



Public Input No. 271-NFPA 101-2021 [Section No. 3.3.22.2.4]

3.3.22.2.4 Net Floor Area.

The floor area within the inside perimeter of the outside walls, or the outside walls and fire walls of a building, or outside and/or inside walls that bound an occupancy or incidental use area with deductions for hallways, stairs, closets, shafts, thickness of interior walls, columns, and other fixed features. (SAF-MEA)

Statement of Problem and Substantiation for Public Input

Clarify what type of features would be considered as part of "other features." As this is a generic statement that is open to interpretation.

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Submittal Date: Sun May 30 21:04:36 EDT 2021

Committee: SAF-MEA

Committee Statement

Resolution: Adding the word "fixed" would remove flexibility for the AHJ to determine what items might be deducted from the floor area when determining what constitutes net floor area.



Public Input No. 42-NFPA 101-2021 [Section No. 3.3.71]

3.3.71 Elevator Evacuation System.

See 3.3.285 286 .1.

Statement of Problem and Substantiation for Public Input

Improper reference

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Committee: SAF-MEA

Committee Statement

Resolution: FR-6505-NFPA 101-2021

Statement: Editorial correction.



Public Input No. 341-NFPA 101-2021 [New Section after 3.3.164]

Interlocked-Door Vestibule.

A compartment provided with doors in series where only one of the doors in series is openable at a time. _

Statement of Problem and Substantiation for Public Input

This proposed definition is modeled after the definition of “sally port”, and along with complementary proposals in 7.2.1.6.5 and Chapters 18, 19, 20, 21, 36, 37, 38, 39, 40, and 42, offers the opportunity for interlocked-door vestibules in these occupancies.

While sally ports are defined in NFPA 101 (3.3.249) and permitted in detention and correctional occupancies, sally ports are typically used as security vestibules and control egress (obviously). Outside of detention and correctional facilities, the commercial building equivalent of sally ports are utilized for security reasons (i.e. money handling rooms), occupant protection (health care), environmental contamination control (manufacturing clean rooms), controlled substance dispensing (prescription drugs and cannabis), and other uses and applications. Unfortunately, the term “sally port”, and its definition, is predominately reserved for uses where occupants are restrained against their will in buildings or spaces. An interlocked-door vestibule could be used for that purpose, but would more commonly be used as mentioned above.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 343-NFPA 101-2021 [New Section after 7.2.1.6.4.2]	
Public Input No. 346-NFPA 101-2021 [New Section after 19.2.5.7.4]	
Public Input No. 348-NFPA 101-2021 [New Section after 20.2.5.3.2]	
Public Input No. 350-NFPA 101-2021 [New Section after 21.2.5.3]	
Public Input No. 352-NFPA 101-2021 [New Section after 36.2.5.11]	
Public Input No. 353-NFPA 101-2021 [New Section after 37.2.5.11]	
Public Input No. 355-NFPA 101-2021 [New Section after 38.2.5.3.2]	
Public Input No. 356-NFPA 101-2021 [New Section after 39.2.5.3]	
Public Input No. 358-NFPA 101-2021 [New Section after 40.2.5.3.2]	
Public Input No. 359-NFPA 101-2021 [New Section after 42.2.5]	

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Committee: SAF-MEA

Committee Statement

Resolution: No protection criteria is included with the proposed provision. Additional information is needed to specify how a continuous and unobstructed means of egress travel would be maintained. No criteria for operational planning, occupant training, or building features (sprinklers, detection, etc.) are specified. Other special locking arrangement provisions specify "how to do it" criteria to be referenced by other sections of the Code.



Public Input No. 25-NFPA 101-2021 [New Section after 3.3.306]

New Definition. Add a new section defining the term "Slip Resistant" as used in Section 7.1.6.4

Slip Resistant: Walking Surfaces whose wet Dynamic Coefficient of Friction (DCOF) is Moderate to High Traction as measured per the National Floor Safety Institute (NFSI) B101.3 Test Method for Measuring wet DCOF of Common Hard Surface Floor Materials...

Additional Proposed Changes

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
NFSI-B101.3-2020.pdf	NFSI B101.3 Wet DCOF Standard	

Statement of Problem and Substantiation for Public Input

The term Slip Resistant is not defined in the current or past 101 Life Safety Codes which unfortunately has caused a lot of confusion as to whether or not a particular walkway is or is not in compliance. Without a definition the term slip resistant is an adjective describing some form of benefit but one which is ambiguous and in some cases misleading. Given that walkways in the means of egress are mandated to be slip resistant: (i.e. "shall be slip resistant") the term and thus the definition must provide a means of measurement as to ensure compliance. It is also vitally important that accessible routes, including ramps, have a sufficient level of slip resistance as to protect those with disabilities from an accidental slip related injury. The NFSI B101.3 standard dates back to 2009 and was recently revised in 2020. The B101.3 standard is one of the most widely used slip resistance test standards in the U.S. and defines three levels of traction or "slip resistance" that being Low, Moderate, or High Traction. Low Traction walkways would clearly not meet the slip resistant requirement/threshold but Moderate to High Traction walkways would be suitable under both dry and wet conditions. Section 3.8 of the B101.3 standard (enclosed) defines the term slip resistant as that which I am proposing be adopted. The B101.3 standard is a wet test method and therefore Moderate to High Traction surfaces when tested wet would certainly comply when the walkway are dry. The NFSI is a nationally recognized consensus standards developing organization and has been authoring walkway safety standards since 2002 and was an ANSI SDO from 2006-2020. For more information about the NFSI and the B101 series of slip, trip and fall prevention standards, please visit: www.nfsi.org

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Submission Date: Wed Jan 27 19:08:21 EST 2021
Committee: SAF-MEA

Committee Statement

Resolution: The current requirement for slip resistance refers to "foreseeable circumstances." Not all walking surfaces would be expected to be wet under foreseeable circumstances. As written, the proposed requirements would apply to new and existing buildings. It is

unknown if the measurement instruments are proprietary. Definitions are not permitted to contain requirements or reference standards in accordance with the NFPA Manual of Style.

**National Floor Safety Institute
B101.3 Test Method for Measuring the Wet DCOF of Hard Surface
Walkways**



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Suggestions for improvement of this standard should be sent to the Accredited Standards Developer: National Floor Safety Institute, P.O. Box 92607, Southlake, TX 76092.

This standard was processed and approved for submittal by the NFSI B101 Main Standards Committee on Safety Requirements for Slip, Trip and Fall Prevention. Approval of the standard does not necessarily imply that all committee members voted for its approval. At the time it approved this standard procedure, the B101 Main Standards Committee had the following members:

Chairman	Howard Harris, M.D.
Committee Secretary	Russell J. Kendzior

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GT Grandstands, Inc.
IEHA/ISSA
Impact General, Inc.

Jessup Manufacturing
Mountville Mills, Inc.
National Floor Safety Institute
New Pig
Professional Safety Consultants
Safer Walkways Association
Safety Priority Consultants, LLC
SlipDoctors
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At the time of approval, the B101.3 subcommittee had the following members:

Chairman

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In Memory of Mahala Ann Cullum

Table of Contents

B101 Committee Membership List	2
B101.3 Subcommittee Membership List	3
Section 1: Scope/Purpose/Application/Exception	5
1.1 Scope	5
1.2 Purpose	5
1.3 Application	5
1.4 Exceptions	5
Section 2: Reference to other Standards and Publications	5
Section 3: Definitions	6
Section 4: Test Procedure	7
4.1 Testing Device	7
4.2 Measuring the Reference Check Surface	7
4.3 Measuring the Wet DCOF of Uninstalled Flooring Materials/Walking Surfaces (Laboratory Procedure)	7
4.4 Measuring the Wet DCOF of Installed Flooring Material (In-Situ Procedure)	9
Section 5: Calculations/Data Interpretation	11
Section 6: Test Report	11
Section 7: Safety & Environmental Information	12
7.1 Potential Hazards in Test Area Vicinity	12
7.2 Testing Environment	12
Appendix A	13
Appendix B	16
Appendix C	17
Appendix D	18
Attachment 1 to Appendix D	25
Attachment 2 to Appendix D	26
Attachment 3 to Appendix D	27
Attachment 4 to Appendix D	28

Test Method for Measuring the Wet DCOF of Hard-Surface Walkways

Section 1: Scope/Purpose/Application/Exception

1.1 Scope

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

1.2 Purpose

This test method provides a measurement procedure setting forth DCOF ranges which facilitate remediation of walkway surfaces when warranted.

1.3 Application

This test method does not apply to carpeting of any type, however, does address the common hard-surfaced walkway materials such as ceramic and porcelain tile, polished and un-polished concrete, stone, vinyl, wood and synthetic laminates, and such materials with coatings or polishes applied.

Note: This test method does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use. No express or implied representation or warranty is made regarding the accuracy or significance of any test results in terms of slip resistance.

1.4 Exceptions

This test method is not recommended for dry surface testing and does not propose to be an accurate measurement method for determining dry surface slip resistance. DRY SURFACE TEST DATA SHOULD NOT BE COMPARED TO WET SURFACE TEST DATA. No inferences should be implied or concluded regarding dry vs. wet DCOF test results or data.

Section 2: Reference to other Standards and Publications

The specification for the SBR sensor material called for in this standard is covered by the following DIN Standards: DIN EN 1392, DIN EN ISO 1183-1, 53504, DIN ISO 7619-1, DIN ISO 34-1, and DIN ISO 4649. See Appendix B for the related values.

Inter-Laboratory Study (ILS) for Tribometers Designed to Measure the Wet Dynamic Coefficient of Friction (DCOF) of Common Hard Surface Walkways (See Appendix D).

Section 3: Definitions

3.1 Directional Bias - a characteristic of a material whose coefficient of friction measurement may differ depending on the direction in which the material surface is being tested.

3.2 Dynamic Coefficient of Friction (DCOF) - the ratio of the horizontal component of force applied to a body required to overcome resistance to movement when the body is already in motion divided by the vertical component of the weight of the body or force applied to the surface where movement occurs.

3.3 Dynamic Friction - the resistance opposing the force required to perpetuate the movement of one surface on or over another.

3.4 Friction - resistance to the relative motion of two solid objects in contact. On a level surface, this force is parallel to the plane of contact and is perpendicular to the normal force.

3.5 Grain - a characteristic of many natural materials surfaces, such as wood, that may exhibit directional bias as it relates to slip resistance.

3.6 Ramp - A walkway with a minimum slope of no less than 1:20 and a maximum slope no greater than 1:12 (4.76 degrees). A minimum slope of less than 1:20 is considered a level surface.

3.7 Slip Resistance - the property of a walkway surface that acts in sufficient opposition to those forces and movements exerted by a pedestrian under all normal conditions of human ambulation.

3.8 Slip Resistant (Walking Surface) - Moderate to High-Traction as measured per this standard (See Table 1).

3.9 SBR - Styrene Butadiene Rubber.

3.10 SLS - Sodium Lauryl Sulfate.

3.11 Surfactant Solution - A solution consisting of SLS and distilled or de-ionized water which when combined has a final dilution level of 0.1% SLS solution. The solution is employed to reduce the water surface tension when testing on wet hard-surface walkway.

3.12 Test Area - the physical space required for the testing apparatus to perform its primary function.

3.13 Tile Joint - the space between two (2) or more pieces of tile. This space may be filled, par or unfilled.

3.14 Traction - the friction between the sensor material and the surface it moves upon.

3.15 Tribometer - an instrument or device specifically designed to measure the available level of traction upon a walkway surface.

3.15.1 Approved Tribometer - a device that is in compliance with the following criteria:

3.15.1.1 The tribometer should demonstrate reliability and reproducibility in measuring the Dynamic Coefficient of Friction per the Inter-Laboratory Study (ILS) for Tribometers Designed to Measure the Wet Dynamic Coefficient of Friction (DCOF) of Common Hard Surface Walkways in Appendix D.

3.15.1.2 The tribometer manufacturer shall be capable of providing calibration, repair, and maintenance, and a reference check surface method for field performance verification, and other services necessary to ensure device reliability.

3.15.1.3 The tribometer shall be capable of providing a digital display of results for DCOF to the hundredths (two positions right of the decimal point) using a scale of 0.00 to 1.00 or greater.

Section 4: Test Procedure

This test procedure should be conducted using an approved tribometer designed to measure the wet dynamic coefficient of friction (DCOF) of a walkway surface under anticipated use. Materials that are excluded from this test method include: sand or gravel beds, pebbles, rough asphalt, any cloth or textile materials, or any surface that would inhibit the normal operation of the testing device.

4.1 Testing Device

This test method should be carried out using a tribometer that has completed and passed the ILS in Appendix D that is fitted with SBR sensor material that complies with the standard set forth herein. The tribometer manufacturer's operating and calibration directives shall be followed.

4.2 Measuring the Reference Check Surface

Follow the tribometer manufacturer's procedures for measuring the reference check surface(s). Report the results and verify that the values measured fall within the limits of the manufacturer's reference surface value(s).

4.3 Measuring the Wet DCOF of Uninstalled Flooring Materials/Walking Surfaces (Laboratory Procedure)

4.3.1 Randomly select three samples of the flooring material under evaluation (hereafter referred to as the test surface).

4.3.2 Using an SLS and distilled water solution (See Appendix C for mixing instructions), clean the sample flooring surface with an uncontaminated microfiber cloth by gently agitating the solution on the sample surface. Rinse the sample flooring surface using a generous flush of water, tap water is acceptable. Once the surface is rinsed, repeat with distilled water and pat dry with a separate uncontaminated microfiber cloth.

4.3.3 Wet the test surface with a surfactant solution of 0.1 percent sodium lauryl sulfate in distilled water. Follow the tribometer manufacturer's operating instructions for performing wet DCOF testing.

4.3.4 Prepare the SBR Sensor - The test surface of the SBR sensor shall be maintained as to prevent buildup of contaminants which may affect the DCOF test results. Follow the tribometer manufacturer's instructions for conditioning the SBR material.

4.3.5 Performing Directional Tests - After completing the tribometer manufacturer's sensor preparation procedure, one (1) reading should be taken in the surfactant solution after sensor cleaning to prevent any sensor conditioning bias. Do not record this DCOF value.

4.3.6 Place the measuring device on the test surface and conduct a minimum of five (5) tests in one direction. Record all DCOF readings and average for the readings.

4.3.7 Rotate the measuring device or the test surface clockwise by 180 degrees, place it on the test surface and conduct a minimum of five (5) tests in the second direction. Record all DCOF readings and average for the readings.

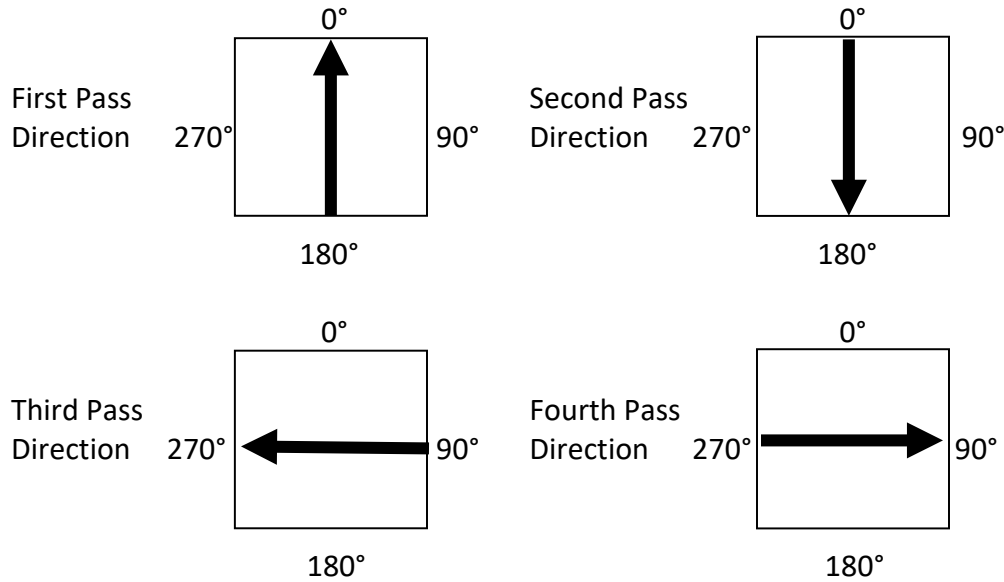
4.3.8 Rotate the measuring device clockwise by 90 degrees, place the measuring device on the test surface and conduct a minimum of five (5) tests in the third direction. Record all DCOF readings and average for the readings.

4.3.9 Rotate the measuring device clockwise by 180 degrees and conduct a minimum of five (5) tests in the fourth direction. Record all DCOF readings, and an average for the readings.

NOTE: Additional surfactant solution may be applied to the test surface as needed.

4.3.10 Repeat items 4.3.2 through 4.3.9 on three (3) separate test surfaces.

4.3.11 Calculate and record the average for the four directional tests for each of the three test surfaces.



4.4 Measuring the Wet DCOF of Installed Walkway Material (In-Situ Procedure)

4.4.1 Select the Test Area - When possible, the surface area to be tested must be large enough to fully accommodate the normal operation of the testing device without restriction. Effort should be made to test each sample area using a minimum of four directions, 90 degrees apart; often referred to as an “X-Y” pattern. One of the readings should be performed in the direction of normal pedestrian traffic if possible. If a situation exists where both X-Y test directions prove impossible to perform, (such as a stairway step) the final test report should indicate the restricted test area. In no instance should a testing device be modified or manually “helped” to compensate for a difficult situation. This may include, but not be limited to; pushing, pulling, lifting, tilting, adding or reducing weight, or other such methods of manipulation. When testing on grouted tile floors, every attempt should be made to avoid testing directly on tile joints wherever possible unless the tile joint is potentially the problem.

4.4.2 Prepare the SBR Sensor - The surface of the SBR sensor shall be maintained as to prevent buildup of contaminants which may affect the DCOF test results. Follow the tribometer manufacturer’s instructions for conditioning the SBR material.

4.4.3 Create a wet test path using surfactant solution of 0.1 percent sodium lauryl sulfate in distilled water of sufficient length and width in accordance with the test device instructions for wet DCOF testing.

4.4.4 Performing Directional Tests - After completing the tribometer manufacturer’s sensor preparation procedure, one (1) reading should be taken in the surfactant solution to prevent any sensor conditioning bias. Do not record this DCOF value.

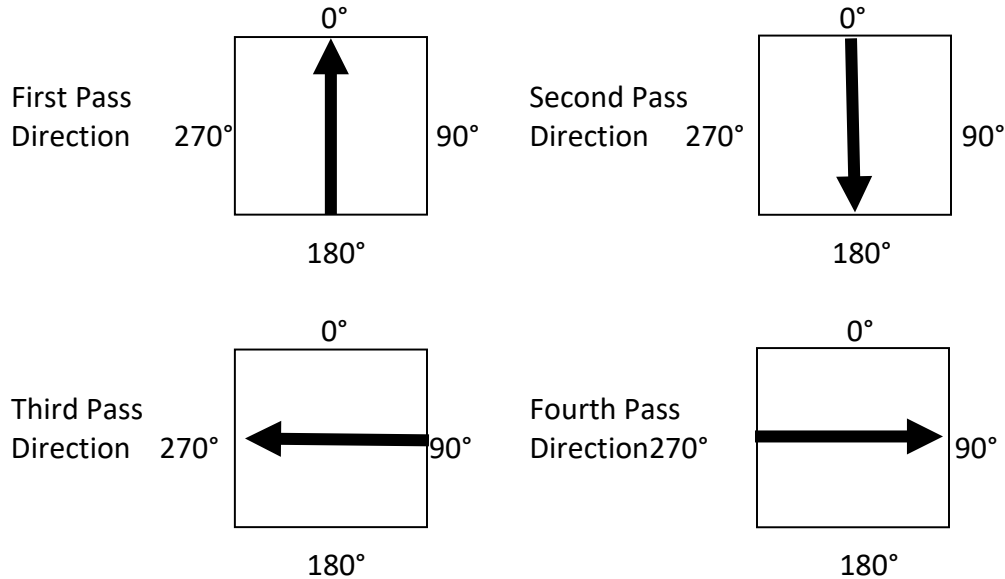
4.4.5 Place the measuring device on the test surface and conduct a minimum of three (3) tests in one direction. Record all DCOF readings and average for the readings.

4.4.6 Rotate the measuring device clockwise by 180 degrees, place it on the test surface and conduct a minimum of three (3) tests in the second direction. Record all DCOF readings and average for the readings.

4.4.7 Rotate the measuring device clockwise by 90 degrees and place the measuring on the test surface. Conduct a minimum of three (3) tests in the third direction. Record all DCOF readings and average for the readings.

4.4.8 Rotate the measuring device clockwise by 180 degrees and conduct a minimum of three (3) tests in the fourth direction. Record all DCOF readings and average for the readings.

NOTE: Additional surfactant solution may be applied to the test surface as needed.



Section 5: Calculations/Data Interpretation

Calculate the test result data in accordance with the testing device manufacturer's directions. The final test results shall be recorded as DCOF values on a linear scale from 0.00 to 1.00 μ .

Table 1.

Wet DCOF Value (μ)	Available Traction	Action
≥ 0.50 (ramp) ≥ 0.45 (level surfaces)	High	None required. Monitor and test DCOF regularly.
0.30 – 0.44	Moderate	Monitor and test DCOF regularly. Consider using traction enhancing products and practices where applicable for intended use and maintain walking surface in dry condition.
< 0.30	Low	Seek professional intervention. Consider replacing flooring or treating with traction enhancing products.

NOTE: It is important to note that these categories are not indicative of all possible conditions. There are numerous variables that may add to, or take from the available slip resistance potential of any given walking surface. (ie: type or style of footwear, types and frequency of contaminants, pedestrian preoccupation, etc.). These ranges were established based on research done in Europe utilizing empirical and mathematical techniques and were validated in the laboratory and field through extensive testing with the following standardized methods: DIN 13287 - BST Tester; DIN 51130 – German Ramp; DIN 51131 – GMG 200, FSC-2000/2011, UWT-3000, BOT-3000, and TRACSCAN. These values would be applicable to other test methods or devices which can produce an R correlation of greater than 0.80 to one of these three reference standards. Data produced by tribometers which are not designed to measure wet DCOF do not necessarily correlate to the values listed in Table 1. All inclined surfaces to be measured using four directional tests.

Section 6: Test Report

The Test Report shall include as a minimum:

- 6.1 types of flooring or walkway materials tested
- 6.2 location(s) of test areas and sites
- 6.3 average values for each area tested
- 6.4 description of areas tested (e.g. greasy, always wet, dusty, damaged tile, etc.)
- 6.5 copies of test results
- 6.6 signature of auditor / technician
- 6.7 value of reference check tile

Section 7: Safety & Environmental Information

7.1 Potential Hazards in Test Area Vicinity

Never leave a test area unattended. People may trip over objects left in the test area. Wipe the residual solution left on the walkway after each test with a clean cloth or towel and then a dry cloth or towel to ensure a thorough removal of the SLS solution. It is recommended to place a hazard warning such as a safety cone or sign to identify your work area and to alert personnel or the public to your presence.

7.2 Testing Environment

The tribometer manufacturer instructions or procedures regarding temperature and humidity requirements for the proper operation and storage of the device shall be followed. Conduct DCOF wet testing in the environmental conditions that are regarded as typical for the test area.

Appendix A

Note: This appendix provides supporting reference background information and known published scientific literature relevant to this standard. The documents and standards herein while in the broad subject area of slips, trips and falls, are not in the exact context or scope of the B101 standards series, but do suggest authoritative citations for this field of injury prevention.

Bakken, PhD, Gary, “Slips Trips Missteps and Their Consequences, Second Edition”; Lawyers & Judges Publishing Company, Inc.; 2007

Batterman, S.D. and Batterman, S.C. (2005) Biomechanical Analysis of Slip, Trip, and Fall Accidents. *Forensic Medicine of the Lower Extremity, Humana Press*

Bönig, S. “Experimentelle Untersuchung zur Festlegung von normgerechten Reibzahl- Grenzwerten fuer gleitsicheres Gehen” [Experimental Investigation to Determine the Standardized Limit of the Coefficient of Friction for Slip Resistance during Walking]. PhD diss., Wuppertal, Germany: Bergische Universität– Wuppertal, 1996.

Brough, R. and Malkin, F. (1979) Measurement of the Coefficient of Friction of Floors *The Institute of Physics*

Brungraber, Robert J. (1976) “An Overview of Floor Slip Resistance Research with Annotated Bibliography” U.S. Department of Commerce.

Buczek, F.L. and Banks, S.A. (1996) High resolution force plate analysis of utilized slip resistance in human walking. *American Society for Testing and Materials*

Chang, W.R. and Groenqvist, R. (2001) The role of friction measurement of slipperiness – Part 1: Friction mechanisms and definition of test conditions. *Ergonomics, Vol. 44, Number 13*

Chang, W.R. (2004) A statistical model to estimate the probability of slip and fall incidents. *Safety Science 42 779-789*

Derler, S. and Kausch, F. (2005) Systematic patterns of random fluctuations in time series of coefficients of friction measured on floor surfaces. *Safety Science 43, Empa, Switzerland*

Deutsches Institut für Normung (DIN) e.V. [German Institute for Standardization], DIN 51130 (2004-06): Prüfung von Bodenbelägen— Bestimmung der rutschhemmenden Eigenschaft—Arbeitsräume und Arbeitsbereiche mit Rutschgefahr, Begehungsverfahren— Schiefe Ebene [Testing of Floor Coverings — Determination of the Anti-Slip Properties— Workrooms and Fields of Activities with Slip Danger, Walking Method—Ramp Test]. Berlin: Deutsches Institut für Normung e.V. (June 2004).

German Institute for Standardization (DIN)

Method DIN 51130 (1992) Determination of anti-slip properties: Ramp test.

Method DIN 51131 (2008) Method for the measurement of the dynamic coefficient of friction

Groenqvist, R. and Hirvonen, M. (2003) The validity and reliability of a portable slip meter for determining floor slipperiness during simulated heel strike. *Accident Analysis and Prevention, Volume 35, Issue 2*

Harper, F.C., W.J. Warlow, and B.L. Clarke. The Forces Applied to the Floor by the Foot in Walking on a Level Surface. National Building Studies: Research Paper 32, Department of Scientific and Industrial Research, Building Research Station. London: Her Majesty's Stationery Office, 1961.

