International
100 Barr Harbor Drive, PO Box C700
West Conshohocken, PA 19428-2959
phone: 610-832-9634
fax: 610-832-9635
email: khooper@astm.org

From: Victor Palacios [mailto:vic_3@hotmail.com]
Sent: Monday, July 06, 2009 2:27 PM
To: Hooper, Kathe
Subject: RE: Request (nao)

Dear Mrs. Kathe Hooper:

I need to make 1 original document (printed), 3 printed copies and two digital copies (in pdf format as part of the thesis so it can't be reproduced), that's 4 printed copies and two digital copies. These documents will be distributed as follows:

1 copy stays with the thesis director,
1 copy and 1 original digital copy for the Mechanical Engineering library
1 original, 1 copy and 1 original digital copy for the Central Campus Library

I hope this information is the one you need, thanks in advance for all your help,

Victor Palacios

De: Hooper, Kathe [mailto:khooper@astm.org]
Enviado el: lunes, 06 de julio de 2009 10:24
Para: vic_3@hotmail.com
Asunto: RE: Request (nao)

Dear Mr. Palacios:

This is in regard to your email of 1 July (copy below).

Before we can proceed with your request to include ASTM standards B584 and B208 in your thesis, we will need to know how many printed copies of your thesis will be made and distributed. Once we receive this information, we will be happy to send a license agreement outlining the fees and conditions involved.

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Thank you for your interest in ASTM standards.

Kind regards,

*Kathe Hooper (Mrs.)
ASTM International
100 Barr Harbor Drive, PO Box C700
West Conshohocken, PA 19428-2959
phone: 610-832-9634
fax: 610-832-9635
email: khooper@astm.org*

From: Naouri, Sarah
Sent: Thursday, July 02, 2009 9:21 AM
To: Hooper, Kathe
Cc: srvcout
Subject: FW: Request (nao)

Hi Kathe,

Sorry for all the emails today! Would the below permission request be something you handle? Please advise. Thank you.

Best Regards,

Sarah Naouri
ASTM International
Customer Relations Representative

From: Custserv
Sent: Thursday, July 02, 2009 8:45 AM
To: Naouri, Sarah
Subject: FW: Request

From: Victor Palacios [mailto:vic_3@hotmail.com]
Sent: Wednesday, July 01, 2009 3:46 PM
To: Custserv
Subject: Request

Greetings,

My name is Victor Palacios, I'm from Ecuador and I bought two standards: B584 and B208 through a friend's credit card (Jose Eduardo Rossel) two years ago (approximately). I'm making a thesis for my degree in Mechanical Engineering. The thesis is about the fabrication of copper alloy casting C86500 according to the ASTM Standard B584 for marine applications. The reason I write this email is because I would like your authorization to use these standards as annex documents in the thesis. Obviously I can't publish them without your authorization.

As I said, my name is Victor Palacios Cevallos, the university I studied is Escuela Superior Politecnica del Litoral (ESPOL), my thesis director is Ignacio Wiesner Falconi (email: iwiesner@espol.edu.ec), Mech. Eng. The university's web page is www.espol.edu.ec, the faculty's web page is www.fimcp.espol.edu.ec.

If there is a formal procedure of doing this, please let me know.

Thanks in advance,

Victor Palacios

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EXHIBIT 132

Register My Account

E-Mail address:

Select Password:

Confirm Password:

REGISTER MY ACCOUNT

Password Note: Please use only letters A(a)-Z(z) and numbers 0-9. Do not use any punctuation marks, formatting, spacing, or non-letters (periods, commas, etc.). Your password must be at least 6 characters long.

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EXHIBIT 133

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The terms of this agreement constitute the entire agreement between the parties with respect to the subject matter hereof. If any provision hereof is adjudged to be invalid, void, or unenforceable, the parties agree that the remaining provisions hereof will not be affected thereby, that the provision in question may be replaced by the lawful provision that most nearly embodies the original intention of the parties, and that the terms of this agreement will in any event remain valid and enforceable.

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EXHIBIT 139

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series with the fluid flow, such as expansion tanks, fill lines, chemical feeders, and drains.

plenum: a compartment or chamber to which one or more ducts are connected, that forms a part of the air distribution system, and that is not used for occupancy or storage. A plenum often is formed in part or in total by portions of the building.

pool: any structure, basin, or tank containing an artificial body of water for swimming, diving, or recreational bathing. The term includes, but is not limited to, swimming pool, whirlpool, spa, and hot tub.

power roof/wall ventilators (PRV): a fan consisting of a centrifugal or axial impeller with an integral driver in a weather-resistant housing and with a base designed to fit, usually by means of a curb, over a wall or roof opening.

power usage effectiveness (PUE): computer room energy divided by IT equipment energy calculated in accordance with industry-accepted standards (see Informative Appendix E).

power usage effectiveness—category 0 (PUE_0): peak electric demand (kW) for the entire computer room, including IT equipment and supporting infrastructure, divided by peak electric demand (kW) of the IT equipment.

power usage effectiveness—category 1 (PUE_1): annual energy consumption (kWh) for the entire computer room, including IT equipment and supporting infrastructure, divided by annual energy consumption (kWh) of the IT equipment.

purchased energy rates: costs for units of energy or power purchased at the building site. These costs may include energy costs as well as costs for power demand as determined by the adopting authority.

R-value: see *thermal resistance*.

radiant heating system: a heating system that transfers heat to objects and surfaces within the heated space primarily (greater than 50%) by infrared radiation.

rated motor power: see *motor power, rated*.

rated R-value of insulation: the thermal resistance of the insulation alone as specified by the manufacturer in units of $\text{h}\cdot\text{ft}^2\cdot^\circ\text{F}/\text{Btu}$ at a mean temperature of 75°F . Rated R-value refers to the thermal resistance of the added insulation in framing cavities or insulated sheathing only and does not include the thermal resistance of other building materials or air films. (See *thermal resistance*.)

rating authority: the organization or agency that adopts or sanctions use of this rating methodology.

readily accessible: capable of being reached quickly for operation, renewal, or inspection without requiring those to whom ready access is requisite to climb over or remove obstacles or to resort to portable ladders, chairs, etc. In public facilities, accessibility may be limited to certified personnel through locking covers or by placing equipment in locked rooms.

recirculating system: a domestic or service hot-water distribution system that includes a closed circulation circuit designed to maintain usage temperatures in hot-water pipes

100%

EXHIBIT 140

(FILED UNDER SEAL)