TECHNICAL COMMITTEE ON SPECIAL OPERATIONS PROTECTIVE CLOTHING AND EQUIPMENT
NFPA 1983 FIRST DRAFT MEETING
San Antonio, TX
February 3-5, 2015
AGENDA

1. Call to order at 8:00am
2. Introductions
3. Opening remarks - Chair, Jeremy Metz
4. Review and approval of minutes from previous meeting
5. NFPA Staff Liaison report - Chris Farrell
6. NFPA 1983 First Draft
   a. Task Group Report – Jim Frank and Beverly Stutts
   b. Act on public comments
7. New business
8. Other items
9. Next meeting
10. Adjourn
NFPA TECHNICAL COMMITTEE FOR
Special Operations Clothing and Equipment
Hilton Hotel Marina, Ft. Lauderdale, FL
April 29-30, 2014

1. Call to order at 8:00am April 29th
2. Introductions/Attendance

Members
Metz, Jeremy (Chairman)
Lehtonen, Karen (Secretary)
Allen, Jason (via phone)
Dempsey, Keith
Dunn, Charles
Frank, James
Haskell, Bill (via phone)
Hess, Diane
Horn, Gavin
Howard, Thomas
Hudson, Daniel
Klaren, Kim
McCurley, Loui
Murray, James
Nelson, Robert
Paderick, Dean
Reall, Jack
Saito, Jon
Stinton, Robert
Stutts, Beverly
Farrell, Chris (NFPA Staff)

Guests:
Beechner, Brian (Orange County FL Fire Rescue)
Broccolo, Richard (Orange County FL Fire Rescue)
Gannon, Pete (Dive Rescue)
James, Chris P. (UL)
Ortins, Faith (DUI)
3. Opening remarks were provided by the technical committee Chair, Jeremy Metz
   - The chairman's report is attached
   - Chairman Metz encouraged Committee member Participation. Please participate, be informed and vote.
4. The minutes from the previous meeting were reviewed and approved
   - No modifications, minutes approved without a motion
5. NFPA Staff Liaison report was provided by Staff Liaison Chris Farrell
6. NFPA 1953 Second Draft was reviewed
   a. Task Group Report was provided by the task group chair Jim Murray
   b. Public comments were acted on
   c. Correlating committee notes were acted on
7. Reports
   a. An update on the NFPA 1983 reorganization concept was provided by Jim Frank
      The objective is to make the standard more end user friendly even though it is a manufacturing specification. Reorganize by blocks of product types. Section 1-4 would not change, Section 5-8 would be reformatted by product types. A copy of the proposed draft was circulated to the TC by Staff Liaison Farrell.
8. New business
   a. NFPA 1983 F 2016 revision cycle discussion
      A task group to work on PI’s for NFPA 1983 was established; PI closes Jan 5, 2015
      Co-Chairs - Jim Frank and Beverly Stutts
      Members – Gavin Horn, Loui McCurley, Steve Gheraghty, Robert Nelson, Jeremy Metz
   b. NFPA 1858 status – Staff Liaison Chris Farrell
      Draft submitted to NFPA, the draft standard has been approved for processing by SC.
      Upon issuance of draft a task group will need to be established to review and work on PI’s.
9. Other items
   TIA for NFPA 1952 review
   Discussed proposed TIA language and reason TIA is being submitted
10. Next meeting
    Act on PI for NFPA 1983 (closes January 5); begin editorial review of NFPA 1858.
    February 3-5 (half day on 5th)
11. Adjourn, 3:00pm April 30th
Special Operations Protective Clothing and Equipment

April 29-30 Ft. Lauderdale, FL
Chair Report
In Memory of Mr. Steve Hudson

Committee member since Jan 1\textsuperscript{st}, 1992
Your New Chair

• 22 years in Fire Service
  – U.S. Air Force FF
  – District (Battalion) Chief and Technical Rescue Chief with West Metro Fire Rescue, Lakewood, CO
    • 120 square miles, 15 staffed stations, ALS transport, 340 member, all career
    • Western Denver Metro area, multiple technical rope rescue, water rescuer incidents annually
    • Host agency for COTF1
Your New Chair

• NFPA Chair training in June an annual meeting
• Starting Executive Fire Officer program at National Fire Academy in June
• Married, wife is program manager for sexual assault forensic nurses at Denver Health Medical Center
• Daughter 9, son 7
• Deeply committed to firefighter safety and training
Standards Council Actions
March 3, 2014

• Jeremy Metz (user), West Metro Fire Rescue, to Chair
• Kim Klaren (user), Fairfax County Fire, principal
  – Pending alternate
• Loui McCurley (manufacturer), Pigeon Mountain Industries, principal
  – Pending alternate
• Jeremy Brads (manufacturer), Spec Rescue International, alternate
• Richard Broccolo (user), Orange County Fire Rescue, FL, hold for balance
<table>
<thead>
<tr>
<th>FAE-SCE Revision Cycle information</th>
<th></th>
<th>Next meeting</th>
</tr>
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<tbody>
<tr>
<td>1952 Standard on Surface Water Operations Protective Clothing and Equipment</td>
<td>F 2014</td>
<td><strong>finishing cycle</strong></td>
</tr>
<tr>
<td>1975 Standard on Station/Work Uniforms for Emergency Services</td>
<td>F 2018</td>
<td>First Draft</td>
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</table>
1952 Surface Water PC&E

• CC voted to forward NFPA 1952 to the NFPA Technical Meeting

• There appears to be an editorial error in SR37. In this revision wet and dry elements were removed from this test criteria.
  – CC will be getting a ballot on the correction
1858 Rope and Equipment SCAM

• The Council approved the request to enter a new document, NFPA 1858, *Standard on Selection, Care, and Maintenance of Life Safety Rope and Equipment for Emergency Services*, into the Fall 2017 revision cycle.

• Task Group Chair or Co chairs?
1953 Contaminated Water PC&E

• Standards Council approved the request to move NFPA 1953 from Fall 2014 cycle to Annual 2015 cycle, without a call for new Public Comments.

• Jim Murray, FDNY Task Group chair to report
Revolutionizing the Modern Turnout Suit

- NC State Project Goal: Project will produce concept turnout suit prototypes that reflect a systems level understanding on optimum balance between TPP and THL requirements for structural firefighter turnout suits.

- Base layer ensemble testing (1975)
Supplemental Operating Procedure for Test Method Validation flow chart

Test Method Validation – How to include criteria within the NFPA Process.

Test Method Validation Requirements
[Technical Committee (TC) creates First Revisions on a new test method]

Correlating Committee (CC) First Draft meeting
CC may provide guidance through Correlating Notes (CNs), including test method validation requirements.

TC Second Draft meeting

CC Second Draft meeting
CC may develop changes/revise Second Revisions (SRs) through Second Correlating Revisions (SCRs). This can be based on test method validation requirements.
Committee Participation

• Recognize the vastness and diversity of technical expertise and knowledge in Spec Ops
• Attendance is preferred at TC and TG meetings
• Teleconference, web conference is available
• Participation is key whether you can attend meetings or not
• Get involved in task groups
• Be informed and vote!
Chapter 1 – Administration

1.1 – Scope.

1.1.1 – This standard shall specify minimum design, performance, testing, and certifications requirements for life safety rope, escape rope, water rescue throwlines, life safety harnesses, belts, victim extrication devices, litters, escape webbing, escape systems, and auxiliary equipment for emergency services personnel.

1.1.2 – This standard shall specify requirements for new life safety rope, escape rope, water rescue throwlines, life safety harnesses, belts, manufacturer-supplied eye terminations, moderate elongation laid life safety rope, belay devices, and auxiliary equipment.

1.1.3 – This standard shall not specify requirements for any accessories that could be attached to the certified product but are not necessary for the certified product to meet the requirements of this standard.

1.1.4 – This standard shall not specify requirements for any utility rope.

1.1.5 – This standard shall not specify requirements for any rope or associated equipment designed for mountain rescue, cave rescue, lead climbing operations, or where expected hazards and situations dictate other performance requirements.

1.1.6* – This standard shall not specify requirements for any rope or equipment for fall protection pertaining to employees of general industry or the construction and demolition industry.

1.1.7 – This standard shall not be construed as addressing all of the safety concerns associated with the use of compliant life safety rope or associated equipment. It shall be the responsibility of the persons and organizations that use compliant life safety rope or associated equipment to establish safety and health practices and determine the applicability of regulatory limitations prior to use.

1.1.8 – This standard shall not be construed as addressing all of the safety concerns, if any, associated with the use of this standard by testing facilities. It shall be the responsibility of the persons and organizations that use this standard to conduct testing of life safety rope to establish safety and health practices and determine the applicability of regulatory limitations prior to using this standard for any designing, manufacturing, and testing.

1.1.9 – Nothing herein shall restrict any jurisdiction or manufacturer from exceeding these minimum requirements.

1.2 – Purpose.

1.2.1* – The purpose of this standard shall be to establish minimum levels of performance for life safety rope, escape rope, water rescue throwlines, life safety harnesses, belts, manufacturer-supplied eye terminations, moderate elongation laid life safety rope, belay devices, and auxiliary equipment for emergency services personnel.

1.2.2 – Controlled laboratory tests used to determine compliance with the performance requirements of this standard shall not be deemed as establishing performance for all situations to which this equipment could be exposed.

1.2.3 – This standard is not intended to serve as a detailed manufacturing or purchase specification, but shall be permitted to be referenced in purchase specifications as minimum requirements.

1.3 – Application.
1.3.1 This standard shall apply to the design, performance, testing, and certification of new emergency services life safety rope, escape rope, water rescue throwlines, life safety harnesses, belts, manufacturer-supplied eye terminations, moderate elongation laid life safety rope, belay devices, and auxiliary equipment.

1.3.2 This standard shall not apply to rope or equipment for use where specific situations dictate other performance requirements such as mountain rescue, cave rescue, lead climbing operations, recreational use, and industrial fall protection for general industry and the construction and demolition industry.

1.3.3 This edition of NFPA 1983 shall not apply to any life safety rope or system components manufactured to previous editions of this standard.

1.3.4 This standard shall not apply to rope or equipment for operations where personnel are required to work above anchor points.

1.3.5 This standard shall not apply to use requirements for life safety rope and associated life safety rope equipment as those requirements are specified in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program.

1.3.6 The requirements of this standard shall not apply to any accessories that might be attached to any life safety rope or associated life safety rope equipment.

1.4 Units.

1.4.1 In this standard, values for measurement are followed by an equivalent in parentheses, but only the first stated value shall be regarded as the requirement.

1.4.2 Equivalent values in parentheses shall not be considered as the requirement, as these values are approximate.

Additional Proposed Changes

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<th>File Name</th>
<th>Description</th>
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<tbody>
<tr>
<td>For_Submittal_-<em>By_Chapter</em>-<em>Chapter_1</em>-_NFPA_Reorg_for_2017_Edition.docx</td>
<td>Chapter 1 Reorg</td>
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</tbody>
</table>

Statement of Problem and Substantiation for Public Input

NFPA 1983 contains an extensive variety of products. The current format can be difficult to navigate and is not easily followed by users and manufacturers. At the TC’s request, the document was reorganized for clarity and ease of use. This input includes the language in TIA 12-1. No new material is contained in this input.

Submitter Information Verification

Submitter Full Name: Beverly Stutts
Organization: UL LLC
Street Address: 
City: 
State: 
Zip: 
Submittal Date: Mon Jan 05 14:42:16 EST 2015
Chapter 2   Referenced Publications

2.1   General.
The documents or portions thereof listed in this chapter are referenced within this standard and shall be considered part of the requirements of this document.

2.2   NFPA Publication.
National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

2.3   Other Publications.
2.3.1   AATCC Publications.
American Association of Textile Chemists and Colorists, P.O. Box 12215, Research Triangle Park, NC 27709.

2.3.2   ASTM Publications.
ASTM International, 100 Barr Harbor Drive, P.O Box C700, West Conshohocken, PA 19428-2959.

2.3.3   Cordage Institute Publications.
The Cordage Institute, 994 Old Eagle School Road, Suite 1019, Wayne, PA 19087.
CI 1801, Low Stretch and Static Kernmantle Life Safety Rope, 2007.
CI 1805, 3-Strand Life Safety Rope, Moderate Stretch, 2008.
2.3.4 ISO Publications.
International Standards Organization, 1 rue de Varembé, Case Postal 56, CH-1211 Geneve 20, Switzerland.

ISO Guide 27, Guidelines for corrective action to be taken by a certification body in the event of misuse of its mark of conformity, 1983.


ISO 9001 DIS 9001, Quality management systems — requirements, 2008.


2.3.5 SAE International Publications.
SAE International, 400 Commonwealth Dr., Warrendale, PA 15096-0001.


2.3.6 UL Publications.
Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.


2.3.7 U.S. Government Publications.


2.3.8 Other Publications.

2.4 References for Extracts in Mandatory Sections (Reserved)

Statement of Problem and Substantiation for Public Input

Referenced current editions.

Related Public Inputs for This Document

Related Input Relationship
Public Input No. 33-NFPA 1983-2014 [Section No. B.1.2]

Submitter Information Verification
<table>
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<tr>
<th><strong>Submitter Full Name:</strong></th>
<th>Aaron Adamczyk</th>
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<tr>
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<tr>
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Public Input No. 55-NFPA 1983-2015 [ Section No. 2.3.6 ]

**2.3.6 UL Publications.**
Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.


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**Statement of Problem and Substantiation for Public Input**

UL Standard was updated and revised.

**Submitter Information Verification**

Submitter Full Name: Ronald Farr  
Organization: UL LLC  
Street Address:  
City:  
State:  
Zip:  
Submittal Date: Thu Jan 01 14:08:47 EST 2015
**Public Input No. 35-NFPA 1983-2014 [Section No. 3.3.3.1]**

**3.3.3.1** Load-Bearing Attachment Point.
Point on a harness, victim extrication device, or escape belt that is used for connection to an anchor system that will provide full support and fall arrest for the designed load.

**Statement of Problem and Substantiation for Public Input**

Includes victim extrication device as one that uses load bearing attachments.

**Related Public Inputs for This Document**

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<th>Related Input</th>
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<td>Public Input No. 37-NFPA 1983-2014 [Section No. A.3.3.3.1]</td>
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**Submitter Information Verification**

Submitter Full Name: Steven Corrado
Organization: UL LLC
Street Address:  
City:  
State:  
Zip:  
Submittal Date: Tue Dec 09 13:22:35 EST 2014
3.3.64.3.1 Fire Escape Rope.
A single purpose, emergency self-escape (self-rescue) rope used to escape an immediately hazardous environment involving fire or fire products; not classified as a life safety rope.

Statement of Problem and Substantiation for Public Input
This will align the definition with the definition of escape rope.

Submitter Information Verification
Submitter Full Name: Steven Corrado
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Tue Dec 09 13:19:35 EST 2014
Chapter 4 – Certification

4.1 – General.

4.1.1 – The process of certification for product as being compliant with NFPA 1983 shall meet the requirements of Section 4.1 – General; Section 4.2 – Certification Program; Section 4.3 – Inspection and Testing; Section 4.4 – Recertification; Section 4.5 – Manufacturer's Quality Assurance Program; Section 4.6 – Hazards Involving Compliant Product; Section 4.7 – Manufacturers' Investigation of Complaints and Returns; and Section 4.8 – Manufacturers' Safety Alert and Product Recall Systems.

4.1.2 – All product labeled as being compliant with this standard shall meet or exceed all applicable requirements specified in this standard and shall be certified.

4.1.3 – All certification shall be performed by a certification organization that meets at least the requirements specified in Section 4.2 – Certification Program, and that is accredited for personal protective equipment in accordance with ISO 65, General requirements for bodies operating product certification systems. The accreditation shall be issued by an accreditation body operating in accordance with ISO 17011, General requirements for accreditation bodies accrediting conformity assessment bodies.

4.1.4 – Manufacturers shall not claim compliance with portions or segments of the requirements of this standard and shall not use the NFPA name or the name or identification of this standard, NFPA 1983, in any statements about their respective products unless the products are certified as compliant to this standard.

4.1.5 – All compliant products shall be labeled and listed.

4.1.6 – All compliant products shall also have a product label that meets the requirements specified in Section 5.1, Product Label Requirements.

4.1.7 – The certification organization’s label, symbol, or identifying mark shall be part of the product label, shall be attached to the product label, or shall be immediately adjacent to the product label.

4.1.8 – The certification organization shall not issue any new certifications to the 2006 edition of NFPA 1983, Standard on Fire Service Life Safety Rope and Equipment for Emergency Services, on or after the NFPA effective date for the 2012 edition which is January 2, 2012.

4.1.9 – The certification organization shall not permit any manufacturer to continue to label any protective ensembles or ensemble elements that are certified compliant with the 2006 edition of NFPA 1983, Standard on Fire Service Life Safety Rope and Equipment for Emergency Services, after January 2, 2013.

4.1.10 – The certification organization shall require manufacturers to remove all certification labels and product labels indicating compliance with the 2006 edition of NFPA 1983, Standard on Fire Service Life Safety Rope and Equipment for Emergency Services, from all protective ensembles and ensemble elements that are under the control of the manufacturer on January 2, 2013, and the certification organization shall verify this action is taken.

4.2 – Certification Program.

4.2.1 – The certification organization shall not be owned or controlled by manufacturers or vendors of the product being certified.

4.2.2 – The certification organization shall be primarily engaged in certification work and shall not have a monetary interest in the product’s ultimate profitability.
4.2.3
The certification organization shall be accredited for personal protective equipment in accordance with ISO 65, General requirements for bodies operating product certification systems. The accreditation shall be issued by an accreditation body operating in accordance with ISO 17011, General requirements for accreditation bodies accrediting conformity assessment bodies.

4.2.4
The certification organization shall refuse to certify products to this standard that do not comply with all applicable requirements of this standard.

4.2.5
The contractual provisions between the certification organization and the manufacturer shall specify that certification is contingent on compliance with all applicable requirements of this standard.

4.2.5.1
The certification organization shall not offer or confer any conditional, temporary, or partial certifications.

4.2.5.2
Manufacturers shall not be authorized to use any label or reference to the certification organization on products that are not compliant with all applicable requirements of this standard.

4.2.6
The certification organization shall have laboratory facilities and equipment available for conducting proper tests to determine product compliance.

4.2.6.1
The certification organization laboratory facilities shall have a program in place and functioning for calibration of all instruments, and procedures shall be in use to ensure proper control of all testing.

4.2.6.2
The certification organization laboratory facilities shall follow good practice regarding the use of laboratory manuals, form data sheets, documented calibration and calibration routines, performance verification, proficiency testing, and staff qualification and training programs.

4.2.7
The certification organization shall require the manufacturer to establish and maintain a quality assurance program that meets the requirements of Section 4.5, Manufacturer's Quality Assurance Program.

4.2.7.1
The certification organization shall require the manufacturer to have a product recall system as specified in Section 4.8, Manufacturers' Safety Alert and Product Recall Systems, as part of the manufacturer's quality assurance program.

4.2.7.2
The certification organization shall audit the manufacturer's quality assurance program to ensure that the quality assurance program provides continued product compliance with this standard.

4.2.8
The certification organization and the manufacturer shall evaluate any changes affecting the form, fit, or function of the compliant product to determine its continued certification to this standard.

4.2.9
The certification organization shall have a follow-up inspection program of the manufacturer's facilities of the compliant product with at least two random and unannounced visits per 12-month period to verify the product's continued compliance.

4.2.9.1
As part of the follow-up inspection program, the certification organization shall select sample compliant product at random from the manufacturer's production line, from the manufacturer's in-house stock, or from the open market.

4.2.9.2
Sample product shall be evaluated by the certification organization to verify the product's continued compliance in order to assure that the materials, components, and manufacturing quality assurance systems are consistent with the materials, components, and manufacturing quality assurance that were inspected and tested by the certification organization during initial certification and recertification.

4.2.9.3
The certification organization shall be permitted to conduct specific testing to verify the product's continued compliance.
4.2.9.4

For products, components, and materials where prior testing, judgment, and experience of the certification organization have shown results to be in jeopardy of not complying with this standard, the certification organization shall conduct more frequent testing of sample product, components, and materials acquired in accordance with 4.2.9.1 against the applicable requirements of this standard.

4.2.10

The certification organization shall have in place a series of procedures, as specified in Section 4.6, Hazards Involving Compliant Product, that address reports of situations in which a compliant product is subsequently found to be hazardous.

4.2.11

The certification organization's operating procedures shall provide a mechanism for the manufacturer to appeal decisions. The procedures shall include the presentation of information from both sides of a controversy to a designated appeals panel.

4.2.12

The certification organization shall be in a position to use legal means to protect the integrity of its name and label. The name and label shall be registered and legally defended.

4.3 Inspection and Testing.

4.3.1 For both initial certification and recertification of compliant products, the certification organization shall conduct both inspection and testing as specified in this section.