James, D.I. "Rubbers and Plastics in Shoes and Flooring: The Importance of Kinetic Friction." *Ergonomics* 26, no. 1 (January 1983): 83-99.

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Johnson, F.M., (2019) Slips and Falls, A New Approach to Friction Measurements, Second Edition. *Lawyers & Judges Publishing Company, Inc.*

Kendzior, R. J. (2010) Falls Aren't Funny: America's Multi-Billion Dollar Slip-and-Fall Crisis. *Government Institutes.*

Kirchberg, S. (1997) Untersuchungen zur Optimierung der Prüfparameter fuer Verfahren zur instationaeren Messung der Gleitreibung von Fussboeden. *Bundesanstalt fuer Arbeitsschutz und Arbeitsmedizin F1673*

Kirchberg, S. (2005) Einfluss der Prufgeschwindigkeit auf die Messung des Gleitreibungskoeffizienten zur Beurteilung der Rutschsicherheit beim Gehen. *Bundesanstalt fuer Arbeitsschutz und Arbeitsmedizin F1954*

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Sebald, J. (2009) System oriented concept for testing and assessment of the slip resistance of safety, protective, and occupational footwear. *University of Wuppertal, Germany. Verlag- Pro Business*

Skiba R. "Sicherheitsgrenzwerte zur Vermeidung des Ausgleitens auf Fussböden" [Safety Limits to Avoid Slipping on Floors]. *Zeitschrift für Arbeitswissenschaft [Journal of Industrial Engineering] 14 (1988): 47-51.*

Sotter, G. (2000) *Stop Slip and Fall Accidents. Sotter Engineering Corporation*

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APPENDIX B
SBR Physical Specifications for NFSI B101.3-2020
Test Method for Measuring Wet DCOF of Hard-Surface Walkways

TEST METHOD	STANDARD	VALUE	UNIT OF MEAS.
THICKNESS	N/A	4.0 ± 0.2	mm
DENSITY	DIN EN ISO 1183-1	1.23 ± 0.2	g/cm ³
HARDNESS	DIN EN ISO 7619-1	95 ± 3	SHORE A
TENSILE STRENGTH	DIN 53504	> 10	MPa
FLEXIBILITY	DIN 53504	> 250	%
WEARABILITY	DIN EN ISO 4649	< 250	mm ³
ADHESION 2 MIN. @ 23 DEG. C	DIN EN 1392	> 1.0	N/mm
ADHESION 5 DAYS @ 23 DEG. C	DIN EN 1392	> 8.0	N/mm
TEAR STRENGTH	DIN EN ISO 34-1	> 12	N/mm

Note: The information contained in this appendix is not part of this Standard and has not been processed in accordance with NFSI Operating Procedures. As such, this appendix may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to the standard.

APPENDIX C

Sodium Lauryl Sulfate Surfactant Specifications for NFSI B101.3 (most current version)

CHEMICAL NAME: Sodium Lauryl Sulfate

FORM: Liquid

SUPPLIED STRENGTH: 29% solution

CONTAINER SIZE: 1 US Gallon

Item # 82025-1

CAS #: [151-21-3]

MOLECULAR FORMULA: $C_{12}H_{25}NaO_4S$

APPEARANCE: Hazy light yellow in color

SYNONYMS: Sodium Dodecyl Sulfate, Dodecyl Sodium Sulfate, SLS, Lauryl Sodium Sulfate, Sodium Lauryl sulfate, Sulfuric Acid Monododecyl Ester Sodium Salt

Note: Dilute the 29% SLS down to 0.1% SLS. For example, to obtain 0.1% SLS mix 13 mL of 29% SLS with 1 gallon of distilled water.

Also:

CHEMICAL NAME: Sodium Lauryl Sulfate

FORM: Needle Form

Supplied Strength: >93%

CONTAINER SIZE: 1 Lb.

Item # 81057-1

CAS #: [151-21-3]

MOLECULAR FORMULA: $C_{12}H_{25}NaO_4S$

APPEARANCE: White

NOTE: Mix 3.79 grams of SLS needles with 1 gallon of distilled water to obtain 0.1% SLS.

A known source of supply of the above surfactants at this time is:

The Chemistry Store (www.chemistrystore.com)

1133 Walter Price St.

Cayce, SC 29033

Phone: 800-224-1430

Also:

CHEMICAL NAME: Sodium Lauryl Sulfate

FORM: Powder

Supplied Strength: Level not provided

CONTAINER SIZE: 1 Lb.

Item # INSOLSP1

CAS #: [151-21-3]

MOLECULAR FORMULA: $C_{12}H_{25}NaO_4S$

APPEARANCE: White

Note: Mix 3.79 grams of SLS needles with 1 gallon of distilled water to obtain 0.1% SLS.

A known source of supply of the above surfactant at this time is:

SoapGoods (www.soapgoods.com)

1625 Rock Mountain Blvd Suite V

Stone Mountain, Georgia 30083

Note: If you are aware of alternative suppliers, please provide this information to NFSI B101 Standards Committee. PO Box 92607, Southlake, TX 76092.

APPENDIX D

Standard Method for Conducting an Interlaboratory Study (ILS) to Establish Repeatability and Reproducibility of a Walkway Tribometer Measuring Wet Dynamic Coefficient of Friction (DCOF) for a Common Hard-Surface Walkways

Section 1: Scope/Purpose/Application/Exceptions

1.1 Scope

This method specifies the procedure for conducting an inter-laboratory study (ILS) for a walkway tribometer used to measure the wet dynamic coefficient of friction (DCOF) of common hard-surface walkways.

1.2. Purpose

This test method evaluates the validity, repeatability and reproducibility of instruments and methods employed to evaluate the wet DCOF of common hard-surface walkway surfaces across a typical traction range.

1.3 Application

This ILS applies to any tribometer (test instrument) which purports to measure the wet DCOF of common hard-surface walkways as prescribed in the NFSI B101.3 (most current version) Test Method for Measuring Wet DCOF of Common Hard-Surface Floor Materials (Including Action and Limit Thresholds for the Suitable Assessment of the Measured Values)

Note: The ILS for evaluating test methods used to evaluate walkway traction does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the Operator to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use. No express or implied representation or warranty is made regarding the accuracy or significance of any test results, for which instrument performance is evaluated by this ILS methodology set forth herein, in terms of slip resistance.

Section 2: Reference to other Standards and Publications

NFSI B101.1 (most current version) – Test Method for Measuring the Wet DCOF of Common Hard-Surface Floor Materials.

NFSI B101.3 (most current version) Test Method for Measuring Wet DCOF of Common Hard-Surface Floor Materials (Including Action and Limit Thresholds for the Suitable Assessment of the Measured Values)

ASTM D297-93(2006) Standard Test Method for Rubber Products – Chemical Analysis

ASTM D2240-05 Standard Test Method for Rubber Property – Durometer Hardness
ASTME691-92 Standard Practice for Conducting and Interlaboratory Study to Determine the Precision of a Test Method

ASTM F1646-03 Standard Terminology Relating to Safety and Traction of Footwear

ASTM F-2508-13 Standard Practice for Validation, Calibration, and Certification of Walkway Tribometers Using Reference Surfaces

Section 3: Definitions

3.1 Analysis of Variance (ANOVA). A statistical technique that separates systematic variation that is attributable to the operator and/or testing instrument from random variation.

3.2 Friction. Resistance to the relative motion of two solid objects in contact. This force is parallel to the plane of contact and is perpendicular to the normal force.

3.3 High Traction. The physical property of a floor or walkway that is designed to mitigate slipping by pedestrians wearing ordinary footwear during normal human ambulation by providing a reasonably sufficient level of available contact friction (Traction).

3.4 Interlaboratory Study (ILS). A controlled study designed to evaluate the consistency of two or more laboratories purporting to measure the same object or phenomenon.

3.5 Laboratory. A combination of instrument, method and person (Operator) or persons used to evaluate the wet DCOF of a flooring material.

3.6 Low Traction. The physical property of a floor or walkway that provides a comparatively low level of available friction, thus increase the risk of slipping during normal human ambulation.

3.7 Moderate Traction. The physical property of a floor or walkway that provides a moderate level of available friction, thus creating a moderate risk of slipping during normal human ambulation.

3.8 Normally Trained Operator. A tribometer operator who has received normal (sufficient) training on the operation of the walkway tribometer under review, but who does not possess expert-level knowledge on tribology and/or the specific tribometer being evaluated by the ILS.

3.9 P-Value. A statistical term that, for the purpose of this standard, quantifies the likelihood that variability in DCOF readings can be attributed to the use of different examples of the same tribometer instruments and/or different normally trained operators. For this ILS, a p-value < 0.1. constitutes an unacceptable degree of Operator and/or instrument-related variation.

3.10 Qualified Individual. A qualified individual is a particular person who having complied with the specific requirements or precedent conditions via education, training, experience, or other requisites of a position that s/he holds or seeks, and who can perform the essential functions of the position.

3.11 Validation Surfaces – two (2) engineered hard surface materials whose wet dynamic coefficient of friction (DCOF) values have been tested and verified by the National Floor Safety Institute (NFSI). When tested in accordance with NFSI B101.3 (most current version) one surface will possess a wet DCOF value between 0.13 – 0.18 (Low Traction) the other surface will possess a wet DCOF value between 0.70 – 0.75 (High Traction). See Attachment 4.

3.12 Repeatability. Or, test-re-test reliability, is the variation in measurements taken by a single person or instrument on the same item and under the same conditions. Repeatability conditions include the same measurement procedure, the same observer, the same measuring instrument, used under the same conditions, the same location and repetition over a short period of time.

3.13 Reproducibility. Refers to the ability of a test or experiment to be accurately reproduced, or replicated, by independent parties evaluating the same material(s) under the same conditions.

3.14 Slip Resistance. The property of a floor or walkway surface that acts in sufficient opposition to those forces and movements exerted by a pedestrian under normal conditions of human ambulation. (see Traction)

3.15 Dynamic Coefficient of Friction (DCOF). The ratio of the horizontal component of force applied to a body required to overcome resistance to movement when the body is already in motion divided by the vertical component of the weight of the body or force applied to the surface where movement occurs.

3.16 Dynamic Friction. The resistance opposing the force required to perpetuate the movement of one surface over another.

3.17 Traction. The friction between the sole material of a shoe and the fixed surface it moves upon.

3.18 Walkway Tribometer. An instrument or device specifically designed to measure the available level of traction upon a flooring material or walkway surface.

Section 4: Procedure for the Inter-laboratory Study of a Walkway Tribometer Method

This method for conducting an inter-laboratory study (ILS) may be utilized to evaluate the performance of any tribometer designed to measure the wet dynamic coefficient of friction (DCOF) of a floor or walkway surface under the conditions specified herein.

4.1 Laboratory. A laboratory shall be defined as the combination of one instrument and one Operator. ILS participants shall create six (6) unique laboratories by combining three (3) different measurement instruments and two (2) normally trained operators. For the purpose of this ILS, data shall be collected from each instrument/Operator combination.

4.1.1 Validation Surfaces. Two validation surfaces shall be provided by the NFSI. One surface is designated as “low traction” and the second surface is designated as “high traction.” All testing shall be conducted in conformance with NFSI B101.3 (most current version) Test Method for Measuring Wet DCOF of Common Hard-Surface Floor Materials (Including Action and Limit Thresholds for the Suitable Assessment of the Measured Values). See Attachment 4.

4.2 Data Collection. Each tribometer seeking ILS validation shall collect data from each laboratory according to the following guidelines.

4.2.1 Designate a Qualified Individual. A qualified individual is a supplier neutral, third-party observer who is a licensed Professional Engineer (PE) and has knowledge in the area of Tribology and or techniques of measurement for quality assurance - ideally as a quality engineer (CQE), reliability engineer (CRE) or quality auditor (CQA) from the American Society for Quality (ASQ). Qualified Individuals must be approved by the NFSI and shall be required to sign an affidavit as an attest to their neutrality.

4.2.2 Generate and Record Data. Data shall be generated, recorded and submitted to NFSI to the following guidelines:

4.2.2.1 Each of the six laboratories shall test each validation surface four times, once in the N-S direction, once in the S-N direction, once in the E-W direction and once in the W-E direction and record the results in Attachment 3. This process will be repeated for all three (3) tribometers for a total of forty-eight (48) observations. Testing shall comply with the measurement techniques set forth in the tribometer supplier’s operating manual.

4.2.2.2 The neutral third-party observer shall confirm that each laboratory is conducting measurements in accordance with the methodologies set forth in the walkway tribometer supplier’s operating manual and in compliance with NFSI B101.3 (most current version) Standard.

4.2.2.3 The neutral third-party observer shall record all data on standard data collection forms provided by the NFSI. (Data Collection Sheet in Attachment 3.)

4.2.2.4 The NFSI recognizes that mistakes can be made in measuring walkway traction. As such, the Operator may elect to exclude an observation prior to receiving visual or other sensory feedback about the measurement. Once the value from the observation is known to the Operator, the value may not be excluded from the data set. It is the responsibility of the third-party observer to decide when an observation may or may not be excluded.

4.2.2.5 The neutral third-party observer shall sign each data collection sheet as an attest to the data collection process, and forward the data sheets to the NFSI at the following address:

NFSI
P.O. Box 92607
Southlake, TX 74892
Attn: Laura Cooper

Section 5: Method for Analyzing the Data Collected During a Walkway Tribometer Inter-laboratory Study

Upon receipt of data collection forms signed by the neutral third-party observer, NFSI's designated analyst(s) shall evaluate the submitted data and render an official statement about the instrument/method's performance on the ILS.

5.1 Data Editing. For each data set of (48) observations from each of the six (6) laboratories employed to test each of the two (2) surfaces provided by the NFSI, the two (2) highest readings and the two (2) lowest readings shall be excluded from the data set, leaving a net total 40 observations.

5.2 Data Analysis. To qualify for NFSI recognition (Approval) as a walkway tribometer, the instrument and method shall perform satisfactorily both on the Pass/Fail Evaluation and the Analysis of Variance (ANOVA) Evaluation.

5.2.1 Pass/Fail Evaluation. The NFSI has set-forth a methodology by which the walkway tribometer's performance in testing standard materials is evaluated using a Pass/Fail test.

5.2.1.1 Pass/Fail Criteria. Pass/fail criteria have been set forth by the NFSI that are approximately +/- 10% of the known value for the tested material. For example, if the wet DCOF for a material is known to be 0.48, any reading that is between 0.53 and 0.44 shall be designated a "Pass." Any reading that falls outside of these bounds shall be designated a "Fail."

5.2.1.2 Required Confidence Level. The NFSI requires that the pass/fail test shall allow for a five percent (5%) likelihood of a false reading and be statistically accurate at the 95% confidence level.

5.2.1.3 Pass/Fail Judgment for a Material. A laboratory shall be deemed to "Pass" in its ability to test a particular flooring material if all forty (40) observations of the wet DCOF for that validation surface fall within the Pass/Fail criteria bounds set forth by the NFSI. The presence of any outlying observations in the edited data shall constitute a "Fail" for the laboratory/material combination.

5.2.1.4 Pass/Fail Judgment for a Laboratory. A laboratory shall be deemed to "Pass" if all forty (40) observations of the wet DCOF for each of the two (2) validation surfaces fall within "Pass"

category of the Pass/Fail criteria bounds set forth by the NFSI. The presence of any outlying observations in the edited data set shall constitute a “Fail” for the laboratory for the Pass/Fail evaluation.

5.2.1.5 Pass/Fail Judgment for a Walkway Tribometer Methodology. A walkway tribometer method shall be deemed to “Pass” if all observations made by each of the six (6) laboratories on each of the two (2) standard designated validation surfaces fall within the pass/fail criteria set forth by the NFSI. The presence of any outlying observations in the edited data set shall constitute a “Fail” for the tribometer methodology for the Pass/Fail evaluation.

5.2.2 Analysis of Variance (ANOVA) Evaluation.

5.2.2.1 Methodology. NFSI shall employ a three-factor ANOVA process to evaluate the performance of each walkway tribometer instrument and method combination in testing materials with high and low traction. The analysis shall be conducted according to standard and customary statistical techniques. The following table summarizes the experimental design employed for the ANOVA.

		Instrument 1	Instrument 2	Instrument 3
Operator 1	NFSI Low Traction Material	40 Observations	40 Observations	40 Observations
	NFSI High Traction Material	40 Observations	40 Observations	40 Observations
Operator 2	NFSI Low Traction Material	40 Observations	40 Observations	40 Observations
	NFSI High Traction Material	40 Observations	40 Observations	40 Observations

5.2.2.2 Evaluation. The walkway tribometer method shall pass the ANOVA evaluation if the p-value is greater than 0.10, meaning that the likelihood of instrument and/or Operator interference is less than 10% when testing high.

5.3 Overall Pass/Fail Criteria. The instrument/method shall be deemed to have passed the NFSI inter-laboratory study for a walkway tribometer only if it successfully succeeds in both the Pass/Fail and ANOVA evaluations.

5.4 Waiting Period for Reassessment. In the event that an instrument/method is unsuccessful in its attempt to achieve ILS validation from the NFSI, the supplier may attempt validation after a mandatory waiting period of ninety (90) days. There is no limit to the number of times ILS validation may be attempted.

Section 6: Report Generated Following Data Analysis for a Walkway Tribometer Inter-laboratory Study

For each instrument/method's submission, a confidential report shall be submitted to the sponsoring organization. The report shall serve to state whether or not the instrument/method passed or failed the NFSI ILS for a Walkway Tribometer. The report shall contain the following details and analysis.

1. A clear statement of overall Pass/Fail status.
 - a. If the instrument method/passed, a certificate of confirmation shall accompany the report.
 - b. If the instrument/method failed, a concise statement of weaknesses shall be provided so as to enable the supplier to modify the instrument and/or method.
2. Details about the Pass/Fail evaluation data for each instrument/Operator/material combination.
3. Details about the ANOVA evaluation to test for instrument/method and or Operator bias in the measurement.

Section 7: Term of Validation

7.1 Standard Term of Certification. If successfully validated by the NFSI inter-laboratory study method, the instrument/method's certification of ILS validation shall be valid for a period of five (05) years, after which to retain its certificate of validation, the instrument must be revalidated according to the then current methodology set forth by the NFSI.

7.2. Provision for Design Change. Any change in the design of a walkway tribometer instrument and/or method that materially alters the core method for measuring the wet DCOF of a walkway material invalidates the certification of ILS validation and the new instrument/method shall require revalidation.

Attachment 1 to Appendix D – Logic for Pass/Fail Analysis for Establishing Repeatability of a Walkway Tribometer

The NFSI opted to use a pass/fail test to establish repeatability of a walkway tribometer. To pass, each laboratory must produce 48 readings that fall within the range specified by the NFSI for a given Surface. The logic for requiring 48 observations that fall within the specified range is based upon the following standard equation for determining the sample size of a pass/fail test.

$$n = \frac{\ln \left(1 - \frac{c\%}{100\%} \right)}{\ln (1 - p)}$$

Where:

n = The required number of observations without a “failure,” which is an observation that falls outside of the specified parameters

ln = log normal

c% = The required confidence level, in our case 95%

p = Specified p-value – in our case, 0.05

For the pass/fail portion of the ILS for walkway tribometers, the equation is as follows:

$$n = \frac{\ln \left(1 - \frac{95\%}{100\%} \right)}{\ln (1 - 0.05)} = 58.40$$

The resultant value of 58.40 was rounded to 48 – a slightly more conservative requirement than that produced by the standard equation. To circumvent complications associated with data editing, it was decided to require a total number of 64 observations per laboratory per Surface type. The highest two and lowest two readings are automatically excluded by the data analyst. If the remaining 48 observations fall within the parameters set forth by NFSI for the pass/fail test, the specified laboratory passes for the specified Surface. If all laboratory/Surface combinations pass, the walkway tribometer passes the pass/fail portion of the ILS to establish repeatability.

Attachment 2 to Appendix D – Analysis of Variance (ANOVA) to Establish Reproducibility for a Walkway Tribometer

Overview

Analysis of Variance, or ANOVA, is a statistical technique employed to differentiate and analyze the significance of systematic variation relative to random variation observed in a sample data set. For the purposes of validating a walkway tribometer under the NFSI Interlaboratory Study (ILS) method, our objective is to differentiate variation specifically related to different tribometer instruments provided by a single supplier and/or different tribometer operators associated with each laboratory. The ANOVA is employed to establish the reproducibility of a walkway tribometer.

Significance to Walkway Tribometer Measurement

A valid walkway tribometer must produce repeatable and accurate results with no significant interference induced by the Operator or serial number on an instrument provided by a particular supplier. If an unacceptable level of Operator or instrument interference exists, it could result in false positive (measurements identify a problem when one doesn't actually exist) or false negative (measurements fail to identify a problem when one does actually exist) readings in the field.

Method

For the walkway tribometer ILS study, the ANOVA will compare the variation within the following “treatment” groups to the total amount of variation observed for all observations.

- Operator to Operator Variation
- Instrument to Instrument Variation
- Combined Operator/Instrument to Operator/Instrument Variation

ANOVA employs the Fisher Test, more commonly called the F-Test, which is based upon the Fisher Distribution first developed in the 1920s by Sir Ronald A. Fisher. The F-Test is the ratio of systematic variation to total variation. The result is reported as the p-value, which denotes the probability that the group responsible for systematic variation is the same as the larger sample population. As with most statistical techniques, the p-value penalized when the study includes a small number of observations. A larger sample size affords more “degrees of freedom” to the analysis. For the purpose of the walkway tribometer ILS, a p-value < 0.10 on any of the three treatment groups shall be deemed significant, causing the instrument seeking validation to fail.

Attachment 3 to Appendix D –Data Collection Sheet

Device 1.	Surface 1.	Surface 1.	Surface 1.	Surface 1.	Surface 2.	Surface 2.	Surface 2.	Surface 2.
Operator 1.								
Operator 2.								
Device 2.	Surface 1.	Surface 1.	Surface 1.	Surface 1.	Surface 2.	Surface 2.	Surface 2.	Surface 2.
Operator 1.								
Operator 2.								
Device 3.	Surface 1.	Surface 1.	Surface 1.	Surface 1.	Surface 2.	Surface 2.	Surface 2.	Surface 2.
Operator 1.								
Operator 2.								
<p>NOTE: two 2 operators using 3 tribometers = 6 labs. Each lab will collect 48 total data points.</p> <p>Validation surface sample measurements are to be taken in four different directions: N-S (↓), E-W (←), S-N (↑), W-E (→).</p>								

Attachment 4 to Appendix D – Reference Surface Material Specifications

High- Traction Surface

Material: 12" X 12" X 3/8" clear tempered glass with beveled edge

Pattern: 1/8" X 1/8" X 80 microns checkerboard

Pattern Material: kiln fired ceramic ink (white) applied at 720 DPI print resolution thickness.

Source: M3 Glass, Inc. Irving, TX or equivalent

Low-Traction Surface

Material: 12" X 12 X ¼" Arctic White King Starboard plastic sheet with beveled edge

Source: Boat Outfitters Inc. Ocoee, FL SKU #13770-42002-1-CP or equivalent

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- Automated Cleaning Equipment**

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Public Input No. 231-NFPA 101-2021 [Section No. 7.1.5.1]

7.1.5.1

Means of egress shall be designed and maintained to provide headroom in accordance with other sections of this *Code*, and such headroom shall be not less than 7 ft 6 in. (2285 mm). Projections from the ceiling shall provide headroom of not less than 6 ft 8 in. (2030 mm), with a tolerance of $-3/4$ in. (-19 mm), above the finished floor, unless otherwise specified by any of the following:

- (1) In existing buildings, the ceiling height shall be not less than 7 ft (2135 mm) from the floor, with projections from the ceiling not less than 6 ft 8 in. (2030 mm), with a tolerance of $-3/4$ in. (-19 mm), nominal above the floor.
- (2) Headroom in industrial equipment access areas as provided in 40.2.5.3 shall be permitted.

Statement of Problem and Substantiation for Public Input

This Public Input seeks to allow the 3/4-inch tolerance for ceiling projections for existing conditions. The current wording only permits the tolerance for new construction.

Submitter Information Verification

Submitter Full Name: Joshua Brackett

Organization:

Street Address:

City:

State:

Zip:

Submittal Date: Fri May 28 10:51:54 EDT 2021

Committee: SAF-MEA

Committee Statement

Resolution: [FR-6529-NFPA 101-2021](#)

Statement: This revision will allow the 3/4-inch tolerance for ceiling projections for existing conditions. The current wording only permits the tolerance for new construction.



Public Input No. 14-NFPA 101-2020 [Section No. 7.1.6.4]

7.1.6.4* Slip Resistance.

Walking surfaces in the means of egress shall be slip resistant under foreseeable conditions.

> my comments are regarding the nonmandatory verbiage which states "Therefore, materials used for floors that are acceptable as slip resistant (as described by ASTM F 1637, Standard Practice for Safe Walking Surfaces), provide adequate slip resistance where used for stair treads." As the Vice Chair of the ASTM committee that publishes ASTM F1637, I can advise that F1637 does not have a definition for slip resistant or slip resistance within it - it defers the reader to ASTM F1646, a terminology standard. Additionally, neither F1637 nor F1646 provide any method or guidance as to how to determine whether a surface is slip resistant, or has adequate slip resistance. So though A7.1.6.4 is nonmandatory, it nevertheless cites to a standard that is not actually useful for the reader.

Additional Proposed Changes

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
Screenshot_2020-12-07_144517.jpg	excerpt from ASTM F1637	

Statement of Problem and Substantiation for Public Input

The attached graphic supports my comment. I suggest the advisory language be changed to eliminate reference to ASTM F1637. There is no alternate standard that I would recommend be cited instead, as standards pertaining to determining "slip resistance" or whether something is "slip resistant" tend to be walkway material-specific and are numerous: ASTM D2047 for polish-coated floors, ANSI A137.1 for ceramic tile, etc. There are more general standards in existence but they are from non-ANSI accredited providers which may not have undergone proper consensus approval.

Submitter Information Verification

Submitter Full Name: John Leffler
Organization: Forcon
Street Address:
City:
State:
Zip:
Submittal Date: Mon Dec 07 14:28:11 EST 2020
Committee: SAF-MEA

Committee Statement

Resolution: It is unclear what the submitter intends to revise. No revised text was provided. The submitter is encouraged to submit a public comment with specific, revised text to address any concerns.

1. Scope

1.1 This practice covers design and construction guidelines and minimum maintenance criteria for new and existing buildings and structures. This practice is intended to provide reasonably safe walking surfaces for pedestrians wearing ordinary footwear. These guidelines may not be adequate for those with certain mobility impairments.

1.2 Conformance with this practice will not alleviate all hazards; however, conformance will reduce certain pedestrian risks.

1.3 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

F1646 Terminology Relating to Walkway Safety and Footwear

3. Terminology

3.1 See Terminology F1646 for the following terms used in this practice:

- 3.1.1 Bollard,
- 3.1.2 Carpet,
- 3.1.3 Cross slope,
- 3.1.4 Element,
- 3.1.5 Fair,
- 3.1.6 Footwear,
- 3.1.7 Foreseeable pedestrian path,
- 3.1.8 Planar,
- 3.1.9 Ramp,
- 3.1.10 Sidewalk,
- 3.1.11 Slip resistance,
- 3.1.12 Slip resistant,
- 3.1.13 Walkway.
- 3.1.14 Walkway surface hardware, and

4. Significance and Use

4.1 This practice addresses elements along and in walkways including floors and walkway surfaces, sidewalks, short flight stairs, gratings, wheel stops, and speed bumps. Swimming pools, bath tubs, showers, natural walks, and unimproved paths are beyond the scope of this practice.

5. Walkway Surfaces

5.1 General:

5.1.1 Walkways shall be stable, planar, flush, and even to the extent possible. Where walkways cannot be made flush and even, they shall conform to the requirements of 5.2 and 5.3.

5.1.2 Walkway surfaces for pedestrians shall be capable of safely sustaining intended loads.

5.1.3 Walkway surfaces shall be slip resistant under expected environmental conditions and use. Painted walkways shall contain an abrasive additive, cross cut grooving, texturing or other appropriate means to render the surface slip resistant where wet conditions may be reasonably foreseeable.

5.1.4 Interior walkways that are not slip resistant when wet shall be maintained dry during periods of pedestrian use.

5.2 Walkway Changes in Level:

¹ This practice is under the jurisdiction of ASTM Committee F13 on Pedestrian/



Public Input No. 292-NFPA 101-2021 [Section No. 7.2.1.2.3]

7.2.1.2.3 Minimum Door Leaf Width.

7.2.1.2.3.1

For purposes of determining minimum door opening width, the clear width in accordance with 7.2.1.2.1 shall be used, unless door leaf width is specified.

7.2.1.2.3.2

Door openings in means of egress shall be not less than 32 in. (810 mm) in clear width, except under any of the following conditions:

- (1) Where a pair of door leaves is provided, one door leaf shall provide not less than a 32 in. (810 mm) clear width opening.
- (2)* Exit access door assemblies serving a room not exceeding 70 ft² (6.5 m²) and not required to be accessible to persons with severe mobility impairments shall be not less than 24 in. (610 mm) in door leaf width.
- (3)* Door openings serving a building or portion thereof not required to be accessible to persons with severe mobility impairments shall be permitted to be 28 in. (710 mm) in door leaf width.
- (4) In existing buildings, the existing door leaf width shall be not less than 28 in. (710 mm).
- (5) Door openings in detention and correctional occupancies, as otherwise provided in Chapters 22 and 23, shall not be required to comply with 7.2.1.2.3.
- (6) Interior door openings in dwelling units as otherwise provided in Chapter 24 shall not be required to comply with 7.2.1.2.3.
- (7) ~~A power-operated door leaf.~~ The door leaves located within a two-leaf opening where both leaves open and close as a power-operated pair shall be exempt from the minimum 32 in. (810 mm) single-leaf requirement in accordance with 7.2.1.9.1.8.
- (8) Revolving door assemblies, as provided in 7.2.1.10, shall be exempt from the minimum 32 in. (810 mm) width requirement.
- (9)* Where a single door opening is provided for discharge from a stairway required to be a minimum of 56 in. (1420 mm) wide in accordance with 7.2.2.2.1.2(B), and such door assembly serves as the sole means of exit discharge from such stairway, the clear width of the door opening, measured in accordance with 7.2.1.2.2, shall be not less than two-thirds the required width of the stairway.

Statement of Problem and Substantiation for Public Input

The proposed revisions are intended to be editorial and clarify the intent of Item 7 of this section of the code.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 345-NFPA 101-2021 [New Section after 18.2.5.7.4]	

Submitter Information Verification

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Submittal Date: Mon May 31 13:23:44 EDT 2021
Committee: SAF-MEA

Committee Statement

Resolution: [FR-6530-NFPA 101-2021](#)

Statement: The revisions are intended to be editorial and clarify the intent of Item 7 of 7.2.1.2.3.2.



Public Input No. 174-NFPA 101-2021 [Section No. 7.2.1.4.1]

A large, empty rectangular box with a thin border, intended for public input or comments.

7.2.1.4.1* Swinging-Type Door Assembly Requirement.

Any door assembly in a means of egress shall be of the side-hinged or pivoted-swinging type, and shall be installed to be capable of swinging from any position to the full required width of the opening in which it is installed, unless otherwise specified as follows:

- (1) Door assemblies in dwelling units, as provided in Chapter 24, shall be permitted.
- (2) Door assemblies in residential board and care occupancies, as provided in Chapters 32 and 33, shall be permitted.
- (3) Horizontal-sliding or vertical-rolling security grilles or door assemblies that are part of the required means of egress, where permitted in Chapters 11 through 43, shall be permitted, provided that all of the following criteria are met:
 - (4) Such grilles or door assemblies shall remain secured in the fully open position during the period of occupancy by the general public.
 - (5) On or adjacent to the grille or door opening, there shall be a readily visible, durable sign in letters not less than 1 in. (25 mm) high on a contrasting background that reads as follows: THIS DOOR TO REMAIN OPEN WHEN THE SPACE IS OCCUPIED.
 - (6) Door leaves or grilles shall not be brought to the closed position when the space is occupied.
 - (7) Door leaves or grilles shall be operable from within the space without the use of any special knowledge or effort.
 - (8) Where two or more means of egress are required, not more than half of the means of egress shall be equipped with horizontal-sliding or vertical-rolling grilles or door assemblies.
- (9) Horizontal-sliding door assemblies shall be permitted under any of the following conditions:
 - (10) Horizontal-sliding door assemblies in detention and correctional occupancies, as provided in Chapters 22 and 23, shall be permitted.
 - (11) Special-purpose horizontally sliding accordion or folding door assemblies complying with 7.2.1.13 shall be permitted.
 - (12) Unless prohibited by Chapters 11 through 43, horizontal-sliding door assemblies serving a room or area with an occupant load of fewer than 10 shall be permitted, provided that all of the following criteria are met:
 - (13) The area served by the door assembly has no high-hazard contents.
 - (14) The door assembly is readily operable from either side without special knowledge or effort.
 - (15) The force required to operate the door assembly in the direction of door leaf travel is not more than 30 lbf (133 N) to set the door leaf in motion and is not more than 15 lbf (67 N) to close the door assembly or open it to the minimum required width.
 - (16) The door assembly complies with any required fire protection rating, and, where rated, is self-closing or automatic-closing by means of smoke detection in accordance with 7.2.1.8 and is installed in accordance with NFPA 80.
 - (17) Corridor door assemblies required to be self-latching have a latch or other mechanism that ensures that the door leaf will not rebound into a partially open position if forcefully closed.
 - (18) Where private garages, business areas, industrial areas, and storage areas with an occupant load not exceeding 10 contain only low- or ordinary-hazard contents, door openings to such areas and private garages shall be permitted to be horizontal-sliding door assemblies.

- (19) Vertical-rolling door assemblies shall be permitted in door openings to private garages, business areas, industrial areas, and storage areas where such areas have an occupant load not exceeding 10 and contain only low or ordinary hazard contents.
- (20) Revolving door assemblies complying with 7.2.1.10 shall be permitted.
- (21) Existing fusible-link-operated horizontal-sliding or vertical-rolling fire door assemblies shall be permitted to be used as provided in Chapters 39, 40, and 42.
- (22) Sliding, power-operated door assemblies serving a room or area with an occupant load of fewer than 50 in accordance with 7.2.1.9.1.7.

Statement of Problem and Substantiation for Public Input

Powered Horizontal sliding egress doors do not meet the requirements of 7.2.1.4.1 where serving an occupant load greater than 10. Thus where occupant loads are greater than 10, the code currently requires the door to breakaway and swing. 7.2.1.9.1.7 permits powered horizontal sliding doors serving less than 50 people to omit the swing out feature required by 7.2.1.9.1.5, but does not omit the feature required by 7.2.1.4.1, thus following the most stringent code requirement, powered sliding doors with less than 50 occupants would require breakaway. This change intends to exempt these doors from the swinging requirements of section 7.2.1.4 to allow the exception of 7.2.1.9.1.7 to apply.

Submitter Information Verification

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Submittal Date: Wed May 19 12:00:00 EDT 2021
Committee: SAF-MEA

Committee Statement

Resolution: The proposed revision does not clarify the Code. 7.2.1.9.1.7 already covers what the public input addresses. It is not clear how the proposed revision would apply to areas with more than 50 occupants.



Public Input No. 293-NFPA 101-2021 [Section No. 7.2.1.5.3]

7.2.1.5.3* Latch-Release Devices.

All locks, latches, and all other fastening devices on the egress side of a door leaf shall be provided with a releasing device that has an obvious method of operation and that is readily operated under all lighting conditions.

7.2.1.5.3.1

The releasing mechanism for locks and latches shall be located as follows:

- (1) Not less than 34 in. (865 mm) above the finished floor for other than existing installations
- (2) Not more than 48 in. (1220 mm) above the finished floor

7.2.1.5.3.2*

The operation of the releasing mechanism shall release all latching and all locking devices of the door leaf with not more than one motion in a single linear or rotational direction, unless otherwise specified in 7.2.1.5.3.4, 7.2.1.5.3.5, 7.2.1.5.3.7, or 7.2.1.5.3.8.

7.2.1.5.3.3

The releasing mechanism for new installations shall be capable of being operated with one hand and shall not require tight grasping, tight pinching, or twisting of the wrist to operate.

7.2.1.5.3.4*

Egress door assemblies from individual living units and guest rooms of residential occupancies shall be permitted to be provided with devices, including automatic latching devices, that require not more than one additional releasing motion, provided that such device is operable from the inside without the use of a key or tool and is mounted at a height not exceeding 48 in. (1220 mm) above the finished floor.

7.2.1.5.3.5

Existing security devices permitted by 7.2.1.5.3.4 shall be permitted to have two additional releasing motions.

7.2.1.5.3.6

Existing security devices permitted by 7.2.1.5.3.4, other than automatic latching devices, shall be located not more than 60 in. (1525 mm) above the finished floor.

7.2.1.5.3.7

Two releasing motions shall be permitted for existing hardware on a door leaf serving an area having an occupant load not exceeding three, provided that releasing does not require simultaneous operations.

7.2.1.5.3.8

Two releasing motions shall be permitted in existing educational occupancies in accordance with 15.2.2.2.4 and in existing day care occupancies in accordance with 17.2.2.2.6.

Statement of Problem and Substantiation for Public Input

Clearly the intent is this section applies only to the egress side of a door. As written, it may be interpreted as applying to both side of a door in the means of egress. Some doors intended for egress only do not have a method for releasing the door on the side opposite the egress side (the ingress side of the door).

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Committee: SAF-MEA

Committee Statement

Resolution: [FR-6507-NFPA 101-2021](#)

Statement: Clearly the intent is this section applies only to the egress side of a door. As currently written, it may be interpreted as applying to both sides of a door in the means of egress. Some doors intended for egress only do not have a method for releasing the door on the side opposite the egress side (the ingress side of the door). The revision modifies the public input by clarifying that the releasing devices must be located on the egress side of the door irrespective of the location of the locks, latches, or other fastening devices.



Public Input No. 438-NFPA 101-2021 [Section No. 7.2.1.5.3.4]

7.2.1.5.3.4*

Egress door assemblies from individual living units and guest rooms of residential occupancies shall be permitted to be provided with devices, including automatic latching devices, that require not more than one additional releasing motion provided the devices do not require simultaneous releasing operations , and provided that such device is- devices are operable from the inside without the use of a key or tool and is- are mounted at a height not exceeding 48 in. (1220 mm) above the finished floor.

Statement of Problem and Substantiation for Public Input

This section is missing important criteria that the additional releasing motion be non-simultaneous with the other releasing motion. The proposed revision is very similar to the current requirements in 7.2.1.5.3.7. The complementary proposed revisions to Annex A illustrate examples of what would, and would, not be permitted with this proposed criteria.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<u>Public Input No. 440-NFPA 101-2021 [Section No. A.7.2.1.5.3.4]</u>	
<u>Public Input No. 443-NFPA 101-2021 [New Section after A.7.2.1.5.3.4]</u>	

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Committee: SAF-MEA

Committee Statement

Resolution: FR-6531-NFPA 101-2021

Statement: This section is missing important criteria that the additional releasing motion be non-simultaneous with the other releasing motion. The proposed revision is very similar to the current requirements in 7.2.1.5.3.7. The complementary proposed revisions to Annex A illustrate examples of what would, and would, not be permitted with this proposed criteria.



Public Input No. 233-NFPA 101-2021 [Section No. 7.2.1.5.7 [Excluding any Sub-Sections]]

Every door assembly in a stair enclosure serving more than four stories, unless permitted by 7.2.1.5.7.2, shall meet one of the following conditions:

- (1) Re-entry from the stair enclosure to the interior of the building shall be provided.
- (2) An automatic release shall be provided that meets all of the following:
 - (a) The automatic release shall unlock all stair enclosure door assemblies to allow re-entry.
 - (b) The automatic release shall be actuated with the initiation of the building fire alarm system. Activation of manual fire alarm boxes that activate the building fire alarm system shall not be required to unlock the stair doors.
 - (c) Door hardware for new installations shall be listed in accordance with UL 294, *Access Control System Units*.
- (3) Selected re-entry shall be provided in accordance with 7.2.1.5.7.1.

Statement of Problem and Substantiation for Public Input

The current Code text requires the locking system to release upon any activation of the fire alarm system including activation of manual fire alarm boxes which is an easy way to defeat the security installed on the stair doors. This is particularly an issue with infant abduction and elopement systems which can be easily thwarted by manual fire alarm boxes under the current provisions of the code. This proposed modification is similar to the requirements for delayed egress (7.2.1.6.1) and sensor release locking systems (7.2.1.6.2) which allows the additional level of security provided by not releasing the locked door when the manual fire alarm box is activated.

Submitter Information Verification

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Submittal Date: Fri May 28 10:55:32 EDT 2021
Committee: SAF-MEA

Committee Statement

Resolution: The proposed revision intends to address door locking issues that are specific to health care occupancies. Occupancy-specific provisions should be addressed by the applicable occupancy chapters. It is noted that existing health care occupancies are exempt from the stairway re-entry requirements of 7.2.1.5.7 (see 19.2.2.2.10), and in new health care occupancies, it is only required for stairs serving levels more than 75 ft above the level of fire department vehicle access (see 18.2.2.2.10).



Public Input No. 278-NFPA 101-2021 [Section No. 7.2.1.5.7 [Excluding any Sub-Sections]]

Every door assembly in a stair enclosure serving more than four stories, unless permitted by 7.2.1.5.7.2, shall meet one of the following conditions:

- (1) Re-entry from the stair enclosure to the interior of the building shall be provided.
- (2) An automatic release shall be provided that meets all of the following:
 - (a) The automatic release shall unlock all stair enclosure door assemblies to allow re-entry.
 - (b) The automatic release shall be actuated with the initiation of the building fire alarm system.
 - (c) * Door electrical locking hardware for new installations shall be listed in accordance with UL 294, Access Control System- Units - Units or UL 1034, Burglary-Resistant Locking Mechanisms . .
- (3) Selected re-entry shall be provided in accordance with 7.2.1.5.7.1.

A.7.2.1.5.7(2)(c)

The electrical locking hardware may be a component of an electrical locking system (i.e. access control system) or the electrical locking hardware may be a device with an individual listing.

Statement of Problem and Substantiation for Public Input

This proposal adds an additional listing option to UL 1034 for the electrical locking hardware. Listing to UL 1034 will provide an additional safety and performance certification option for the electro-mechanical or electromagnetic lock devices.

The reference to UL 294 has created confusion for building designers specifying electric locking systems and for AHJs approving systems for this application. The proposed revision will help eliminate that confusion by allowing what is already available and commonly utilized for these applications. The addition of UL 1034 is also intended to provide clarity as to certified products in use and available in the market.

In addition of adding UL 1034, this proposal brings consistency in the text where UL 294 (and UL 1034) are referenced in NFPA 101.

The addition of this Annex A text complements the revisions to 7.2.1.5.7(2)(c)

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 277-NFPA 101-2021 [Section No. 2.3.11]	
Public Input No. 279-NFPA 101-2021 [Section No. 7.2.1.6]	
Public Input No. 282-NFPA 101-2021 [Section No. 18.2.2.2.5]	
Public Input No. 283-NFPA 101-2021 [Section No. 19.2.2.2.5]	

Submitter Information Verification

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Submission Date: Mon May 31 10:32:33 EDT 2021
Committee: SAF-MEA

Committee Statement

Resolution: [FR-6559-NFPA 101-2021](#)

Statement: This revision adds an additional listing option to UL 1034 for the electrical locking hardware. Listing to UL 1034 will provide an additional safety and performance certification option for the electro-mechanical or electromagnetic lock devices. The

reference to UL 294 has created confusion for building designers specifying electric locking systems and for AHJs approving systems for this application. The revision will help eliminate that confusion by allowing what is already available and commonly utilized for these applications. The addition of UL 1034 is also intended to provide clarity as to certified products in use and available in the market. In addition to adding UL 1034, this revision brings consistency in the text where UL 294 (and UL 1034) are referenced in NFPA 101.

The addition of this Annex A text complements the revisions to 7.2.1.5.7(2)(c)



Public Input No. 61-NFPA 101-2021 [Section No. 7.2.1.5.8]

7.2.1.5.8

If a ~~stair-enclosure door~~ door allows access to the roof of the building, the door assembly to the roof either shall be kept locked preventing access to the roof or shall allow re-entry from the roof.

Statement of Problem and Substantiation for Public Input

This requirement should be changed to include the many doors not associated with stairs that access roofs. In jurisdictions complying with International Building Code, roof access is required to be provided through a penthouse rather than directly from the stair (IBC 1011.12.2). This change would apply the same requirement to all doors accessing a roof, not just from stairs. This could prevent occupants from becoming inadvertently locked on a roof.

Submitter Information Verification

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Submittal Date: Mon Apr 12 15:48:18 EDT 2021
Committee: SAF-MEA

Committee Statement

Resolution: [FR-6533-NFPA 101-2021](#)

Statement: Many doors not associated with stairs that access roofs. In jurisdictions complying with International Building Code, roof access is required to be provided through a penthouse rather than directly from the stair (IBC 1011.12.2). This revision applies the same requirement to all doors accessing a roof, not just those from stairs. This could prevent occupants from becoming inadvertently locked on a roof.



Public Input No. 279-NFPA 101-2021 [Section No. 7.2.1.6]

7.2.1.6* Special Locking Arrangements.

7.2.1.6.1* Delayed-Egress Electrical Locking Systems.

7.2.1.6.1.1

Approved, delayed-egress electrical locking systems shall be permitted to be installed on door assemblies serving low- and ordinary-hazard contents in buildings protected throughout by an approved, supervised automatic fire detection system in accordance with Section 9.6 or an approved, supervised automatic sprinkler system in accordance with Section 9.7, and where permitted in Chapters 11 through 43, provided that all of the following criteria are met:

- (1) The delay of the delayed-egress electrical locking system shall deactivate allowing unobstructed egress upon actuation of one of the following:
 - (2) Approved, supervised automatic sprinkler system in accordance with Section 9.7
 - (3) Not more than one heat detector of an approved, supervised automatic fire detection system in accordance with Section 9.6
 - (4) Not more than two smoke detectors of an approved, supervised automatic fire detection system in accordance with Section 9.6
- (5) The delay of the delayed-egress electrical locking system shall deactivate allowing unobstructed egress upon loss of power controlling the lock or locking mechanism.
- (6)* An irreversible process shall release the electrical lock in the direction of egress within 15 seconds, or 30 seconds where approved by the authority having jurisdiction, upon application of a force to the release device required in 7.2.1.5.3 under all of the following conditions:
 - (7) The force shall not be required to exceed 15 lbf (67 N).
 - (8) The force shall not be required to be continuously applied for more than 3 seconds.
 - (9) The initiation of the release process shall activate an audible signal in the vicinity of the door opening.
 - (10) Once the electrical lock has been released by the application of force to the releasing device, rearming the delay electronics shall be by manual means only.
- (11)* A readily visible, durable sign that conforms to the visual characters requirements of ICC A117.1, *Accessible and Usable Buildings and Facilities*, shall be located on the door leaf adjacent to the release device in the direction of egress, and shall read as follows:
 - (12) PUSH UNTIL ALARM SOUNDS, DOOR CAN BE OPENED IN 15 SECONDS, for doors that swing in the direction of egress travel
 - (13) PULL UNTIL ALARM SOUNDS, DOOR CAN BE OPENED IN 15 SECONDS, for doors that swing against the direction of egress travel
- (14) The egress side of doors equipped with delayed-egress electrical locking systems shall be provided with emergency lighting in accordance with Section 7.9.
- (15) Hardware- *Door electrical locking hardware for new installations shall be listed in accordance with UL 294, *Access Control System Units Units* or UL 1034, *Burglary-Resistant Locking Mechanisms* .

[A . 7.2.1. 6.1. 1 \(6 \)](#)

The electrical locking hardware may be a component of an electrical locking system or the electrical locking hardware may be a device with an individual listing.

7.2.1.6.1.2

The provisions of 7.2.1.6.2 for sensor-release of electrical locking systems and 7.2.1.6.3 for door hardware release of electrically locked egress door assemblies shall not apply to door assemblies with delayed-egress electrical locking systems.

7.2.1.6.2* Sensor-Release of Electrical Locking Systems.

7.2.1.6.2.1

Where permitted in Chapters 11 through 43, door assemblies in the means of egress shall be permitted to be equipped with sensor-release electrical locking system hardware provided that all of the following criteria are met:

- (1) A sensor shall be provided on the egress side, arranged to electrically unlock the door leaf in the direction of egress upon detection of an approaching occupant.
- (2) Door leaves shall automatically electrically unlock in the direction of egress upon loss of power to the sensor or to the part of the locking system that electrically locks the door leaves.
- (3) Door locks shall be arranged to electrically unlock in the direction of egress from a manual release device complying with all of the following criteria:
 - (4) The manual release device shall be located on the egress side, 40 in. to 48 in. (1015 mm to 1220 mm) vertically above the floor, and within 60 in. (1525 mm) of the secured door openings, except as otherwise permitted by 7.2.1.6.2 (3)(c).
 - (5) The requirement of 7.2.1.6.2 (3)(a) to locate the manual release device within 60 in. (1525 mm) of the secured door opening shall not apply to previously approved existing installations.
 - (6) The manual release device shall be readily accessible and clearly identified by a sign that reads as follows: PUSH TO EXIT.
 - (7) When operated, the manual release device shall result in direct interruption of power to the electrical lock — independent of the locking system electronics — and the lock shall remain unlocked for not less than 30 seconds.
- (8) Activation of the building fire-protective signaling system, if provided, shall automatically electrically unlock the door leaves in the direction of egress, and the door leaves shall remain electrically unlocked until the fire-protective signaling system has been manually reset.
- (9) The activation of manual fire alarm boxes that activate the building fire-protective signaling system specified in 7.2.1.6.2(4) shall not be required to unlock the door leaves.
- (10) Activation of the building automatic sprinkler or fire detection system, if provided, shall automatically electrically unlock the door leaves in the direction of egress, and the door leaves shall remain electrically unlocked until the fire-protective signaling system has been manually reset.
- (11) The egress side of sensor-release electrically locked egress doors, other than existing sensor-release electrically locked egress doors, shall be provided with emergency lighting in accordance with Section 7.9.
- (12) ~~Hardware~~ *Door electrical locking hardware for new installations shall be listed in accordance with UL 294, Access Control System Units Units or UL 1034, Burglary-Resistant Locking Mechanisms .

[A . 7.2.1. 6. 2 . 1 \(8 \)](#)

The electrical locking hardware may be a component of an electrical locking system or the electrical locking hardware may be a device with an individual listing.

7.2.1.6.2.2

The provisions of 7.2.1.6.1 for delayed-egress electrical locking systems and 7.2.1.6.3 for door hardware release of electrically locked egress door assemblies shall not apply to door assemblies with sensor-release of electrical locking systems.

7.2.1.6.3 Door Hardware Release of Electrically Locked Egress Door Assemblies.

7.2.1.6.3.1

Door assemblies in the means of egress shall be permitted to be equipped with approved electrical locking systems released by the operation of door hardware provided that all of the following conditions are met:

- (1) The hardware for egress-side occupant release of the electrical lock is affixed to the door leaf.
- (2) The hardware has an obvious method of operation that is readily operated in the direction of egress under all lighting conditions.
- (3) The hardware is capable of being operated with one hand in the direction of egress.
- (4) Operation of the hardware directly and immediately interrupts the power supply to the electric lock to unlock the door assembly in the direction of egress.
- (5)* Loss of power to the listed releasing hardware automatically unlocks the door assembly in the direction of egress.
- (6) ~~Hardware~~ *Door electrical locking hardware for new installations is listed in accordance with UL 294, *Access Control System Units* or UL 1034, *Burglary-Resistant Locking Mechanisms* .

A . 7.2.1. 6. 3 . 1 (6)

The electrical locking hardware may be a component of an electrical locking system or the electrical locking hardware may be a device with an individual listing.

7.2.1.6.3.2

The provisions of 7.2.1.6.1 for delayed-egress electrical locking systems and the provisions of 7.2.1.6.2 for sensor-release of electrical locking systems shall not apply to door assemblies with door hardware release of electrically locked egress doors.

7.2.1.6.4* Elevator Lobby Exit Access Door Assemblies Locking.