4.3.2 All inspections, evaluations, conditioning, and testing for certification or for recertification shall be conducted by a certification organization's testing laboratory that is accredited in accordance with the requirements of ISO 17025, General requirements for the competence of testing and calibration laboratories.

4.3.2.1 The certification organization's testing laboratory's scope of accreditation to ISO 17025, General requirements for the competence of testing and calibration laboratories, shall encompass testing of personal protective equipment.

4.3.2.2 The accreditation of a certification organization's testing laboratory shall be issued by an accreditation body operating in accordance with ISO 17011, General requirements for accreditation bodies accrediting conformity assessment bodies.

4.3.3 A certification organization shall be permitted to utilize conditioning and testing results conducted by a product or component manufacturer for certification or recertification provided the manufacturer's testing laboratory meets the requirements specified in 4.3.3.1 through 4.3.3.5.

4.3.3.1 The manufacturer's testing laboratory shall be accredited in accordance with the requirements of ISO 17025, General requirements for the competence of testing and calibration laboratories.

4.3.3.2 The manufacturer's testing laboratory's scope of accreditation to ISO 17025, General requirements for the competence of testing and calibration laboratories, shall encompass testing of personal protective equipment.

4.3.3.3 The accreditation of a manufacturer's testing laboratory shall be issued by an accreditation body operating in accordance with ISO 17011, General requirements for accreditation bodies accrediting conformity assessment bodies.

4.3.3.4 The certification organization shall approve the manufacturer's testing laboratory.

4.3.3.5 The certification organization shall determine the level of supervision and witnessing of the conditioning and testing for certification or recertification conducted at the manufacturer's testing laboratory.

4.3.4 Sampling levels for testing and inspection shall be established by the certification organization and the manufacturer to ensure a reasonable and acceptable reliability at a reasonable and acceptable confidence level that products certified to this standard are compliant, unless such sampling levels are specified herein.
4.3.5 Inspection by the certification organization shall include a review of all product labels to ensure that all required label attachments, compliance statements, certification statements, and other product information are at least as specified for the products identified in Section 5.1, Product Label Requirements.

4.3.6 Inspection by the certification organization shall include an evaluation of any symbols and pictorial graphic representations used on product labels or in user information, as permitted by in 5.1.1.6, 5.1.2.6, 5.1.3.8, 5.1.4.8, 5.1.5.7, and 5.1.6.6, to ensure that the symbols are clearly explained in the product's user information package.

4.3.7 Inspection by the certification organization shall include a review of the user information required by Section 5.2, User Information, to ensure that the information has been developed and is available.

4.3.8 Inspection by the certification organization for determining compliance with the design requirements specified in Chapter 6 shall be performed on whole or complete products.

4.3.9 Testing to determine product compliance with the performance requirements specified in Chapter 7 shall be conducted by the certification organization in accordance with the specified testing requirements of Chapter 8.

4.3.9.1 Testing shall be performed on specimens representative of materials and components used in the actual construction of the compliant product.

4.3.9.2 The certification organization also shall be permitted to use sample materials cut from a representative product.

4.3.10 The certification organization shall accept from the manufacturer, for evaluation and testing for certification, only product or product components that are the same in every respect to the actual final product or product component.

4.3.11 The certification organization shall not allow any modifications, pretreatment, conditioning, or other such special processes of the product or any product component prior to the product's submission for evaluation and testing by the certification organization.

4.3.12 The certification organization shall not allow the substitution, repair, or modification, other than as specifically permitted herein, of any product or any product component during testing.

4.3.13 The certification organization shall not allow test specimens that have been conditioned and tested for one method to be reconditioned and tested for another test method unless specifically permitted in the test method.

4.3.14 Any change in the design, construction, or materials of a compliant product shall necessitate new inspection and testing to verify compliance with all applicable requirements of this standard that the certification organization determines can be affected by such change. This recertification shall be conducted before labeling the modified product as being compliant with this standard.

4.3.15 The manufacturer shall maintain all design and performance inspection and test data from the certification organization used in the certification of the manufacturer's compliant product. The manufacturer shall provide such data, upon request, to the purchaser or authority having jurisdiction.

4.4 Recertification.

4.4.1 All products that are labeled as being compliant with this standard shall undergo recertification in accordance with Table 4.4.1 Recertification Schedule.

<table>
<thead>
<tr>
<th>Product Test Time</th>
<th>All component product Corrosion testing Initial cert only</th>
<th>All component product Product label durability tests Initial cert only</th>
<th>Life safety rope Rope breaking and elongation Every year</th>
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<tr>
<td>Time</td>
<td>Initial cert only</td>
<td>Product label durability tests Initial cert only</td>
<td>Life safety rope Rope breaking and elongation Every year</td>
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</tbody>
</table>
4.4.1.1
This recertification shall include inspection and evaluation to the design requirements and testing to the performance requirements as required by this standard on all manufacturers' compliant product models.

4.4.1.2
Any change that affects the compliant product performance under design or performance requirements of this standard shall constitute a different model.

4.4.1.3
For the purpose of this standard, models shall include each unique pattern, style, or design of the compliant product.

4.4.2
Samples of manufacturer's models and components for recertification shall be acquired from the manufacturer or component supplier during random and unannounced visits as part of the follow-up program specified in 4.2.9.

4.4.2.1
For recertification, the certification organization shall acquire at least one complete compliant product.

4.4.2.2
The certification organization shall also acquire a sufficient quantity of components to be tested for recertification as required by 4.4.3.

4.4.3
Compliant products and components shall be inspected, evaluated, and tested as specified in 4.4.3.1 and 4.4.3.2. Inspection, evaluation, and testing performed as part of the follow-up program shall be permitted to be used for recertification to avoid duplication.

4.4.3.1
One sample of each compliant product shall be inspected and evaluated to the design requirements specified in Chapter 6.
4.4.3.2
One sample of each compliant product and component shall be tested for overall performance as specified in Chapter 7.

4.4.4
The manufacturer shall maintain all design, inspection, performance, and test data from the certification organization produced during the recertification of the manufacturer's models and components. The manufacturer shall provide such data upon request to the purchaser or to the authority having jurisdiction (AHJ).

4.5 - Manufacturer's Quality Assurance Program.

4.5.1
The manufacturer shall provide and operate a quality assurance program that meets the requirements of this section and that includes a product recall system as specified in 4.2.7.1, and Section 4.8, Manufacturers' Safety Alert and Product Recall Systems.

4.5.2
The operation of the quality assurance program shall evaluate and test compliant product production to the requirements of this standard to assure production remains in compliance.

4.5.3
The manufacturer shall be registered to ISO 9001, Quality management systems — requirements.

4.5.3.1
Registration to the requirements of ISO 9001, Quality management systems — requirements, shall be conducted by a registrar that is accredited for personal protective equipment in accordance with ISO Guide 62, General requirements for bodies operating assessment and certification/registration of quality systems. The registrar shall affix the accreditation mark on the ISO registration certificate.

4.5.4
Any entity that meets the definition of manufacturer specified in Section 3.3, General Definitions, and therefore is considered the “manufacturer,” but does not manufacture or assemble the compliant product, shall meet the requirements specified in this Section 4.5.

4.5.5
Where the manufacturer uses subcontractors in the construction or assembly of the compliant product, the locations and names of all subcontractor facilities shall be documented and the documentation shall be provided to the manufacturer’s ISO registrar and to the certification organization.

4.6 - Hazards Involving Compliant Product.

4.6.1
The certification organization shall establish procedures to be followed where situation(s) are reported in which a compliant product is subsequently found to be hazardous. These procedures shall comply with the provisions of ISO 27, Guidelines for corrective action to be taken by a certification body in the event of misuse of its mark of conformity, and as modified herein.

4.6.2
Where a report of a hazard involved with a compliant product is received by the certification organization, the validity of the report shall be investigated.

4.6.3
With respect to a compliant product, a hazard shall be a condition or create a situation that results in exposing life, limb, or property to an imminently dangerous or dangerous condition.

4.6.4
Where a specific hazard is identified, the determination of the appropriate action for the certification organization and the manufacturer to undertake shall take into consideration the severity of the hazard and its consequences to the safety and health of users.

4.6.5
Where it is established that a hazard is involved with a compliant product, the certification organization shall determine the scope of the hazard including products, model numbers, serial numbers, factory production facilities, production runs, and quantities involved.
4.6.6 -
The certification organization's investigation shall include, but not be limited to, the extent and scope of the problem as it might apply to other compliant products or compliant product components manufactured by other manufacturers or certified by other certification organizations.

4.6.7 -
The certification organization shall also investigate reports of a hazard where compliant product is gaining widespread use in applications not foreseen when the standard was written, such applications in turn being ones for which the product was not certified, and no specific scope of application has been provided in the standard, and no limiting scope of application was provided by the manufacturer in written material accompanying the compliant product at the point of sale.

4.6.8 -
The certification organization shall require the manufacturer of the compliant product, or the manufacturer of the compliant product component if applicable, to assist the certification organization in the investigation and to conduct its own investigation as specified in Section 4.7, Manufacturers' Investigation of Complaints and Returns.

4.6.9 -
Where the facts indicating a need for corrective action are conclusive and the certification organization's appeal procedures referenced in 4.2.11 have been followed, the certification organization shall initiate corrective action immediately, provided there is a manufacturer to be held responsible for such action.

4.6.10 -
Where the facts are conclusive and corrective action is indicated, but there is no manufacturer to be held responsible, such as when the manufacturer is out of business or the manufacturer is bankrupt, the certification organization shall immediately notify relevant governmental and regulatory agencies and issue a notice to the user community about the hazard.

4.6.11 -
Where the facts are conclusive and corrective action is indicated, the certification organization shall take one or more of the following corrective actions:

(1) - Notification of parties authorized and responsible for issuing a safety alert when, in the opinion of the certification organization, such a notification is necessary to inform the users.

(2) - Notification of parties authorized and responsible for issuing a product recall when, in the opinion of the certification organization, such a recall is necessary to protect the users.

(3) - Removal of the mark of certification from the product.

(4) - Where a hazardous condition exists and it is not practical to implement (1), (2), or (3); or the responsible parties refuse to take corrective action, the certification organization shall notify relevant governmental and regulatory agencies and issue a notice to the user community about the hazard.

4.6.12 -
The certification organization shall provide a report to the organization or individual identifying the reported hazardous condition and notify that organization or individual of the corrective action indicated, or that no corrective action is indicated.

4.6.13 -
Where a change to an NFPA standard(s) is felt to be necessary, the certification organization shall also provide a copy of the report and corrective actions indicated to NFPA and shall also submit either a Public Proposal for a proposed change to the next revision of the applicable standard or a proposed Temporary Interim Amendment (TIA) to the current edition of the applicable standard.

4.7 - Manufacturers' Investigation of Complaints and Returns.

4.7.1 -
Manufacturers shall provide corrective action in accordance with ISO 9001, Quality management systems — requirements, for investigating written complaints and returned products.

4.7.2 -
Manufacturers' records of returns and complaints related to safety issues shall be retained for at least 5 years.
4.7.3 Where the manufacturer discovers, during the review of specific returns or complaints, that a compliant product or compliant product component can constitute a potential safety risk to end users that is possibly subject to a safety alert or product recall, the manufacturer shall immediately contact the certification organization and provide all information about its review to assist the certification organization with the investigation.

4.8 Manufacturers' Safety Alert and Product Recall Systems.

4.8.1 Manufacturers shall establish a written safety alert system and a written product recall system that describes the procedures to be used in the event that it decides, or is directed by the certification organization, to either issue a safety alert or to conduct a product recall.

4.8.2 The manufacturers’ safety alert and product recall system shall provide the following:

1. The establishment of a coordinator and responsibilities by the manufacturer for the handling of safety alerts and product recalls

2. A method of notifying all dealers, distributors, purchasers, users, and NFPA about the safety alert or product recall that can be initiated within a 1-week period following the manufacturer's decision to issue a safety alert or to conduct a product recall, or after the manufacturer has been directed by the certification organization to issue a safety alert or conduct a product recall

3. Techniques for communicating accurately and understandably the nature of the safety alert or product recall and in particular the specific hazard or safety issue found to exist

4. Procedures for removing product that is recalled and for documenting the effectiveness of the product recall

5. A plan for repairing, replacing, or compensating purchasers for returned product

Additional Proposed Changes

<table>
<thead>
<tr>
<th>File Name</th>
<th>Description</th>
<th>Approved</th>
</tr>
</thead>
<tbody>
<tr>
<td>For_Submittal_-<em>By_Chapter</em>-<em>Chapter_4</em>-_NFPA_Reorg_for_2017_Edition.docx</td>
<td>Chapter 4</td>
<td>Reorg</td>
</tr>
</tbody>
</table>

Statement of Problem and Substantiation for Public Input

NFPA 1983 contains an extensive variety of products. The current format can be difficult to navigate and is not easily followed by users and manufacturers. At the TC’s request, the document was reorganized for clarity and ease of use. This input includes the language in TIA 12-1. No new material is contained in this input.

Submitter Information Verification

Submitter Full Name: Beverly Stutts
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jan 05 14:44:35 EST 2015
Chapter 4  Certification

4.1 General.

4.1.1 The process of certification for product as being compliant with NFPA 1983 shall meet the requirements of Section 4.1, General; Section 4.2, Certification Program; Section 4.3, Inspection and Testing; Section 4.4, Recertification; Section 4.5, Manufacturer's Quality Assurance Program; Section 4.6, Hazards Involving Compliant Product; Section 4.7, Manufacturers' Investigation of Complaints and Returns; and Section 4.8, Manufacturers' Safety Alert and Product Recall Systems.

4.1.2 All product labeled as being compliant with this standard shall meet or exceed all applicable requirements specified in this standard and shall be certified.

4.1.3 All certification shall be performed by a certification organization that meets at least the requirements specified in Section 4.2, Certification Program, and that is accredited for personal protective equipment in accordance with ISO 65, General requirements for bodies operating product certification systems. The accreditation shall be issued by an accreditation body operating in accordance with ISO 17011, General requirements for accreditation bodies accrediting conformity assessment bodies.

4.1.4 Manufacturers shall not claim compliance with portions or segments of the requirements of this standard and shall not use the NFPA name or the name or identification of this standard, NFPA 1983, in any statements about their respective products unless the products are certified as compliant to this standard.

4.1.5 All compliant products shall be labeled and listed.

4.1.6 All compliant products shall also have a product label that meets the requirements specified in Section 5.1, Product Label Requirements.

4.1.7* The certification organization's label, symbol, or identifying mark shall be part of the product label, shall be attached to the product label, or shall be immediately adjacent to the product label.

4.1.8 The certification organization shall not issue any new certifications to the 2006 edition of NFPA 1983, Standard on Fire Service Life Safety Rope and Equipment for Emergency Services, on or after the NFPA effective date for the 2012 edition which is January 2, 2012 date.

4.1.9 The certification organization shall not permit any manufacturer to continue to label any protective ensembles or ensemble elements that are certified as compliant with the 2006 edition of NFPA 1983, Standard on Fire Service Life Safety Rope and Equipment for Emergency Services, after January 2, 2012 date.
4.1.10 The certification organization shall require manufacturers to remove all certification labels and product labels indicating compliance with the 2006 edition of NFPA 1983, *Standard on Fire Service Life Safety Rope and Equipment for Emergency Services*, from all protective ensembles and ensemble elements that are under the control of the manufacturer on January 2, 2012 date 2018, and the certification organization shall verify this action is taken.

4.2 Certification Program.

4.2.1* The certification organization shall not be owned or controlled by manufacturers or vendors of the product being certified.

4.2.2 The certification organization shall be primarily engaged in certification work and shall not have a monetary interest in the product's ultimate profitability.

4.2.3 The certification organization shall be accredited for personal protective equipment in accordance with ISO 65, *General requirements for bodies operating product certification systems*. The accreditation shall be issued by an accreditation body operating in accordance with ISO 17011, *General requirements for accreditation bodies accrediting conformity assessment bodies*.

4.2.4 The certification organization shall refuse to certify products to this standard that do not comply with all applicable requirements of this standard.

4.2.5* The contractual provisions between the certification organization and the manufacturer shall specify that certification is contingent on compliance with all applicable requirements of this standard.

4.2.5.1 The certification organization shall not offer or confer any conditional, temporary, or partial certifications.

4.2.5.2 Manufacturers shall not be authorized to use any label or reference to the certification organization on products that are not compliant with all applicable requirements of this standard.

4.2.6* The certification organization shall have laboratory facilities and equipment available for conducting proper tests to determine product compliance.

4.2.6.1 The certification organization laboratory facilities shall have a program in place and functioning for calibration of all instruments, and procedures shall be in use to ensure proper control of all testing.

4.2.6.2 The certification organization laboratory facilities shall follow good practice regarding the use of laboratory manuals, form data sheets, documented calibration and calibration routines, performance verification, proficiency testing, and staff qualification and training programs.

4.2.7 The certification organization shall require the manufacturer to establish and maintain a quality assurance program that meets the requirements of Section 4.5, Manufacturer's Quality Assurance Program.

4.2.7.1* The certification organization shall require the manufacturer to have a product recall system as specified in Section 4.8, Manufacturers' Safety Alert and Product Recall Systems, as part of the manufacturer's quality assurance program.
4.2.7.2 The certification organization shall audit the manufacturer's quality assurance program to ensure that the quality assurance program provides continued product compliance with this standard.

4.2.8 The certification organization and the manufacturer shall evaluate any changes affecting the form, fit, or function of the compliant product to determine its continued certification to this standard.

4.2.9* The certification organization shall have a follow-up inspection program of the manufacturer's facilities of the compliant product with at least two random and unannounced visits per 12-month period to verify the product's continued compliance.

4.2.9.1 As part of the follow-up inspection program, the certification organization shall select sample compliant product at random from the manufacturer's production line, from the manufacturer's in-house stock, or from the open market.

4.2.9.2 Sample product shall be evaluated by the certification organization to verify the product's continued compliance in order to assure that the materials, components, and manufacturing quality assurance systems are consistent with the materials, components, and manufacturing quality assurance that were inspected and tested by the certification organization during initial certification and recertification.

4.2.9.3 The certification organization shall be permitted to conduct specific testing to verify the product's continued compliance.

4.2.9.4 For products, components, and materials where prior testing, judgment, and experience of the certification organization have shown results to be in jeopardy of not complying with this standard, the certification organization shall conduct more frequent testing of sample product, components, and materials acquired in accordance with 4.2.9.1 against the applicable requirements of this standard.

4.2.10 The certification organization shall have in place a series of procedures, as specified in Section 4.6, Hazards Involving Compliant Product, that address reports of situations in which a compliant product is subsequently found to be hazardous.

4.2.11 The certification organization's operating procedures shall provide a mechanism for the manufacturer to appeal decisions. The procedures shall include the presentation of information from both sides of a controversy to a designated appeals panel.

4.2.12 The certification organization shall be in a position to use legal means to protect the integrity of its name and label. The name and label shall be registered and legally defended.

4.3 Inspection and Testing.

4.3.1 For both initial certification and recertification of compliant products, the certification organization shall conduct both inspection and testing as specified in this section.

4.3.2 All inspections, evaluations, conditioning, and testing for certification or for recertification shall be conducted by a certification organization's testing laboratory that is accredited in accordance with the requirements of ISO 17025, *General requirements for the competence of testing and calibration laboratories.*
4.3.2.1 The certification organization's testing laboratory's scope of accreditation to ISO 17025, *General requirements for the competence of testing and calibration laboratories*, shall encompass testing of personal protective equipment.

4.3.2.2 The accreditation of a certification organization's testing laboratory shall be issued by an accreditation body operating in accordance with ISO 17011, *General requirements for accreditation bodies accrediting conformity assessment bodies*.

4.3.3 A certification organization shall be permitted to utilize conditioning and testing results conducted by a product or component manufacturer for certification or recertification provided the manufacturer's testing laboratory meets the requirements specified in 4.3.3.1 through 4.3.3.5.

4.3.3.1 The manufacturer's testing laboratory shall be accredited in accordance with the requirements of ISO 17025, *General requirements for the competence of testing and calibration laboratories*.

4.3.3.2 The manufacturer's testing laboratory's scope of accreditation to ISO 17025, *General requirements for the competence of testing and calibration laboratories*, shall encompass testing of personal protective equipment.

4.3.3.3 The accreditation of a manufacturer's testing laboratory shall be issued by an accreditation body operating in accordance with ISO 17011, *General requirements for accreditation bodies accrediting conformity assessment bodies*.

4.3.3.4 The certification organization shall approve the manufacturer's testing laboratory.

4.3.3.5 The certification organization shall determine the level of supervision and witnessing of the conditioning and testing for certification or recertification conducted at the manufacturer's testing laboratory.

4.3.4 Sampling levels for testing and inspection shall be established by the certification organization and the manufacturer to ensure a reasonable and acceptable reliability at a reasonable and acceptable confidence level that products certified to this standard are compliant, unless such sampling levels are specified herein.