7.2.1.6.4.1

Where permitted in Chapters 11 through 43, door assemblies separating the elevator lobby from the exit access required by 7.4.1.6.1 shall be permitted to be electrically locked, provided that all the following criteria are met:

- (1) * The electrical locking hardware is listed in accordance with UL 294, *Access Control System Units* or UL 1034, *Burglary-Resistant Locking Mechanisms*.
- (2) The building is protected throughout by a fire alarm system in accordance with Section 9.6.
- (3) The building is protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 9.7.
- (4) Waterflow in the sprinkler system required by 7.2.1.6.4.1 is arranged to initiate the building fire alarm system.
- (5) The elevator lobby is protected by an approved, supervised smoke detection system in accordance with Section 9.6.
- (6) Detection of smoke by the detection system required by 7.2.1.6.4.1 is arranged to initiate the building fire alarm system and notify building occupants.
- (7) Initiation of the building fire alarm system by other than manual fire alarm boxes unlocks the electrical locks on the elevator lobby door assembly.
- (8) Loss of power to the elevator lobby electrical lock system unlocks the electrical locks on the elevator lobby door assemblies.
- (9) Once unlocked, the elevator lobby door assemblies remain electrically unlocked until the building fire alarm system has been manually reset.
- (10) Where the elevator lobby door assemblies remain mechanically latched after being electrically unlocked, latch-releasing hardware in accordance with 7.2.1.5.3 is affixed to the door leaves.
- (11) A two-way communication system is provided for communication between the elevator lobby and a central control point that is constantly staffed.
- (12) The central control point staff required by 7.2.1.6.4 is capable, trained, and authorized to provide emergency assistance.

A . 7.2.1. 6. 4. 1(1)

The electrical locking hardware may be a component of an electrical locking system (i.e. access control system) or the electrical locking hardware may be a device with an individual listing.

7. 2.1.6.4.2

Elevator lobby exit access doors equipped with electrical locking systems shall not be required to comply with 7.2.1.6.1, 7.2.1.6.2, or 7.2.1.6.3.

Additional Proposed Changes

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
2024_NFPA_101_UL_294_and_UL_1034_20210531.pdf	PDF of proposed revisions adding UL 1034.	

Statement of Problem and Substantiation for Public Input

This proposal adds an additional listing option to UL 1034 for the electrical locking hardware. Listing to UL 1034 will provide an additional safety and performance certification option for the electro-mechanical or electromagnetic lock devices.

The reference to UL 294 has created confusion for building designers specifying electric locking systems and for AHJs approving systems for this application. The proposed revision will help

eliminate that confusion by allowing what is already available and commonly utilized for these applications. The addition of UL 1034 is also intended to provide clarity as to certified products in use and available in the market.

In addition of adding UL 1034, this proposal brings consistency in the text where UL 294 (and UL 1034) are referenced in NFPA 101.

The additions of the Annex A text complements the revisions to the mandatory language of these special locking arrangements.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 277-NFPA 101-2021 [Section No. 2.3.11]	
Public Input No. 278-NFPA 101-2021 [Section No. 7.2.1.5.7 [Excluding any Sub-Sections]]	
Public Input No. 282-NFPA 101-2021 [Section No. 18.2.2.2.5]	
Public Input No. 283-NFPA 101-2021 [Section No. 19.2.2.2.5]	

Submitter Information Verification

Submitter Full Name: John Woestman
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Affiliation: Builders Hardware Manufacturers Association (BHMA)
Street Address:
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Submittal Date: Mon May 31 10:39:55 EDT 2021
Committee: SAF-MEA

Committee Statement

Resolution: The TC has not reviewed the differences between the two UL standards and is not comfortable approving the revision without having the opportunity to review them. There is no confirmation that UL 1034 would require testing to cover all situations.

2021 NFPA 101 UL 294 and UL 1034
Revised May 31, 2021
BHMA, John Woestman

Chapter 2 Referenced Publications

UL 294, Access Control System Units, 2018.

[UL 1034-2011, Burglary-Resistant Electric Locking Mechanisms – with revisions through June 2020](#)

Reason: Adding this UL standard as it is proposed to be referenced in 7.2.1.5.7, 7.2.1.6.1.1, 7.2.1.6.2.1, 7.2.1.6.3.1, 7.2.1.6.4.1, 18.2.2.2.5.2, and 19.2.2.2.5.2.

Chapter 7 Means of Egress

7.2.1.5.7 * Stair Enclosure Re-entry.

Every door assembly in a stair enclosure serving more than four stories, unless permitted by 7.2.1.5.7.2, shall meet one of the following conditions:

1. Re-entry from the stair enclosure to the interior of the building shall be provided.
2. An automatic release shall be provided that meets all of the following:
 - a) The automatic release shall unlock all stair enclosure door assemblies to allow re-entry.
 - b) The automatic release shall be actuated with the initiation of the building fire alarm system.
 - c) *Door [electrical locking](#) hardware for new installations shall be listed in accordance with [UL 294, Access Control System Units](#) or [UL 1034, Burglary-Resistant Locking Mechanisms](#).
3. Selected re-entry shall be provided in accordance with 7.2.1.5.7.1.

[A.7.2.1.5.7\(2\)\(c\)](#)

[The electrical locking hardware may be a component of an electrical locking system \(i.e. access control system\) or the electrical locking hardware may be a device with an individual listing.](#)

Reason: This proposal adds an additional listing option to UL 1034 for the electrical locking hardware. Listing to UL 1034 will provide an additional safety and performance certification option for the electro-mechanical or electromagnetic lock devices.

The reference to UL 294 has created confusion for building designers specifying electric locking systems and for AHJs approving systems for this application. The proposed revision will help eliminate that confusion by allowing what is already available and commonly utilized for these applications. The addition of UL 1034 is also intended to provide clarity as to certified products in use and available in the market.

In addition of adding UL 1034, this proposal bring consistency in the text where UL 294 (and UL 1034) are referenced in NFPA 101.

The addition of this Annex A text complements the revisions to 7.2.1.5.7(2)(c)

7.2.1.6* Special Locking Arrangements.

7.2.1.6.1 * Delayed-Egress Electrical Locking Systems.

7.2.1.6.1.1

Approved, delayed-egress electrical locking systems shall be permitted to be installed on door assemblies serving low- and ordinary-hazard contents in buildings protected throughout by an approved, supervised automatic fire detection system in accordance with Section 9.6 or an approved, supervised automatic sprinkler system in accordance with Section 9.7, and where permitted in Chapters 11 through 43, provided that all of the following criteria are met:

1. The delay of the delayed-egress electrical locking system shall deactivate allowing unobstructed egress upon actuation of one of the following:
 - a) Approved, supervised automatic sprinkler system in accordance with Section 9.7
 - b) Not more than one heat detector of an approved, supervised automatic fire detection system in accordance with Section 9.6
 - c) Not more than two smoke detectors of an approved, supervised automatic fire detection system in accordance with Section 9.6
2. The delay of the delayed-egress electrical locking system shall deactivate allowing unobstructed egress upon loss of power controlling the lock or locking mechanism.
3. *An irreversible process shall release the electrical lock in the direction of egress within 15 seconds, or 30 seconds where approved by the authority having jurisdiction, upon application of a force to the release device required in 7.2.1.5.3 under all of the following conditions:
 - a) The force shall not be required to exceed 15 lbf (67 N).
 - b) The force shall not be required to be continuously applied for more than 3 seconds.
 - c) The initiation of the release process shall activate an audible signal in the vicinity of the door opening.
 - d) Once the electrical lock has been released by the application of force to the releasing device, rearming the delay electronics shall be by manual means only.
4. *A readily visible, durable sign that conforms to the visual characters requirements of ICC A117.1, *Accessible and Usable Buildings and Facilities*, shall be located on the door leaf adjacent to the release device in the direction of egress, and shall read as follows:
 - a) PUSH UNTIL ALARM SOUNDS, DOOR CAN BE OPENED IN 15 SECONDS, for doors that swing in the direction of egress travel
 - b) PULL UNTIL ALARM SOUNDS, DOOR CAN BE OPENED IN 15 SECONDS, for doors that swing against the direction of egress travel
5. The egress side of doors equipped with delayed-egress electrical locking systems shall be provided with emergency lighting in accordance with Section 7.9.
6. *Door electrical locking hardware for new installations shall be listed in accordance with UL 294, *Access Control System Units* or UL 1034, *Burglary-Resistant Locking Mechanisms*.

A.7.2.1.6.1.1(6)

The electrical locking hardware may be a component of an electrical locking system or the electrical locking hardware may be a device with an individual listing.

Reason: This proposal adds an additional listing option to UL 1034 for the electrical locking hardware. Listing to UL 1034 will provide an additional safety and performance certification option for the electro-mechanical or electromagnetic lock devices.

The reference to UL 294 has created confusion for building designers specifying electric locking systems and for AHJs approving systems for this application. The proposed revision will help eliminate that confusion by allowing what is already available and commonly utilized for these applications. The addition of UL 1034 is also intended to provide clarity as to certified products in use and available in the market.

In addition of adding UL 1034, this proposal bring consistency in the text where UL 294 (and UL 1034) are referenced in NFPA 101.

The additions of the Annex A text complement the revisions to the mandatory language of these special locking arrangements.

7.2.1.6.2 * Sensor-Release of Electrical Locking Systems.

7.2.1.6.2.1

Where permitted in Chapters 11 through 43, door assemblies in the means of egress shall be permitted to be equipped with sensor-release electrical locking system hardware provided that all of the following criteria are met:

1. A sensor shall be provided on the egress side, arranged to electrically unlock the door leaf in the direction of egress upon detection of an approaching occupant.
2. Door leaves shall automatically electrically unlock in the direction of egress upon loss of power to the sensor or to the part of the locking system that electrically locks the door leaves.
3. Door locks shall be arranged to electrically unlock in the direction of egress from a manual release device complying with all of the following criteria:
 - a) The manual release device shall be located on the egress side, 40 in. to 48 in. (1015 mm to 1220 mm) vertically above the floor, and within 60 in. (1525 mm) of the secured door openings, except as otherwise permitted by 7.2.1.6.2(3)(c).
 - b) The requirement of 7.2.1.6.2(3)(a) to locate the manual release device within 60 in. (1525 mm) of the secured door opening shall not apply to previously approved existing installations.
 - c) The manual release device shall be readily accessible and clearly identified by a sign that reads as follows: PUSH TO EXIT.
 - d) When operated, the manual release device shall result in direct interruption of power to the electrical lock — independent of the locking system electronics — and the lock shall remain unlocked for not less than 30 seconds.
4. Activation of the building fire-protective signaling system, if provided, shall automatically electrically unlock the door leaves in the direction of egress, and the door leaves shall remain electrically unlocked until the fire-protective signaling system has been manually reset.
5. The activation of manual fire alarm boxes that activate the building fire-protective signaling system specified in 7.2.1.6.2(4) shall not be required to unlock the door leaves.
6. Activation of the building automatic sprinkler or fire detection system, if provided, shall automatically electrically unlock the door leaves in the direction of egress, and the door leaves shall remain electrically unlocked until the fire-protective signaling system has been manually reset.
7. The egress side of sensor-release electrically locked egress doors, other than existing sensor-release electrically locked egress doors, shall be provided with emergency lighting in accordance with Section 7.9.
8. *Door electrical locking hardware for new installations shall be listed in accordance with UL 294, Access Control System Units or UL 1034, Burglary-Resistant Locking Mechanisms.

A.7.2.1.6.2.1(8)

The electrical locking hardware may be a component of an electrical locking system or the electrical locking hardware may be a device with an individual listing.

7.2.1.6.3 Door Hardware Release of Electrically Locked Egress Door Assemblies.

7.2.1.6.3.1

Door assemblies in the means of egress shall be permitted to be equipped with approved electrical locking systems released by the operation of door hardware provided that all of the following conditions are met:

1. The hardware for egress-side occupant release of the electrical lock is affixed to the door leaf.
2. The hardware has an obvious method of operation that is readily operated in the direction of egress under all lighting conditions.
3. The hardware is capable of being operated with one hand in the direction of egress.
4. Operation of the hardware directly and immediately interrupts the power supply to the electric lock to unlock the door assembly in the direction of egress.
5. *Loss of power to the listed releasing hardware automatically unlocks the door assembly in the direction of egress.
6. *Door electrical locking hardware for new installations is listed in accordance with UL 294, Access Control System Units or UL 1034, Burglary-Resistant Locking Mechanisms.

A.7.2.1.6.3.1(6)

The electrical locking hardware may be a component of an electrical locking system or the electrical locking hardware may be a device with an individual listing.

7.2.1.6.4 * Elevator Lobby Exit Access Door Assemblies Locking.

7.2.1.6.4.1

Where permitted in Chapters 11 through 43, door assemblies separating the elevator lobby from the exit access required by 7.4.1.6.1 shall be permitted to be electrically locked, provided that all the following criteria are met:

1. *The electrical locking hardware is listed in accordance with UL 294, Access Control System Units or UL 1034, Burglary-Resistant Locking Mechanisms.
2. The building is protected throughout by a fire alarm system in accordance with Section 9.6.
3. The building is protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 9.7.
4. Waterflow in the sprinkler system required by 7.2.1.6.4.1 is arranged to initiate the building fire alarm system.
5. The elevator lobby is protected by an approved, supervised smoke detection system in accordance with Section 9.6.
6. Detection of smoke by the detection system required by 7.2.1.6.4.1 is arranged to initiate the building fire alarm system and notify building occupants.
7. Initiation of the building fire alarm system by other than manual fire alarm boxes unlocks the electrical locks on the elevator lobby door assembly.
8. Loss of power to the elevator lobby electrical lock system unlocks the electrical locks on the elevator lobby door assemblies.
9. Once unlocked, the elevator lobby door assemblies remain electrically unlocked until the building fire alarm system has been manually reset.
10. Where the elevator lobby door assemblies remain mechanically latched after being electrically unlocked, latch-releasing hardware in accordance with 7.2.1.5.3 is affixed to the door leaves.
11. A two-way communication system is provided for communication between the elevator lobby and a central control point that is constantly staffed.
12. The central control point staff required by 7.2.1.6.4 is capable, trained, and authorized to provide emergency assistance.

A.7.2.1.6.4.1(1)

The electrical locking hardware may be a component of an electrical locking system (i.e. access control system) or the electrical locking hardware may be a device with an individual listing.

Chapter 18 New Health Care Occupancies

18.2.2.2.5

Door-locking arrangements shall be permitted in accordance with either 18.2.2.2.5.1 or 18.2.2.2.5.2.

18.2.2.2.5.1 *

Door-locking arrangements shall be permitted where the clinical needs of patients require specialized security measures or where patients pose a security threat, provided that staff can readily unlock doors at all times in accordance with 18.2.2.2.6.

18.2.2.2.5.2 *

Door-locking arrangements shall be permitted where patient special needs require specialized protective measures for their safety, provided that all of the following criteria are met:

1. Staff can readily unlock doors at all times in accordance with 18.2.2.2.6.
2. A total (complete) smoke detection system is provided throughout the locked space in accordance with 9.6.2.9, or locked doors can be remotely unlocked at an approved, constantly attended location within the locked space.
3. *The building is protected throughout by an approved, supervised automatic sprinkler system in accordance with 18.3.5.1.
4. The locks are electrical locks that fail safely so as to release upon loss of power to the device.
5. The locks release by independent activation of each of the following:
 - a) Activation of the smoke detection system required by 18.2.2.2.5.2(2)
 - b) Waterflow in the automatic sprinkler system required by 18.2.2.2.5.2(3)
6. *Door electrical locking hardware for new ~~electric lock~~ installations is listed in accordance with UL 294, Access Control System Units or UL 1034, Burglary-Resistant Locking Mechanisms.

A. 18.2.2.2.5.2(6)

The electrical locking hardware may be a component of an electrical locking system or the electrical locking hardware may be a device with an individual listing.

Reason: This proposal adds an additional listing option to UL 1034 for the electrical locking hardware. Listing to UL 1034 will provide an additional safety and performance certification option for the electro-mechanical or electromagnetic lock devices.

The reference to UL 294 has created confusion for building designers specifying electric locking systems and for AHJs approving systems for this application. The proposed revision will help eliminate that confusion by allowing what is already available and commonly utilized for these applications. The addition of UL 1034 is also intended to provide clarity as to certified products in use and available in the market.

In addition of adding UL 1034, this proposal bring consistency in the text where UL 294 (and UL 1034) are referenced in NFPA 101.

The addition of this Annex A text complements the revisions to 18.2.2.2.5.2(6)

Chapter 19 Existing Health Care Occupancies

19.2.2.2.5

Door-locking arrangements shall be permitted in accordance with either 19.2.2.2.5.1 or 19.2.2.2.5.2.

19.2.2.2.5.1 *

Door-locking arrangements shall be permitted where the clinical needs of patients require specialized security measures or where patients pose a security threat, provided that staff can readily unlock doors at all times in accordance with 19.2.2.2.6.

19.2.2.2.5.2 *

Door-locking arrangements shall be permitted where patient special needs require specialized protective measures for their safety, provided that all of the following are met:

1. Staff can readily unlock doors at all times in accordance with 19.2.2.2.6.
2. A total (complete) smoke detection system is provided throughout the locked space in accordance with 9.6.2.9, or locked doors can be remotely unlocked at an approved, constantly attended location within the locked space.
3. *The building is protected throughout by an approved, supervised automatic sprinkler system in accordance with 19.3.5.7.
4. The locks are electrical locks that fail safely so as to release upon loss of power to the device.
5. The locks release by independent activation of each of the following:
 1. Activation of the smoke detection system required by 19.2.2.2.5.2(2)
 2. Waterflow in the automatic sprinkler system required by 19.2.2.2.5.2(3)
6. *Door electrical locking hardware for ~~new electric~~ lock installations is listed in accordance with UL 294, Access Control System Units or UL 1034, Burglary-Resistant Locking Mechanisms.

A. 19.2.2.2.5.2(6)

The electrical locking hardware may be a component of an electrical locking system or the electrical locking hardware may be a device with an individual listing.

Reason: This proposal adds an additional listing option to UL 1034 for the electrical locking hardware. Listing to UL 1034 will provide an additional safety and performance certification option for the electro-mechanical or electromagnetic lock devices.

The reference to UL 294 has created confusion for building designers specifying electric locking systems and for AHJs approving systems for this application. The proposed revision will help eliminate that confusion by allowing what is already available and commonly utilized for these applications. The addition of UL 1034 is also intended to provide clarity as to certified products in use and available in the market.

In addition to adding UL 1034, this proposal bring consistency in the text where UL 294 (and UL 1034) are referenced in NFPA 101.

The addition of the Annex A text complements the revisions to 19.2.2.2.5.2(6)



Public Input No. 229-NFPA 101-2021 [Section No. 7.2.1.6.1.1]

A large, empty rectangular box with a thin border, intended for public input or comments.

7.2.1.6.1.1

Approved, delayed-egress electrical locking systems shall be permitted to be installed on door assemblies serving low- and ordinary-hazard

contents in buildings protected

contents where permitted in Chapters 11 through 43, provided that all of the following criteria are met:

(1) The building shall be protected by one of the following methods:

(2) The building shall be protected throughout by an approved

7

(1)

(a) supervised

automatic fire detection

(1)

(a) sprinkler system in accordance with

Section-

(1)

(a) 9.

6 or

(1)

(a) 7 or the portion of the building where the delayed egress path is located shall be protected by an approved

7

(1)

(a) supervised

automatic

(1)

(a) sprinkler system in accordance with

Section-

(1)

(a) Section 9.7

, and where permitted in Chapters 11 through 43, provided that all of the following criteria are met:

(1)

(a) and shall be separated from the nonsprinklered portion of the building by a 2-hour fire barrier

(b) The building shall be protected throughout by an approved supervised automatic fire detection system in accordance with 9. 6

A.7.2.1.6.1.1(1)(a) The delayed egress path required to be sprinkler protected should include, at a minimum, the secured compartment and compartments that the occupants of the secured

compartment must travel through to egress the building.

- (1) The delay of the delayed-egress electrical locking system shall deactivate allowing unobstructed egress upon actuation of one of the following:
 - (2) Approved, supervised automatic sprinkler system in accordance with Section 9.7
 - (3) Not more than one heat detector of an approved, supervised automatic fire detection system in accordance with Section 9.6
 - (4) Not more than two smoke detectors of an approved, supervised automatic fire detection system in accordance with Section 9.6
- (5) The delay of the delayed-egress electrical locking system shall deactivate allowing unobstructed egress upon loss of power controlling the lock or locking mechanism.
- (6)* An irreversible process shall release the electrical lock in the direction of egress within 15 seconds, or 30 seconds where approved by the authority having jurisdiction, upon application of a force to the release device required in 7.2.1.5.3 under all of the following conditions:
 - (7) The force shall not be required to exceed 15 lbf (67 N).
 - (8) The force shall not be required to be continuously applied for more than 3 seconds.
 - (9) The initiation of the release process shall activate an audible signal in the vicinity of the door opening.
 - (10) Once the electrical lock has been released by the application of force to the releasing device, rearming the delay electronics shall be by manual means only.
- (11)* A readily visible, durable sign that conforms to the visual characters requirements of ICC A117.1, *Accessible and Usable Buildings and Facilities*, shall be located on the door leaf adjacent to the release device in the direction of egress, and shall read as follows:
 - (12) PUSH UNTIL ALARM SOUNDS, DOOR CAN BE OPENED IN 15 SECONDS, for doors that swing in the direction of egress travel
 - (13) PULL UNTIL ALARM SOUNDS, DOOR CAN BE OPENED IN 15 SECONDS, for doors that swing against the direction of egress travel
- (14) The egress side of doors equipped with delayed-egress electrical locking systems shall be provided with emergency lighting in accordance with Section 7.9 .
- (15) Hardware for new installations shall be listed in accordance with UL 294, *Access Control System Units* .

Additional Proposed Changes

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
Delayed_Egress.docx	Submitted for clarity due to Terra View	

Statement of Problem and Substantiation for Public Input

Currently delayed egress locking is not permitted unless the building is completely sprinkler protected leaving only access control locking (now sensor release of locking) as the only security option. Access control is not always a feasible way of providing security due to the required motion sensor to unlock the door each time an occupant walks near the door. The new proposed text is similar to the exit discharge approach as detailed in Section 7.7.2. Provided the building occupants in the delayed egress portion of the building are separated from non-sprinkler protected areas by a 2-hour fire barrier,

delayed egress should be permitted to be installed to provide security. Providing sprinkler protection throughout a building is not always feasible in older buildings due to remediation of conditions such as asbestos.

Submitter Information Verification

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Submittal Date: Fri May 28 10:41:21 EDT 2021
Committee: SAF-MEA

Committee Statement

Resolution: It is not clear what would constitute the portion of the building where the delayed egress path is located or why the 2-hour barrier separation allowance would not be permitted for the fire detection system option. The submitter should consider whether the proposed revision should apply to both new and existing buildings. The term 'secured compartment' is unclear.

7.2.1.6.1.1 Approved, delayed-egress electrical locking system shall be permitted to be installed on door assemblies serving low- and ordinary-hazard contents ~~in buildings protected throughout by an approved, supervised automatic fire detection system in accordance with Section 9.6 or an approved, supervised automatic sprinkler system in accordance with Section 9.7, and~~ where permitted in Chapters 11 through 43, provided that all of the following criteria are met:

- (1) The building shall be protected by one of the following methods:
 - a. The building shall be protected throughout by an approved supervised sprinkler system in accordance with 9.7 or the portion of the building where the delayed egress path is located shall be protected by an approved supervised sprinkler system in accordance with Section 9.7 and shall be separated from the nonsprinklered portion of the building by a 2-hour fire barrier.
 - b. The building shall be protected throughout by an approved supervised automatic fire detection system in accordance with 9.6.

A.7.2.1.6.1.1(1)(a) The delayed egress path required to be sprinkler protected should include, at a minimum, the secured compartment and compartments that the occupants of the secured compartment must travel through to egress the building.

(12) The delay of the delayed-egress electrical locking system shall deactivate allowing unobstructed egress upon actuation of one of the following:

- (a) Approved, supervised automatic sprinkler system in accordance with Section 9.7
- (b) Not more than one heat detector of an approved, supervised automatic fire detection system in accordance with Section 9.6
- (c) Not more than two smoke detectors of an approved, supervised automatic fire detection system in accordance with Section 9.6



Public Input No. 284-NFPA 101-2021 [New Section after 7.2.1.6.4]

7.2.1.6.5* Access Control Systems on Doors in the Means of Egress

Where doors in the means of egress are equipped with access control systems affecting ingress, the access control system shall not interfere with egress as required or permitted by this chapter.

A.7.2.1.6.5

Many doors in the means of egress are equipped with access control systems which allow only authorized personnel to enter a building, room, or space. These access control systems may be key-operated locks, electric locks released by entering a code via keypad, electric locks released by retinal scans, locks operated by remote personnel interacting by video and voice, or other configurations of access control. Regardless of the complexity of the access control system controlling ingress, occupants of a building must be able to egress the building as required by this chapter.

Egress for the most common situation of mechanical locks controlling access (ingress) would be by turning a lever-operated latchset, or by operating panic hardware or fire exit hardware. This egress-side hardware and its operation must comply with the requirements of this chapter to facilitate immediate and unimpeded egress.

Also common are electrical access control systems such as an electric lock or electric strike controlled by the input of a card reader or keypad. On the egress side of these doors, the lever-operated hardware, panic hardware, or fire-exit hardware must provide for immediate and unimpeded egress.

It is also relatively common for doors with electrical access control systems (controlling ingress) to incorporate one of the special locking arrangements of 7.2.1.6. In these situations, the access control system is typically integrated into the egress-side special locking arrangement. Regardless of the complexity of the access control system, egress must be facilitated as required and permitted by one of the special locking arrangements.

Statement of Problem and Substantiation for Public Input

BHMA members are being drawn into conversations and debates with code officials as to what section(s) of NFPA 101 with requirements for door locking arrangements are applicable to access control systems which control or prevent ingress to a building, room, or space. This proposed new section is intended to prevent these debates by requiring doors in the means of egress which incorporate access control systems to ensure egress is provided as required or permitted by this chapter.

The proposed new section of Annex A materials is intended to inform and illustrate how access control systems (affecting ingress to a building, room, or space) should not negatively affect egress from that building, room, or space.