4.3.5 Inspection by the certification organization shall include a review of all product labels to ensure that all required label attachments, compliance statements, certification statements, and other product information are at least as specified for the products identified in Section 5.1, Product Label Requirements.

4.3.6 Inspection by the certification organization shall include an evaluation of any symbols and pictorial graphic representations used on product labels or in user information, as permitted by in 5.1.1.6, 5.1.2.6, 5.1.3.8, 5.1.4.8, 5.1.5.7, and 5.1.6.6, 5.1.7.6, 5.1.8.7, 5.1.11.7, 5.1.12.6, 5.1.13.5, and 5.1.14.5 to ensure that the symbols are clearly explained in the product's user information package.

4.3.7 Inspection by the certification organization shall include a review of the user information required by Section 5.2, User Information, to ensure that the information has been developed and is available.
4.3.8 Inspection by the certification organization for determining compliance with the design requirements specified in Chapter 6 shall be performed on whole or complete products.

4.3.9 Testing to determine product compliance with the performance requirements specified in Chapter 7 shall be conducted by the certification organization in accordance with the specified testing requirements of Chapter 8.

4.3.9.1 Testing shall be performed on specimens representative of materials and components used in the actual construction of the compliant product.

4.3.9.2 The certification organization also shall be permitted to use sample materials cut from a representative product.

4.3.10 The certification organization shall accept from the manufacturer, for evaluation and testing for certification, only product or product components that are the same in every respect to the actual final product or product component.

4.3.11 The certification organization shall not allow any modifications, pretreatment, conditioning, or other such special processes of the product or any product component prior to the product's submission for evaluation and testing by the certification organization.

4.3.12 The certification organization shall not allow the substitution, repair, or modification, other than as specifically permitted herein, of any product or any product component during testing.

4.3.13 The certification organization shall not allow test specimens that have been conditioned and tested for one method to be reconditioned and tested for another test method unless specifically permitted in the test method.

4.3.14 Any change in the design, construction, or material of a compliant product shall necessitate new inspection and testing to verify compliance to all applicable requirements of this standard that the certification organization determines can be affected by such change. This recertification shall be conducted before labeling the modified product as being compliant with this standard.

4.3.15 The manufacturer shall maintain all design and performance inspection and test data from the certification organization used in the certification of the manufacturer's compliant product. The manufacturer shall provide such data, upon request, to the purchaser or authority having jurisdiction.

4.4 Recertification.

4.4.1 All products that are labeled as being compliant with this standard shall undergo recertification in accordance with Table 4.4.1.

<table>
<thead>
<tr>
<th>Product</th>
<th>Test</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>All component product</td>
<td>Corrosion testing</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>All component product</td>
<td>Product label durability tests</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>Life safety rope</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Item</td>
<td>Specification</td>
<td>Frequency</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>--------------------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>Escape rope</td>
<td>Diameter, Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Water rescue throwlines (TIA)</td>
<td>Diameter and Rope breaking</td>
<td>Every year</td>
</tr>
<tr>
<td>Water rescue throwlines (TIA)</td>
<td>Floatability</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety harness</td>
<td>Static</td>
<td>Alternating years with drop test</td>
</tr>
<tr>
<td>Life safety harness</td>
<td>Drop</td>
<td>Alternating years with static test</td>
</tr>
<tr>
<td>Belt</td>
<td>Static</td>
<td>Alternating years with drop test</td>
</tr>
<tr>
<td>Belt</td>
<td>Drop</td>
<td>Alternating years with static test</td>
</tr>
<tr>
<td>Auxiliary equipment</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>carabiners and snap-links (TIA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auxiliary equipment</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>rope grab devices (TIA)</td>
<td></td>
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</tr>
<tr>
<td>Auxiliary equipment system</td>
<td>Passive brake holding test (TIA)</td>
<td>Every year</td>
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<tr>
<td>descent control devices — auto stop (TIA)</td>
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<td></td>
</tr>
<tr>
<td>Auxiliary equipment components</td>
<td>Manner of function</td>
<td>Every year</td>
</tr>
<tr>
<td>descent control devices — auto stop (TIA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auxiliary equipment descent control devices — non-auto stop (TIA)</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment portable anchor (TIA)</td>
<td>All</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>Auxiliary equipment pulley (TIA)</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment pick-off, anchor and rigging strap (TIA)</td>
<td>Breaking strength</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment manufactured systems (TIA)</td>
<td>All</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td></td>
</tr>
<tr>
<td>Life safety rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope and Fire Escape Rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td></td>
</tr>
<tr>
<td>Fire escape rope</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope fibers</td>
<td>Melting and crystallization</td>
<td>Every year</td>
</tr>
<tr>
<td>Item</td>
<td>Test Type</td>
<td>Frequency</td>
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<tr>
<td>----------------------------------------------------------------------</td>
<td>-----------------------------------------------</td>
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<tr>
<td>Escape webbing and Fire Escape Webbing</td>
<td>Perimeter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape webbing</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape webbing(TIA)</td>
<td>Elevated rope temperature test(TIA)</td>
<td>Every year(TIA)</td>
</tr>
<tr>
<td>Escape webbing fibers(TIA)</td>
<td>Melting and crystallization temperatures by thermal analysis(TIA)</td>
<td>Every year(TIA)</td>
</tr>
<tr>
<td>Moderate elongation laid life saving rope (TIA)</td>
<td>Diameter, rope breaking, and elongation (TIA)</td>
<td>Every year (TIA)</td>
</tr>
<tr>
<td>Moderate elongation laid life saving rope fibers (TIA)</td>
<td>Melting and crystallization temperatures by thermal analysis (TIA)</td>
<td>Every year (TIA)</td>
</tr>
<tr>
<td>Victim extrication devices</td>
<td>Static</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Litters</td>
<td>Litter strength test — vertical</td>
<td>Initial only; Alternating years with horizontal (TIA)</td>
</tr>
<tr>
<td>Load-bearing textiles used in victim extrication devices</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in victim extrication devices</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Webbing components</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread components</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year(TIA)</td>
</tr>
<tr>
<td>Load-bearing textiles used in belts with optional flame resistance</td>
<td>Flame resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in belts with optional flame resistance</td>
<td>Heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Hardware installed in belts with optional flame</td>
<td>Heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>resistance</td>
<td>Thread heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Thread used in belts with optional flame resistance</td>
<td>Thread heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in life safety harnesses with optional flame resistance</td>
<td>Flame resistance</td>
<td>Every year (TIA)</td>
</tr>
<tr>
<td>Load-bearing textiles used in life safety harnesses with optional flame resistance</td>
<td>Flame resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in life safety harnesses with optional flame resistance</td>
<td>Heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Hardware installed in life safety harnesses with optional flame resistance</td>
<td>Heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in life safety harnesses with optional flame resistance</td>
<td>Thread heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Manufacturer-supplied eye termination</td>
<td>Breaking strength</td>
<td>Every year</td>
</tr>
<tr>
<td><strong>Thread used in</strong></td>
<td><strong>Thread melting</strong></td>
<td>Every year</td>
</tr>
<tr>
<td>Manufacturer-supplied eye termination</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**4.4.1.1** This recertification shall include inspection and evaluation to the design requirements and testing to the performance requirements as required by this standard on all manufacturers’ compliant product models.

**4.4.1.2** Any change that affects the compliant product performance under design or performance requirements of this standard shall constitute a different model.

**4.4.1.3** For the purpose of this standard, models shall include each unique pattern, style, or design of the compliant products.

**4.4.2** Samples of manufacturer’s models and components for recertification shall be acquired from the manufacturer or component supplier during random and unannounced visits as part of the follow-up program specified in 4.2.9.

**4.4.2.1** For recertification, the certification organization shall acquire at least one complete compliant product.

**4.4.2.2** The certification organization shall also acquire a sufficient quantity of components to be tested for recertification as required by 4.4.3.

**4.4.3** Compliant products and components shall be inspected, evaluated, and tested as specified in 4.4.3.1 and 4.4.3.2. Inspection, evaluation, and testing performed as part of the follow-up program shall be permitted to be used for recertification to avoid duplication.
4.4.3.1 One sample of each compliant product shall be inspected and evaluated to the design requirements specified in Chapter 6.

4.4.3.2 One sample of each compliant product and component shall be tested for overall performance as specified in Chapter 7.

4.4.4 The manufacturer shall maintain all design, inspection, performance, and test data from the certification organization produced during the recertification of the manufacturer's models and components. The manufacturer shall provide such data upon request to the purchaser or to the authority having jurisdiction (AHJ).

4.5 Manufacturer's Quality Assurance Program.

4.5.1 The manufacturer shall provide and operate a quality assurance program that meets the requirements of this section and that includes a product recall system as specified in 4.2.7.1, and Section 4.8, Manufacturers' Safety Alert and Product Recall Systems.

4.5.2 The operation of the quality assurance program shall evaluate and test compliant product production to the requirements of this standard to assure production remains in compliance.

4.5.3 The manufacturer shall be registered to ISO 9001, Quality management systems — requirements.

4.5.3.1 Registration to the requirements of ISO 9001, Quality management systems — requirements, shall be conducted by a registrar that is accredited for personal protective equipment in accordance with ISO Guide 62, General requirements for bodies operating assessment and certification/registration of quality systems. The registrar shall affix the accreditation mark on the ISO registration certificate.

4.5.3.2 The scope of the ISO registration shall include at least the design and manufacturing systems management for the type of personal protective equipment being certified.

4.5.4* Any entity that meets the definition of manufacturer specified in Section 3.3, General Definitions, and therefore is considered the “manufacturer,” but does not manufacture or assemble the compliant product, shall meet the requirements specified in this Section 4.5.

4.5.5* Where the manufacturer uses subcontractors in the construction or assembly of the compliant product, the locations and names of all subcontractor facilities shall be documented and the documentation shall be provided to the manufacturer's ISO registrar and to the certification organization.

4.6 Hazards Involving Compliant Product.

4.6.1* The certification organization shall establish procedures to be followed where situation(s) are reported in which a compliant product is subsequently found to be hazardous. These procedures shall comply with the provisions of ISO 27, Guidelines for corrective action to be taken by a certification body in the event of misuse of its mark of conformity, and as modified herein.

4.6.2* Where a report of a hazard involved with a compliant product is received by the certification organization, the validity of the report shall be investigated.
4.6.3 With respect to a compliant product, a hazard shall be a condition or create a situation that results in exposing life, limb, or property to an imminently dangerous or dangerous condition.

4.6.4 Where a specific hazard is identified, the determination of the appropriate action for the certification organization and the manufacturer to undertake shall take into consideration the severity of the hazard and its consequences to the safety and health of users.

4.6.5 Where it is established that a hazard is involved with a compliant product, the certification organization shall determine the scope of the hazard including products, model numbers, serial numbers, factory production facilities, production runs, and quantities involved.

4.6.6 The certification organization's investigation shall include, but not be limited to, the extent and scope of the problem as it might apply to other compliant products or compliant product components manufactured by other manufacturers or certified by other certification organizations.

4.6.7 The certification organization shall also investigate reports of a hazard where compliant product is gaining widespread use in applications not foreseen when the standard was written, such applications in turn being ones for which the product was not certified, and no specific scope of application has been provided in the standard, and no limiting scope of application was provided by the manufacturer in written material accompanying the compliant product at the point of sale.

4.6.8 The certification organization shall require the manufacturer of the compliant product, or the manufacturer of the compliant product component if applicable, to assist the certification organization in the investigation and to conduct its own investigation as specified in Section 4.7, Manufacturers' Investigation of Complaints and Returns.

4.6.9 Where the facts indicating a need for corrective action are conclusive and the certification organization's appeal procedures referenced in 4.2.11 have been followed, the certification organization shall initiate corrective action immediately, provided there is a manufacturer to be held responsible for such action.

4.6.10 Where the facts are conclusive and corrective action is indicated, but there is no manufacturer to be held responsible, such as when the manufacturer is out of business or the manufacturer is bankrupt, the certification organization shall immediately notify relevant governmental and regulatory agencies and issue a notice to the user community about the hazard.

4.6.11* Where the facts are conclusive and corrective action is indicated, the certification organization shall take one or more of the following corrective actions:

(1) Notification of parties authorized and responsible for issuing a safety alert when, in the opinion of the certification organization, such a notification is necessary to inform the users.

(2) Notification of parties authorized and responsible for issuing a product recall when, in the opinion of the certification organization, such a recall is necessary to protect the users.

(3) Removal of the mark of certification from the product.
(4) Where a hazardous condition exists and it is not practical to implement (1), (2), or (3); or the responsible parties refuse to take corrective action, the certification organization shall notify relevant governmental and regulatory agencies and issue a notice to the user community about the hazard.

4.6.12 The certification organization shall provide a report to the organization or individual identifying the reported hazardous condition and notify that organization or individual of the corrective action indicated, or that no corrective action is indicated.

4.6.13* Where a change to an NFPA standard(s) is felt to be necessary, the certification organization shall also provide a copy of the report and corrective actions indicated to NFPA and shall also submit either a Public Proposal for a proposed change to the next revision of the applicable standard or a proposed Temporary Interim Amendment (TIA) to the current edition of the applicable standard.

4.7 Manufacturers' Investigation of Complaints and Returns.

4.7.1 Manufacturers shall provide corrective action in accordance with ISO 9001, Quality management systems — requirements, for investigating written complaints and returned products.

4.7.2 Manufacturers' records of returns and complaints related to safety issues shall be retained for at least 5 years.

4.7.3 Where the manufacturer discovers, during the review of specific returns or complaints, that a compliant product or compliant product component can constitute a potential safety risk to end users that is possibly subject to a safety alert or product recall, the manufacturer shall immediately contact the certification organization and provide all information about its review to assist the certification organization with the investigation.

4.8 Manufacturers' Safety Alert and Product Recall Systems.

4.8.1 Manufacturers shall establish a written safety alert system and a written product recall system that describes the procedures to be used in the event that it decides, or is directed by the certification organization, to either issue a safety alert or to conduct a product recall.

4.8.2 The manufacturers' safety alert and product recall system shall provide the following:

(1) The establishment of a coordinator and responsibilities by the manufacturer for the handling of safety alerts and product recalls

(2) A method of notifying all dealers, distributors, purchasers, users, and NFPA about the safety alert or product recall that can be initiated within a 1-week period following the manufacturer's decision to issue a safety alert or to conduct a product recall, or after the manufacturer has been directed by the certification organization to issue a safety alert or conduct a product recall

(3) Techniques for communicating accurately and understandably the nature of the safety alert or product recall and in particular the specific hazard or safety issue found to exist
(4) Procedures for removing product that is recalled and for documenting the effectiveness of the product recall

(5) A plan for repairing, replacing, or compensating purchasers for returned product
Public Input No. 38-NFPA 1983-2014 [ Sections 4.1.8, 4.1.9, 4.1.10 ]

Sections 4.1.8, 4.1.9, 4.1.10

4.1.8
The certification organization shall not issue any new certifications to the 2006-2012 edition of NFPA 1983, Standard on Fire Service Life Safety Rope and Equipment for Emergency Services, on or after the NFPA effective date for the 2012-20XX edition which is January 2, 2012. (EFFECTIVE DATE)

4.1.9
The certification organization shall not permit any manufacturer to continue to label any protective ensembles or ensemble elements that are certified as compliant with the 2006-2012 edition of NFPA 1983, Standard on Fire Service Life Safety Rope and Equipment for Emergency Services, after January 2, 2013 (EFFECTIVE DATE PLUS 12 MONTHS).

4.1.10
The certification organization shall require manufacturers to remove all certification labels and product labels indicating compliance with the 2006-20XX edition of NFPA 1983, Standard on Fire Service Life Safety Rope and Equipment for Emergency Services, from all protective ensembles and ensemble elements that are under the control of the manufacturer on January 2, 2013, (EFFECTIVE DATE PLUS 12 MONTHS), and the certification organization shall verify this action is taken.

Statement of Problem and Substantiation for Public Input

Updates standard title and effective dates.

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Street Address: 
City: 
State: 
Zip: 
Submittal Date: Tue Dec 09 13:29:41 EST 2014
4.4.1
<table>
<thead>
<tr>
<th>Product</th>
<th>Test</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>All component product</td>
<td>Corrosion testing</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>All component product</td>
<td>Product label durability testing</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>Life safety rope</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Water rescue Throwlines</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Water rescue Throwlines</td>
<td>Floatability</td>
<td>Every year</td>
</tr>
<tr>
<td>Safety harness</td>
<td>Static</td>
<td>Alternating years with drop test</td>
</tr>
<tr>
<td>Belt</td>
<td>Drop</td>
<td>Alternating years with static test</td>
</tr>
<tr>
<td>Belt</td>
<td>Static</td>
<td>Alternating years with drop test</td>
</tr>
<tr>
<td>Auxiliary equipment Carabiners and snap link</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auxiliary equipment Rope grab devices</td>
<td></td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment system Descent control devices – auto stop</td>
<td>Passive brake holding</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment system Descent control devices – non-auto stop</td>
<td>Manner of function</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment Portable anchor systems</td>
<td>All</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment Pulley</td>
<td></td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment pick-off, anchor and rigging Multiple configuration and end to end straps</td>
<td>Breaking Strength</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment Manufactured systems</td>
<td>All</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape Systems</td>
<td>All</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape rope</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing</td>
<td>Perimeter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape webbing</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Moderate elongation laid life saving rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Moderate elongation laid life saving rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape webbing</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Victim extrication devices</td>
<td>Static</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Litters</td>
<td>Litter strength test – vertical</td>
<td>Initial only/Alternating years with vertical</td>
</tr>
<tr>
<td>---------------------------</td>
<td>---------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Litter Strength test – horizontal</td>
<td>Initial only/Alternating years with vertical</td>
</tr>
<tr>
<td>Load-bearing textiles used in victim extrication devices</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in victim extrication devices</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Webbing components</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread components</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in belts with optional flame resistance</td>
<td>Flame resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in life safety harnesses with optional flame resistance</td>
<td>Flame resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Hardware used in belts with optional flame resistance</td>
<td>Heat Resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in belts with optional flame resistance</td>
<td>Thread heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in life safety harnesses with optional flame resistance</td>
<td>Flame resistance</td>
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</tr>
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<td>Load-bearing textiles used in life safety harnesses with optional flame resistance</td>
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</tr>
<tr>
<td>Hardware used in life safety harnesses with optional flame resistance</td>
<td>Heat Resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in life safety harnesses with optional flame resistance</td>
<td>Thread heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Manufacturer-supplied eye termination</td>
<td>Breaking strength</td>
<td>Every year</td>
</tr>
<tr>
<td>Manufacturer-supplied eye termination</td>
<td>Thread melting</td>
<td>Every year</td>
</tr>
</tbody>
</table>

2. Revise 5.1.5.12 to read as follows:

5.1.5.12 In addition to the compliance specified in 5.1.5.9, rigging and anchor multiple configuration and end to end straps shall include the following additional statement on the product label:

For multiple configuration straps:

“MINIMUM BREAKING STRENGTH AND RATING ARE DETERMINED USING A BASKET (U) CONFIGURATION. IN ADDITION, THIS STRAP HAS A MINIMUM BREAKING STRENGTH OF:
___ kN IN A CHOKER CONFIGURATION
___ kN WHEN PULLED END TO END.”

For end to end straps:

“MINIMUM BREAKING STRENGTH OF
___ kN WHEN PULLED END TO END”

3. Add a new paragraph 5.2.10.6 as follows:


5.2.10.6 The manufacturer of moderate elongation laid life saving ropes that are certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of moderate elongation laid life saving rope and a list of items that the records need to contain.

4. Revise 7.4.6.1 and 7.5.6.1 to read as follows:

7.4.6.1 Where harnesses are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

7.5.6.1 Where belts are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

5. Delete paragraph 7.5.7.10 and 7.6.3.9 and renumber subsequent paragraphs; revise paragraph 8.13.1.1 as follows:

7.5.7.10 Where the manufactured system incorporates an escape descent control device that incorporates a passive or active breaking feature that creates friction between the device and the rope, the system shall be tested for maximum payout force as specified in Section 8.13, Payout Test, shall not release the test torso, and shall not exceed 90 N (20 lb).

7.6.3.9 Where the escape descent control device incorporates a passive or active breaking feature that creates friction between the device and the rope, the maximum force required to pay a specific type of rope through the descent control device shall be tested as specified in Section 8.13, Payout Test, and shall not exceed 90 N (20 lb).

8.13.1.1 This test shall apply to descent control systems with passive and active braking systems, and escape manufactured systems.

6. Add a new paragraph 7.6.3.12 as follows:

7.6.3.12 Technical use descent control devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure B, and shall have a minimum breaking strength of at least 13.5 kN (3034 lbf).

7. Revise 7.11.6, 7.11.6.2 and add new 7.11.6.3 to read as follows:

7.11.6 Where an escape system is designated as a fire escape system, additional tests as specified in 7.11.6.1, and 7.11.6.2, and 7.11.6.3 shall be conducted.