Submitter Information Verification

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Submittal Date: Mon May 31 11:27:31 EDT 2021
Committee: SAF-MEA

Committee Statement

Resolution: [FR-6534-NFPA 101-2021](#)

Statement: The proposed annex text is intended to inform and illustrate how access control systems affecting ingress to a building, room, or space should not negatively affect egress from that building, room, or space. The revision does not incorporate the proposed new 7.2.1.6.5 from PI-284 because it is adequately addressed.



Public Input No. 170-NFPA 101-2021 [Section No. 7.2.1.6.4.1]

7.2.1.6.4.1

Where permitted in Chapters 11 through 43, door assemblies separating the elevator lobby from the exit access required by 7.4.1.6.1 shall be permitted to be electrically locked, provided that all the following criteria are met:

- (1) The electrical locking hardware is listed in accordance with UL 294, *Access Control System Units*.
- (2) The building is protected throughout by a fire alarm system in accordance with Section 9.6.
- (3) The building is protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 9.7.
- (4) Waterflow in the sprinkler system required by 7.2.1.6.4.1 is arranged to initiate the building fire alarm system.
- (5) The elevator lobby is protected by an approved, supervised smoke detection system in accordance with Section 9.6.
- (6) Detection of smoke by the detection system required by 7.2.1.6.4.1 is arranged to initiate the building fire alarm system and notify building occupants.
- (7) Initiation of the building fire alarm system by other than manual fire alarm boxes unlocks the electrical locks on the elevator lobby door assembly.
- (8) Loss of power to the elevator lobby electrical lock system unlocks the electrical locks on the elevator lobby door assemblies.
- (9) Once unlocked, the elevator lobby door assemblies remain electrically unlocked until the building fire alarm system has been manually reset.
- (10) Where the elevator lobby door assemblies remain mechanically latched after being electrically unlocked, latch-releasing hardware in accordance with 7.2.1.5.3 is affixed to the door leaves.
- (11) A two-way communication system is provided for communication between the elevator lobby and a central control point that is constantly staffed.
- (12) The central control point staff required by 7.2.1.6.4 is .1(11) is capable, trained, and authorized to provide emergency assistance.

Statement of Problem and Substantiation for Public Input

Existing code reference broadly references the parent section. The central control point staff referenced is specifically required by 7.2.1.6.4.1(11) as should be specified as such.

Submitter Information Verification

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Submittal Date: Wed May 19 10:38:32 EDT 2021

Committee: SAF-MEA

Committee Statement

Resolution: [FR-6535-NFPA 101-2021](#)

Statement: Existing code reference broadly references the parent section. The required central control point staff is specifically referenced by 7.2.1.6.4.1(11) and should be specified as such.



Public Input No. 56-NFPA 101-2021 [Section No. 7.2.1.6.4.1]

7.2.1.6.4.1

Where permitted in Chapters 11 through 43, door assemblies separating the elevator lobby from the exit access required by 7.4.1.6.1 shall be permitted to be electrically locked, provided that all the following criteria are met:

- (1) The electrical locking hardware is listed in accordance with UL 294, *Access Control System Units*.
- (2) The building is protected throughout by a fire alarm system in accordance with Section 9.6.
- (3) The building is protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 9.7.
- (4) Waterflow in the sprinkler system required by 7.2.1.6.4.1 is arranged to initiate the building fire alarm system.
- (5) The elevator lobby is protected by an approved, supervised smoke detection system in accordance with Section 9.6.
- (6) Detection of smoke by the detection system required by 7.2.1.6.4.1 is arranged to initiate the building fire alarm system and notify building occupants.
- (7) Initiation of the building fire alarm system by other than manual fire alarm boxes unlocks the electrical locks on the elevator lobby door assembly.
- (8) Loss of power to the elevator lobby electrical lock system unlocks the electrical locks on the elevator lobby door assemblies.
- (9) Once unlocked, the elevator lobby door assemblies remain electrically unlocked until the building fire alarm system has been manually reset.
- (10) Where the elevator lobby door assemblies remain mechanically latched after being electrically unlocked, latch-releasing hardware in accordance with 7.2.1.5.3 is affixed to the door leaves.
- (11) A two-way communication system is such as a voice call button, house telephone with a call number, or other similar means approved by the AHJ is provided for communication between the elevator lobby and a central control point that is constantly staffed.
- (12) The central control point staff required by 7.2.1.6.4 is capable, trained, and authorized to provide emergency assistance.

Statement of Problem and Substantiation for Public Input

The current requirement for the two-way communication system is vague as NFPA 101 does not define a "two-way communication system." The revision would clarify that the intent of this requirement is not to meet the NFPA 72 two-way communications system requirements. Alternatively, if the committee intends for more stringent requirements for the two-way communication system, they should be defined so it is not left to the AHJ for interpretation.

Submitter Information Verification

Submitter Full Name: Adam Graybeal
Organization: Koffel Compliance LLC
Street Address:
City:

State:

Zip:

Submittal Date: Mon Apr 12 13:07:36 EDT 2021

Committee: SAF-MEA

Committee Statement

Resolution: The proposed revision contradicts the submitter's substantiation with regard to not leaving compliance to the interpretation of the AHJ. Code requirements should not include lists of example compliance options. Such examples should be located in associated Annex A language.



Public Input No. 343-NFPA 101-2021 [New Section after 7.2.1.6.4.2]

7.2.1.6.5 Interlocked-Door Vestibule

Where permitted by the applicable occupancy chapter, an interlocked-door vestibule shall be permitted in a means of egress where there are provisions for continuous and unobstructed travel through the interlocked-door vestibule during an emergency egress condition .

Statement of Problem and Substantiation for Public Input

This proposal, along with complementary proposals in Chapters 18, 19, 20, 21, 36, 37, 38, 39, 40, and 42 offer the opportunity for interlocked-door vestibules in these occupancies.

While sally ports are defined in NFPA 101 (3.3.249) and permitted in detention and correctional occupancies, sally ports are typically used as security vestibules and control egress (obviously).

Outside of detention and correctional facilities, the commercial building equivalent of sally ports are utilized for security reasons (i.e. money handling rooms), occupant protection (health care), environmental contamination control (manufacturing clean rooms), controlled substance dispensing (prescription drugs and cannabis), and other uses and applications.

Unfortunately, the term "sally port", and its definition, is predominately reserved for uses where occupants are restrained against their will in buildings or spaces. An interlocked-door vestibule could be used for that purpose, but would more commonly be used as mentioned above.

An occupant egressing through an interlocked-door vestibule would be delayed at the second door in series if the first door in series is not in a closed position, and vice-versa.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 341-NFPA 101-2021 [New Section after 3.3.164]	
Public Input No. 345-NFPA 101-2021 [New Section after 18.2.5.7.4]	
Public Input No. 346-NFPA 101-2021 [New Section after 19.2.5.7.4]	
Public Input No. 348-NFPA 101-2021 [New Section after 20.2.5.3.2]	
Public Input No. 350-NFPA 101-2021 [New Section after 21.2.5.3]	
Public Input No. 352-NFPA 101-2021 [New Section after 36.2.5.11]	
Public Input No. 353-NFPA 101-2021 [New Section after 37.2.5.11]	
Public Input No. 355-NFPA 101-2021 [New Section after 38.2.5.3.2]	
Public Input No. 356-NFPA 101-2021 [New Section after 39.2.5.3]	
Public Input No. 358-NFPA 101-2021 [New Section after 40.2.5.3.2]	
Public Input No. 359-NFPA 101-2021 [New Section after 42.2.5]	

Submitter Information Verification

Submitter Full Name: John Woestman

Organization: Kellen Company

Affiliation: Builders Hardware Manufacturers Association (BHMA)

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 01 10:33:10 EDT 2021

Committee: SAF-MEA

Committee Statement

Resolution: No protection criteria is included with the proposed provision. Additional information is needed to specify how a continuous and unobstructed means of egress travel would be maintained. No criteria for operational planning, occupant training, or building features (sprinklers, detection, etc.) are specified. Other special locking arrangement provisions specify "how to do it" criteria to be referenced by other sections of the Code.



Public Input No. 17-NFPA 101-2020 [Section No. 7.2.3.3.2]

7.2.3.3.2

Where a vestibule is used as part of one of the design methods , it shall be within the 2-hour-rated enclosure and shall be considered part of the smokeproof enclosure.

Statement of Problem and Substantiation for Public Input

This section falls under the "general" requirements of the smokeproof enclosure section and needs to clarify that only when the vestibule is considered as part of the design method (design methods include: Natural Ventilation, Mechanical Ventilation, and Enclosure Pressurization) that it is to be included within the smokeproof enclosure. When using the enclosure pressurization method, a vestibule is not required (See Sec. 7.2.3.6). However, there are instances where based on the building function that a vestibule may be required to access the stairway. This section as currently written and if using the enclosure pressurization method would require that vestibule to be included as part of the smokeproof enclosure and subject to the pressurization requirements. This may not cause a big issue on many high-rise buildings, however, this is problematic in air traffic control towers that have a single stair and typically a shared vestibule between the single stairway and the elevator shaft. In this instance, the design of the system would be complicated if using the enclosure pressurization method that has to include a shared vestibule. While in this example another method could be utilized such as the mechanical ventilation method with vestibule, it could still be problematic with an elevator opening into the vestibule as well and code issues with elevators opening into exit enclosures. This Public Input is intended to clarify that if using the enclosure pressurization method and a vestibule is provided that it does not need considered part of the smokeproof enclosure unless it is part of the design method (i.e. the designer can decide if to include the vestibule as enclosure pressurization method which is common in California High Rise buildings).

Submitter Information Verification

Submitter Full Name: Derek Duval
Organization: Coffman Engineers
Street Address:
City:
State:
Zip:
Submittal Date: Tue Dec 29 17:04:11 EST 2020
Committee: SAF-MEA

Committee Statement

Resolution: [FR-6536-NFPA 101-2021](#)

Statement: This section falls under the "general" requirements of the smokeproof enclosure section and needs to clarify that only when the vestibule is considered as part of the design method (design methods include: Natural Ventilation, Mechanical Ventilation, and Enclosure Pressurization) that it is to be included within the smokeproof enclosure. When using the enclosure pressurization method, a vestibule is not required (See Sec. 7.2.3.6). However, there are instances where based on the building function that a vestibule may be required to access the stairway. This section as currently written and if using the enclosure pressurization method would require that vestibule to be included as part of the smokeproof enclosure and subject to the pressurization requirements. This may not

cause a big issue on many high-rise buildings, however, this is problematic in air traffic control towers that have a single stair and typically a shared vestibule between the single stairway and the elevator shaft. In this instance, the design of the system would be complicated if using the enclosure pressurization method that has to include a shared vestibule. While in this example another method could be utilized such as the mechanical ventilation method with vestibule, it could still be problematic with an elevator opening into the vestibule as well and code issues with elevators opening into exit enclosures. This revision is intended to clarify that if using the enclosure pressurization method and a vestibule is provided that it does not need considered part of the smokeproof enclosure unless it is part of the design method (i.e. the designer can decide if to include the vestibule as enclosure pressurization method which is common in California High Rise buildings).



Public Input No. 442-NFPA 101-2021 [New Section after 7.2.4.3.3]

7.2.4.3.3.4 Where a fire barrier provides a horizontal exit in any story of a building, such fire barrier shall not be required on other stories, provided that all of the following criteria are met:

(1) The building construction is minimum Type II (222).

(2) Vertical openings between the story with the horizontal exit and the open fire area story are enclosed with construction having a fire resistance rating at least equal to that of the horizontal exit fire barrier.

(3) The building is protected throughout with automatic sprinklers in accordance with NFPA 13

Statement of Problem and Substantiation for Public Input

Adding this additional requirement for the building construction Type to be minimum Type II (222) and complete automatic sprinkler protection eliminates the requirement that all stairs discharge to directly to the exterior (item (3) under 7.2.4.3.3).

The concern under 7.2.4.3.3 (3) is that the floor using the horizontal exit maybe need to egress through the Level of Exit discharge during a fire scenario rather than directly to the exterior. Where the building is constructed of 2 hour fire resistive construction throughout (minimum), a fire on the first floor (the Level of Exit Discharge) would not affect the occupants on upper floors. A fire located on the first floor is at the fire department entrance level and therefore would allow direct fire department access for attack. Occupants on upper levels would be located far above the Level of Incidence with numerous fire rated floor assemblies separating them from the fire.

If a fire occurs on an upper level, the Occupants would be notified and would proceed down the d exit stairs and outside the building (with up to 50% of the exit stairs discharging through Level 1 which would be clear since the fire is on an upper floor) .

Submitter Information Verification

Submitter Full Name: James Peterkin

Organization: TLC Engineering

Street Address:

City:

State:

Zip:

Submission Date: Tue Jun 01 16:20:37 EDT 2021

Committee: SAF-MEA

Committee Statement

Resolution: FR-6512-NFPA 101-2021

Statement: The revision permits other exits associated with horizontal exits that do not extend to the ground to discharge through interior building areas in response to PI-442 and PI-232.



Public Input No. 232-NFPA 101-2021 [Section No. 7.2.4.3.3]

7.2.4.3.3

Where a fire barrier provides a horizontal exit in any story of a building, such fire barrier shall not be required on other stories, provided that all of the following criteria are met:

- (1) The stories on which the fire barrier is omitted are separated from the story with the horizontal exit by construction having a fire resistance rating at least equal to that of the horizontal exit fire barrier.
- (2) Vertical openings between the story with the horizontal exit and the open fire area story are enclosed with construction having a fire resistance rating at least equal to that of the horizontal exit fire barrier.
- (3) ~~All required exits, other than horizontal exits, discharge directly to the outside.~~

Statement of Problem and Substantiation for Public Input

Currently the Code requires every exit to discharge to the exterior of the building if a horizontal exit does not extend to the finished ground level. It is understandable that a minimum of one exit on each side of the horizontal exit should discharge directly to the building exterior, however requiring every exit is often not feasible in buildings of larger square footage.

Submitter Information Verification

Submitter Full Name: Joshua Brackett

Organization:

Street Address:

City:

State:

Zip:

Submittal Date: Fri May 28 10:53:52 EDT 2021

Committee: SAF-MEA

Committee Statement

Resolution: [FR-6512-NFPA 101-2021](#)

Statement: The revision permits other exits associated with horizontal exits that do not extend to the ground to discharge through interior building areas in response to PI-442 and PI-232.



Public Input No. 213-NFPA 101-2021 [Section No. 7.2.12.1.1]

7.2.12.1.1

An area of refuge used as part of a required accessible means of egress in accordance with 7.5.4; consisting of a story in a building that is protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 9.7; and having an accessible story that is one or more stories above or below a story of exit discharge shall meet the following criteria:

- (1) Each elevator landing shall be provided with a two-way communication system for communication between the elevator landing and the fire command center or a central control point approved by the authority having jurisdiction.
- (2) Directions for the use of the two-way communication system, instructions for summoning assistance via the two-way communication system, and written identification of the location shall be posted adjacent to the two-way communication system.
- (3) The two-way communication system shall include both audible and visible signals.
- (4) The two-way communication system shall be installed, tested, and maintained in accordance with the applicable requirements of NFPA 72 unless it is an approved, existing installation, which shall be permitted to be continued in use.

Statement of Problem and Substantiation for Public Input

The current code language does not specify any installation, testing, or maintenance requirements for area of refuge two-way communication systems. NFPA 72 provides requirements for pathway survivability, pathway performance capabilities under abnormal (fault) conditions, requirements for pathway integrity monitoring, component testing requirements, periodic testing frequencies and testing methods. If a reference to NFPA 72 is not provided, area of refuge two-way communication systems may not have the robustness to survive an act by fire or may not be tested and maintained to assure their operability during emergency events.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<u>Public Input No. 214-NFPA 101-2021 [New Section after 7.2.12.2]</u>	

Submitter Information Verification

Submitter Full Name: Waymon Jackson
Organization: University of Texas at Austin
Street Address:
City:
State:
Zip:
Submission Date: Thu May 27 13:57:58 EDT 2021
Committee: SAF-MEA

Committee Statement

Resolution: Determining what constitutes existing installations would be difficult to enforce. The

survivability requirements of NFPA 72 can be challenging to meet. It was not the intent to mandate compliance with the stringent requirements of NFPA 72 when the two-way communication system requirements were introduced into the code in the early 1990s.



Public Input No. 214-NFPA 101-2021 [New Section after 7.2.12.2]

Add a new 7.2.12.2.7 to read as follows:

7.2.12.2.7 The two-way communication system required by 7.2.12.2.5 shall be installed, tested, and maintained in accordance with the applicable requirements of NFPA 72 unless it is an approved, existing installation, which shall be permitted to be continued in use.

Statement of Problem and Substantiation for Public Input

The current code language does not specify any installation, testing, or maintenance requirements for area of refuge two-way communication systems. NFPA 72 provides requirements for pathway survivability, pathway performance capabilities under abnormal (fault) conditions, requirements for pathway integrity monitoring, component testing requirements, periodic testing frequencies and testing methods. If a reference to NFPA 72 is not provided, area of refuge two-way communication systems may not have the robustness to survive an act by fire or may not be tested and maintained to assure their operability during emergency events.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<u>Public Input No. 213-NFPA 101-2021</u> <u>[Section No. 7.2.12.1.1]</u>	Requirement for ITM to be performed area of refuge two-way communication systems.

Submitter Information Verification

Submitter Full Name: Waymon Jackson
Organization: University of Texas at Austin
Street Address:
City:
State:
Zip:
Submittal Date: Thu May 27 14:14:10 EDT 2021
Committee: SAF-MEA

Committee Statement

Resolution: Determining what constitutes existing installations would be difficult to enforce. The survivability requirements of NFPA 72 can be challenging to meet. It was not the intent to mandate compliance with the stringent requirements of NFPA 72 when the two-way communication system requirements were introduced into the code in the early 1990s.



Public Input No. 217-NFPA 101-2021 [Sections 7.2.12.2.5, 7.2.12.2.6]

Sections 7.2.12.2.5, 7.2.12.2.6

7.2.12.2.5

The area of refuge shall be provided with a two-way communication system for communication between the area of refuge and a central control point.

7.2.12.2.6

Two-way communication system shall be listed as complying with UL 2525 and installed in accordance with NFPA 72.

7.2.12.2.7

The door opening to the stair enclosure or the elevator door and the associated portion of the area of refuge that the stair enclosure door opening or elevator door serves shall be identified by signage. (See 7.2.12.3.5.)

7.2.12.2.6 8 *

Instructions for summoning assistance, via the two-way communication system, and written identification of the area of refuge location shall be posted adjacent to the two-way communication system.

Statement of Problem and Substantiation for Public Input

This Public Input seeks to require two-way communication systems to comply with the applicable product listing standard and the installation standard. Two-way communication systems are intended to allow occupants in need of assistance to evacuate a building to areas of safety. These systems must work correctly when they are needed in an emergency condition.

UL 2525 is a new Product Standard for products intended to be used in combination with other devices to form a rescue assistance two-way emergency communication system. NFPA 72 within Chapter 24 has the requirements for installation of these systems including main panels, remote panels, remote call stations, pathway integrity and backup power.

Submitter Information Verification

Submitter Full Name: Megan Hayes

Organization: Nema

Street Address:

City:

State:

Zip:

Submission Date: Thu May 27 14:48:39 EDT 2021

Committee: SAF-MEA

Committee Statement

Resolution: CI-6515-NFPA 101-2021

Statement: This committee input seeks to require newly installed two-way communication systems to comply with the applicable product listing standard. Two-way communication systems are intended to allow occupants in need of assistance to evacuate a building to areas of safety. These systems must work correctly when they are needed in an emergency condition. UL 2525 is a new Product Standard for products intended to be used in combination with other devices to form a rescue assistance two-way emergency communication system. The CI is intended to solicit public comments and give the committee the opportunity to review the new product standard.



Public Input No. 5-NFPA 101-2020 [New Section after 7.3.1.2]

7.3.1.2.1

The Occupant Load in any building, or portion thereof, shall be reduced to meet governmental guidelines set forth by the Center for Disease Control and Prevention (CDC) or other governmental agency during a declared State of Emergency or a declared pandemic.

Statement of Problem and Substantiation for Public Input

This new code would give Inspectors a specific code to reference while enforcing reduced occupant loads in businesses, churches, etc. in order to enforce governmental guidelines. This would also give Inspectors a specific code to reference while writing citations when violations are found.

Submitter Information Verification

Submitter Full Name: Charlie Croy

Organization: Princeton Fire Dept

Street Address:

City:

State:

Zip:

Submittal Date: Mon Nov 16 13:34:56 EST 2020

Committee: SAF-MEA

Committee Statement

Resolution: The proposed revision is not within the scope of NFPA 101.



Public Input No. 24-NFPA 101-2021 [Section No. 7.3.1.2]

A large, empty rectangular box with a thin border, intended for public input or comments.

7.3.1.2* Occupant Load Factor.

The occupant load in any building or portion thereof shall be not less than the number of persons determined by dividing the floor area assigned to that use by the occupant load factor for that use as specified in Table 7.3.1.2, Figure 7.3.1.2(a), and Figure 7.3.1.2(b). Where both gross and net area figures are given for the same occupancy, calculations shall be made by applying the gross area figure to the gross area of the portion of the building devoted to the use for which the gross area figure is specified and by applying the net area figure to the net area of the portion of the building devoted to the use for which the net area figure is specified.

Table 7.3.1.2 Occupant Load Factor

<u>Use</u>	<u>(ft²/person)^a</u>	<u>(m²/person)^a</u>
Assembly Use	-	-
Concentrated use, without fixed seating	7 net	0.65 net
Less concentrated use, without fixed seating	15 net	1.4 net
Bench-type seating	1 person/18 linear in.	1 person/455 linear mm
Fixed seating	Use number of fixed seats	Use number of fixed seats
Waiting spaces	See 12.1.7.2 and 13.1.7.2.	See 12.1.7.2 and 13.1.7.2.
<u>Kitchens</u>	100	9.3
Library stack areas	100	9.3
Library reading rooms	50 net	4.6 net
Swimming pools	50 (water surface)	4.6 (water surface)
Swimming pool decks	30	2.8
Exercise rooms with equipment	50	4.6
Exercise rooms without equipment	15	1.4
Stages	15 net	1.4 net
Lighting and access catwalks, galleries, gridirons	100 net	9.3 net
Casinos and similar gaming areas	11	1
Skating rinks	50	4.6
-	-	- (ADD) Locker Rooms <u>30</u> <u>2.8</u>
Business Use (other than below)	150	14
Concentrated business use ^b	50	4.6
Airport traffic control tower observation levels	40	3.7
Collaboration rooms/spaces ≤450 ft ² (41.8 m ²) in area ^b	30	2.8
Collaboration rooms/spaces >450 ft ² (41.8 m ²) in area ^b	15	1.4
Day-Care Use	35 net	3.3 net
Detention and Correctional Use	120	11.1
Educational Use	-	-
Classrooms	20 net	1.9 net

<u>Use</u>	<u>(ft²/person)^a</u>	<u>(m²/person)^a</u>
Shops, laboratories, vocational rooms	50 net	4.6 net
Health Care Use	-	-
Inpatient treatment departments	240	22.3
Sleeping departments	120	11.1
Ambulatory health care	150	14
Industrial Use	-	-
General- and high-hazard industrial	100	9.3
Special-purpose industrial	MP	MP
Mercantile Use	-	-
Sales area on street floor ^{c,d}	30	2.8
Sales area on two or more street floors ^d	40	3.7
Sales area on floor below street floor ^d	30	2.8
Sales area on floors above street floor ^d	60	5.6
Floors or portions of floors used only for offices	See business use.	See business use.
Floors or portions of floors used only for storage, receiving, and shipping, and not open to general public	300	27.9
Mall structures ^e	Per factors applicable to use of space ^f	-
Residential Use	-	-
Hotels and dormitories	200	18.6
Apartment buildings	200	18.6
Board and care, large	200	18.6
Storage Use	-	-
In storage occupancies	MP	MP
In mercantile occupancies	300	27.9
In other than storage and mercantile occupancies	500	46.5

MP: The occupant load is the maximum probable number of occupants present at any time.

^aAll factors are expressed in gross area unless marked "net."

^bSee A.7.3.1.2.

^cFor determining occupant load in mercantile occupancies where, due to differences in the finished ground level of streets on different sides, two or more floors directly accessible from streets (not including alleys or similar back streets) exist, each such floor is permitted to be considered a street floor. The occupant load factor is one person for each 40 ft² (3.7 m²) of gross floor area of sales space.

^dFor determining occupant load in mercantile occupancies with no street floor, as defined in 3.3.283, but with access directly from the street by stairs or escalators, the floor at the point of entrance to the mercantile occupancy is considered the street floor.

^eFor any food court or other assembly use areas located in the mall concourse that are not included as a portion of the gross leasable area of the mall structure, the occupant load is calculated based on the occupant load factor for that use as specified in Table 7.3.1.2. The remaining mall concourse area is not required to be assigned an occupant load.

The portions of the mall concourse not used as gross leasable area are not required to be assessed an occupant load based on Table 7.3.1.2. However, means of egress from a mall concourse are required to be provided for an occupant load determined by dividing the gross leasable area of the mall building (not including anchor buildings) by the appropriate lowest whole number occupant load factor from Figure 7.3.1.2(a) or Figure 7.3.1.2(b).

Each individual tenant space is required to have means of egress to the outside or to the mall concourse based on occupant loads calculated by using the appropriate occupant load factor from Table 7.3.1.2.

Each individual anchor store is required to have means of egress independent of the mall concourse.

Figure 7.3.1.2(a) Mall Structure Occupant Load Factors (U.S. Customary Units).

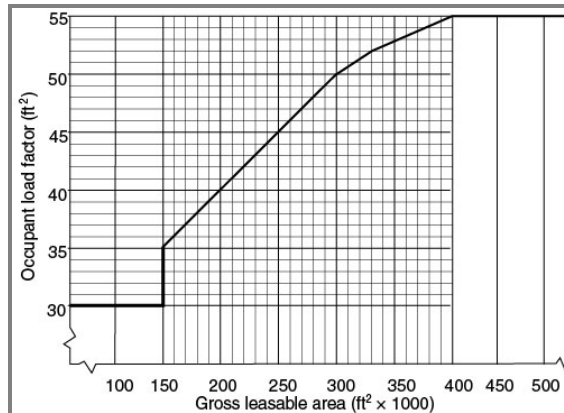
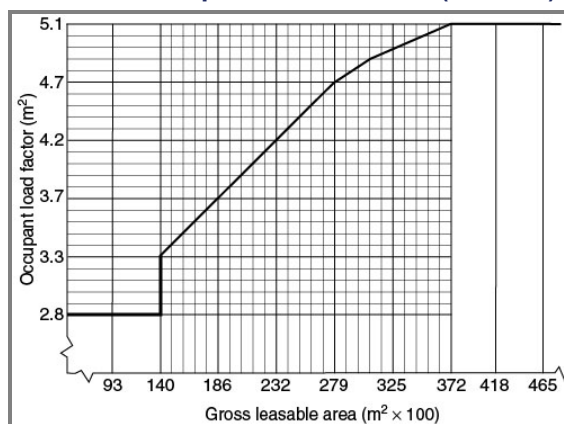


Figure 7.3.1.2(b) Mall Structure Occupant Load Factors (SI Units).



Statement of Problem and Substantiation for Public Input

Especially with COVID times and the constant request to perform occupant load calculations, it was a challenge to classify locker rooms with a specific occupant load factor. Mixed areas with bench style seating vs open space, restroom areas, shower areas etc. it was difficult to determine a specific occupant load that would cover the entire area. Recommend adding additional occupant load factors and categories within occupancy classifications to help better define areas to better assist AHJ's and fire protection professionals in calculating/verifying occupant load calculations.

Submitter Information Verification

Submitter Full Name: Jeffrey M Work

Organization: University of Delaware

Street Address:

City:

State:

Zip:

Submittal Date: Wed Jan 27 11:34:45 EST 2021

Committee: SAF-MEA

Committee Statement

Resolution: No technical substantiation has been provided for the proposed revision.



Public Input No. 322-NFPA 101-2021 [Section No. 7.3.1.2]

A large, empty rectangular box with a thin black border, intended for public input or comments.

7.3.1.2* Occupant Load Factor.

The occupant load in any building or portion thereof shall be not less than the number of persons determined by dividing the floor area assigned to that use by the occupant load factor for that use as specified in Table 7.3.1.2, Figure 7.3.1.2(a), and Figure 7.3.1.2(b). Where both gross and net area figures are given for the same occupancy, calculations shall be made by applying the gross area figure to the gross area of the portion of the building devoted to the use for which the gross area figure is specified and by applying the net area figure to the net area of the portion of the building devoted to the use for which the net area figure is specified.

7.3.1.2.1 When using Table 7.3.1.2, the actual use of the space shall be considered, not the Occupancy Classification of the space.

Table 7.3.1.2 Occupant Load Factor

<u>Use</u>	<u>(ft²/person)^a</u>	<u>(m²/person)^a</u>
Assembly Use	-	-
<u>Gathering Places</u>		
Concentrated use, without fixed seating	7 net	0.65 net
Less concentrated use, without fixed seating	15 net	1.4 net
Bench-type seating	1 person/18 linear in.	1 person/455 linear mm
Fixed seating	Use number of fixed seats	Use number of fixed seats
Waiting spaces	See 12.1.7.2 and 13.1.7.2.	See 12.1.7.2 and 13.1.7.2.
Kitchens	100	9.3
Library stack areas	100	9.3
Library reading rooms	50 net	4.6 net
Swimming pools	50 (water surface)	4.6 (water surface)
Swimming pool decks	30	2.8
Exercise rooms with equipment	50	4.6
Exercise rooms without equipment	15	1.4
Stages	15 net	1.4 net
Lighting and access catwalks, galleries, gridirons	100 net	9.3 net
Casinos and similar gaming areas	11	1
Skating rinks	50	4.6
-	-	-
Business Use - Offices (other than below)	150	14
Concentrated business use ^b	50	4.6
Airport traffic control tower observation levels	40	3.7
Collaboration rooms/spaces ≤450 ft ² (41.8 m ²) in area ^b	30	2.8
Collaboration rooms/spaces >450 ft ² (41.8 m ²) in area ^b	15	1.4
Day-Care Use	35 net	3.3 net
Detention - Jails and Correctional Use Prisons	120	11.1
Educational Use	-	-

<u>Use</u>	<u>(ft²/person)^a</u>	<u>(m²/person)^a</u>
<u>Learning</u>		
Classrooms	20 net	1.9 net
Shops, laboratories, vocational rooms	50 net	4.6 net
Health Care Use		
Inpatient treatment departments	240	22.3
Sleeping departments	120	11.1
Ambulatory health care	150	14
Industrial Use		
<u>Manufacturing and Processing</u>		
General- and high-hazard industrial	100	9.3
Special-purpose industrial	MP	MP
Mercantile Use		
<u>Sales</u>		
Sales area on street floor ^{c,d}	30	2.8
Sales area on two or more street floors ^d	40	3.7
Sales area on floor below street floor ^d	30	2.8
Sales area on floors above street floor ^d	60	5.6
Floors or portions of floors used only for offices	See business use.	See business use.
Floors or portions of floors used only for storage, receiving, and shipping, and not open to general public	300	27.9
Mall structures ^e	Per factors applicable to use of space ^f	-
Residential Use		
<u>Living</u>		
Hotels and dormitories	200	18.6
Apartment buildings	200	18.6
Board and care, large	200	18.6
Storage Use		
In storage occupancies	MP	MP
In mercantile occupancies	300	27.9
In other than storage and mercantile occupancies	500	46.5

MP: The occupant load is the maximum probable number of occupants present at any time.

^aAll factors are expressed in gross area unless marked "net."

^bSee A.7.3.1.2.

^cFor determining occupant load in mercantile occupancies where, due to differences in the finished ground level of streets on different sides, two or more floors directly accessible from streets (not including alleys or similar back streets) exist, each such floor is permitted to be considered a street floor. The occupant load factor is one person for each 40 ft² (3.7 m²) of gross floor area of sales space.

^dFor determining occupant load in mercantile occupancies with no street floor, as defined in 3.3.283, but with access directly from the street by stairs or escalators, the floor at the point of

entrance to the mercantile occupancy is considered the street floor.

^eFor any food court or other assembly use areas located in the mall concourse that are not included as a portion of the gross leasable area of the mall structure, the occupant load is calculated based on the occupant load factor for that use as specified in Table 7.3.1.2. The remaining mall concourse area is not required to be assigned an occupant load.

^fThe portions of the mall concourse not used as gross leasable area are not required to be assessed an occupant load based on Table 7.3.1.2. However, means of egress from a mall concourse are required to be provided for an occupant load determined by dividing the gross leasable area of the mall building (not including anchor buildings) by the appropriate lowest whole number occupant load factor from Figure 7.3.1.2(a) or Figure 7.3.1.2(b).

Each individual tenant space is required to have means of egress to the outside or to the mall concourse based on occupant loads calculated by using the appropriate occupant load factor from Table 7.3.1.2.

Each individual anchor store is required to have means of egress independent of the mall concourse.

Figure 7.3.1.2(a) Mall Structure Occupant Load Factors (U.S. Customary Units).

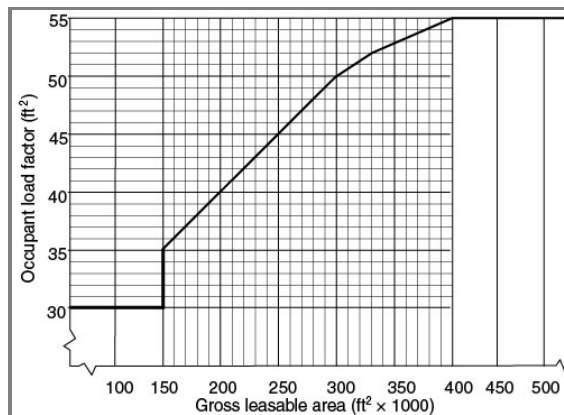
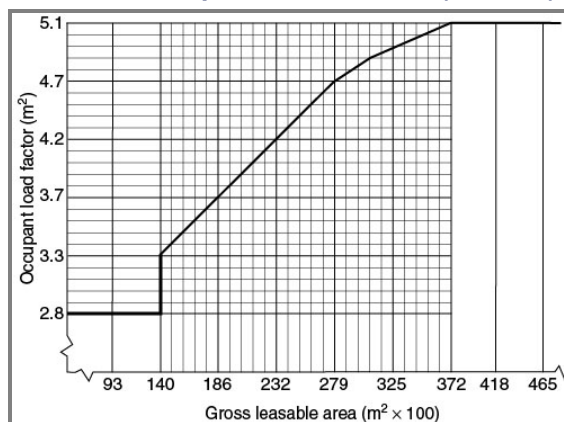


Figure 7.3.1.2(b) Mall Structure Occupant Load Factors (SI Units).



Statement of Problem and Substantiation for Public Input

I submitted a similar proposal last cycle and it was rejected by the committee. I was not able to follow up for the 2nd draft, so I am resubmitting it this cycle. In rejecting the proposal last cycle, the committee made the statement, "The proposed revisions do not clarify the application of the occupant load factors. Table 7.3.1.2 specifically refers to uses and not occupancy classifications."

This committee statement is incorrect. NFPA 101 is not written the way it is being used. While most people understand the correct way to use the Code, it is a difficult subject to teach because the words in the Code are not correct. Moreover, there are many AHJs that don't understand the correct way to

use the Code and enforce it incorrectly because the words are not correct.

There is nowhere in the Code where the user is told to ignore the Occupancy Classifications and use the occupant load factor that is appropriate for the way the space is being used. Section 7.3.1.2 makes the situation worse because it specifically says that the user is required to use the occupant load factor, "as specified in Table 7.3.1.2." Since Table 7.3.1.2 uses the Occupancy Classifications, which are defined in Chapter 3, the user is actually required to ignore the way the space is being used and apply the occupant load factor that applies from the definition of the Occupancy Classification.

For example, if the user is trying to determine the occupant load for a college classroom, the intent of the Code is to have the user apply an occupant load factor of 20 sq ft per person. But technically, the user cannot use 20 sq ft per person because this number is limited to Educational Occupancies and they are defined in Chapter 3 as only applying to grades K-12. The user is stuck having to find another occupant load factor due to the choice of words in the Table.

Once a word is defined in Chapter 3, it cannot be used in any other context in the Code. By using the definitions of Chapter 3 in Table 7.3.1.2, the committee has locked the use of these terms and cannot pretend that some other interpretation of these words is appropriate.

The changes to the table suggested here must be made. The additional section suggested by this proposal is less important, but would be helpful in explaining the intent of the Code.

Submitter Information Verification

Submitter Full Name: Kenneth Isman
Organization: University Of Maryland
Street Address:
City:
State:
Zip:
Submittal Date: Mon May 31 21:04:10 EDT 2021
Committee: SAF-MEA

Committee Statement

Resolution: [FR-6537-NFPA 101-2021](#)

Statement: The revision further clarifies that calculated occupant load is based on the use of the space, not occupancy classification in response to PI-322 via annex language rather than code text, which already specifies use and not occupancy classification. The proposed revisions to Table 7.3.1.2 by PI-322 were not incorporated because the various uses need to correspond to the applicable occupancy classifications responsible for developing and maintaining the associated occupant load factors.



Public Input No. 323-NFPA 101-2021 [Section No. 7.3.1.2]

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7.3.1.2* Occupant Load Factor.

The occupant load in any building or portion thereof shall be not less than the number of persons determined by dividing the floor area assigned to that use by the occupant load factor for that use as specified in Table 7.3.1.2, Figure 7.3.1.2(a), and Figure 7.3.1.2(b). Where both gross and net area figures are given for the same occupancy, calculations shall be made by applying the gross area figure to the gross area of the portion of the building devoted to the use for which the gross area figure is specified and by applying the net area figure to the net area of the portion of the building devoted to the use for which the net area figure is specified.

Table 7.3.1.2 Occupant Load Factor

<u>Use</u>	<u>(ft²/person)^a</u>	<u>(m²/person)^a</u>
Assembly Use	-	-
Concentrated use, without fixed seating	7 net	0.65 net
Less concentrated use, without fixed seating	15 net	1.4 net
Bench-type seating	1 person/18 linear in.	1 person/455 linear mm
Fixed seating	Use number of fixed seats + 10%	Use number of fixed seats + 10%
Waiting spaces	See 12.1.7.2 and 13.1.7.2.	See 12.1.7.2 and 13.1.7.2.
Kitchens	100	9.3
Library stack areas	100	9.3
Library reading rooms	50 net	4.6 net
Swimming pools	50 (water surface)	4.6 (water surface)
Swimming pool decks	30	2.8
Exercise rooms with equipment	50	4.6
Exercise rooms without equipment	15	1.4
Stages	15 net	1.4 net
Lighting and access catwalks, galleries, gridirons	100 net	9.3 net
Casinos and similar gaming areas	11	1
Skating rinks	50	4.6
-	-	-
Business Use (other than below)	150	14
Concentrated business use ^b	50	4.6
Airport traffic control tower observation levels	40	3.7
Collaboration rooms/spaces ≤450 ft ² (41.8 m ²) in area ^b	30	2.8
Collaboration rooms/spaces >450 ft ² (41.8 m ²) in area ^b	15	1.4
Day-Care Use	35 net	3.3 net
Detention and Correctional Use	120	11.1
Educational Use	-	-
Classrooms	20 net	1.9 net
Shops, laboratories, vocational rooms	50 net	4.6 net
Health Care Use	-	-
Inpatient treatment departments	240	22.3

<u>Use</u>	<u>(ft²/person)^a</u>	<u>(m²/person)^a</u>
Sleeping departments	120	11.1
Ambulatory health care	150	14
Industrial Use	-	-
General- and high-hazard industrial	100	9.3
Special-purpose industrial	MP	MP
Mercantile Use	-	-
Sales area on street floor ^{c,d}	30	2.8
Sales area on two or more street floors ^d	40	3.7
Sales area on floor below street floor ^d	30	2.8
Sales area on floors above street floor ^d	60	5.6
Floors or portions of floors used only for offices	See business use.	See business use.
Floors or portions of floors used only for storage, receiving, and shipping, and not open to general public	300	27.9
Mall structures ^e	Per factors applicable to use of space ^f	-
Residential Use	-	-
Hotels and dormitories	200	18.6
Apartment buildings	200	18.6
Board and care, large	200	18.6
Storage Use	-	-
In storage occupancies	MP	MP
In mercantile occupancies	300	27.9
In other than storage and mercantile occupancies	500	46.5

MP: The occupant load is the maximum probable number of occupants present at any time.

^aAll factors are expressed in gross area unless marked "net."

^bSee A.7.3.1.2.

^cFor determining occupant load in mercantile occupancies where, due to differences in the finished ground level of streets on different sides, two or more floors directly accessible from streets (not including alleys or similar back streets) exist, each such floor is permitted to be considered a street floor. The occupant load factor is one person for each 40 ft² (3.7 m²) of gross floor area of sales space.

^dFor determining occupant load in mercantile occupancies with no street floor, as defined in 3.3.283, but with access directly from the street by stairs or escalators, the floor at the point of entrance to the mercantile occupancy is considered the street floor.

^eFor any food court or other assembly use areas located in the mall concourse that are not included as a portion of the gross leasable area of the mall structure, the occupant load is calculated based on the occupant load factor for that use as specified in Table 7.3.1.2. The remaining mall concourse area is not required to be assigned an occupant load.

^fThe portions of the mall concourse not used as gross leasable area are not required to be assessed an occupant load based on Table 7.3.1.2. However, means of egress from a mall concourse are required to be provided for an occupant load determined by dividing the gross

leasable area of the mall building (not including anchor buildings) by the appropriate lowest whole number occupant load factor from Figure 7.3.1.2(a) or Figure 7.3.1.2(b).

Each individual tenant space is required to have means of egress to the outside or to the mall concourse based on occupant loads calculated by using the appropriate occupant load factor from Table 7.3.1.2.

Each individual anchor store is required to have means of egress independent of the mall concourse.

Figure 7.3.1.2(a) Mall Structure Occupant Load Factors (U.S. Customary Units).

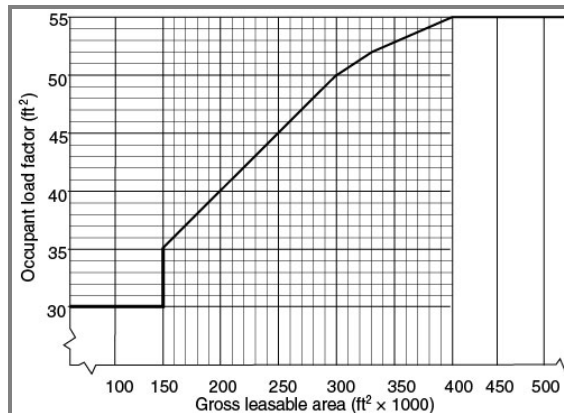
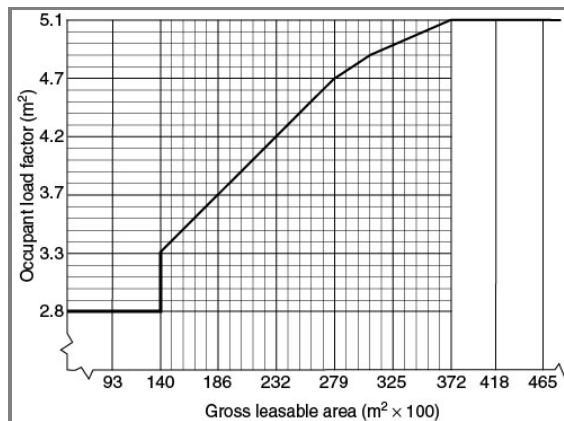


Figure 7.3.1.2(b) Mall Structure Occupant Load Factors (SI Units).



Statement of Problem and Substantiation for Public Input

I submitted the same proposal last cycle and it was rejected by the committee. I was not able to follow-up with a Public Comment, so I am re-submitting the proposal this cycle.

The committee stated that the reason for their rejection was, "No data has been provided to substantiate the proposed revision." The Committee Statement is incorrect. The statement that I submitted in support of the proposed change was to account for people in wheelchairs and people who stand up in front of the room that do not have a seat. The egress system needs to account for these people as well as the people in seats. The occupant load needs to include these people so that the egress capacity is actually adequate to handle them.

Does the committee doubt that people in wheelchairs roll into assembly occupancies with fixed seats? Has the committee ever heard of the Americans with Disabilities Act? Does the committee really need me to remind them that if people in wheelchairs are not counted in the occupant load that is used to determine egress capacity, they can sue the NFPA?

Does the committee doubt that people stand in front of lecture halls, theaters, and other assembly spaces without using a seat? Do I really need to build a case that by counting the seats in a fixed seating assembly occupancy, you are ignoring the people that are not in seats?

Asking specifically about the 10% number would have been appropriate. The committee never actually questioned this number, but I can share how it was obtained. The ADA Standards for Accessible Design require a certain number of spaces to be added to fixed seat assembly spaces based on the number of fixed seats. The requirements vary between 1% and 8% for spaces with more than 50 seats (meeting the definition of Assembly). Since the justification for this proposed change is more than just ADA acceptance (such as a professor standing up in front of a class), the 8% number was rounded up to 10% so that there would be one simple rule that would help everyone comply with the ADA and account for everyone who was reasonably going to be in the room.

Alternatively, the committee could refer to the ADA Standards For Accessible Design to figure out how many additional people they should add to the occupant load, but that would be more cumbersome for the user. The 10% number is reasonable, easy to calculate, and provides a number that helps everyone meet the ADA Standards for Accessible Design regardless of the number of seats.

Submitter Information Verification

Submitter Full Name: Kenneth Isman
Organization: University Of Maryland
Street Address:
City:
State:
Zip:
Submittal Date: Mon May 31 21:35:26 EDT 2021
Committee: SAF-MEA

Committee Statement

Resolution: Assembly use occupancy load factors are owned by the TC on Assembly Occupancies and will be acted on by that TC.



Public Input No. 404-NFPA 101-2021 [Section No. 7.3.1.2]

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7.3.1.2* Occupant Load Factor.

The occupant load in any building or portion thereof shall be not less than the number of persons determined by dividing the floor area assigned to that use by the occupant load factor for that use as specified in Table 7.3.1.2, Figure 7.3.1.2(a), and Figure 7.3.1.2(b). Where both gross and net area figures are given for the same occupancy, calculations shall be made by applying the gross area figure to the gross area of the portion of the building devoted to the use for which the gross area figure is specified and by applying the net area figure to the net area of the portion of the building devoted to the use for which the net area figure is specified.

Table 7.3.1.2 Occupant Load Factor

<u>Use</u>	<u>(ft²/person)^a</u>	<u>(m²/person)^a</u>
Assembly Use	-	-
Concentrated use, without fixed seating	7 net	0.65 net
Less concentrated use, without fixed seating	15 net	1.4 net
Bench-type seating	1 person/18 linear in.	1 person/455 linear mm
Fixed seating	Use number of fixed seats	Use number of fixed seats
Waiting spaces	See 12.1.7.2 and 13.1.7.2.	See 12.1.7.2 and 13.1.7.2.
Kitchens	100	9.3
Library stack areas	100	9.3
Library reading rooms	50 net	4.6 net
Swimming pools	50 (water surface)	4.6 (water surface)
Swimming pool decks	30	2.8
Exercise rooms with equipment	50	4.6
Exercise rooms without equipment	15	1.4
Stages	15 net	1.4 net
Lighting and access catwalks, galleries, gridirons	100 net	9.3 net
Casinos and similar gaming areas	11	1
Skating rinks	50	4.6
-	-	-
Business Use (other than below)	150	14
Concentrated business use ^b	50	4.6
Airport traffic control tower observation levels	40	3.7
<u>Airport traffic control tower accessory levels that support tower operations</u> ^g	<u>300</u>	<u>27.9</u>
Collaboration rooms/spaces ≤450 ft ² (41.8 m ²) in area ^b	30	2.8
Collaboration rooms/spaces >450 ft ² (41.8 m ²) in area ^b	15	1.4
Day-Care Use	35 net	3.3 net
Detention and Correctional Use	120	11.1
Educational Use	-	-
Classrooms	20 net	1.9 net
Shops, laboratories, vocational rooms	50 net	4.6 net

<u>Use</u>	<u>(ft²/person)^a</u>	<u>(m²/person)^a</u>
Health Care Use	-	-
Inpatient treatment departments	240	22.3
Sleeping departments	120	11.1
Ambulatory health care	150	14
Industrial Use	-	-
General- and high-hazard industrial	100	9.3
Special-purpose industrial	MP	MP
Mercantile Use	-	-
Sales area on street floor ^{c,d}	30	2.8
Sales area on two or more street floors ^d	40	3.7
Sales area on floor below street floor ^d	30	2.8
Sales area on floors above street floor ^d	60	5.6
Floors or portions of floors used only for offices	See business use.	See business use.
Floors or portions of floors used only for storage, receiving, and shipping, and not open to general public	300	27.9
Mall structures ^e	Per factors applicable to use of space ^f	-
Residential Use	-	-
Hotels and dormitories	200	18.6
Apartment buildings	200	18.6
Board and care, large	200	18.6
Storage Use	-	-
In storage occupancies	MP	MP
In mercantile occupancies	300	27.9
In other than storage and mercantile occupancies	500	46.5

MP: The occupant load is the maximum probable number of occupants present at any time.

^aAll factors are expressed in gross area unless marked "net."

^bSee A.7.3.1.2.

^cFor determining occupant load in mercantile occupancies where, due to differences in the finished ground level of streets on different sides, two or more floors directly accessible from streets (not including alleys or similar back streets) exist, each such floor is permitted to be considered a street floor. The occupant load factor is one person for each 40 ft² (3.7 m²) of gross floor area of sales space.

^dFor determining occupant load in mercantile occupancies with no street floor, as defined in 3.3.283, but with access directly from the street by stairs or escalators, the floor at the point of entrance to the mercantile occupancy is considered the street floor.

^eFor any food court or other assembly use areas located in the mall concourse that are not included as a portion of the gross leasable area of the mall structure, the occupant load is calculated based on the occupant load factor for that use as specified in Table 7.3.1.2. The remaining mall concourse area is not required to be assigned an occupant load.

^fThe portions of the mall concourse not used as gross leasable area are not required to be

assessed an occupant load based on Table 7.3.1.2. However, means of egress from a mall concourse are required to be provided for an occupant load determined by dividing the gross leasable area of the mall building (not including anchor buildings) by the appropriate lowest whole number occupant load factor from Figure 7.3.1.2(a) or Figure 7.3.1.2(b).

Each individual tenant space is required to have means of egress to the outside or to the mall concourse based on occupant loads calculated by using the appropriate occupant load factor from Table 7.3.1.2.

Each individual anchor store is required to have means of egress independent of the mall concourse.

9 Airport traffic control tower accessory level uses that support tower operations include electrical and mechanical equipment rooms, including emergency and standby power, radar, communications, and electronics rooms (see 11.3.4.2(1)). The occupant load factor identified is not intended to apply to the incidental accessory uses such as small office spaces or lounge areas and similar uses that are used by tower employees (see A.11.3.4.2(2)).

Figure 7.3.1.2(a) Mall Structure Occupant Load Factors (U.S. Customary Units).

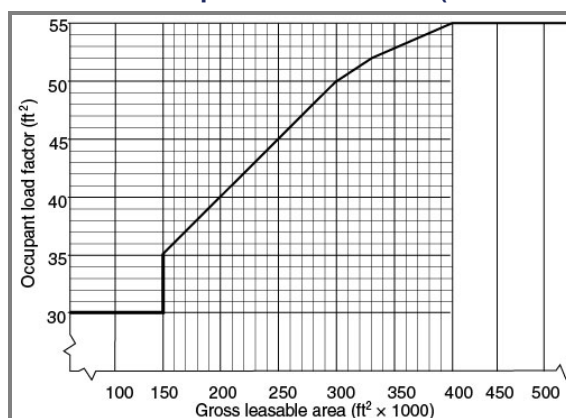
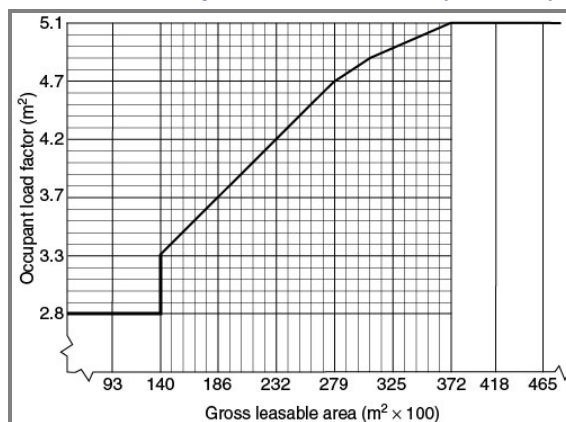


Figure 7.3.1.2(b) Mall Structure Occupant Load Factors (SI Units).