7.11.6.2 Where fire escape system anchors are represented as being flame resistant, materials, labels, and hardware shall be tested individually for heat resistance as specified in Section 8.17, Heat Resistance Test, and shall not melt, drip, separate, or ignite; hardware items shall remain functional.

7.11.6.3 Sewing thread utilized in the construction of fire escape systems shall be tested for heat resistance as specified in Section 8.18, Thread Heat Resistance Test, and shall not melt at or below a temperature of 260°C (500°F).

8. Revise paragraph 7.15.1 and 7.15.2 as follows:

7.15.1 Technical use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

7.15.2 General-use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m, and with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

9. Delete Section 7.17, and add new paragraphs 7.6.3.11 and 7.11.7 as follows:

7.17 Escape Descent Control Device Performance Requirements. Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or device, and shall remain functional.

7.6.3.11 Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.
7.11.7 Escape systems shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.

10. Revise 8.15.5 to read as follows:

8.15.5 Report. The time to failure shall be recorded from each test and the average and standard deviation calculated.

11. Delete 8.15.6.1 as follows:

8.15.6.1 Pass/fail performance shall be based on the average time to failure.

Submitter’s Substantiation:
1. Table 4.4.1 - The table is missing recertification for Moderate Elongation Life Saving Rope and includes several duplications and terminology errors.
2. 5.1.5.12 - The terminology in 5.1.5.12 is not consistent with the document. The terms “rigging and anchor” straps have been replaced with “multiple configuration and end to end” straps. The current required statement is incorrect for end to end straps in that they are not required to be tested in a U or choker configuration.
3. 5.2.10.6 - This added text is a requirement for other products covered by NFPA 1983 and provides users with valuable information on maintaining records for this life saving equipment.
4. 7.4.6.1 and 7.5.6.1 - The term “and hardware” was inadvertently added to these paragraphs. Additionally, the char length requirement does not apply to hardware items, and there are no specific requirements for the testing of hardware items in the test method. The requirement as written in the current edition is inappropriate for hardware items, would be impossible to determine and could inhibit product certification.
5. 7.5.7.10, 7.6.3.9, and 8.13.1.1 - Requirement 7.5.7.10 is redundant in that a manufactured system that includes an escape descent device would be classified as an Escape System – and therefore must meet all of the requirements of NFPA 1983 Section 7.11. Additionally, the requirement is incorrectly worded in that there is no torso used in the conduct of the test - thus the statement “shall not release the test torso” has no relevance.

Requirement 7.6.3.9 applies to all escape descent control devices (those that are sold separately – not as part of a system). As the test is to be conducted with “each type of rope for its intended use” (NFPA 1983, Section 8.13.2.3) it follows that all escape descent control devices may have to be tested with all escape ropes – or the device would be limited to the type of rope with which it was tested. This would present an undue hardship on the manufacturers, and contribute to confusion on the part of the users in determining what ropes are suitable with each device.

Requirement 8.13.1.1 is changed so the application of the test method is consistent with the performance requirements.
6. 7.6.3.12 - This performance requirement mandates the minimum breaking strength for these particular devices and is therefore a critical safety issue.
7. 7.11.6, 7.11.6.2, and 7.11.6.3 (New) - The change in 7.11.6 adds the requirement of thread heat resistance to fire escape systems.

The change in 7.11.6.2 corrects the terminology from “escape anchors” to “fire escape system” as section 7.11.6 contains the requirements for fire escape systems and this requirement applies to the system not just the anchor.

The addition of 7.11.6.3 adds the thread heat resistance test to threads used in the construction of fire escape systems. This was inadvertently omitted in the 2012 edition. Testing of thread in a fire escape system evaluates a critical safety property of the fire escape system. Using a thread that will not withstand heat can cause the system to fail under high heat conditions.
8. 7.15.1 and 7.15.2 - These requirements are currently located in NFPA 1983-2012 Section 8.6.4.5.6. As these parameters are utilized to determine pass/fail of the device they should be relocated to the Performance Requirements. Additionally, this is a manner of function requirement – not a breaking strength requirement. It is impossible to determine breaking strength without failure of the device or rope.
9. 7.17, 7.6.3.1.1 and 7.11.7 (New) - This added text is part of the requirements that apply to escape descent control devices and escape systems. As such, this language should appear with the group of performance requirements for descent control devices (Section 7.6.3) and escape systems (Section 7.11). Having this requirement separate and distinct from the other performance requirements for these devices/systems can lead to confusion and the possibility of neglect of the remainder of the requirements.
10. and 11. 8.15.5 and 8.15.6.1 -This change resolves a conflict with the requirements in 7.10.3 and 7.12.5.

Emergency Nature: This TIA seeks to correct errors and omissions that were overlooked during the Fall 2011 revision cycle process of NFPA 1983. Additionally, some parts of this TIA intend to offer to the public a benefit that would lessen a known hazard, and correct circumstances in which the standard could adversely affect impact on a product or method that was inadvertently overlooked in the total revision process.
All products that are labeled as being compliant with this standard shall undergo recertification in accordance with Table 4.4.1.

Table 4.4.1 Recertification Schedule

<table>
<thead>
<tr>
<th>Product</th>
<th>Test</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>All component product</td>
<td>Corrosion testing</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>All component product</td>
<td>Product label durability tests</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>Life safety rope</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Water rescue throwlines</td>
<td>Rope breaking</td>
<td>Every year</td>
</tr>
<tr>
<td>Water rescue throwlines</td>
<td>Floatability</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety harness</td>
<td>Static</td>
<td>Alternating years</td>
</tr>
<tr>
<td>Life safety harness</td>
<td>Drop</td>
<td>with drop test</td>
</tr>
<tr>
<td>Belt</td>
<td>Static</td>
<td>Alternating years</td>
</tr>
<tr>
<td>Belt</td>
<td>Drop</td>
<td>with static test</td>
</tr>
<tr>
<td>Auxiliary equipment carabiners and snap-link</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment rope grab devices</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment system descent control devices — auto stop</td>
<td>Passive brake holding test</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment components descent control devices — auto stop</td>
<td>Manner of function</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment descent control devices — non-auto stop</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment portable anchor</td>
<td>All</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>Auxiliary equipment pulley</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment pick-off, anchor and rigging strap</td>
<td>Breaking strength</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment manufactured systems</td>
<td>All</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape rope</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
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<tr>
<td>Escape rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing</td>
<td>Perimeter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape webbing</td>
<td>Elevated rope temperature test</td>
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<td>Fire escape webbing</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape webbing</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Victim extrication devices</td>
<td>Static</td>
<td>Every 2 years</td>
</tr>
</tbody>
</table>
### Product | Test | Time
--- | --- | ---
Litters | Litter strength test — vertical | Initial only
 | Litter strength test — horizontal | Initial only
Load-bearing textiles used in victim extrication devices | Melting and crystallization temperatures by thermal analysis | Every year
Thread used in victim extrication devices | Melting and crystallization temperatures by thermal analysis | Every year
Webbing components | Melting and crystallization temperatures by thermal analysis | Every year
Thread components | Melting and crystallization temperatures by thermal analysis | Every year
Escape webbing fibers | Melting and crystallization temperatures by thermal analysis | Every year
Load-bearing textiles used in belts with optional flame resistance | Flame resistance | Every year
Load-bearing textiles used in belts with optional flame resistance | Heat resistance | Every year
Hardware installed in belts with optional flame resistance | Heat resistance | Every year
Thread used in belts with optional flame resistance | Thread heat resistance | Every year
Load-bearing textiles used in life safety harnesses with optional flame resistance | Flame resistance | Every year
Load-bearing textiles used in life safety harnesses with optional flame resistance | Flame resistance | Every year
Load-bearing textiles used in life safety harnesses with optional flame resistance | Heat resistance | Every year
Hardware installed in life safety harnesses with optional flame resistance | Heat resistance | Every year
Thread used in life safety harnesses with optional flame resistance | Thread heat resistance | Every year
Manufacturer-supplied eye termination | Breaking strength | Every year
Manufacturer-supplied eye termination | Thread melting | Every year

#### Additional Proposed Changes

<table>
<thead>
<tr>
<th>File Name</th>
<th>Description</th>
<th>Approved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposed_TIA_1983_.docx</td>
<td>Balloted TIA</td>
<td></td>
</tr>
</tbody>
</table>

#### Statement of Problem and Substantiation for Public Input

Note: This Public Input originates from Tentative Interim Amendment 1983-12-1 (TIA 1076) issued by the Standards Council on October 30, 2012.
1. Table 4.4.1 - The table is missing recertification for Moderate Elongation Life Saving Rope and includes several duplications and terminology errors.

2. 5.1.5.12 - The terminology in 5.1.5.12 is not consistent with the document. The terms “rigging and anchor” straps have been replaced with “multiple configuration and end to end” straps. The current required statement is incorrect for end to end straps in that they are not required to be tested in a U or choker configuration.

3. 5.2.10.6 - This added text is a requirement for other products covered by NFPA 1983 and provides users with valuable information on maintaining records for this life saving equipment.

4. 7.4.6.1 and 7.5.6.1 - The term “and hardware” was inadvertently added to these paragraphs. Additionally, the char length requirement does not apply to hardware items, and there are no specific requirements for the testing of hardware items in the test method. The requirement as written in the current edition is inappropriate for hardware items, would be impossible to determine and could inhibit product certification.

5. 7.5.7.10, 7.6.3.9, and 8.13.1.1 - Requirement 7.5.7.10 is redundant in that a manufactured system that includes an escape descent device would be classified as an Escape System – and therefore must meet all of the requirements of NFPA 1983 Section 7.11. Additionally, the requirement is incorrectly worded in that there is no torso used in the conduct of the test - thus the statement “shall not release the test torso” has no relevance.

Requirement 7.6.3.9 applies to all escape descent control devices (those that are sold separately – not as part of a system). As the test is to be conducted with “each type of rope for its intended use” (NFPA 1983, Section 8.13.2.3) it follows that all escape descent control devices may have to be tested with all escape ropes – or the device would be limited to the type of rope with which it was tested. This would present an undue hardship on the manufacturers, and contribute to confusion on the part of the users in determining what ropes are suitable with each device.

Requirement 8.13.1.1 is changed so the application of the test method is consistent with the performance requirements.

6. 7.6.3.12 - This performance requirement mandates the minimum breaking strength for these particular devices and is therefore a critical safety issue.

7. 7.11.6, 7.11.6.2, and 7.11.6.3 (New) - The change in 7.11.6 adds the requirement of thread heat resistance to fire escape systems.

The change in 7.11.6.2 corrects the terminology from "escape anchors" to "fire escape system" as section 7.11.6 contains the requirements for fire escape systems and this requirement applies to the system not just the anchor.

The addition of 7.11.6.3 adds the thread heat resistance test to threads used in the construction of fire escape systems. This was inadvertently omitted in the 2012 edition. Testing of thread in a fire escape system evaluates a critical safety property of the fire escape system. Using a thread that will not withstand heat can cause the system to fail under high heat conditions.

8. 7.15.1 and 7.15.2 - These requirements are currently located in NFPA 1983-2012 Section 8.6.4.5.6. As these parameters are utilized to determine pass/fail of the device they should be relocated to the Performance Requirements. Additionally, this is a manner of function requirement – not a breaking strength requirement. It is impossible to determine breaking strength without failure of the device or rope.

9. 7.17, 7.6.3.1.1 and 7.11.7 (New) - This added text is part of the requirements that apply to escape descent control devices and escape systems. As such, this language should appear with the group of performance requirements for descent control devices (Section 7.6.3) and escape systems (Section 7.11). Having this requirement separate and distinct from the other performance requirements for these devices/systems can lead to confusion and the possibility of neglect of the remainder of the requirements.

10. and 11. 8.15.5 and 8.15.6.1 - This change resolves a conflict with the requirements in 7.10.3 and 7.12.5.

Emergency Nature: This TIA seeks to correct errors and omissions that were overlooked during the Fall 2011 revision cycle process of NFPA 1983. Additionally, some parts of this TIA intend to offer to the public a benefit that would lessen a known hazard, and correct circumstances in which the standard could adversely affect impact on a product or method that was inadvertently overlooked in the total revision process.

Submitter Information Verification

Submitter Full Name: TC on FAE-SCE
Organization: TC on Special Operations Protective Clothing and Equipment
Street Address:
City:
State:
Zip:
Submittal Date: Mon Sep 09 09:24:31 EDT 2013
All products that are labeled as being compliant with this standard shall undergo recertification in accordance with Table 4.4.1.

Table 4.4.1 Recertification Schedule

<table>
<thead>
<tr>
<th>Product</th>
<th>Test</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>All component product</td>
<td>Corrosion testing</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>All component product</td>
<td>Product label durability tests</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>Life safety rope</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Water rescue throwlines</td>
<td>Rope breaking</td>
<td>Every year</td>
</tr>
<tr>
<td>Water rescue throwlines</td>
<td>Floatability</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety harness</td>
<td>Static</td>
<td>Alternating years with drop test</td>
</tr>
<tr>
<td>Life safety harness</td>
<td>Drop</td>
<td>Alternating years with static test</td>
</tr>
<tr>
<td>Belt</td>
<td>Static</td>
<td>Alternating years with drop test</td>
</tr>
<tr>
<td>Belt</td>
<td>Drop</td>
<td>Alternating years with static test</td>
</tr>
<tr>
<td>Auxiliary equipment carabiners and snap-link</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment rope grab devices</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment system descent control devices — auto stop</td>
<td>Passive brake holding test</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment components descent control devices — auto stop</td>
<td>Manner of function</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment descent control devices — non-auto stop</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment portable anchor</td>
<td>All</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>Auxiliary equipment pulley</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment pick-off, anchor and rigging strap</td>
<td>Breaking strength</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment manufactured systems</td>
<td>All</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape rope</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing</td>
<td>Perimeter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape webbing</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape webbing</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape webbing</td>
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<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape webbing</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
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<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
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<td>Fire escape webbing</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
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<td>Fire escape webbing</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Victim extrication devices</td>
<td>Static</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Litters</td>
<td>Litter strength test — vertical</td>
<td>Initial only</td>
</tr>
</tbody>
</table>

Victim extrication devices

Litters
<table>
<thead>
<tr>
<th>Product</th>
<th>Test</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load-bearing textiles used in victim extrication devices</td>
<td>Litter strength test — horizontal</td>
<td>Initial only</td>
</tr>
<tr>
<td></td>
<td>Melting and crystallization</td>
<td>Every year</td>
</tr>
<tr>
<td></td>
<td>temperatures by thermal analysis</td>
<td></td>
</tr>
<tr>
<td>Thread used in victim extrication devices</td>
<td>Melting and crystallization</td>
<td>Every year</td>
</tr>
<tr>
<td></td>
<td>temperatures by thermal analysis</td>
<td></td>
</tr>
<tr>
<td>Webbing components</td>
<td>Melting and crystallization</td>
<td>Every year</td>
</tr>
<tr>
<td></td>
<td>temperatures by thermal analysis</td>
<td></td>
</tr>
<tr>
<td>Thread components</td>
<td>Melting and crystallization</td>
<td>Every year</td>
</tr>
<tr>
<td></td>
<td>temperatures by thermal analysis</td>
<td></td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization</td>
<td>Every year</td>
</tr>
<tr>
<td></td>
<td>temperatures by thermal analysis</td>
<td></td>
</tr>
<tr>
<td>Load-bearing textiles used in belts with optional flame resistance</td>
<td>Flame resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in belts with optional flame resistance</td>
<td>Heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Hardware installed in belts with optional flame resistance</td>
<td>Heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in belts with optional flame resistance</td>
<td>Thread heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in life safety harnesses with optional flame</td>
<td>Flame resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>resistance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Load-bearing textiles used in life safety harnesses with optional flame</td>
<td>Flame resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>resistance</td>
<td></td>
<td></td>
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<tr>
<td>Load-bearing textiles used in life safety harnesses with optional flame</td>
<td>Heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>resistance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hardware installed in life safety harnesses with optional flame resistance</td>
<td>Heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in life safety harnesses with optional flame resistance</td>
<td>Thread heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Manufacturer-supplied eye termination</td>
<td>Breaking strength</td>
<td>Every year</td>
</tr>
<tr>
<td>Manufacturer-supplied eye termination</td>
<td>Thread melting</td>
<td>Every year</td>
</tr>
<tr>
<td>Belay Devices</td>
<td>Manner of Function</td>
<td>Every 2 Years</td>
</tr>
</tbody>
</table>

**Statement of Problem and Substantiation for Public Input**

Adds belay devices to the annual recert table.

**Submitter Information Verification**

**Submitter Full Name:** Steven Corrado  
**Organization:** UL LLC  
**Street Address:**  
**City:**  
**State:**  
**Zip:**  
**Submittal Date:** Tue Dec 09 13:34:38 EST 2014
Chapter 5 - Labeling and Information

5.1 - Product Label Requirements.

5.1.1 - Life Safety Rope.

5.1.1.1 - Each life safety rope item shall have a product label.

5.1.1.2 - Where life safety rope is an integral and nonseparable piece of a manufactured system and that manufactured system is certified as compliant with this standard, the life safety rope shall be required to have at least the continuous identification tape specified in 5.1.1.13.

5.1.1.3 - The life safety rope product label shall be permitted to be a hang tag affixed to each individual life safety rope or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the life safety rope.

5.1.1.4 - All letters shall be at least 2 mm (5/64 in.) high.

5.1.1.5 - All worded portions of the required product label shall at least be in English.

5.1.1.6 - Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.1.1.7 - The certification organization’s label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2.5 mm (3/32 in.) high.

5.1.1.8 - Each life safety rope shall have the following compliance statement on the product label:


5.1.1.9 - The class designation of the life safety rope that is required in 5.1.1.8 to be stated on the product label shall be as determined by the certification organization in accordance with Section 7.1.

5.1.1.10 - In addition to the compliance statement specified in 5.1.1.8, at least the following information shall be provided on the product label:

“Minimum breaking strength: _______ kN Diameter: ______ mm
Type of fiber(s) _____________________________”

5.1.1.11 - The minimum breaking strength value of the life safety rope, which is required in 5.1.1.10 to be stated on the product label, shall be permitted to be any value greater than the actual “pass” requirement value determined by the certification testing in accordance with 7.1.1 or 7.1.2, as applicable, but shall not be greater than the calculated minimum breaking strength.

5.1.1.12 - The diameter of the life safety rope, which is required in 5.1.1.10 to be stated on the product label, shall be as determined by the certification organization in accordance with 7.1.3 or 7.1.4, as applicable.
5.1.1.13

In addition to the compliance statement specified in 5.1.1.8, each life safety rope shall also be marked for its full length by insertion of a continuous identification tape(s). At least the following statement and information shall be legibly printed on the tape not less than every 1 m (39 in.).

"MEETS REQUIREMENTS FOR LIFE SAFETY ROPE OF NFPA 1983"

[Certification organization’s label, symbol, or identifying mark]

[Name of manufacturer]

[Year and quarter of manufacture (not coded)]

5.1.1.14

In addition to the compliance and information statements in 5.1.1.8, 5.1.1.10, and 5.1.1.13, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high.

1. Manufacturer’s name, identification, or designation
2. Manufacturer’s address
3. Country of manufacture
4. Manufacturer’s product identification
5. Model, style, lot, or serial number
6. Elongation at 1.35 kN (300 lbf)
7. Elongation at 2.7 kN (600 lbf)
8. Elongation at 4.4 kN (1000 lbf)

5.1.2 – Escape Rope.

5.1.2.1

Each escape rope item shall have a product label.

5.1.2.2

Where escape rope is an integral and nonseparable piece of a manufactured system and that manufactured system is certified as compliant with this standard, the escape rope shall be required to have at least the continuous identification tape specified in 5.1.2.12.

5.1.2.3

The escape rope product label shall be permitted to be a hang tag affixed to each escape rope or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the escape rope.

5.1.2.4

All letters shall be at least 1.6 mm (\(\frac{1}{16}\) in.) high.

5.1.2.5

All worded portions of the required product label shall be at least in English.

5.1.2.6

Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.1.2.7

The certification organization’s label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2.5 mm (\(\frac{3}{32}\) in.) high.

5.1.2.8

Each escape rope shall have the following compliance statement on the product label.

"THIS ROPE MEETS THE ESCAPE ROPE REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2012 EDITION."

National Fire Protection Association Report http://submittals.nfpa.org/TerraViewWeb/ContentFetcher?commentPara...
In addition to the compliance statement specified in 5.1.2.8, at least the following information shall be provided on the product label.

"MINIMUM BREAKING STRENGTH: _______ kN
DIAMETER: ______ mm
Type of fiber(s) _____________________________"

The minimum breaking strength value of the escape rope, which is required in 5.1.2.9 to be stated on the product label, shall be permitted to be any value greater than the actual "pass" requirement value determined by the certification testing in accordance with 7.2.1, but shall not be greater than the calculated minimum breaking strength.