Statement of Problem and Substantiation for Public Input

Airport traffic control towers typically have a very small footprint with a limited number of occupants, including a limited number of maintenance personnel present during a shift. Accessory levels that support tower operations, including electrical and mechanical equipment rooms, emergency and standby power rooms, radar, communications, and electronics rooms, are typically not occupied. If there are maintenance personnel in these accessory level spaces that support tower operations, they are there for maintenance purposes, and typically there are no more than 1 or 2 occupants in the space. Applying the Business Use Occupant Load Factor of 150 ft²/person gross to these accessory levels that support tower operations will inaccurately overestimate the number of occupants on the floor level and in the overall airport traffic control tower. Using 300 ft²/person more accurately

describes the true occupant load of such spaces, including those used for electrical and mechanical equipment, emergency and standby power, radar, communications, and electronics. Moreover, occupancy (such as fewer than 25 persons in 11.3.2.4.1(1)) and calculated occupant load (such as 15 or fewer persons in 11.3.4.4.1(1)) have substantial impacts on airport traffic control towers if inaccurately represented.

Submitted by Leonard Belliveau, Jr., PE, SET, Senior Fire Protection Engineer, Protection Engineers, LLC, working on a Task Group with members of the DOT Volpe National Transportation Systems Center and the Federal Aviation Administration.

Submitter Information Verification

Submitter Full Name: Leonard Belliveau
Organization: Protection Engineers, LLC
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 01 14:38:38 EDT 2021
Committee: SAF-MEA

Committee Statement

Resolution: Occupant load factors are owned by the applicable occupancy TCs. The proposed revision will be reviewed by the TC on Industrial and Storage Occupancies, which is responsible for the ATCT requirements in Ch. 11.



Public Input No. 47-NFPA 101-2021 [Section No. 7.3.1.2]

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7.3.1.2* Occupant Load Factor.

The occupant load in any building or portion thereof shall be not less than the number of persons determined by dividing the floor area assigned to that use by the occupant load factor for that use as specified in Table 7.3.1.2, Figure 7.3.1.2(a), and Figure 7.3.1.2(b). Where both gross and net area figures are given for the same occupancy, calculations shall be made by applying the gross area figure to the gross area of the portion of the building devoted to the use for which the gross area figure is specified and by applying the net area figure to the net area of the portion of the building devoted to the use for which the net area figure is specified.

Table 7.3.1.2 Occupant Load Factor

Use	(ft²/person)^a	(m²/person)^a
Assembly Use		
--		
<u>Concentrated use, without fixed seating</u>	<u>7 net</u>	<u>0.65 net</u>
<u>Less concentrated use, without fixed seating</u>	<u>15 net</u>	<u>1.4 net</u>
<u>Bench-type seating</u>	<u>1 person/18 linear in.</u>	<u>1 person/455 linear mm</u>
<u>Fixed seating</u>	<u>Use number of fixed seats</u>	<u>Use number of fixed seats</u>
<u>Waiting spaces</u>	<u>See 12.1.7.2 and 13.1.7.2.</u>	<u>See 12.1.7.2 and 13.1.7.2.</u>
<u>Kitchens</u>	<u>100</u>	<u>9.3</u>
<u>Library stack areas</u>	<u>100</u>	<u>9.3</u>
<u>Library reading rooms</u>	<u>50 net</u>	<u>4.6 net</u>
<u>Swimming pools</u>	<u>50 (water surface)</u>	<u>4.6 (water surface)</u>
<u>Swimming pool decks</u>	<u>30</u>	<u>2.8</u>
<u>Exercise rooms with equipment</u>	<u>50</u>	<u>4.6</u>
<u>Exercise rooms without equipment</u>	<u>15</u>	<u>1.4</u>
<u>Stages</u>	<u>15 net</u>	<u>1.4 net</u>
<u>Lighting and access catwalks, galleries, gridirons</u>	<u>100 net</u>	<u>9.3 net</u>
<u>Casinos and similar gaming areas</u>	<u>11</u>	<u>1</u>
<u>Skating rinks</u>	<u>50</u>	<u>4.6</u>

<u>Business Use (other than below)</u>	<u>150</u>	<u>14</u>
<u>Concentrated business use^b</u>	<u>50</u>	<u>4.6</u>
<u>Airport traffic control tower observation levels</u>	<u>40</u>	<u>3.7</u>
<u>Collaboration rooms/spaces ≤450 ft² (41.8 m²) in area^b</u>	<u>30</u>	<u>2.8</u>
<u>Collaboration rooms/spaces >450 ft² (41.8 m²) in area^b</u>	<u>15</u>	<u>1.4</u>
<u>Day-Care Use</u>	<u>35 net</u>	<u>3.3 net</u>
<u>Detention and Correctional Use</u>	<u>120</u>	<u>11.1</u>
<u>Educational Use</u>		
--		
<u>Classrooms</u>	<u>20 net</u>	<u>1.9 net</u>
<u>Shops, laboratories, vocational rooms</u>	<u>50 net</u>	<u>4.6 net</u>
<u>Health Care Use</u>		
--		

<u>Inpatient treatment departments</u>	<u>240</u>	<u>22.3</u>
<u>Sleeping departments</u>	<u>120</u>	<u>11.1</u>
<u>Ambulatory health care</u>	<u>150</u>	<u>14</u>
<u>Industrial Use</u>		
--		
<u>General- and high-hazard industrial</u>	<u>100</u>	<u>9.3</u>
<u>Special-purpose industrial</u>	<u>MP</u>	<u>MP</u>
<u>Mercantile Use</u>		
--		
<u>Sales area on street floor ^{c, d}</u>	<u>30</u>	<u>2.8</u>
<u>Sales area on two or more street floors ^d</u>	<u>40</u>	<u>3.7</u>
<u>Sales area on floor below street floor ^d</u>	<u>30</u>	<u>2.8</u>
<u>Sales area on floors above street floor ^d</u>	<u>60</u>	<u>5.6</u>
<u>Floors or portions of floors used only for offices</u>	<u>See business use.</u>	<u>See business use.</u>
<u>Floors or portions of floors used only for storage, receiving, and shipping, and not open to general public</u>	<u>300</u>	<u>27.9</u>
<u>Mall structures ^e</u>	<u>Per factors applicable to use of space ^f</u>	
--		
<u>Residential Use</u>		
--		
<u>Hotels and dormitories</u>	<u>200</u>	<u>18.6</u>
<u>Apartment buildings</u>	<u>200</u>	<u>18.6</u>
<u>Board and care, large</u>	<u>200</u>	<u>18.6</u>
<u>Storage Use</u>		
--		
<u>In storage occupancies</u>	<u>MP</u>	<u>MP</u>
<u>In mercantile occupancies</u>	<u>300</u>	<u>27.9</u>
<u>In other than storage and mercantile occupancies</u>	<u>500</u>	<u>46.5</u>

MP: The occupant load is the maximum probable number of occupants present at any time.

^aAll factors are expressed in gross area unless marked "net."

^bSee A.7.3.1.2.

^cFor determining occupant load in mercantile occupancies where, due to differences in the finished ground level of streets on different sides, two or more floors directly accessible from streets (not including alleys or similar back streets) exist, each such floor is permitted to be considered a street floor. The occupant load factor is one person for each 40 ft² (3.7 m²) of gross floor area of sales space.

^dFor determining occupant load in mercantile occupancies with no street floor, as defined in 3.3.283, but with access directly from the street by stairs or escalators, the floor at the point of entrance to the mercantile occupancy is considered the street floor.

^eFor any food court or other assembly use areas located in the mall concourse that are not included as a portion of the gross leasable area of the mall structure, the occupant load is calculated based on the occupant load factor for that use as specified in Table 7.3.1.2. The remaining mall concourse area is not required to be assigned an occupant load.

^fThe portions of the mall concourse not used as gross leasable area are not required to be assessed an occupant load based on Table 7.3.1.2. However, means of egress from a mall concourse are required to be provided for an occupant load determined by dividing the gross leasable area of the mall building (not including anchor buildings) by the appropriate lowest whole number occupant load factor from Figure 7.3.1.2(a) or Figure 7.3.1.2(b).

Each individual tenant space is required to have means of egress to the outside or to the mall concourse based on occupant loads calculated by using the appropriate occupant load factor from Table 7.3.1.2.

Each individual anchor store is required to have means of egress independent of the mall concourse.

Figure 7.3.1.2(a) Mall Structure Occupant Load Factors (U.S. Customary Units).

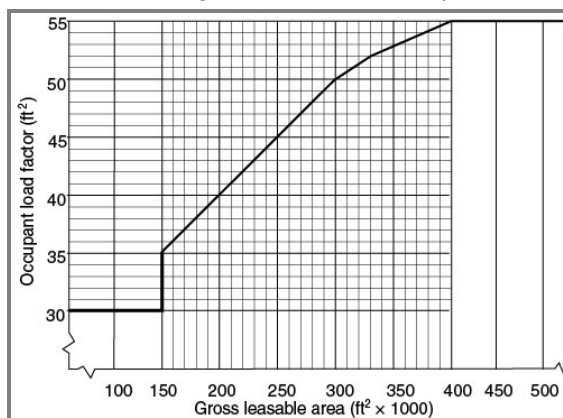
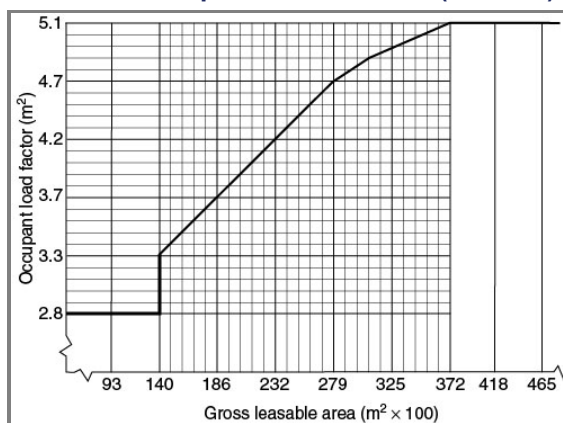


Figure 7.3.1.2(b) Mall Structure Occupant Load Factors (SI Units).



Additional Proposed Changes

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
Revise_table_14.8.1.2.docx	Revise Table 7.3.1.2	

Statement of Problem and Substantiation for Public Input

To my knowledge, Mercantile is the only occupancy classification which has different occupant loads based on which level it is on. This is an old fallacy where the main floor is the busiest floor from the early 1900's, where it was the main access point. In today's environment, there are many locations where upper or lower floors are busier than the street level. There are retail stores in the casinos Las

Vegas where their only access is from other levels. In urban environments such as NYC, there are many mercantile occupancies where the main sales floor is in the cellar or basement level and others where the main area is accessed on multiple upper levels from other buildings, stores and parking ramps. The main Target store in downtown Minneapolis is accessed from the street level as well as a skyway on the second level, the upper level is far busier than the main floor.

The occupant load factor should be the same for all levels. A similar change is already in the International Fire and Building Codes, and a similar request will be made to NFPA 1.

Submitter Information Verification

Submitter Full Name: Barry Greive

Organization: Target Corporation

Affiliation: Target Corporation

Street Address:

City:

State:

Zip:

Submittal Date: Thu Mar 25 14:51:13 EDT 2021

Committee: SAF-MEA

Committee Statement

Resolution: Occupant load factors are owned by the applicable occupancy committees. The proposed revision will be reviewed by TC on Mercantile and Business Occupancies. Also see CI-6629 (36.1.7) for additional action by the TC on Mercantile Occupancies.

Revise table 7.3.1.2 and remove footnotes C and D

Mercantile Use

Sales area on street floor^{c,d}	30	2.8
Sales area on two or more street floors^d	40	3.7
Sales area on floor below street floor^d	30	2.8
Sales area on floors above street floor^d	60	5.6
Sales area on all floors	60	5.6
Floors or portions of floors used only for offices	See business use.	See business use.
Floors or portions of floors used only for storage, receiving, and shipping, and not open to general public	300	27.9
Mall structures ^e	Per factors applicable to use of space ^f	



Public Input No. 22-NFPA 101-2021 [Section No. 7.7.2]

A large, empty rectangular box with a thin border, intended for public input or comments.

7.7.2 Exit Discharge Through Interior Building Areas.

Exits shall be permitted to discharge through interior building areas, provided that all of the following are met:

- (1) Not more than 50 percent of the required number of exit stairs or ramps serving normally occupied areas of each floor, and not more than 50 percent of the exit stair o ramp capacity required for normally occupied areas of each floor, shall discharge through areas on any level of discharge, except as otherwise permitted by one of the following:
 - (2) One hundred percent of the exits shall be permitted to discharge through areas on any level of discharge in detention and correctional occupancies as otherwise provided in Chapters 22 and 23 .
 - (3) In existing buildings, the 50 percent limit on egress capacity shall not apply if the 50 percent limit on the required number of exits is met.
 - (4) Where a building is served by a single exit stair or ramp, and all other exits discharge directly outside on the level of exit discharge.
- (5) Each level of discharge shall discharge directly outside at the finished ground level or discharge directly outside and provide access to the finished ground level by outside stairs or outside ramps.
- (6) The interior exit discharge shall lead to a free and unobstructed way to the exterior of the building, and such way shall be readily apparent or shall be identifiable by exit signage from the point of discharge from the exit.
- (7) The interior exit discharge shall be protected by one of the following methods:
 - (8) The level of discharge shall be protected throughout by an approved automatic sprinkler system in accordance with Section 9.7 , or the portion of the level of discharge used for interior exit discharge shall be protected by an approved automatic sprinkler system in accordance with Section 9.7 and shall be separated from the nonsprinklered portion of the floor by fire barriers with a fire resistance rating meeting the requirements for the enclosure of exits. (See 7.1.3.2.1 .)
 - (9) The interior exit discharge area shall be in a vestibule or foyer that meets all of the following criteria:
 - (10) The depth from the exterior of the building shall be not more than 10 ft (3050 mm), and the length shall be not more than 30 ft (9.1 m).
 - (11) The foyer shall be separated from the remainder of the level of discharge by fire barriers with a minimum 1-hour fire resistance rating, and existing installations of wired glass in steel frames shall be permitted to be continued in use.
 - (12) The foyer shall serve only as means of egress and shall include an exit directly to the outside.
- (13) The entire area on the level of discharge shall be separated from areas below by construction having a fire resistance rating not less than that required for the exit enclosure, unless otherwise provided in 7.7.2(6).
- (14) Levels below the level of discharge in an atrium shall be permitted to be open to the level of discharge where such level of discharge is protected in accordance with 8.6.7.

Statement of Problem and Substantiation for Public Input

The current provisions do not provide for the use of exit ramps. Additionally, the current provision does not permit the exit discharge through the interior of the building where half or more of the exits are at the level of exit discharge, but a single exit stair or ramp is necessary.

Submitter Information Verification

Submitter Full Name: Matthew Shanks

Organization: Montgomery County

Street Address:

City:

State:

Zip:

Submittal Date: Fri Jan 15 07:05:30 EST 2021

Committee: SAF-MEA

Committee Statement

Resolution: [FR-6518-NFPA 101-2021](#)

Statement: The revision replaces 'exit stairs' with 'exit enclosures' to be inclusive of all exit enclosures in response to PI-22. The revision does not include the proposed new 7.7.2(1)(c), which is unclear and for which no technical substantiation was provided.



Public Input No. 130-NFPA 101-2021 [Section No. 7.8.1.2.2]

7.8.1.2.2*

Unless prohibited by Chapters 11 through 43, automatic lighting control devices shall be permitted to temporarily turn off the illumination within the means of egress, provided that each lighting control device complies with all of the following:

- (1) In new installations, the lighting control device is listed.
- (2) The lighting control device is equipped to automatically energize ~~the controlled lights~~ any controlled lights required for compliance with Section 7.9 (Emergency Lighting) upon loss of normal power and is evaluated for this purpose.
- (3) Illumination timers are provided and are set for a minimum 15-minute duration.
- (4) The lighting control device is activated by any occupant movement in the area served by the lighting units.
- (5) In new installations, the lighting control device is activated by activation of the building fire alarm system, if provided.
- (6) The lighting control device does not turn off any lights relied upon for activation of photoluminescent exit signs or path markers.
- (7) The lighting control device does not turn off any battery-equipped emergency luminaires, unit equipment, or exit signs.

Statement of Problem and Substantiation for Public Input

The text of 7.8.1.2.2 (2) is overly broad. Only luminaires that are designated for emergency lighting should be required to be automatically energized upon loss of normal power.

Controls for emergency lighting should be listed to UL 924. A revision to specify this is separately being submitted under 7.9.2.5.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<u>Public Input No. 131-NFPA 101-2021 [Section No. 7.9.2.5]</u>	PI 131 adds emergency lighting control devices to the list of emergency lighting equipment that should be listed.
<u>Public Input No. 131-NFPA 101-2021 [Section No. 7.9.2.5]</u>	

Submitter Information Verification

Submitter Full Name: Michael Shulman

Organization: UL LLC

Street Address:

City:

State:

Zip:

Submittal Date: Thu May 06 15:25:32 EDT 2021

Committee: SAF-MEA

Committee Statement

Resolution: [FR-6519-NFPA 101-2021](#)

Statement: The text of 7.8.1.2.2 (2) is overly broad. Only luminaires that are designated for emergency lighting should be required to be automatically energized upon loss of normal power.



Public Input No. 131-NFPA 101-2021 [Section No. 7.9.2.5]

7.9.2.5

Unit equipment- and battery- , battery-equipped emergency luminaires, battery systems for emergency luminaires, and emergency lighting control devices shall be listed to UL 924, *Emergency Lighting and Power Equipment*.

Statement of Problem and Substantiation for Public Input

Emergency luminaires containing their own emergency battery pack require listing per UL 924 to validate both proper functionality and battery capacity. Emergency lighting control devices can take several different forms and also should be listed to UL 924 to validate their intended functionality. Similar specifications are now present (or pending) in NFPA 70 (NEC) Article 700.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<u>Public Input No. 130-NFPA 101-2021 [Section No. 7.8.1.2.2]</u>	PI 130, for 7.8.1.2.2, provides one example of where an emergency lighting control device should be listed.
<u>Public Input No. 130-NFPA 101-2021 [Section No. 7.8.1.2.2]</u>	

Submitter Information Verification

Submitter Full Name: Michael Shulman
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submission Date: Thu May 06 15:31:01 EDT 2021
Committee: SAF-MEA

Committee Statement

Resolution: FR-6520-NFPA 101-2021

Statement: Emergency luminaires containing their own emergency battery pack require listing per UL 924 to validate both proper functionality and battery capacity. Emergency lighting control devices can take several different forms and also should be listed to UL 924 to validate their intended functionality. Similar specifications are now present (or pending) in NFPA 70 (NEC) Article 700.



Public Input No. 6-NFPA 101-2020 [Section No. 7.10.1.5.1]

7.10.1.5.1

Access to exits shall be marked by approved, readily visible signs in all cases where the exit or way to reach the exit is not readily apparent to the occupants. At no time shall signs or floormarking be used to guide or direct flow of occupants through an occupancy other than to approved exits. ie. arrows in aisleways in mercantiles.

Statement of Problem and Substantiation for Public Input

The problem is that with Co-vid stores and schools are marking directional arrows not always going to an exit. I have seen confusion with these markings during non-emergency events. Only exit directional signs should be used.

Submitter Information Verification

Submitter Full Name: Chad Bailey

Organization: Princeton Fire Dept

Street Address:

City:

State:

Zip:

Submittal Date: Mon Nov 16 14:07:42 EST 2020

Committee: SAF-MEA

Committee Statement

Resolution: The proposed revision is not within the scope of the code. Floor markings can be useful in certain situations provided that they do not interfere with means of egress marking.



Public Input No. 265-NFPA 101-2021 [Section No. 7.10.8.3]

7.10.8.3* No Exit.

7.10.8.3.1

Any door, passage, or stairway that is neither an exit nor a way of exit access and that is located or arranged so that it is likely to be mistaken for an exit shall be identified by a sign that reads as follows:

NO
EXIT

7.10.8.3.2

For other than previously approved existing NO EXIT or NOT AN EXIT signs, the sign shall comply with all of the following:

- (1) The word NO or NOT AN shall be in letters not less than 2 in. (51 mm) high, with a stroke width of not less than $\frac{3}{8}$ in. (9.5 mm).
- (2) The word EXIT shall be in letters not less than 1 in. (25 mm) high.
- (3) Larger signs shall retain the same letter-height-to-stroke-width ratio for the word NO and a 2:1 letter-height ratio between the words NO or NOT AN and EXIT.
- (4) The word EXIT shall be located below the word NO or NOT AN.

Statement of Problem and Substantiation for Public Input

While a "NOT AN EXIT" sign is practically the same as a "NO EXIT" sign, there are federal regulators that make facilities replace their NOT AN EXIT signs with NO EXIT signs. Some localities such as NYC and surrounding areas also specifically require NOT AN EXIT signs which means facilities must provide NO EXIT signs for the federal regulators and NOT AN EXIT signs for local AHJs. Either sign should be permitted.

Submitter Information Verification

Submitter Full Name: Lennon Peake
Organization: Koffel Associates, Inc.
Street Address:
City:
State:
Zip:
Submission Date: Fri May 28 13:59:34 EDT 2021
Committee: SAF-MEA

Committee Statement

Resolution: The proposed revisions to 7.10.8.3.2 would conflict with 7.10.8.3.1. The Code permits equivalency via Section 1.4, and other signage might be considered equivalent to that prescribed by 7.10.8.3. The submitter might consider a public comment to provide additional guidance in Annex A.



Public Input No. 237-NFPA 101-2021 [Section No. 7.15.1]

7.15.1 General.

7.15.1.1*

Where passenger elevators for general public use are permitted to be used for occupant evacuation prior to Phase I Emergency Recall Operation mandated by the firefighters' emergency operation provisions of ASME A17.1/CSA B44, *Safety Code for Elevators and Escalators*, the elevator system shall also comply with this section, except as otherwise permitted by 7.15.1.2.

7.15.1.2

The provisions of Section 7.15 shall not apply where the limited or supervised use of elevators for evacuation is part of a formal or informal evacuation strategy, including the relocation or evacuation of patients in health care occupancies and the relocation or ~~evacuation~~ of ~~occupants with disabilities in other occupancies~~ occupancies that require a high level of supervision.

7.15.1.3*

The occupant evacuation elevators shall be in accordance with the occupant evacuation operation (OEO) requirements of ASME A17.1/CSA B44, *Safety Code for Elevators and Escalators*, and the building emergency action plan required by 7.15.3.1.

7.15.1.4

Occupant evacuation elevators in accordance with Section 7.15 shall not be permitted to satisfy requirements of this *Code* applicable to the following:

- (1) Number of means of egress
- (2) Capacity of means of egress
- (3) Arrangement of means of egress

Statement of Problem and Substantiation for Public Input

Occupant Evacuation Elevators are designed to be used by occupants who use wheelchairs or may have other ambulatory limitations. The current language would limit them using OEE. The proposed language would only limit use if someone requires a high level of supervision (such as a nursing home, memory care facility, penal institution, etc.).

Submitter Information Verification

Submitter Full Name: Kevin Brinkman
Organization: National Elevator Industry, Inc.
Street Address:
City:
State:
Zip:
Submission Date: Fri May 28 11:21:42 EDT 2021
Committee: SAF-MEA

Committee Statement

Resolution: The revision as submitted is unclear. The proponent is encouraged to submit a public comment with clarification as to whom the exemption would apply and whether the reference to evacuation is intended to be deleted.



Public Input No. 218-NFPA 101-2021 [Section No. 7.15.3.3]

7.15.3.3 Conditions for Safe Continued Operation.

7.15.3.3.1

Conditions necessary for the continued safe operation of the occupant evacuation elevators and the associated elevator lobbies and elevator machine rooms shall be continuously monitored and displayed at the building fire command center ~~by a standard emergency service interface system meeting the requirements of NFPA 72 and NEMA SB 30, Fire Service Annunciator and Interface~~ on a building fire alarm system annunciator(s), or other annunciator(s) as approved by the authority having jurisdiction.

7.15.3.3.2

The monitoring and display required by 7.15.3.3.1 shall include all of the following:

- (1) Floor location of each elevator car
- (2) Direction of travel of each elevator car
- (3) Status of each elevator car with respect to whether it is occupied
- (4) Status of normal power to the elevator equipment, elevator controller cooling equipment, and elevator machine room ventilation and cooling equipment
- (5) Status of standby or emergency power system that provides backup power to the elevator equipment, elevator controller cooling equipment, and elevator machine/control room or machinery/control space ventilation and cooling equipment
- (6) Activation of any fire alarm-initiating device in any elevator lobby, elevator machine/control room or machinery/control space, or elevator hoistway

Statement of Problem and Substantiation for Public Input

The 3SB30 standard has been withdrawn and NFPA 72 has been revised accordingly.

Submitter Information Verification

Submitter Full Name: Megan Hayes

Organization: Nema

Street Address:

City:

State:

Zip:

Submittal Date: Thu May 27 14:56:31 EDT 2021

Committee: SAF-MEA

Committee Statement

Resolution: [FR-6521-NFPA 101-2021](#)

Statement: The revision responds to PI-218 by deleting the references to NEMA SB 30 and NFPA 72. The proposed references to annunciators in PI-218 are not necessary.



Public Input No. 240-NFPA 101-2021 [Section No. 7.15.6]

7.15.6 Elevator Installation.

7.15.6.1

Except as modified by 7.15.6.2 and 7.15.6.3, occupant evacuation elevators shall be installed in accordance with ASME A17.1/CSA B44, *Safety Code for Elevators and Escalators*, including the provisions for occupant evacuation operation, as required by 7.15.1.3.

7.15.6.2*

Shunt breakers shall not be installed on elevator systems used for occupant evacuation.

7.15.6.3

Occupant evacuation elevators shall be limited to electric passenger elevators that are located in noncombustible hoistways and for which the car enclosure materials meet the requirements of ASME A17.1/CSA B44, *Safety Code for Elevators and Escalators*.

Statement of Problem and Substantiation for Public Input

Occupant evacuation elevators should be limited to electric elevators. Hydraulic elevators are limited to low-rise applications where occupant evacuation is not typically used and hydraulic elevators are currently required to have sprinklers in the pit per NFPA 13.

Submitter Information Verification

Submitter Full Name: Kevin Brinkman
Organization: National Elevator Industry, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 28 11:31:28 EDT 2021
Committee: SAF-MEA

Committee Statement

Resolution: This code and NFPA 13 already address how the use of a hydraulic elevator could be incorporated into the design of occupant evacuation elevators where required. This proposal might be overly restrictive on the use of hydraulic elevators where these types of elevators would be permitted to be used as occupant evacuation elevators.



Public Input No. 241-NFPA 101-2021 [Section No. 7.15.8]

7.15.8 Electrical Power and Control Wiring.

7.15.8.1

The following features associated with occupant evacuation elevators shall be supplied by both normal power and Type 60, Class 2, Level 1 standby power:

- (1) Elevator equipment
- (2) Ventilation and cooling equipment for elevator machine/control rooms and machinery/control spaces
- (3) Elevator car lighting

7.15.8.2

Wires or cables that are located outside elevator hoistways, machine/control rooms, and machinery/control spaces and elevator lobbies, and that provide normal power, standby power, control signals, communication with the cars, lighting, heating, air-conditioning, ventilation, and fire detecting systems to occupant evacuation elevators shall be protected by one of the following means, except as otherwise provided in 7.15.8.3:

- (1) The wiring shall utilize Type CI cable with a minimum 2-hour fire resistance rating.
- (2) The wiring shall be enclosed in a minimum 2-hour fire-resistance-rated construction.
- (3) The wiring shall be wiring that is approved as providing a 2-hour performance alternative.

7.15.8.3*

Control signaling wiring and cables that do not serve Phase II emergency in-car service shall not be required to be protected.

Statement of Problem and Substantiation for Public Input

Elevator lobbies for OEE are already required to have a 2-hour fire resistance rating so the additional protection for the wiring in the lobby is not necessary.

Submitter Information Verification

Submitter Full Name: Kevin Brinkman
Organization: National Elevator Industry, Inc,
Street Address:
City:
State:
Zip:
Submission Date: Fri May 28 11:34:29 EDT 2021
Committee: SAF-MEA

Committee Statement

Resolution: NFPA 101 does not require 2-hr elevator lobby enclosures.



Public Input No. 242-NFPA 101-2021 [Section No. 7.15.9]

7.15.9 Occupant Evacuation Shaft System.

7.15.9.1

Occupant evacuation elevators shall be provided with an occupant evacuation shaft system consisting of all of the following:

- (1) Elevator hoistway
- (2) Enclosed elevator lobby outside the bank or group of hoistway doors on each floor served by the elevators, with the exception that elevator lobbies not be required to be enclosed where located either on the street floor or level of exit discharge
- (3) Enclosed exit stair with doors to all floors, at and above grade level, served by the elevators

Exception: Elevators that only service an open parking garage and the lobby of the building shall not be required to provide direct access to exit stairs.

7.15.9.2* Elevator Lobby Size.

7.15.9.2.1

Occupant evacuation elevator lobbies shall have minimum clear floor area, except as otherwise provided in 7.15.9.2.2, as follows:

- (1) The elevator lobby clear floor area shall accommodate, at 3 ft² (0.28 m²) per person, a minimum of 25 percent of the occupant load of the floor area served by the lobby.
- (2) The elevator lobby clear floor area also shall accommodate one wheelchair space of 30 in. × 48 in. (760 mm × 1220 mm) for each 50 persons, or portion thereof, of the occupant load of the floor area served by the lobby.

7.15.9.2.2

The size of lobbies serving multiple banks of elevators shall be exempt from the requirement of 7.15.9.2.1(1), provided that the area of such lobbies is approved on an individual basis and is consistent with the building's emergency action plan.

7.15.9.3

Access to the exit stair required by 7.15.9.1(3) shall be directly from the enclosed elevator lobby on each floor.

7.15.9.4

The occupant evacuation shaft system shall be enclosed and separated from the remainder of the building by walls complying with the following:

- (1) The shaft system walls shall be smoke barriers in accordance with Section 8.5.
- (2) The shaft system walls separating the elevator lobby from the remainder of the building shall have a minimum 1-hour fire resistance rating and minimum ¾-hour fire-protection-rated opening protectives.
- (3) The shaft system walls separating the elevator hoistway from the remainder of the building shall have a minimum 2-hour fire resistance rating and minimum 1½-hour fire-protection-rated opening protectives.
- (4) The shaft system walls separating the enclosed exit stair from the remainder of the building shall have a minimum 2-hour fire resistance rating and minimum 1½-hour fire-protection-rated opening protectives.

7.15.9.5

Occupant evacuation shaft system enclosures shall be constructed to provide a minimum of classification Level 2 in accordance with ASTM C1629/C1629M, *Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels*.

7.15.9.6*

An approved method to prevent water from infiltrating into the hoistway enclosure from the operation of the automatic sprinkler system outside the enclosed occupant evacuation elevator lobby shall be provided.

7.15.9.7

Occupant evacuation shaft system elevator lobby doors, other than doors to the hoistway, exit stair enclosure, control room, or control space, shall have all of the following features:

- (1) The doors shall have a fire protection rating of not less than $\frac{3}{4}$ hour.
- (2) The doors shall be smoke-leakage-rated assemblies in accordance with NFPA 105.
- (3) The doors shall have an automatic positioning bottom seal to resist the passage of water at floor level from outside the shaft system.

7.15.9.8

Occupant evacuation shaft system elevator lobby doors shall have the following features:

- (1) Each door, other than doors to the hoistway, exit stair enclosure, control room, or control space, shall be automatic-closing in accordance with 7.2.1.8.2, as modified by 7.15.9.8(2).
- (2) In addition to the automatic-closing means addressed by 7.2.1.8.2, the elevator lobby door on any floor shall also close in response to any alarm signal initiated on that floor.
- (3) Each door shall be provided with a vision panel arranged to allow people on either side of the door to view conditions on the other side of the door.

7.15.9.9

Each occupant evacuation shaft system exit stair enclosure door shall be provided with a vision panel arranged to allow people on either side of the door to view conditions on the other side of the door.

Statement of Problem and Substantiation for Public Input

There is no need to have access to exit stairs in an open parking garage or in the lobby of the building that is at the exit discharge level.

Submitter Information Verification

Submitter Full Name: Kevin Brinkman
Organization: National Elevator Industry, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 28 11:36:58 EDT 2021
Committee: SAF-MEA

Committee Statement

Resolution: Exceptions are not permitted by the NFPA Manual of Style. The submitter's intent is not clear. The specified protection is needed for elevators that serve as an occupant evacuation elevator system in accordance with Section 7.15.



Public Input No. 152-NFPA 101-2021 [Section No. A.7.1.3.2.1(1)]

A.7.1.3.2.1(1)

In existing buildings, existing walls in good repair and consisting of lath and plaster, gypsum wallboard panel products, or masonry units can usually provide satisfactory protection for the purposes of this requirement where a 1-hour fire resistance rating is required. Further evaluation might be needed where a 2-hour fire resistance rating is required. Additional guidelines can be found in Annex O of NFPA 914 and in the *SFPE Handbook of Fire Protection Engineering*.

Statement of Problem and Substantiation for Public Input

The Building Code Technical Committee of the Gypsum Association reviewed references to gypsum products throughout NFPA 101 and identified several instances where incorrect terminology was used. This is one of several Public Inputs being submitted to ensure consistency in the use of gypsum terms throughout all codes, standards, and industry publications.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 145-NFPA 101-2021 [Section No. 8.6.11.3]	
Public Input No. 146-NFPA 101-2021 [Section No. 12.4.7.10.3]	
Public Input No. 148-NFPA 101-2021 [Section No. 13.4.7.10.3]	
Public Input No. 149-NFPA 101-2021 [Section No. 14.3.4.4.1]	
Public Input No. 150-NFPA 101-2021 [Section No. 14.3.4.4.3]	
Public Input No. 151-NFPA 101-2021 [Section No. A.3.3.182]	
Public Input No. 155-NFPA 101-2021 [Section No. 13.3.1]	
Public Input No. 153-NFPA 101-2021 [Section No. A.7.1.3.2.1(3)]	

Submitter Information Verification

Submitter Full Name: Timothy Earl
Organization: GBH International
Affiliation: the Gypsum Association
Street Address:
City:
State:
Zip:
Submission Date: Fri May 14 10:31:20 EDT 2021
Committee: SAF-MEA

Committee Statement

Resolution: [FR-6522-NFPA 101-2021](#)

Statement: The Building Code Technical Committee of the Gypsum Association reviewed references to gypsum products throughout NFPA 101 and identified several instances where incorrect terminology was used. This is one of several revisions to ensure consistency in the use of gypsum terms throughout all codes, standards, and industry publications.



Public Input No. 153-NFPA 101-2021 [Section No. A.7.1.3.2.1(3)]

A.7.1.3.2.1(3)

In existing buildings, existing walls in good repair and consisting of lath and plaster, gypsum wallboard panel products, or masonry units can usually provide satisfactory protection for the purposes of this requirement where a 1-hour fire resistance rating is required. Further evaluation might be needed where a 2-hour fire resistance rating is required. Additional guidelines can be found in Annex O of NFPA 914 and in the *SFPE Handbook of Fire Protection Engineering*.

Statement of Problem and Substantiation for Public Input

The Building Code Technical Committee of the Gypsum Association reviewed references to gypsum products throughout NFPA 101 and identified several instances where incorrect terminology was used. This is one of several Public Inputs being submitted to ensure consistency in the use of gypsum terms throughout all codes, standards, and industry publications.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 145-NFPA 101-2021 [Section No. 8.6.11.3]	
Public Input No. 146-NFPA 101-2021 [Section No. 12.4.7.10.3]	
Public Input No. 148-NFPA 101-2021 [Section No. 13.4.7.10.3]	
Public Input No. 149-NFPA 101-2021 [Section No. 14.3.4.4.1]	
Public Input No. 150-NFPA 101-2021 [Section No. 14.3.4.4.3]	
Public Input No. 151-NFPA 101-2021 [Section No. A.3.3.182]	
Public Input No. 152-NFPA 101-2021 [Section No. A.7.1.3.2.1(1)]	
Public Input No. 155-NFPA 101-2021 [Section No. 13.3.1]	

Submitter Information Verification

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Submission Date: Fri May 14 10:39:18 EDT 2021
Committee: SAF-MEA

Committee Statement

Resolution: [FR-6523-NFPA 101-2021](#)

Statement: The Building Code Technical Committee of the Gypsum Association reviewed references to gypsum products throughout NFPA 101 and identified several instances where incorrect terminology was used. This is one of several revisions to ensure consistency in the use of gypsum terms throughout all codes, standards, and industry publications.



Public Input No. 115-NFPA 101-2021 [Section No. A.7.1.7.2]

A.7.1.7.2

Aside from the problems created for persons who ~~are mobility impaired~~ use wheelchairs or other mobility devices, small changes of elevations in floors are best avoided because of the increased occurrence of missteps where the presence of single steps, a series of steps, or a ramp is not readily apparent. Although small changes of elevation pose significant fall risks in the case of individual movement, they are even more undesirable where crowds traverse the area.

A contrasting marking stripe on each stepping surface can be helpful at the nosing or leading edge so that the location of each step is readily apparent, especially when viewed in descent. Such stripes should be not less than 1 in. (25 mm), but should not exceed 2 in. (51 mm), in width. Other methods could include a relatively higher level of lighting, contrasting colors, contrasting textures, highly prominent handrails, warning signs, a combination thereof, or other similar means. The construction or application of marking stripes should be such that slip resistance is consistent over the walking surface and no tripping hazard is created (*see also* A.7.2.2.3.3.2). Depending on the distractions of the surroundings, the familiarity of users with a particular small change of level, and especially the number of people that might be in a group traversing the change of level (thereby reducing visibility of the level changes), a strong argument can be made for the elimination of steps and ramps that might pose a risk of missteps.

Statement of Problem and Substantiation for Public Input

The NFPA Disability Access Review and Advisory Committee (DARAC) requests an update to the terminology used to describe individuals with disabilities. In general, we suggest using “people first” language to avoid characterizing a person or group of persons entirely by their disability. Also, where possible, we recommend substituting the appropriate technical term when describing building elements that are accessible to individuals with disabilities, rather than describing the element as being “for” such people. For example, we would say “accessible parking” instead of “handicap parking”. The substitute terms we recommend are found to be more acceptable to the disability community and its supporters and, therefore, demonstrate greater respect.

We used following resources to develop our input:

- “Guidelines for Writing About People with Disabilities” ADA National Network at <https://adata.org/factsheet/ADANN-writing>
- “Disability Style Guide” National Center on Disability and Journalism at <https://ncdj.org/style-guide/>
- “Resources for Reporters Writing About Blindness and Vision Loss” American Foundation for the Blind at <https://www.afb.org/news-publications/press-room/reporter-resources-writing-about-blindness-vision-loss>
- “Five Tips for Writing About People with Disabilities” Adaptive Sports Center at <https://www.adaptivesports.org/blog/announcements/five-tips-writing-about-people-disabilities>
- “Fact Sheet: Drug Addiction and Federal Disability Rights Laws” U.S. Department of Health and Hum Services: Office for Civil Rights at <https://www.hhs.gov/sites/default/files/drug-addiction-aand-federal-disability-rights-laws-fact-sheet.pdf>
- “People First Language” District of Columbia Office of Disability Rights at <https://odr.dc.gov/page/people-first-language>

Submitter Information Verification

Submitter Full Name: Marsha Mazz

Organization: United Spinal Association

Affiliation: Representing the DARAC Advisory Committee
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Submittal Date: Thu May 06 12:43:26 EDT 2021
Committee: SAF-MEA

Committee Statement

Resolution: [FR-6524-NFPA 101-2021](#)

Statement: The revision responds to PI-115, the substantiation for which follows:

The NFPA Disability Access Review and Advisory Committee (DARAC) requests an update to the terminology used to describe individuals with disabilities. In general, we suggest using “people first” language to avoid characterizing a person or group of persons entirely by their disability. Also, where possible, we recommend substituting the appropriate technical term when describing building elements that are accessible to individuals with disabilities, rather than describing the element as being “for” such people. For example, we would say “accessible parking” instead of “handicap parking”. The substitute terms we recommend are found to be more acceptable to the disability community and its supporters and, therefore, demonstrate greater respect.

We used following resources to develop our input:

- “Guidelines for Writing About People with Disabilities” ADA National Network at <https://adata.org/factsheet/ADANN-writing>
- “Disability Style Guide” National Center on Disability and Journalism at <https://ncdj.org/style-guide/>
- “Resources for Reporters Writing About Blindness and Vision Loss” American Foundation for the Blind at <https://www.afb.org/news-publications/press-room/reporter-resources-writing-about-blindness-vision-loss>
- “Five Tips for Writing About People with Disabilities” Adaptive Sports Center at <https://www.adaptivesports.org/blog/announcements/five-tips-writing-about-people-disabilities>
- “Fact Sheet: Drug Addiction and Federal Disability Rights Laws” U.S. Department of Health and Hum Services: Office for Civil Rights at <https://www.hhs.gov/sites/default/files/drug-addiction-aand-federal-disability-rights-laws-fact-sheet.pdf>
- “People First Language” District of Columbia Office of Disability Rights at <https://odr.dc.gov/page/people-first-language>



Public Input No. 443-NFPA 101-2021 [New Section after A.7.2.1.5.3.4]

A.7.2.1.5.3.7

*A door with a thumb-turn operated dead bolt in addition to a lever operated latchset would be permitted per 7.2.1.5.3.7 as the dead bolt could be retracted with the first motion of rotating the thumb turn (one operation), and then the latch bolt would be retracted by the second motion of rotating the lever handle (other operation).

An example of what would not be permitted would be a door with two lever operated latchsets because the first operation of rotating the lever to retract one of the latch bolts would also require that lever to be manually maintained, or held, in the turned position while the second operation of the rotating the other lever to retract the second latch bolt is performed.

Statement of Problem and Substantiation for Public Input

It may be helpful to illustrate what may, or may not, be permitted with the requirements of this section.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 438-NFPA 101-2021 [Section No. 7.2.1.5.3.4]	
Public Input No. 440-NFPA 101-2021 [Section No. A.7.2.1.5.3.4]	

Submitter Information Verification

Submitter Full Name: John Woestman
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Submittal Date: Tue Jun 01 16:23:13 EDT 2021
Committee: SAF-MEA

Committee Statement

Resolution: FR-6538-NFPA 101-2021

Statement: The revision helps to illustrate what may or may not be permitted by the requirements of 7.2.1.5.3.7.



Public Input No. 440-NFPA 101-2021 [Section No. A.7.2.1.5.3.4]

A.7.2.1.5.3.4

Examples of devices that, when used with a latch, can be arranged to require not more than one additional releasing operation include ~~night latches, dead bolts, and security chains~~ include dead bolts, security chains, swing door lock, or privacy door guard.

A door with a thumb-turn operated dead bolt in addition to a lever operated latchset would be permitted per 7.2.1.5.3.7 as the dead bolt could be retracted with the first motion of rotating the thumb turn (one operation), and then the latch bolt would be retracted by the second motion of rotating the lever handle (other operation).

An example of what would not be permitted would be a door with two lever operated latchsets because the first operation of rotating the lever to retract one of the latch bolts would also require that lever to be manually maintained, or held, in the turned position while the second operation of the rotating the other lever to retract the second latch bolt is performed.

Swing bar door locks and privacy door guards are commonly used in guest rooms in hotels, and many other applications permitted by this section .

Statement of Problem and Substantiation for Public Input

Revising and expanding Annex A language for this section to better identify types of permitted hardware. Adding examples of a permitted configuration, and a configuration which should not be permitted.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<u>Public Input No. 438-NFPA 101-2021 [Section No. 7.2.1.5.3.4]</u>	
<u>Public Input No. 443-NFPA 101-2021 [New Section after A.7.2.1.5.3.4]</u>	

Submitter Information Verification

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Submittal Date: Tue Jun 01 16:19:44 EDT 2021
Committee: SAF-MEA

Committee Statement

Resolution: FR-6526-NFPA 101-2021

Statement: The revision better identifies types of permitted hardware and adds examples of a permitted configuration and a configuration that should not be permitted.



Public Input No. 116-NFPA 101-2021 [Section No. A.7.3.4.1.1]

A large, empty rectangular box with a thin border, intended for public input or comments.

A.7.3.4.1.1

The criteria of 7.3.4.1.1, as initially written, were intended to provide for minimum widths for small spaces such as individual offices. The intent is that these reductions in required width apply to spaces formed by furniture and movable walls, so that accommodations can easily be made for mobility-impaired individuals for individuals using wheelchairs or other mobility devices. One side of a path could be a fixed wall, provided that the other side is movable. This does not exempt the door widths or widths of fixed-wall corridors, regardless of the number of people or length. The allowance for reduction in width has been expanded to include all exit accesses serving not more than six people where the travel length along the reduced-width path does not exceed 50 ft (15 m), regardless of occupancy or use of the space.

Figure A.7.3.4.1.1(a) and Figure A.7.3.4.1.1(b) present selected anthropometric data for adults. The male and female figures depicted in the figures are average, 50th percentile, in size. Some dimensions apply to very large, 97.5 percentile, adults (noted as 97.5 P).

Figure A.7.3.4.1.1(a) Anthropometric Data (in in.) for Adults; Males and Females of Average, 50th Percentile, Size; Some Dimensions Apply to Very Large, 97.5 Percentile (97.5 P), Adults.

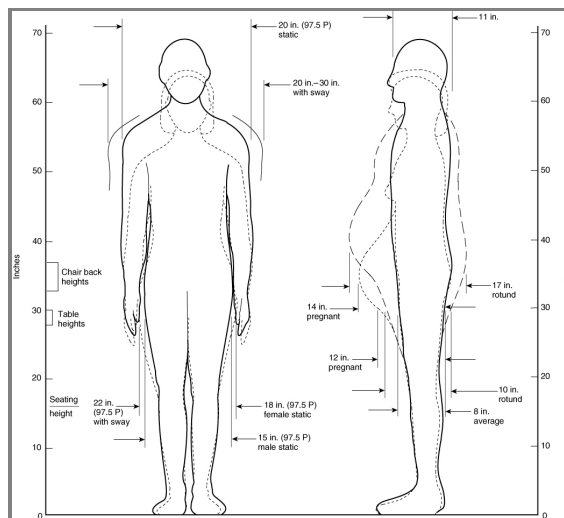
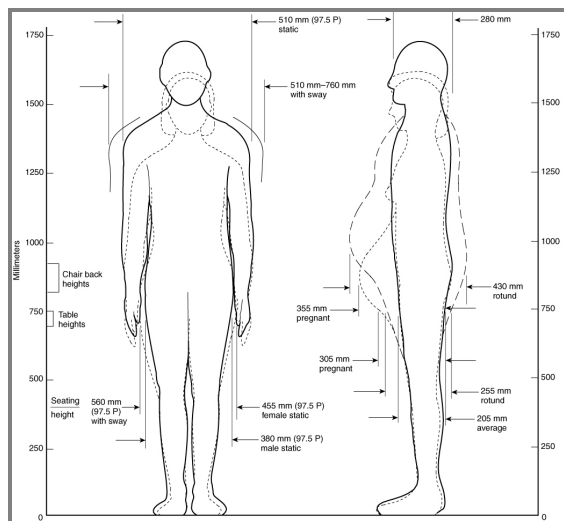


Figure A.7.3.4.1.1(b) Anthropometric Data (in mm) for Adults; Males and Females of Average, 50th Percentile, Size; Some Dimensions Apply to Very Large, 97.5 Percentile (97.5 P), Adults.



Statement of Problem and Substantiation for Public Input

The NFPA Disability Access Review and Advisory Committee (DARAC) requests an update to the

terminology used to describe individuals with disabilities. In general, we suggest using “people first” language to avoid characterizing a person or group of persons entirely by their disability. Also, where possible, we recommend substituting the appropriate technical term when describing building elements that are accessible to individuals with disabilities, rather than describing the element as being “for” such people. For example, we would say “accessible parking” instead of “handicap parking”. The substitute terms we recommend are found to be more acceptable to the disability community and its supporters and, therefore, demonstrate greater respect.

We used following resources to develop our input:

- “Guidelines for Writing About People with Disabilities” ADA National Network at <https://adata.org/factsheet/ADANN-writing>
- “Disability Style Guide” National Center on Disability and Journalism at <https://ncdj.org/style-guide/>
- “Resources for Reporters Writing About Blindness and Vision Loss” American Foundation for the Blind at <https://www.afb.org/news-publications/press-room/reporter-resources-writing-about-blindness-vision-loss>
- “Five Tips for Writing About People with Disabilities” Adaptive Sports Center at <https://www.adaptivesports.org/blog/announcements/five-tips-writing-about-people-disabilities>
- “Fact Sheet: Drug Addiction and Federal Disability Rights Laws” U.S. Department of Health and Hum Services: Office for Civil Rights at <https://www.hhs.gov/sites/default/files/drug-addiction-aand-federal-disability-rights-laws-fact-sheet.pdf>
- “People First Language” District of Columbia Office of Disability Rights at <https://odr.dc.gov/page/people-first-language>

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Submittal Date: Thu May 06 12:45:49 EDT 2021

Committee: SAF-MEA

Committee Statement

Resolution: [FR-6527-NFPA 101-2021](#)

Statement: The revision responds to PI-116, the substantiation for which follows:

The NFPA Disability Access Review and Advisory Committee (DARAC) requests an update to the terminology used to describe individuals with disabilities. In general, we suggest using “people first” language to avoid characterizing a person or group of persons entirely by their disability. Also, where possible, we recommend substituting the appropriate technical term when describing building elements that are accessible to individuals with disabilities, rather than describing the element as being “for” such people. For example, we would say “accessible parking” instead of “handicap parking”. The substitute terms we recommend are found to be more acceptable to the disability community and its supporters and, therefore, demonstrate greater respect.

We used following resources to develop our input:

- “Guidelines for Writing About People with Disabilities” ADA National Network at <https://adata.org/factsheet/ADANN-writing>
- “Disability Style Guide” National Center on Disability and Journalism at <https://ncdj.org>

/style-guide/

- “Resources for Reporters Writing About Blindness and Vision Loss” American Foundation for the Blind at <https://www.afb.org/news-publications/press-room/reporter-resources-writing-about-blindness-vision-loss>
- “Five Tips for Writing About People with Disabilities” Adaptive Sports Center at <https://www.adaptivesports.org/blog/announcements/five-tips-writing-about-people-disabilities>
- “Fact Sheet: Drug Addiction and Federal Disability Rights Laws” U.S. Department of Health and Hum Services: Office for Civil Rights at <https://www.hhs.gov/sites/default/files/drug-addiction-aand-federal-disability-rights-laws-fact-sheet.pdf>
- “People First Language” District of Columbia Office of Disability Rights at <https://odr.dc.gov/page/people-first-language>



Public Input No. 192-NFPA 101-2021 [Section No. A.7.9.1.1]

A.7.9.1.1

Emergency lighting outside the building should provide illumination to either a public way or a distance away from the building that is considered safe, whichever is closest to the building being evacuated. Where exterior egress lighting such as high- and low-pressure sodium, mercury vapor, and metal halide and are not able to provide adequate lighting within 10 seconds supplemental lighting should be supplied to operate until normal illumination has been restored.

Statement of Problem and Substantiation for Public Input

This is something that is frequently overlooked and cited in heavily regulated facilities such as health care. These devices need to cycle and may take minutes to provide the required levels of illumination with any power bump such as a transfer of power. There are several ways to resolve this issue, and is addressed in Article 700 of the NEC, but it needs to be brought to the designers attention here as well.

Submitter Information Verification

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Submittal Date: Tue May 25 10:31:46 EDT 2021

Committee: SAF-MEA

Committee Statement

Resolution: The proposed revision is adequately addressed by 7.9.1.3. Annex language associated with 7.9.1.3 might better address the submitter's concerns. It is unclear as to why the proposed revision addresses outside lighting only.