The diameter of the escape rope, which is required in 5.1.2.9 to be stated on the product label, shall be as determined by the certification organization in accordance with 7.2.2.

In addition to the compliance statement specified in 5.1.2.8, each escape rope shall also be marked for its full length by insertion of a continuous identification tape(s). At least the following statement and information shall be legibly printed on the tape not less than every 1 m (39 in.):

"MEETS REQUIREMENTS FOR ESCAPE ROPE OF NFPA 1983"
[Certification organization's label, symbol, or identifying mark]
[Name of manufacturer]
[Year and quarter of manufacture (not coded)]

In addition to the compliance and information statements in 5.1.2.9, 5.1.2.10, and 5.1.2.12, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high.

1. Manufacturer's name, identification, or designation
2. Manufacturer's address
3. Country of manufacture
4. Manufacturer's product identification
5. Model, style, lot, or serial number
6. Elongation at 1.35 kN (300 lb)
7. Elongation at 2.7 kN (600 lb)
8. Elongation at 4.4 kN (1000 lb)

5.1.3 Life Safety Harness.
5.1.3.1 Each life safety harness item shall have a product label.
5.1.3.2 Harnesses used in manufactured systems shall be required to be individually labeled.
5.1.3.3 Harness product labels shall be embossed, printed, sewn, stapled, riveted, or otherwise permanently attached to the harness.
5.1.3.4 Harness product labels shall be conspicuously located on each harness when the harness is properly assembled with all components in place.
5.1.3.5 All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high.
5.1.3.6
Multiple label pieces shall be permitted in order to carry all statements and information required to be on the product label; however, all label pieces comprising the entire product label shall be located adjacent to each other.

5.1.3.7
All worded portions of the required product label shall at least be in English.

5.1.3.8
Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.1.3.9
The certification organization's label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2.5 mm (\(\frac{3}{32}\) in.) high.

5.1.3.10
Where the life safety harness is certified as compliant with only the nonoptional requirements of the standard and is not certified with the optional flame resistance requirements, the following statement shall be printed legibly on the product label:

"THIS LIFE SAFETY HARNESS MEETS THE REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2012 EDITION, CLASS ________. THIS HARNESS IS NOT FLAME-RESISTANT! DO NOT REMOVE THIS LABEL!"

5.1.3.11
Where the life safety harness is certified as compliant with nonoptional requirements of this standard and also certified as compliant with the optional flame resistance requirements specified in 6.3.9, the following statement shall be printed legibly on the product label:


5.1.3.12
In addition to the compliance statement specified in 5.1.3.10 or 5.1.3.11, at least the following information shall be provided on the product label:

1. For Class II harness: "Fits waist size ________"
2. For one-piece Class III harness: "Fits waist size _______, Fits height ________" or "Fits chest size _______, Fits height ________" 
3. For multiple-piece Class III harness: "Fits waist size _______, Fits height ________" or "Fits chest size _______, Fits height ________"

This is one part of a multiple-piece harness and must be used in conjunction with component part number ___ in order to fully meet the criteria of Class ___ harness."

5.1.3.13
The class designation of the life safety harness required to be stated on the product label(s) shall be as determined by the certification organization in accordance with 6.3.4.

5.1.3.14
In addition to the compliance and information statements in 5.1.3.10, 5.1.3.12, and 5.1.3.15, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high.

1. Manufacturer's name, identification, or designation
2. Manufacturer's address
3. Country of manufacture
4. Manufacturer's product identification
5. Model, style, lot, or serial number
5.1.3.15

Where detachable components must be used with a life safety harness in order for the life safety harness to be compliant with this standard, at least the following statement and information shall also be printed legibly on the product label of the life safety harness. All letters shall be at least 2.5 mm (\( \frac{3}{32} \) in.) high. The detachable component(s) shall be listed following the statement by type, identification, and how properly used.

"TO BE COMPLIANT WITH NFPA 1983, THE FOLLOWING ADDITIONAL COMPONENTS MUST BE USED IN CONJUNCTION WITH THIS LIFE SAFETY HARNESS:"

[The detachable component(s) shall be listed here.]

5.1.4

Belts.

5.1.4.1

Each belt item shall have a product label.

5.1.4.2

Belts used in manufactured systems shall be required to be individually labeled.

5.1.4.3

Belt product labels shall be embossed, printed, sewn, stapled, riveted, or otherwise permanently attached to the belt.

5.1.4.4

Belt product labels shall be conspicuously located on each belt when the belt is properly assembled with all components in place.

5.1.4.5

All letters shall be at least 2 mm (\( \frac{5}{64} \) in.) high.

5.1.4.6

Multiple label pieces shall be permitted in order to carry all statements and information required to be on the product label; however, all label pieces comprising the entire product label shall be located adjacent to each other.

5.1.4.7

All worded portions of the required product label shall at least be in English.

5.1.4.8

Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.1.4.9

The certification organization’s label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2.5 mm (\( \frac{3}{32} \) in.) high.

5.1.4.10

Where the belt is certified as compliant with only the nonoptional requirements of the standard and is not certified with the optional flame resistance requirements, the following statement shall be printed legibly on the product label:

"THIS BELT MEETS THE REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2012 EDITION, TYPE __________. THIS BELT IS NOT FLAME-RESISTANT! DO NOT REMOVE THIS LABEL!"

5.1.4.11

Where the belt is certified as compliant with nonoptional requirements of this standard and also certified as compliant with the optional flame resistance requirements specified in 6.4.9, the following statement shall be printed legibly on the product label:


5.1.4.12

In addition to the compliance statement specified in 5.1.4.10 or 5.1.4.11, at least the following information shall be provided on the product label:

- "Fits waist size ________"

5.1.4.13

The type designation of belt required to be stated on the product label shall be as determined by the certification organization in accordance with 6.4.1.
In addition to the compliance and information statements in 5.1.4.10, 5.1.4.12, and 5.1.4.15, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (5/64 in.) high.

1. Manufacturer's name, identification, or designation
2. Manufacturer's address
3. Country of manufacture
4. Manufacturer's product identification
5. Model, style, lot, or serial number

Where detachable components must be used with the belt in order for the belt to be compliant with this standard, at least the following statement and information shall also be printed legibly on the product label of the belt. All letters shall be at least 2.5 mm (3/32 in.) high. The detachable component(s) shall be listed following the statement by type, identification, and how properly used.

"TO BE COMPLIANT WITH NFPA 1983, THE FOLLOWING ADDITIONAL COMPONENTS MUST BE USED IN CONJUNCTION WITH THIS BELT:"

[The detachable component(s) shall be listed here.]

### 5.1.5 - Auxiliary Equipment

#### 5.1.5.1

Each auxiliary equipment item shall have a product label.

#### 5.1.5.2

Each load-bearing hardware auxiliary equipment item shall have a product label stamped, engraved, or otherwise permanently marked with the portions of the product label information specified in 5.1.5.2.1 through 5.1.5.2.5.

1. Each load-bearing hardware auxiliary equipment item shall have the following compliance statement: "MEETS NFPA 1983 (2012 ED)."

2. Each load-bearing hardware auxiliary equipment shall display the mark or logo of the certification organization and the manufacturer's name or identifying mark.

3. Each load-bearing hardware auxiliary equipment shall display at least the minimum rated breaking strength prefixed by the letters "MBS." The minimum breaking strength value stated on the product label shall be permitted to be any value greater than the actual "pass" requirement value determined by the certification testing, but shall not be greater than the calculated minimum breaking strength.

4. Each load-bearing hardware auxiliary equipment shall display a "G" for general use items, a "T" for technical use items, or an "E" for escape use items. The designation "G," "T," or "E" shall be designated in accordance with 6.5.2.

5. Each auxiliary equipment ascending device, rope grab device, and descent control device shall also display the range of rope diameters with which the device is intended to be used.

6. The product label for the portions of the product label information not specified in 5.1.5.2.1 through 5.1.5.2.5 shall be permitted to be a hang tag affixed to each individual auxiliary equipment item or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the auxiliary equipment item.

All letters shall be at least 2 mm (5/64 in.) high.
5.1.5.5 Multiple label pieces shall be permitted in order to carry all statements and information required to be on the product label; however, all label pieces comprising the entire product label shall be located adjacent to each other.

5.1.5.6 All worded portions of the required product label shall at least be in English.

5.1.5.7 Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.1.5.8 The certification organization’s label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2 mm (\( \frac{5}{64} \) in.) high.

5.1.5.9 Each auxiliary equipment item shall have the following compliance statement on the product label.

“THIS [insert name of equipment item here] MEETS THE AUXILIARY EQUIPMENT REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2012 EDITION.”

5.1.5.10 In addition to the compliance statement specified in 5.1.5.9, at least the information required in 5.1.5.2.3 through 5.1.5.2.5 shall also be provided on the printed product label.

5.1.5.11 In addition to the compliance statement specified in 5.1.5.9, portable anchor auxiliary equipment devices shall include the following additional information on the product label:

“MINIMUM BREAKING STRENGTH AND RATING ARE DETERMINED AT THE CONFIGURATION OF LOWEST STRENGTH PER MANUFACTURER’S INSTRUCTIONS.”

5.1.5.12 In addition to the compliance statement specified in 5.1.5.9, rigging and anchor straps shall include the following additional statement on the product label:

“MINIMUM BREAKING STRENGTH AND RATING ARE DETERMINED USING A BASKET (U) CONFIGURATION. IN ADDITION, THIS STRAP HAS A MINIMUM BREAKING STRENGTH OF:

\[ \text{[Value]} \text{ kN IN A CHOKER CONFIGURATION} \]
\[ \text{[Value]} \text{ kN WHEN PULLED END TO END}. \]

5.1.5.13 In addition to the compliance and information statements in 5.1.5.9, 5.1.5.10, and 5.1.5.11, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (\( \frac{5}{64} \) in.) high.

(1) Manufacturer’s name, identification, or designation
(2) Manufacturer’s address
(3) Country of manufacture
(4) Manufacturer’s product identification
(5) Model, style, lot, or serial number

5.1.5.14 Where detachable components must be used with the auxiliary equipment item in order for the auxiliary equipment item to be compliant with this standard, at least the following statement and information shall also be printed legibly on the product label of the item. All letters shall be at least 2 mm (\( \frac{5}{64} \) in.) high.

The detachable component(s) shall be listed following the statement by type, identification, and how properly used.

“TO BE COMPLIANT WITH NFPA 1983, THE FOLLOWING ADDITIONAL COMPONENTS MUST BE USED IN CONJUNCTION WITH THIS [insert type of auxiliary equipment here]:”

[The detachable component(s) shall be listed here.]

5.1.6 Throwlines.
5.1.6.1 Each throwline item shall have a product label.

5.1.6.2 Where a throwline is an integral and nonseparable piece of a manufactured system and that manufactured system is certified as compliant with this standard, the throwline shall be required to have at least the continuous identification tape specified in 5.1.6.12.

5.1.6.3 The throwline product label shall be permitted to be a hang tag affixed to each individual throwline or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the throwline.

5.1.6.4 All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high.

5.1.6.5 All worded portions of the required product label shall at least be in English.

5.1.6.6 Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.1.6.7 The certification organization’s label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high.

5.1.6.8 Each throwline shall have the following compliance statement on the product label:

> "THIS ROPE MEETS THE THROWLINE REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2012 EDITION."

5.1.6.9 In addition to the compliance statement specified in 5.1.6.8, at least the following information shall be provided on the product label.

> "MINIMUM BREAKING STRENGTH: _______ kN DIAMETER: _____ mm Type of fiber(s) _____________________________"

5.1.6.10 The minimum breaking strength value of the throwline, which is required in 5.1.6.9 to be stated on the product label, shall be permitted to be any value greater than the actual “pass” requirement value determined by the certification testing in accordance with 7.3.1, but shall not be greater than the calculated minimum breaking strength.

5.1.6.11 The diameter of the throwline, which is required in 5.1.6.8 to be stated on the product label, shall be as determined by the certification organization in accordance with 7.3.2.

5.1.6.12 In addition to the compliance statement specified in 5.1.6.8, each throwline shall also be marked for its full length by insertion of a continuous identification tape(s). At least the following statement and information shall be legibly printed on the tape not less than every 1 m (39 in.).

> "MEETS REQUIREMENTS FOR THROWLINE OF NFPA 1983"

>Certification organization’s label, symbol, or identifying mark

>Name of manufacturer

>Year and quarter of manufacture (not coded)
5.1.6.13
In addition to the compliance and information statements in 5.1.6.8 and 5.1.6.9, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (\( \frac{5}{64} \) in.) high.

1. Manufacturer's name, identification, or designation
2. Manufacturer's address
3. Country of manufacture
4. Manufacturer's product identification
5. Model, style, lot, or serial number

5.1.7 – Victim Extrication Device.
5.1.7.1 – Each victim extrication device shall have a product label.

5.1.7.2 – Each victim extrication device shall have a product label stamped, engraved, or otherwise permanently marked with the portions of the product label information.

5.1.7.2.1 – Each victim extrication device shall display the mark or logo of the certification organization, and the manufacturer's name or identifying mark.

5.1.7.3 – All letters shall be at least 2 mm (\( \frac{5}{64} \) in.) high.

5.1.7.4 – Multiple label pieces shall be permitted in order to carry all statements and information required to be on the product label; however, all label pieces comprising the entire product label shall be located adjacent to each other.

5.1.7.5 – All worded portions of the required product label shall be at least in English.

5.1.7.6 – Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.1.7.7 – The certification organization's label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2 mm (\( \frac{5}{64} \) in.) high.

5.1.7.8 – Each victim extrication device shall have the following compliance statement on the product label:

“MEETS THE VICTIM EXTRICATION DEVICE REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2012 EDITION, CLASS________.”

5.1.7.9 – In addition to the compliance and information statements in 5.1.7.8, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (\( \frac{5}{64} \) in.) high.

1. Manufacturer's name, identification, or designation
2. Manufacturer's address
3. Country of manufacture
4. Manufacturer's product identification
5. Model, style, lot, or serial number
5.1.7.10
Where detachable components must be used with a victim extrication device in order for the device to be compliant with this standard, at least the following statement and information shall also be printed legibly on the product label of the device. All labels shall be at least 2 mm ( \( \frac{5}{64} \) in.) high. The detachable components shall be listed following the statement by type, identification, and how properly used.

- “TO BE COMPLIANT WITH NFPA 1983, THE FOLLOWING ADDITIONAL COMPONENTS MUST BE USED IN CONJUNCTION WITH THIS VICTIM EXTRICATION DEVICE:” [The detachable component(s) shall be listed here.]

5.1.8 - Litters.
5.1.8.1 -
Each litter shall have a product label.
5.1.8.2 -
Each litter shall have a product label stamped, engraved, or otherwise permanently marked with the portions of the product label information specified in 5.1.8.2.1 through 5.1.8.2.2.
5.1.8.2.1 -
Each litter shall have the following compliance statement:

- “MEETS NFPA 1983 (2012 ED)”

5.1.8.2.2 -
Each litter shall display the mark or logo of the certification organization and the manufacturer’s name or identifying mark.
5.1.8.3 -
The product label for the portions of the product label information not specified in 5.1.8.2.1 and 5.1.8.2.2 shall be permitted to be a hang tag affixed to each individual litter.
5.1.8.4 -
All letters shall be at least 2 mm ( \( \frac{5}{64} \) in.) high.
5.1.8.5 -
Multiple label pieces shall be permitted in order to carry all statements and information required to be on the product label; however, all label pieces comprising the entire product label shall be located adjacent to each other.
5.1.8.6 -
All worded portions of the required product label shall be at least in English.
5.1.8.7 -
Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).
5.1.8.8 -
The certification organization’s label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2 mm ( \( \frac{5}{64} \) in.) high.
5.1.8.9 -
Each litter shall have the following compliance statement on the product label:

- “MEETS THE LITTER REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2012 EDITION.”

5.1.8.10 -
In addition to the compliance statement specified in 5.1.8.9, litters shall include the following additional information on the product label:

- “VERTICAL BREAKING STRENGTH: ______kN. HORIZONTAL BREAKING STRENGTH: ______kN.”
5.1.8.11 – In addition to the compliance and information statements in 5.1.8.9 and 5.1.8.11, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (0.079 inch) high.

1. Manufacturer's name, identification, or designation
2. Manufacturer's address
3. Country of manufacture
4. Manufacturer's product identification
5. Model, style, lot, or serial number

5.1.9 – Escape Webbing.

5.1.9.1 – Escape webbing shall meet the labeling requirements in 5.1.2, excluding 5.1.2.5, 5.1.2.10, and 5.1.2.12.

5.1.9.2 – Each escape webbing shall have the following compliance statement on the product label:

"THIS WEBBING MEETS THE ESCAPE WEBBING REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2012 EDITION."

5.1.9.3* – In addition to the compliance statement specified in 5.1.9.3, at least the following information shall be provided on the product label:

MINIMUM BREAKING STRENGTH: _______ kN PERIMETER: _______ mm
Type of fiber(s) _______________________________

5.1.9.4 – The perimeter of the escape webbing, which is required in 5.1.9.3 to be stated on the product label, shall be as determined by the certification organization in accordance with 7.9.2.

5.1.9.5 – In addition to the compliance statement specified in 5.1.9.3, each escape webbing shall also be marked for its full length by insertion of a continuous identification tape(s). At least the following statement and information shall be legibly printed on the tape not less than every 1 m (39 in.).

"MEETS REQUIREMENTS FOR ESCAPE WEBBING OF NFPA 1983"

[Certification organization's label, symbol, or identifying mark]
[Name of manufacturer]
[Year and quarter of manufacture (not coded)]

5.1.10 – Fire Escape Webbing.

5.1.10.1 – Fire escape webbing shall meet the labeling requirements in 5.1.2, escape rope, excluding 5.1.2.8, 5.1.2.9, 5.1.2.10, and 5.1.2.12.

5.1.10.2 – Each fire escape webbing shall have the following compliance statement on the product label:

"THIS WEBBING MEETS THE FIRE ESCAPE WEBBING REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2012 EDITION."

5.1.10.3* – In addition to the compliance statement specified in 5.1.10.2, at least the following information shall be provided on the product label:

MINIMUM BREAKING STRENGTH: _______ kN PERIMETER: _______ mm
Type of fiber(s) _______________________________

5.1.10.4 – The perimeter of the fire escape webbing, which is required in 5.1.10.3 to be stated on the product label, shall be as determined by the certification organization in accordance with 7.10.2.
5.1.10.5 -
In addition to the compliance statement specified in 5.1.10.2, each fire escape webbing shall also be marked for its full length by insertion of a continuous identification tape(s). At least the following statement and information shall be legibly printed on the tape not less than every 1 m (39 in.).

- "MEETS REQUIREMENTS FOR FIRE ESCAPE WEBBING OF NFPA 1983"
  [Certification organization’s label, symbol, or identifying mark]
  [Name of manufacturer]
  [Year and quarter of manufacture (not coded)]

5.1.11 - Escape Systems Compliance and Information Statements.

5.1.11.1 -
Each escape system shall have a product label.

5.1.11.2 -
Each escape system load-bearing hardware item shall have a product label stamped, engraved, or otherwise permanently marked with the portions of the product label information specified in 5.1.5.2.1 through 5.1.5.2.5.

5.1.11.2.1 -
Each load-bearing escape system component shall have the following compliance statement:

- "MEETS NFPA 1983 (2012 ED)"

5.1.11.2.2 -
Each load-bearing hardware escape system component shall display the mark or logo of the certification organization and the manufacturer’s name or identifying mark.

5.1.11.2.3 -
Each load-bearing hardware escape system component shall display at least the minimum rated breaking strength prefaced by the letters “MBS.” The minimum breaking strength value stated on the product label shall be permitted to be any value greater than the actual “pass” requirement value determined by the certification testing, but shall not be greater than the calculated minimum breaking strength.

5.1.11.2.4 -
Each load-bearing escape system component shall display an “E” for escape use items. The designation “E” shall be designated in accordance with 6.5.2.1.

5.1.11.2.5 -
Each system device, rope grab device, and descent control device shall also display the range of rope diameters with which the device is intended to be used.

5.1.11.3 -
The product label for the portions of the product label information not specified in 5.1.5.2.1 shall be permitted to be a hang tag affixed to each individual equipment item or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the escape system.

5.1.11.4 -
All letters shall be at least 2 mm (\( \frac{5}{64} \) in.) high.

5.1.11.5 -
Multiple label pieces shall be permitted in order to carry all statements and information required to be on the product label; however, all label pieces comprising the entire product label shall be located adjacent to each other.

5.1.11.6 -
All worded portions of the required product label shall be at least in English.

5.1.11.7 -
Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.1.11.8 -
The certification organization’s label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2.5 mm (\( \frac{3}{32} \) in.) high.
5.1.11.9 Each escape system shall have the following compliance statement on the product label:

- For fire escape systems: “THIS [insert name of equipment item here] MEETS THE FIRE ESCAPE SYSTEM REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2012 EDITION.”

- For escape systems: “THIS [insert name of equipment item here] MEETS THE ESCAPE SYSTEM REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2012 EDITION.”

5.1.11.10 In addition to the compliance and information statements in 5.1.5.9, 5.1.5.10, and 5.1.5.11, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high.

1. Manufacturer’s name, identification, or designation
2. Manufacturer’s address
3. Country of manufacture
4. Manufacturer’s product identification
5. Model, style, lot, or serial number

5.1.11.11 Where detachable components must be used with the escape system item in order for the escape system to be compliant with this standard, at least the following statement and information shall also be printed legibly on the product label of the item. All letters shall be at least 2.5 mm (\(\frac{3}{32}\) in.) high. The detachable component(s) shall be listed following the statement by type, identification, and how properly used.

“TO BE COMPLIANT WITH NFPA 1983, THE FOLLOWING ADDITIONAL COMPONENTS MUST BE USED IN CONJUNCTION WITH THIS [insert type of escape system here]:”

The detachable component(s) shall be listed here.

5.1.12 Fire Escape Rope.

5.1.12.1 Each fire escape rope item shall have a product label.

5.1.12.2 Where fire escape rope is an integral and nonseparable piece of a manufactured system and that manufactured system is certified as compliant with this standard, the fire escape rope shall be required to have at least the continuous identification tape specified in 5.1.2.12.

5.1.12.3 The fire escape rope product label shall be permitted to be a hang tag affixed to each fire escape rope or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the fire escape rope.

5.1.12.4 All letters shall be at least 1.6 mm (\(\frac{1}{16}\) in.) high.

5.1.12.5 All worded portions of the required product label shall be at least in English.

5.1.12.6 Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.1.12.7 The certification organization’s label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2.5 mm (\(\frac{3}{32}\) in.) high.

5.1.12.8 Each fire escape rope shall have the following compliance statement on the product label:

“THIS ROPE MEETS THE FIRE ESCAPE ROPE REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2012 EDITION.”
5.1.12.9 In addition to the compliance statement specified in 5.1.12.8, at least the following information shall be provided on the product label:

- "MINIMUM BREAKING STRENGTH: _______ kN DIAMETER: ______ mm
Type of fiber(s) _____________________________"

5.1.12.10 The minimum breaking strength value of the fire escape rope, which is required in 5.1.12.9, to be stated on the product label, shall be permitted to be any value greater than the actual “pass” requirement value determined by the certification testing in accordance with 7.2.1, but shall not be greater than the calculated minimum breaking strength.

5.1.12.11 The diameter of the fire escape rope, which is required in 5.1.12.9, to be stated on the product label, shall be as determined by the certification organization in accordance with 7.2.2.

5.1.12.12 In addition to the compliance statement specified in 5.1.12.9, each fire escape rope shall also be marked for its full length by insertion of a continuous identification tape(s). At least the following statement and information shall be legibly printed on the tape not less than every 1 m (39 in.):

- “MEETS REQUIREMENTS FOR FIRE ESCAPE ROPE OF NFPA 1983”
  [Certification organization's label, symbol, or identifying mark]
  [Name of manufacturer]
  [Year and quarter of manufacture (not coded)]

5.1.12.13 In addition to the compliance and information statements in 5.1.12.8, 5.1.12.9, and 5.1.12.12, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (\frac{5}{64} in.) high.

(1) Manufacturer’s name, identification, or designation
(2) Manufacturer’s address
(3) Country of manufacture
(4) Manufacturer’s product identification
(5) Model, style, lot, or serial number
(6) Elongation at 1.35 kN (300 lb)
(7) Elongation at 2.7 kN (600 lb)
(8) Elongation at 4.4 kN (1000 lb)

5.1.13 Manufacturer-Supplied Eye Termination.

5.1.13.1 Each manufacturer-supplied eye termination shall have a product label.

5.1.13.2 The manufacturer-supplied eye termination product label shall be permitted to be a hang tag affixed to each manufacturer-supplied eye termination or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the manufacturer-supplied eye termination.

5.1.13.3 All letters shall be at least 2 mm (\frac{5}{64} in.) high.

5.1.13.4 All worded portions of the required product label shall be at least in English.

5.1.13.5 Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.1.13.6 The certification organization’s label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2.5 mm (\frac{3}{32} in.) high.
5.1.13.7
Each manufacturer-supplied eye termination shall have the following compliance statement on the product label:

"THIS MANUFACTURER-SUPPLIED EYE TERMINATION MEETS THE REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2012 EDITION
MBS: ________kN"

5.1.13.8
In addition to the compliance statement specified in 5.1.13.7, at least the following information shall be provided on the product label:

"THIS (ROPE OR ESCAPE WEBBING) IS CERTIFIED AS CLASS: ______ (ROPE OR WEBBING) WITH MBS OF ___kN
DIAMETER: _____mm
Type of Fibers: ______________,
Thread Fiber: ______"

5.1.13.9
In addition to the compliance and information statements in 5.1.13.7 and 5.1.13.8, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high.

1. Manufacturer's name, identification, or designation
2. Manufacturer's address
3. Country of manufacturer
4. Manufacturer's product identification
5. Model, style, lot, or serial number

5.1.13.10
Where the manufacturer of the rope and the manufacturer of the manufacturer-supplied eye termination are the same, the labeling for both the rope and the manufacturer-supplied eye termination shall be permitted to be combined, as long as all required product label information of the rope and of the manufacturer-supplied eye termination as given in 5.1.13.1 through 5.1.13.9 is included on the label.

5.1.13.11
Where the manufacturer of the manufactured system and the manufacturer of the manufacturer-supplied eye termination are the same, the labeling for both the system and the manufacturer-supplied eye termination shall be permitted to be combined, as long as all required product label information of the manufactured system and of the manufacturer-supplied eye termination as given in 5.1.13.1 through 5.1.13.9 is included on the label. Where the manufacturer of the escape webbing and the manufacturer of the manufacturer-supplied eye termination are the same, the labeling for both the escape webbing and the manufacturer-supplied eye termination shall be permitted to be combined, as long as all required product label information of the escape webbing and of the manufacturer-supplied eye termination as given in 5.1.13.1 through 5.1.13.9 is included on label.

5.1.13.12
Where the manufacturer of the escape webbing and the manufacturer of the manufacturer-supplied eye termination are the same, the labeling for both the escape webbing and the manufacturer-supplied eye termination shall be permitted to be combined, as long as all required product label information of the escape webbing and of the manufacturer-supplied eye termination as given in 5.1.13.1 through 5.1.13.9 is included on label.

5.1.14
Moderate Elongation Laid Life Saving Rope.

5.1.14.1
Each moderate elongation laid life saving rope shall have a product label.

5.1.14.2
The moderate elongation laid life saving rope product label shall be permitted to be a hang tag affixed to each rope or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the moderate elongation laid life saving rope.
5.1.14.3
All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high.

5.1.14.4
All worded portions of the required product label shall be at least in English.

5.1.14.5
Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.1.14.6
The certification organization's label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2.5 mm (\(\frac{3}{32}\) in.) high.

5.1.14.7
Each moderate elongation laid life-saving rope shall have the following compliance statement on the product label:

“THIS ROPE MEETS THE MODERATE ELONGATION LAID LIFE SAVING ROPE REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2012 EDITION.”

5.1.14.8
In addition to the compliance statement specified in 5.1.14.7, at least the following information shall be provided on the product label:

- “MINIMUM BREAKING STRENGTH: ___kN
  DIAMETER: _____mm
  Type of Fiber(s): _______________”

5.1.14.9
The minimum breaking strength value of the moderate elongation laid life-saving rope, which is required in 5.1.14.8 to be stated on the product label, shall be permitted to be any value greater than the actual “pass” requirement value determined by the certification testing in accordance with 7.14.1, but shall not be greater than the calculated minimum breaking strength.

5.1.14.10
The diameter of the moderate elongation laid life-saving rope, which is required in 5.1.14.8 to be stated on the product label, shall be as determined by the certification organization in accordance with 7.14.2.

5.1.14.11
In addition to the compliance statement specified in 5.1.14.7, each moderate elongation laid life-saving rope shall also be marked for its full length by insertion of a continuous identification tape(s). At least the following statement and information shall be legibly printed on the tape not less than every 1 m (39 in.):

“MEETS REQUIREMENTS FOR MODERATE ELONGATION LAID LIFE SAVING ROPE OF NFPA 1983
  [Certification organization's label, symbol, or identifying mark]
  [Name of manufacturer]
  [Year and quarter of manufacture (not coded)]
5.1.14.12 -
In addition to the compliance and information statements specified in 5.1.14.7, 5.1.14.8, and 5.1.14.11, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (~5/64 in.) high.

1. Manufacturer's name, identification, or designation
2. Manufacturer's address
3. Country of manufacture
4. Manufacturer's product identification
5. Model, style, lot, or serial number
6. Elongation at 1.35 kN (300 lbf)
7. Elongation at 2.7 kN (600 lbf)
8. Elongation at 4.4 kN (1000 lbf)

5.2 - User Information.
5.2.1 - Life Safety Rope User Information.
5.2.1.1 -
The manufacturer of life safety rope that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.2.1.2 -
The manufacturer shall provide information for the user to consider prior to reusing life safety rope, including that the rope be considered for reuse only if all of the following conditions are met:

1. Rope has not been visually damaged.
2. Rope has not been exposed to heat, direct flame impingement, or abrasion.
3. Rope has not been subjected to any impact load.
4. Rope has not been exposed to liquids, solids, gases, mists, or vapors of any chemical or other material that can deteriorate rope.
5. Rope passes inspection when inspected by a qualified person following the manufacturer's inspection procedures both before and after each use.

5.2.1.3 -
The manufacturer shall provide information for the user regarding not using the life safety rope and removing the rope from service if the rope does not meet all of the conditions in 5.2.1.2, if the rope does not pass inspection, or if there is any doubt about the safety or serviceability of the rope.
5.2.1.4  The manufacturer shall provide information for the user regarding at least the following issues:

(1) Inspecting the rope periodically according to the manufacturer's inspection procedure
(2) Removing the rope from service and destroying it if the rope does not pass inspection or if there is any doubt about the safety or serviceability of the rope
(3) Protecting the rope from abrasion
(4) Not exposing the rope to flame or high temperature and carrying the rope where it will be protected as the rope could melt or burn and fail if exposed to flame or high temperature
(5) Keeping the product label and user instructions/information after they are removed/separated from the rope and retaining them in the permanent rope record; copying the product label and user instructions/information and keeping the copies with the rope
(6) Referring to the user instructions/information before and after each use
(7) Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences

5.2.1.5  The manufacturer shall provide information for the user that additional information regarding moderate elongation laid life saving rope can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.

5.2.1.6  The manufacturer of life safety rope that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of life safety rope and a list of items that the records need to contain.

5.2.2  Escape Rope, Escape Webbing, Fire Escape Rope, and Fire Escape Webbing User Information.

5.2.2.1  The manufacturer of escape rope, escape webbing, fire escape rope, and fire escape webbing that are certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.2.2.2  The manufacturer shall provide information for the user regarding at least the following issues:

(1) Using the rope only with a life safety harness or escape belt
(2) Inspecting the rope periodically according to the manufacturers' inspection procedure
(3) Removing the rope from service and destroying it if the rope does not pass inspection or if there is any doubt about the safety or serviceability of the rope
(4) Protecting the rope from abrasion
(5) Not exposing the rope to flame or high temperature and carrying the rope where it will be protected as the rope could melt or burn and fail if exposed to flame or high temperature
(6) Keeping the product label and user instructions/information after they are removed/separated from the rope for future reference
(7) Referring to the user instructions/information before and after each use
(8) Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences

5.2.2.3  The manufacturer shall provide information for the user that additional information regarding escape rope, escape webbing, fire escape rope, and fire escape webbing can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.
5.2.2.4 The manufacturer of escape rope, escape webbing, fire escape rope, and fire escape webbing that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of escape rope, escape webbing, fire escape rope, and fire escape webbing and a list of items that the records need to contain.

5.2.3 Life Safety Harness User Information.

5.2.3.1 The manufacturer of life safety harnesses that are certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.2.3.2 The manufacturer shall provide information for the user regarding at least the following issues:

1. Inspecting the harness periodically according to the manufacturer's inspection procedure.
2. Removing the harness from service and destroying it if the harness does not pass inspection or if there is any doubt about the safety or serviceability of the harness.
3. For a life safety harness certified to only the nonoptional requirements of the standard, not exposing the harness to flame or high temperature and carrying the harness where it will be protected, as the harness could melt or burn and fail if exposed to flame or high temperature.
4. Repairing the harness only in accordance with the manufacturer's instructions.
5. Keeping the user instructions/information after they are separated from the harness and retaining them in a permanent record; copying the user instructions/information and keeping the copy with the harness.
6. Referring to the user instructions/information before and after each use.
7. Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences.

5.2.3.3 The manufacturer shall provide information for the user that additional information regarding life safety harnesses can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.

5.2.3.4 The manufacturer of life safety harnesses that are certified as being compliant with this standard shall indicate that tie-off is required for webbing ends if tie-off of webbing end(s) was required during testing. The instructions shall include location(s) and method(s) with text and/or illustrations.

5.2.4 Belt User Information.

5.2.4.1 The manufacturer of belts that are certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.
5.2.4.2
The manufacturer shall provide information for the user regarding at least the following issues:

1. Inspecting the belt periodically according to the manufacturer's inspection procedure.
2. Removing the belt from service and destroying it if the belt does not pass inspection or if there is any doubt about the safety or serviceability of the belt.
3. For belts certified to only the nonoptional requirements of the standard, not exposing the belt to flame or high temperature and carrying the belt where it will be protected, as the belt could melt or burn and fail if exposed to flame or high temperature.
4. Repairing the belt only in accordance with the manufacturer's instructions.
5. Keeping the user instructions/information after they are separated from the belt and retaining them in a permanent record; copying the user instructions/information and keeping the copy with the belt.
6. Referring to the user instructions/information before and after each use.
7. Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences.

5.2.4.3
The manufacturer shall provide information for the user that additional information regarding belts can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.

5.2.4.4
The manufacturer of belts that are certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of belts and a list of items that the records need to contain.

5.2.4.5
The manufacturer of belts that are certified as being compliant with this standard shall indicate that tie-off of webbing end(s) is required for webbing end(s) if tie-off of webbing end(s) was required during testing. The instructions shall include location(s) and method(s) with text and/or illustrations.

5.2.5
Auxiliary Equipment User Information.

5.2.5.1
The manufacturer of auxiliary equipment that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.
5.2.5.2 The manufacturer shall provide information for the user regarding at least the following issues:

1. Inspecting the auxiliary equipment periodically according to the manufacturer's inspection procedure.
2. Removing the auxiliary equipment from service if the equipment does not pass inspection or if there is any doubt about the safety or serviceability of the equipment.
3. Maintaining the auxiliary equipment in accordance with the manufacturer's instructions where metal components are subjected to corrosion or deterioration.
4. Returning auxiliary equipment to the manufacturer or to a qualified inspection person/center if the equipment is dropped or impact-loaded.
5. Not exposing the software auxiliary equipment to flame or high temperature and carrying the equipment where it will be protected as it could melt or burn and fail if exposed to flame or high temperature.
6. Repairing the auxiliary equipment only in accordance with the manufacturer's instructions.
7. Keeping the user instructions/information after they are separated from the auxiliary equipment and retaining them in a permanent record; copying the user instructions/information and keeping the copy with the equipment.
8. Referring to the user instructions/information before and after each use.
9. Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences.

5.2.5.3 The manufacturer shall provide information for the user that additional information regarding auxiliary equipment can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.

5.2.5.4 The manufacturer of auxiliary equipment that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of the auxiliary equipment and a list of items that the records need to contain.

5.2.5.5 In addition to the requirements for auxiliary equipment, the manufacturer of portable anchors shall provide information for the user that indicates the actual configuration of the device when meeting the breaking strength requirement, including the height, attachment points, and angular configuration of the legs, such that the user can set up the equipment in the same configuration as tested.

5.2.5.6 The manufacturer of manufactured systems auxiliary equipment certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of the manufactured system auxiliary equipment.

5.2.5.7 Where auxiliary equipment is tested with a rope, the following statement shall be provided in the user instructions:

"THIS [insert name of equipment item here] HAS PASSED THE MINIMUM BREAKING STRENGTH AND HOLDING LOAD TEST USING THE FOLLOWING ROPE: [insert rope manufacturer name, designation, part number, and diameter here]."

5.2.5.8 Where the auxiliary equipment has been tested with multiple ropes, each rope shall be listed in the user instructions.

5.2.6 Water Rescue Throwline User Information.

The manufacturer of a throwline that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.2.7 Victim Extrication Device User Information.
5.2.7.1 - 
The manufacturer of the victim extrication device that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.2.7.2 - 
The manufacturer shall provide information for the user regarding at least the following issues:

1. Inspecting the victim extrication device periodically according to the manufacturer's inspection procedure
2. Removing the victim extrication device from service if the equipment does not pass inspection or if there is any doubt about the safety or serviceability of the equipment
3. Maintaining the victim extrication device in accordance with the manufacturer's instructions where metal components are subjected to corrosion or deterioration
4. Returning victim extrication device to the manufacturer or to a qualified inspection person/center if the equipment is dropped or impact-loaded
5. Not exposing any software component of the victim extrication device to flame or high temperature and carrying the equipment where it will be protected as it could melt or burn and fail if exposed to flame or high temperature
6. Repairing the victim extrication device only in accordance with the manufacturer's instructions
7. Keeping the user instructions/information after they are separated from the victim extrication device and retaining them in a permanent record; copying the user instructions/information and keeping the copy with the equipment
8. Referring to the user instructions/information before and after each use
9. Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences

5.2.7.3 - 
The manufacturer of a victim extrication device that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of the victim extrication device and a list of items that the records need to contain.

5.2.8 - Litter User Information.

5.2.8.1 - 
The manufacturer of the litter that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.
5.2.8.2 -
The manufacturer shall provide information for the user regarding at least the following issues:

1. Inspecting the litter periodically according to the manufacturer's inspection procedure.
2. Removing the litter from service if the equipment does not pass inspection or if there is any doubt about the safety or serviceability of the equipment.
3. Maintaining the litter in accordance with the manufacturer's instructions where metal components are subjected to corrosion or deterioration.
4. Returning litter to the manufacturer or to a qualified inspection person/center if the equipment is dropped or impact-loaded.
5. Not exposing any software component of the litter to flame or high temperature and carrying the equipment where it will be protected as it could melt or burn and fail if exposed to flame or high temperature.
6. Repairing the litter only in accordance with the manufacturer's instructions.
7. Keeping the user instructions/information after they are separated from the litter and retaining them in a permanent record; copying the user instructions/information and keeping the copy with the equipment.
8. Referring to the user instructions/information before and after each use.
9. Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences.

5.2.8.3 -
The manufacturer shall provide information for the user that additional information regarding litters can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.

5.2.8.4 -
The manufacturer of a litter that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of the litter and a list of items that the records need to contain.

5.2.9 - Manufacturer-Supplied Eye Termination User Information.

5.2.9.1 -
The manufacturer of the manufacturer-supplied eye termination that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.2.9.2 -
The manufacturer shall provide information for the user to consider prior to reusing manufacturer-supplied eye termination, including that the rope be considered for reuse only if all of the following conditions are met:

1. Manufacturer-supplied eye termination has not been visually damaged.
2. Manufacturer-supplied eye termination has not been exposed to heat, direct flame impingement, or abrasion.
3. Manufacturer-supplied eye termination has not been subjected to any impact load.
4. Manufacturer-supplied eye termination has not been exposed to liquids, solids, gases, mists, or vapors of any chemical or other material that can deteriorate the manufacturer-supplied eye termination.
5. Manufacturer-supplied eye termination passes inspection when inspected by a qualified person following the manufacturer's inspection procedures both before and after each use.
5.2.9.3
The manufacturer shall provide information for the user regarding not using the manufacturer-supplied eye termination and removing the manufacturer-supplied eye termination from service if the rope does not meet all of the conditions in 5.2.9.2, if the manufacturer-supplied eye termination does not pass inspection, or if there is any doubt about the safety or serviceability of the manufacturer-supplied eye termination.

5.2.9.4
The manufacturer shall provide information for the user regarding at least the following issues:

1. Inspecting the manufacturer-supplied eye termination periodically according to the manufacturer's inspection procedure
2. Removing the manufacturer-supplied eye termination from service and destroying it if the manufacturer-supplied eye termination does not pass inspection or if there is any doubt about the safety of the manufacturer-supplied eye termination
3. Protecting the manufacturer-supplied eye termination from abrasion
4. Not exposing the manufacturer-supplied eye termination to flame or high temperature and carrying the manufacturer-supplied eye termination where it will be protected as the manufacturer-supplied eye termination could melt or burn and fail if exposed to flame or high temperature
5. Keeping the product label and user instructions/information after they are removed/separated from the manufacturer-supplied eye termination and retaining them in the permanent manufacturer-supplied eye termination record; copying the product label and user information/instructions and keeping copies with the manufacturer-supplied eye termination
6. Referring to the user instructions/information before and after each use
7. Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences

5.2.9.5
The manufacturer of manufacturer-supplied eye termination that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of manufacturer-supplied eye termination and a list of items that the records need to contain.

5.2.9.5.1
The suggested inspection records shall include inspection of the loop of the eye, inspection for worn or broken thread in sewn termination, and inspection of contact point of swage and rope in swage termination.

5.2.9.6
Where the manufacturer of the rope and the manufacturer of the manufacturer-supplied eye termination are the same, the user information/instructions for both the rope and the manufacturer-supplied eye termination shall be permitted to be combined, as long as all required user information/instructions of the rope and required user information/instructions of manufacturer-supplied eye termination as given in 5.2.9.1 through 5.2.9.5 are included in the user information/instructions.

5.2.9.7
Where the manufacturer of the manufactured system and the manufacturer of the manufacturer-supplied eye termination are the same, the user information/instructions for both the manufactured system and the manufacturer-supplied eye termination shall be permitted to be combined, as long as all required user information/instructions of the manufactured system and required user information/instructions of the manufacturer-supplied eye termination as given in 5.2.9.1 through 5.2.9.5 are included in the user information/instructions.

5.2.9.8
Where the manufacturer of the escape webbing and the manufacturer of the manufacturer-supplied eye termination are the same, the user information/instructions for both the escape webbing and the manufacturer-supplied eye termination shall be permitted to be combined, as long as all required user information/instructions of the escape webbing and required user information/instructions of manufacturer-supplied eye termination as given in 5.2.9.1 through 5.2.9.5 are included in the user information/instructions.

5.2.10 – Moderate Elongation Laid Life Saving Rope User Information.
5.2.10.1
The manufacturer of moderate elongation laid life saving rope that is certified as being compliant with this
standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance
procedures, and retirement criteria for the product.

5.2.10.2
The manufacturer shall provide information for the user to consider prior to reusing moderate elongation
laid life saving rope, including that the rope be considered for reuse only if all of the following conditions are
met:

1. Rope has not been visually damaged.
2. Rope has not been exposed to heat, direct flame impingement, or abrasion.
3. Rope has not been subjected to any impact load.
4. Rope has not been exposed to liquids, solids, gases, mists, or vapors of any chemical or other
   material that can deteriorate rope.
5. Rope passes inspection when inspected by a qualified person following the manufacturer's
   inspection procedures both before and after each use.

5.2.10.3
The manufacturer shall provide information for the user regarding not using the moderate elongation laid
life saving rope and removing the rope from service if the rope does not meet all of the conditions in
5.2.10.2, if the rope does not pass inspection, or if there is any doubt about the safety or serviceability of
the rope.

5.2.10.4
The manufacturer shall provide information for the user regarding at least the following issues:

1. Inspecting the rope periodically according to the manufacturer's inspection procedure
2. Removing the rope from service and destroying it if the rope does not pass inspection or if there is
   any doubt about the safety or serviceability of the rope
3. Protecting the rope from abrasion
4. Not exposing the rope to flame or high temperature and carrying the rope where it will be protected
   as the rope could melt or burn and fail if exposed to flame or high temperature
5. Keeping the product label and user instructions/information after they are removed/separated from
   the rope and retaining them in the permanent rope record; copying the product label and user
   instructions/information and keeping the copies with the rope
6. Referring to the user instructions/information before and after each use
7. Cautioning that if the instructions/information are not followed, the user could suffer serious
   consequences

5.2.10.5
The manufacturer shall provide information for the user that additional information regarding victim
extrication devices can be found in NFPA 1500, Standard on Fire Department Occupational Safety and

Additional Proposed Changes

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Statement of Problem and Substantiation for Public Input

NFPA 1983 contains an extensive variety of products. The current format can be difficult to navigate and is not
easily followed by users and manufacturers. At the TC’s request, the document was reorganized for clarity and
ease of use. This input includes the language in TIA 12-1. No new material is contained in this input.
Submitter Information Verification

Submitter Full Name: Beverly Stutts
Organization: UL LLC
Street Address:
City:
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Zip:
Submittal Date: Mon Jan 05 14:46:08 EST 2015
Chapter 5  Labeling and Information

5.1  Product Label Requirements. Life Safety Rope

5.1.1  Life Safety Rope Label Requirements.

5.1.1.1  Each life safety rope item shall have a product label.

5.1.1.2  Where life safety rope is an integral and nonseparable piece of a manufactured system and that manufactured system is certified as compliant with this standard, the life safety rope shall be required to have at least the continuous identification tape specified in 5.1.1.13.

5.1.1.3  The life safety rope product label shall be permitted to be a hang tag affixed to each individual life safety rope or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the life safety rope.

5.1.1.4  All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high.

5.1.1.5  All worded portions of the required product label shall at least be in English.

5.1.1.6  Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.1.1.7  The certification organization's label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2.5 mm (\(\frac{3}{32}\) in.) high.

5.1.1.8*  Each life safety rope shall have the following compliance statement on the product label:


Class: ____________-use rope”

5.1.1.9  The class designation of the life safety rope that is required in 5.1.1.8 to be stated on the product label shall be as determined by the certification organization in accordance with Section 7.1.

5.1.1.10  In addition to the compliance statement specified in 5.1.1.8, at least the following information shall be provided on the product label:

“Minimum breaking strength: _____ kN Diameter: _____ mm
Type of fiber(s) _____________________________”

5.1.1.11  The minimum breaking strength value of the life safety rope, which is required in 5.1.1.10 to be stated on the product label, shall be permitted to be any value greater than the
actual “pass” requirement value determined by the certification testing in accordance with 7.1.1 or 7.1.2, as applicable, but shall not be greater than the calculated minimum breaking strength.

5.1.1.12 The diameter of the life safety rope, which is required in 5.1.1.10 to be stated on the product label, shall be as determined by the certification organization in accordance with 7.1.3 or 7.1.4, as applicable.

5.1.1.13* In addition to the compliance statement specified in 5.1.1.8, each life safety rope shall also be marked for its full length by insertion of a continuous identification tape(s). At least the following statement and information shall be legibly printed on the tape not less than every 1 m (39 in.).

“MEETS REQUIREMENTS FOR LIFE SAFETY ROPE OF NFPA 1983”

[Certification organization's label, symbol, or identifying mark ]

[Name of manufacturer]

[Year and quarter of manufacture (not coded)]

5.1.1.14 In addition to the compliance and information statements in 5.1.1.8, 5.1.1.10, and 5.1.1.13, at least the following information shall also be printed legibly on the product label(s).

All letters shall be at least 2 mm (5⁄64 in.) high.

(1) Manufacturer's name, identification, or designation
(2) Manufacturer's address
(3) Country of manufacture
(4) Manufacturer's product identification
(5) Model, style, lot, or serial number
(6) Elongation at 1.35 kN (300 lbf)
(7) Elongation at 2.7 kN (600 lbf)
(8) Elongation at 4.4 kN (1000 lbf)

5.2.1 5.1.2 Life Safety Rope User Information.

5.2.1.1 5.1.2.1 The manufacturer of life safety rope that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.2.1.2 5.1.2.2 The manufacturer shall provide information for the user to consider prior to reusing life safety rope, including that the rope be considered for reuse only if all of the following conditions are met:

(1) Rope has not been visually damaged.
(2) Rope has not been exposed to heat, direct flame impingement, or abrasion.
(3) Rope has not been subjected to any impact load.
(4) Rope has not been exposed to liquids, solids, gases, mists, or vapors of any chemical or other material that can deteriorate rope.
(5) Rope passes inspection when inspected by a qualified person following the manufacturer's inspection procedures both before and after each use.

5.2.1.3 5.1.2.3 The manufacturer shall provide information for the user regarding not using the life safety rope and removing the rope from service if the rope does not meet all of the conditions
in 5.2.1.2, if the rope does not pass inspection, or if there is any doubt about the safety or serviceability of the rope.

5.2.1.4 5.1.2.4 The manufacturer shall provide information for the user regarding at least the following issues:
(1)* Inspecting the rope periodically according to the manufacturer’s inspection procedure
(2) Removing the rope from service and destroying it if the rope does not pass inspection or if there is any doubt about the safety or serviceability of the rope
(3) Protecting the rope from abrasion
(4) Not exposing the rope to flame or high temperature and carrying the rope where it will be protected as the rope could melt or burn and fail if exposed to flame or high temperature
(5) Keeping the product label and user instructions/information after they are removed/separated from the rope and retaining them in the permanent rope record; copying the product label and user instructions/information and keeping the copies with the rope
(6) Referring to the user instructions/information before and after each use
(7) Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences

5.2.1.5 5.1.2.5 The manufacturer shall provide information for the user that additional information regarding moderate elongation laid life saving rope can be found in NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, and NFPA 1983, *Standard on Life Safety Rope and Equipment for Emergency Services*.

5.2.1.6 5.1.2.6 The manufacturer of life safety rope that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of life safety rope and a list of items that the records need to contain.
5.1.2 5.2  Escape Rope.

5.2.1 Escape Rope Label Requirements.

5.1.2.1 5.2.1.1* Each escape rope item shall have a product label.

5.1.2.2* Where escape rope is an integral and nonseparable piece of an escape system or fire escape manufactured system and that manufactured system is certified as compliant with this standard, the escape rope shall be required to have at least the continuous identification tape specified in 5.1.2.1.2.

5.1.2.3 5.2.1.3 The escape rope product label shall be permitted to be a hang tag affixed to each escape rope or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the escape rope.

5.1.2.4 5.2.1.4 All letters shall be at least 1.6 mm (\(\frac{1}{4}\) in.) \(2\text{mm (5/64in.)}\) high.

5.1.2.5 5.2.1.5 All worded portions of the required product label shall at least be in English.

5.1.2.6 5.2.1.6 Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.1.2.7 5.2.1.7 The certification organization's label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2.5 mm (\(\frac{3}{32}\) in.) high.

5.1.2.8 5.2.1.8 Each escape rope shall have the following compliance statement on the product label.

“THIS ROPE MEETS THE ESCAPE ROPE REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2017 EDITION.”

5.1.2.9 5.2.1.9* In addition to the compliance statement specified in 5.1.2.1.8, at least the following information shall be provided on the product label.

“MINIMUM BREAKING STRENGTH: ______ kN
DIAMETER: _____ mm
Type of fiber(s) _____________________________”

5.1.2.10 5.2.1.10 The minimum breaking strength value of the escape rope, which is required in 5.1.2.1.9 to be stated on the product label, shall be permitted to be any value greater than the actual “pass” requirement value determined by the certification testing in accordance with 7.2.1, but shall not be greater than the calculated minimum breaking strength.

5.2.1.11 The diameter of the escape rope, which is required in 5.1.2.1.9 to be stated on the product label, shall be as determined by the certification organization in accordance with 7.2.2.

5.1.2.12 5.2.1.12* In addition to the compliance statement specified in 5.1.2.1.8, each escape rope shall also be marked for its full length by insertion of a continuous identification tape(s). At least the following statement and information shall be legibly printed on the tape not less than every 1 m (39 in.):
“MEETS REQUIREMENTS FOR ESCAPE ROPE OF NFPA 1983”

[Certification organization's label, symbol, or identifying mark]

[Name of manufacturer]

[Year and quarter of manufacture (not coded)]

5.1.2.13 5.2.1.13  In addition to the compliance and information statements in 5.1.2.9, 5.1.2.10, and 5.1.2.12 5.2.1.9 and 5.2.1.10 at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (5/64 in.) high.

(1) Manufacturer's name, identification, or designation
(2) Manufacturer's address
(3) Country of manufacture
(4) Manufacturer's product identification
(5) Model, style, lot, or serial number
(6) Elongation at 1.35 kN (300 lb)
(7) Elongation at 2.7 kN (600 lb)
(8) Elongation at 4.4 kN (1000 lb)

5.2.2  Escape Rope, Escape Webbing, Fire Escape Rope, and Fire Escape Webbing User Information

5.2.2.1  The manufacturer of escape rope, escape webbing, fire escape rope, and fire escape webbing that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.2.2.2  The manufacturer shall provide information for the user regarding at least the following issues:
(1) Using the rope only with a life safety harness or escape belt
(2) Inspecting the rope periodically according to the manufacturers’ inspection procedure
(3) Removing the rope from service and destroying it if the rope does not pass inspection or if there is any doubt about the safety or serviceability of the rope
(4) Protecting the rope from abrasion
(5) Not exposing the rope to flame or high temperature and carrying the rope where it will be protected as the rope could melt or burn and fail if exposed to flame or high temperature
(6) Keeping the product label and user instructions/information after they are removed/separated from the rope for future reference
(7) Referring to the user instructions/information before and after each use
(8) Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences

5.2.2.3  The manufacturer shall provide information for the user that additional information regarding escape rope, escape webbing, fire escape rope, and fire escape webbing can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.
5.2.2.4 The manufacturer of escape rope, escape webbing, fire escape rope, and fire escape webbing that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of escape rope, escape webbing, fire escape rope, and fire escape webbing and a list of items that the records need to contain.
5.1.9 5.3 Escape Webbing.

5.3.1 Escape Webbing Label Requirements.

5.1.9.1 5.3.1.1 Escape webbing shall meet the labeling requirements in 5.1.2, excluding 5.1.2.8, 5.1.2.9, 5.1.2.10, 5.1.2.11, and 5.1.2.12 in 5.2.1, excluding 5.2.1.8, 5.2.1.9, 5.2.1.10, 5.2.1.11, and 5.2.1.12.

5.1.9.2 5.3.1.2 Each escape webbing shall have the following compliance statement on the product label:

“THIS WEBBING MEETS THE ESCAPE WEBBING REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2017 EDITION.”

5.1.9.3 5.3.1.3* In addition to the compliance statement specified in 5.1.9.3 5.3.1.2, at least the following information shall be provided on the product label:

“MINIMUM BREAKING STRENGTH: _______ kN PERIMETER: ______ mm
Type of fiber(s) _______________________________”

5.1.9.4 5.3.1.4 The perimeter of the escape webbing, which is required in 5.1.9.3 5.3.1.3 to be stated on the product label, shall be as determined by the certification organization in accordance with 7.9.2-7.3.2.

5.1.9.5 5.3.1.5 In addition to the compliance statement specified in 5.9.1.3 5.3.1.3, each escape webbing shall also be marked for its full length by insertion of a continuous identification tape(s). At least the following statement and information shall be legibly printed on the tape not less than every 1 m (39 in.).

“MEETS REQUIREMENTS FOR ESCAPE WEBBING OF NFPA 1983”

[Certification organization’s label, symbol, or identifying mark]
[Name of manufacturer]
[Year and quarter of manufacture (not coded)]

5.1.9.6 5.3.1.6 The minimum breaking strength value of the escape webbing, which is required in 5.1.9.3 5.3.1.3 to be stated on the product label, shall be permitted to be any value greater than the actual “pass” requirement value determined by the certification testing in accordance with 7.9.1-7.3.1, but shall not be greater than the calculated minimum breaking strength.

5.2.2—5.3.2 Escape Webbing User Information. Escape Rope, Escape Webbing, Fire Escape Rope, and Fire Escape Webbing User Information.

5.2.2.1 5.3.2.1 The manufacturer of escape rope, escape webbing, fire escape rope, and fire escape webbing that are is certified as being compliant with this standard shall furnish the
The manufacturer shall provide information for the user regarding at least the following issues:

1. Using the rope webbing only with a life safety harness or escape belt
2. Inspecting the rope webbing periodically according to the manufacturers' inspection procedure
3. Removing the rope webbing from service and destroying it if the rope webbing does not pass inspection or if there is any doubt about the safety or serviceability of the rope webbing
4. Protecting the rope webbing from abrasion
5. Not exposing the rope webbing to flame or high temperature and carrying the rope webbing where it will be protected as the rope webbing could melt or burn and fail if exposed to flame or high temperature
6. Keeping the product label and user instructions/information after they are removed/separated from the rope webbing for future reference
7. Referring to the user instructions/information before and after each use
8. Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences

The manufacturer shall provide information for the user that additional information regarding escape rope, escape webbing, fire escape rope, and fire escape webbing can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.

The manufacturer of escape rope, escape webbing, fire escape rope, and fire escape webbing that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of escape rope, escape webbing, fire escape rope, and fire escape webbing and a list of items that the records need to contain.
5.1.12 5.4  Fire Escape Rope.

5.4.1 Fire Escape Rope Label Requirements

5.1.12.1 5.4.1.1* Each fire escape rope item shall have a product label.

5.1.12.2 5.4.1.2* Where fire escape rope is an integral and nonseparable piece of a manufactured system and that manufactured system is certified as compliant with this standard, the fire escape rope shall be required to have at least the continuous identification tape specified in 5.4.1.2.12.

5.1.12.3 5.4.1.3 The fire escape rope product label shall be permitted to be a hang tag affixed to each fire escape rope or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the fire escape rope.

5.1.12.4 5.4.1.4 All letters shall be at least \(1.6 \text{ mm (1/16 in.)}\) \(2 \text{ mm (5/64 in.)}\).

5.1.12.5 5.4.1.5 All worded portions of the required product label shall be at least in English.

5.1.12.6 5.4.1.6 Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.1.12.7 5.4.1.7 The certification organization’s label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2.5 mm (3/32 in.) high.

5.1.12.8 5.4.1.8 Each fire escape rope shall have the following compliance statement on the product label:

"THIS ROPE MEETS THE FIRE ESCAPE ROPE REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2017 EDITION."

5.1.12.9 5.4.1.9* In addition to the compliance statement specified in 5.1.12.8 5.4.1.8, at least the following information shall be provided on the product label:

"MINIMUM BREAKING STRENGTH: _______ kN DIAMETER: ______ mm Type of fiber(s) _____________________________"

5.1.12.10 5.4.1.10 The minimum breaking strength value of the fire escape rope, which is required in 5.1.12.9 5.4.1.9, to be stated on the product label, shall be permitted to be any value greater than the actual “pass” requirement value determined by the certification testing in accordance with 7.2.1, but shall not be greater than the calculated minimum breaking strength.

5.1.12.11 5.4.1.11 The diameter of the fire escape rope, which is required in 5.1.12.9 5.4.1.9 to be stated on the product label, shall be as determined by the certification organization in accordance with 7.2.2.

5.1.12.12 5.4.1.12* In addition to the compliance statement specified in 5.1.12.9 5.4.1.9, each fire escape rope shall also be marked for its full length by insertion of a continuous identification
tape(s). At least the following statement and information shall be legibly printed on the tape not less than every 1 m (39 in.):

“MEETS REQUIREMENTS FOR FIRE ESCAPE ROPE OF NFPA 1983”

[Certification organization’s label, symbol, or identifying mark]

[Name of manufacturer]

[Year and quarter of manufacture (not coded)]

5.1.12.13 5.4.1.13 In addition to the compliance and information statements in 5.1.12.8, 5.1.12.9, and 5.1.12.12 5.4.1.8, and 5.4.1.9, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (5/64 in.) high.

(1) Manufacturer’s name, identification, or designation
(2) Manufacturer’s address
(3) Country of manufacture
(4) Manufacturer’s product identification
(5) Model, style, lot, or serial number
(6) Elongation at 1.35 kN (300 lb)
(7) Elongation at 2.7 kN (600 lb)
(8) Elongation at 4.4 kN (1000 lb)

5.2.2–5.4.2 Fire Escape Rope User Information. Escape Rope, Escape Webbing, Fire Escape Rope, and Fire Escape Webbing User Information.

5.2.2.1–5.4.2.1 The manufacturer of escape rope, escape webbing, fire escape rope, and fire escape webbing that are is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.2.2.2–5.4.2.2 The manufacturer shall provide information for the user regarding at least the following issues:
(1) Using the rope only with a life safety harness or escape belt
(2) Inspecting the rope periodically according to the manufacturers’ inspection procedure
(3) Removing the rope from service and destroying it if the rope does not pass inspection or if there is any doubt about the safety or serviceability of the rope
(4) Protecting the rope from abrasion
(5) Not exposing the rope to flame or high temperature and carrying the rope where it will be protected as the rope could melt or burn and fail if exposed to flame or high temperature
(6) Keeping the product label and user instructions/information after they are removed/separated from the rope for future reference
(7) Referring to the user instructions/information before and after each use
(8) Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences

5.2.2.3–5.4.2.3 The manufacturer shall provide information for the user that additional information regarding escape rope, escape webbing, fire escape rope, and fire escape webbing can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health.

5.2.2.4–5.4.2.4 The manufacturer of escape rope, escape webbing, fire escape rope, and fire escape webbing that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of escape rope, escape webbing, fire escape rope, and fire escape webbing and a list of items that the records need to contain.
5.1.10 5.5 Fire Escape Webbing

5.5.1  Label Requirements for Fire Escape Webbing

5.1.10.1 5.5.1.1 Fire escape webbing shall meet the labeling requirements in 5.1.2 5.2.1, escape rope, excluding 5.1.2.8, 5.1.2.9, 5.1.2.10, 5.1.2.11, and 5.1.2.12 5.2.1.8, 5.2.1.9, 5.2.1.10, 5.2.1.11, and 5.2.1.12.

5.5.10.2 5.5.1.2 Each fire escape webbing shall have the following compliance statement on the product label:


5.5.10.3 5.5.1.3* In addition to the compliance statement specified in 5.1.10.2 5.5.1.2, at least the following information shall be provided on the product label:

“Minimum breaking strength: _____ kN Perimeter: _____ mm
Type of fiber(s) _______________________________”

5.5.10.4 5.5.1.4 The perimeter of the fire escape webbing, which is required in 5.1.10.3 5.5.1.3 to be stated on the product label, shall be as determined by the certification organization in accordance with 7.5.2.

5.1.10.5 5.5.1.5 In addition to the compliance statement specified in 5.1.10.2 5.5.1.2, each fire escape webbing shall also be marked for its full length by insertion of a continuous identification tape(s). At least the following statement and information shall be legibly printed on the tape not less than every 1 m (39 in.).

“Meets requirements for fire escape webbing of NFPA 1983”
[Certification organization’s label, symbol, or identifying mark]
[Name of manufacturer]
[Year and quarter of manufacture (not coded)]

5.5.1.6 The minimum breaking strength value of the escape webbing, which is required in 5.5.1.3 to be stated on the product label, shall be permitted to be any value greater than the actual “pass” requirement value determined by the certification testing in accordance with 7.5.1, but shall not be greater than the calculated minimum breaking strength.

5.2.2–5.5.2 Fire Escape Webbing User Information, Escape Rope, Escape Webbing, Fire Escape Rope, and Fire Escape Webbing User Information

5.2.2.1–5.5.2.1 The manufacturer of escape rope, escape webbing, fire escape rope, and fire escape webbing that are is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.
5.2.2.2–5.5.2.2 The manufacturer shall provide information for the user regarding at least the following issues:

1. Using the rope webbing only with a life safety harness or escape belt
2. Inspecting the rope webbing periodically according to the manufacturers' inspection procedure
3. Removing the rope webbing from service and destroying it if the rope webbing does not pass inspection or if there is any doubt about the safety or serviceability of the rope webbing
4. Protecting the rope webbing from abrasion
5. Not exposing the rope webbing to flame or high temperature and carrying the rope webbing where it will be protected as the rope webbing could melt or burn and fail if exposed to flame or high temperature
6. Keeping the product label and user instructions/information after they are removed/separated from the rope webbing for future reference
7. Referring to the user instructions/information before and after each use
8. Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences

5.2.2.3–5.5.2.3 The manufacturer shall provide information for the user that additional information regarding escape rope, escape webbing, fire escape rope, and fire escape webbing can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.

5.2.2.4–5.3.2.4 The manufacturer of escape rope, escape webbing, fire escape rope, and fire escape webbing that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of escape rope, escape webbing, fire escape rope, and fire escape webbing and a list of items that the records need to contain.
5.1.6.5.6 Throwlines.

5.6.1 Throwline Label Requirements

5.1.6.1 5.6.1.1* Each throwline item shall have a product label.

5.1.6.2 5.6.1.2 Where a throwline is an integral and nonseparable piece of a manufactured system and that manufactured system is certified as compliant with this standard, the throwline shall be required to have at least the continuous identification tape specified in 5.1.6.12.

5.1.6.3 5.6.1.3 The throwline product label shall be permitted to be a hang tag affixed to each individual throwline or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the throwline.

5.1.6.4 5.6.1.4 All letters shall be at least 2 mm (5/64 in.) high.

5.1.6.5 5.6.1.5 All worded portions of the required product label shall at least be in English.

5.1.6.6 5.6.1.6 Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.1.6.7 5.6.1.7 The certification organization's label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2 mm (5/64 in.) high.

5.1.6.8 5.6.1.8* Each throwline shall have the following compliance statement on the product label:


5.1.6.9 5.6.1.9 In addition to the compliance statement specified in 5.1.6.8, at least the following information shall be provided on the product label.

“Minimum breaking strength: ______ kN Diameter: ______ mm
Type of fiber(s) _____________________________”

5.1.6.10 5.6.1.10 The minimum breaking strength value of the throwline, which is required in 5.1.6.9 to be stated on the product label, shall be permitted to be any value greater than the actual “pass” requirement value determined by the certification testing in accordance with 7.3.1, but shall not be greater than the calculated minimum breaking strength.

5.1.6.11 5.6.1.11 The diameter of the throwline, which is required in 5.1.6.8 to be stated on the product label, shall be as determined by the certification organization in accordance with 7.3.2.

5.1.6.12 5.6.1.12 In addition to the compliance statement specified in 5.1.6.8, each throwline shall also be marked for its full length by insertion of a continuous identification tape(s). At least the following statement and information shall be legibly printed on the tape not less than every 1 m (39 in.):
5.1.6.13 5.6.1.13 In addition to the compliance and information statements in 5.1.6.8 and 5.1.6.9, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (5/64 in.) high.

(1) Manufacturer's name, identification, or designation
(2) Manufacturer's address
(3) Country of manufacture
(4) Manufacturer's product identification
(5) Model, style, lot, or serial number

5.2.6 5.6.2 Water-Rescue Throwline User Information. The manufacturer of a throwline that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.
5.1.14 5.7 Moderate Elongation Laid Life Saving Rope.

5.7.1. Moderate Elongation Laid Life Saving Rope Label Requirements

5.1.14.1 5.7.1.1 Each moderate elongation laid life saving rope shall have a product label.

5.1.14.2 5.7.1.2 The moderate elongation laid life saving rope product label shall be permitted to be a hang tag affixed to each rope or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the moderate elongation laid life saving rope.

5.1.14.3 5.7.1.3 All letters shall be at least 2 mm (5/64 in.) high.

5.1.14.4 5.7.1.4 All worded portions of the required product label shall be at least in English.

5.1.14.5 5.7.1.5 Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.1.14.6 5.7.1.6 The certification organization’s label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2.5 mm (3/32 in.) high.

5.1.14.7 5.7.1.7 Each moderate elongation laid life saving rope shall have the following compliance statement on the product label:


5.1.14.8 5.7.1.8 In addition to the compliance statement specified in 5.1.14.7 5.7.1.7, at least the following information shall be provided on the product label:

“Minimum breaking strength: ___ kN
Diameter: ____ mm
Type of Fiber(s): ______________;”

5.1.14.9 5.7.1.9 The minimum breaking strength value of the moderate elongation laid life saving rope, which is required in 5.1.14.8 5.7.1.8 to be stated on the product label, shall be permitted to be any value greater than the actual “pass” requirement value determined by the certification testing in accordance with 7.14.17.7.1, but shall not be greater than the calculated minimum breaking strength.

5.1.14.10 5.7.1.10 The diameter of the moderate elongation laid life saving rope, which is required in 5.1.14.8 5.7.1.8 to be stated on the product label, shall be as determined by the certification organization in accordance with 7.14.2 7.7.2.

5.1.14.11 5.7.1.11 In addition to the compliance statement specified in 5.1.14.7 5.7.1.7, each moderate elongation laid life saving rope shall also be marked for its full length by insertion of a continuous identification tape(s). At least the following statement and information shall be legibly printed on the tape not less than every 1 m (39 in.):
“MEETS REQUIREMENTS FOR MODERATE ELONGATION LAID LIFE SAVING ROPE OF NFPA 1983”

[Certification organization’s label, symbol, or identifying mark]

[Name of manufacturer]

[Year and quarter of manufacture (not coded)]

5.1.14.12 5.7.1.12 In addition to the compliance and information statements specified in 5.1.14.7, 5.1.14.8, and 5.1.14.11, 5.7.1.7, 5.7.1.8, and 5.7.1.11, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (5/64 in.) high.

(1) Manufacturer’s name, identification, or designation
(2) Manufacturer’s address
(3) Country of manufacture
(4) Manufacturer’s product identification
(5) Model, style, lot, or serial number
(6) Elongation at 1.35 kN (300 lbf)
(7) Elongation at 2.7 kN (600 lbf)
(8) Elongation at 4.4 kN (1000 lbf)

5.2.10–5.7.2 Moderate Elongation Laid Life Saving Rope User Information.

5.2.10.1 5.7.2.1 The manufacturer of moderate elongation laid life saving rope that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.2.10.2 5.7.2.2 The manufacturer shall provide information for the user to consider prior to reusing moderate elongation laid life saving rope, including that the rope be considered for reuse only if all of the following conditions are met:

(1) Rope has not been visually damaged.
(2) Rope has not been exposed to heat, direct flame impingement, or abrasion.
(3) Rope has not been subjected to any impact load.
(4) Rope has not been exposed to liquids, solids, gases, mists, or vapors of any chemical or other material that can deteriorate rope.
(5) Rope passes inspection when inspected by a qualified person following the manufacturer’s inspection procedures both before and after each use.

5.2.10.3–5.7.2.3 The manufacturer shall provide information for the user regarding not using the moderate elongation laid life saving rope and removing the rope from service if the rope does not meet all of the conditions in 5.2.10.2, if the rope does not pass inspection, or if there is any doubt about the safety or serviceability of the rope.

5.2.10.4–5.7.2.4 The manufacturer shall provide information for the user regarding at least the following issues:

(1) Inspecting the rope periodically according to the manufacturer’s inspection procedure
(2) Removing the rope from service and destroying it if the rope does not pass inspection or if there is any doubt about the safety or serviceability of the rope.

(3) Protecting the rope from abrasion

(4) Not exposing the rope to flame or high temperature and carrying the rope where it will be protected as the rope could melt or burn and fail if exposed to flame or high temperature.

(5) Keeping the product label and user instructions/information after they are removed/separated from the rope and retaining them in the permanent rope record; copying the product label and user instructions/information and keeping the copies with the rope.

(6) Referring to the user instructions/information before and after each use.

(7) Cautioning that if the instructions/information are not followed, the user could suffer serious consequences.

5.2.10.5 5.7.2.5 The manufacturer shall provide information for the user that additional information regarding victim extrication devices moderate elongation laid life saving rope can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.

5.2.10.6 5.7.2.6 The manufacturer of moderate elongation laid life saving ropes that are certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of moderate elongation laid life saving rope and a list of items that the records need to contain. (added through TIA)
5.1.13.5 5.8 Manufacturer-Supplied Eye Termination.

5.8.1 Manufacturer-Supplied Eye Termination Label Requirements

5.1.13.1 5.8.1.1 Each manufacturer-supplied eye termination shall have a product label.

5.1.13.2 5.8.1.2 The manufacturer-supplied eye termination product label shall be permitted to be a hang tag affixed to each manufacturer-supplied eye termination or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the manufacturer-supplied eye termination.

5.1.13.3 5.8.1.3 All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high.

5.1.13.4 5.8.1.4 All worded portions of the required product label shall be at least in English.

5.1.13.5 5.8.1.5 Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.1.13.6 5.8.1.6 The certification organization’s label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2.5 mm (\(\frac{3}{32}\) in.) high.

5.1.13.7 5.8.1.7 Each manufacturer-supplied eye termination shall have the following compliance statement on the product label:

“THIS MANUFACTURER-SUPPLIED EYE TERMINATION MEETS THE REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2017 EDITION

MBS: ______ kN”

5.1.13.8 5.8.1.8 In addition to the compliance statement specified in 5.1.13.7 5.1.7, at least the following information shall be provided on the product label:

“THIS (ROPE OR ESCAPE WEBBING) IS CERTIFIED AS CLASS: ______ (ROPE OR WEBBING) WITH MBS OF ______ kN

DIAMETER: ______ mm

Type of Fibers: ______________,

Thread Fiber: ______ ”

5.1.13.9 5.8.1.9 In addition to the compliance and information statements in 5.1.13.7 and 5.1.13.8, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high.

(1) Manufacturer’s name, identification, or designation

(2) Manufacturer’s address

(3) Country of manufacturer

(4) Manufacturer’s product identification

(5) Model, style, lot, or serial number

5.1.13.10 5.8.1.10 Where the manufacturer of the life safety, escape, or fire escape rope, and the manufacturer of the manufacturer supplied eye termination are the same, the labeling for both the
rope and the manufacturer-supplied eye termination shall be permitted to be combined, as long as all required product label information of the rope and of the manufacturer-supplied eye termination as given in 5.1.13.1 through 5.1.13.9, 5.8.1.1 through 5.8.1.9 is included on the label.

5.1.13.11 5.8.1.11 Where the manufacturer of the manufactured system and the manufacturer of the manufacturer-supplied eye termination are the same, the labeling for both the system and the manufacturer-supplied eye termination shall be permitted to be combined, as long as all required product label information of the manufactured system and of the manufacturer-supplied eye termination as given in 5.1.13.1 through 5.1.13.9 is included on the label. Where the manufacturer of the escape or fire escape webbing and the manufacturer of the manufacturer-supplied eye termination are the same, the labeling for both the escape webbing and the manufacturer-supplied eye termination shall be permitted to be combined, as long as all required product label information of the escape webbing and of the manufacturer-supplied eye termination as given in 5.1.13 through 5.1.13.9, 5.8.1.1 through 5.8.1.9 is included on label.

5.1.13.12 Where the manufacturer of the escape webbing and the manufacturer of the manufacturer-supplied eye termination are the same, the labeling for both the escape webbing and the manufacturer-supplied eye termination shall be permitted to be combined, as long as all required product label information of the escape webbing and of the manufacturer-supplied eye termination as given in 5.1.13 through 5.1.13.9 is included on label.

5.8.1.12 Where the manufacturer of the throwline and the manufacturer of the manufacturer-supplied eye termination are the same, the labeling for both the throwline and the manufacturer-supplied eye termination shall be permitted to be combined, as long as all required product label information of the throwline and of the manufacturer-supplied eye termination as given in 5.8.1.1 through 5.8.1.9 is included on label.

5.8.1.13 Where the manufacturer of the manufactured system, escape system, or fire escape system, and the manufacturer of the manufacturer-supplied eye termination are the same, the labeling for both the system and the manufacturer-supplied eye termination shall be permitted to be combined, as long as all required product label information of the manufactured system and of the manufacturer-supplied eye termination as given in 5.8.1.1 through 5.8.1.9 is included on the label.

5.2.9 5.8.2 Manufacturer-Supplied Eye Termination User Information.

5.2.9.1 5.8.2.1 The manufacturer of the manufacturer-supplied eye termination that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.2.9.2 5.8.2.2 The manufacturer shall provide information for the user to consider prior to reusing manufacturer-supplied eye termination, including that the rope be considered for reuse only if all of the following conditions are met:

(1) Manufacturer-supplied eye termination has not been visually damaged.

(2) Manufacturer-supplied eye termination has not been exposed to heat, direct flame impingement, or abrasion.

(3) Manufacturer-supplied eye termination has not been subjected to any impact load.
(4) Manufacturer-supplied eye termination has not been exposed to liquids, solids, gases, mists, or vapors of any chemical or other material that can deteriorate the manufacturer-supplied eye termination.

(5) Manufacturer-supplied eye termination passes inspection when inspected by a qualified person following the manufacturer’s inspection procedures both before and after each use.

5.2.9.3 5.8.2.3 The manufacturer shall provide information for the user regarding not using the manufacturer-supplied eye termination and removing the manufacturer-supplied eye termination from service if the rope does not meet all of the conditions in 5.2.9.2, if the manufacturer-supplied eye termination does not pass inspection, or if there is any doubt about the safety or serviceability of the manufacturer-supplied eye termination.

5.2.9.4 5.8.2.4 The manufacturer shall provide information for the user regarding at least the following issues:

(1) Inspecting the manufacturer-supplied eye termination periodically according to the manufacturer’s inspection procedure

(2) Removing the manufacturer-supplied eye termination from service and destroying it if the manufacturer-supplied eye termination does not pass inspection or if there is any doubt about the safety of the manufacturer-supplied eye termination

(3) Protecting the manufacturer-supplied eye termination from abrasion

(4) Not exposing the manufacturer-supplied eye termination to flame or high temperature and carrying the manufacturer-supplied eye termination where it will be protected as the manufacturer-supplied eye termination could melt or burn and fail if exposed to flame or high temperature

(5) Keeping the product label and user instructions/information after they are removed/separated from the manufacturer-supplied eye termination and retaining them in the permanent manufacturer-supplied eye termination record: copying the product label and user information/instructions and keeping copies with the manufacturer-supplied eye termination

(6) Referring to the user instructions/information before and after each use

(7) Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences

5.2.9.5 5.8.2.5 The manufacturer of manufacturer-supplied eye termination that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of manufacturer-supplied eye termination and a list of items that the records need to contain.

5.2.9.5.1 5.8.2.5.1 The suggested inspection records shall include inspection of the loop of the eye, inspection for worn or broken thread in sewn termination, and inspection of contact point of swage and rope in swage termination.

5.2.9.6 5.8.2.6 Where the manufacturer of the rope and the manufacturer of the manufacturer-supplied eye termination are the same, the user information/instructions for both the rope and the manufacturer-supplied eye termination shall be permitted to be combined, as long as all required user information/instructions of the rope and required user information/instructions of manufacturer-supplied eye termination as given in 5.2.9.1 through 5.2.9.5 5.8.2.1 through 5.8.2.5.1 are included in the user information/instructions.
5.2.9.8–5.8.2.7 Where the manufacturer of the escape webbing and the manufacturer of the manufacture-supplied eye termination are the same, the user information/instructions for both the escape webbing and the manufacturer-supplied eye termination shall be permitted to be combined, as long as all required user information/instructions of the escape webbing and required user information/instructions of manufacturer-supplied eye termination as given in 5.2.9.1 through 5.2.9.5, 5.8.2.1 through 5.8.2.5.1 are included in the user information/instructions.

5.8.2.8 Where the manufacturer of the throwline and the manufacturer of the manufacturer-supplied eye termination are the same, the user information/instructions for both the throwline and the manufacturer-supplied eye termination shall be permitted to be combined, as long as all required user information/instructions of the throwline and required user information/instructions of manufacturer-supplied eye termination as given in 5.8.2.1 through 5.8.2.5.1 are included in the user information/instructions.

5.2.9.7 5.8.2.9 Where the manufacturer of the manufactured system and the manufacturer of the manufacture-supplied eye termination are the same, the user information/instructions for both the manufactured system and the manufacturer-supplied eye termination shall be permitted to be combined, as long as all required user information/instructions of the manufactured system and required user information/instructions of the manufacturer-supplied eye termination as given in 5.2.9.1 through 5.2.9.5, 5.8.2.1 through 5.8.2.5.1 are included in the user information/instructions.

5.8.2.10 The manufacturer shall provide information for the user that additional information regarding manufacturer-supplied eye termination can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.
5.9.1.5 Each life safety harness item shall have a product label.

5.9.1.6 Harnesses used in manufactured systems shall be required to be individually labeled.

5.9.1.7 Harness product labels shall be embossed, printed, sewn, stapled, riveted, or otherwise permanently attached to the harness.

5.9.1.8 Harness product labels shall be conspicuously located on each harness when the harness is properly assembled with all components in place.

5.9.1.9 All letters shall be at least 2 mm (5/64 in.) high.

5.9.1.10 Multiple label pieces shall be permitted in order to carry all statements and information required to be on the product label; however, all label pieces comprising the entire product label shall be located adjacent to each other.

5.9.1.11 All worded portions of the required product label shall at least be in English.

5.9.1.12 Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.9.1.13 The certification organization's label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2.5 mm (3/32 in.) high.

5.9.1.14 Where the life safety harness is certified as compliant with only the nonoptional requirements of the standard and is not certified with the optional flame resistance requirements, the following statement shall be printed legibly on the product label:

"THIS LIFE SAFETY HARNESS MEETS THE LIFE SAFETY HARNESS REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2017, CLASS ________. THIS HARNESS IS NOT FLAME-RESISTANT! DO NOT REMOVE THIS LABEL!"

5.9.1.15 Where the life safety harness is certified as compliant with nonoptional requirements of this standard and also certified as compliant with the optional flame resistance requirements specified in 6.3.9, the following statement shall be printed legibly on the product label:

In addition to the compliance statement specified in 5.1.3.10 or 5.1.3.11, at least the following information shall be provided on the product label:

1. For Class II harness: “Fits waist size ________”
2. For one-piece Class III harness: “Fits waist size ______, Fits height ______” or “Fits chest size ________, Fits height ________”
3. For multiple-piece Class III harness: “Fits waist size ______, Fits height ______” or “Fits chest size ________, Fits height _________”
   This is one part of a multiple-piece harness and must be used in conjunction with component part number ___ in order to fully meet the criteria of Class ___ harness.”

The class designation of the life safety harness required to be stated on the product label(s) shall be as determined by the certification organization in accordance with 6.3.1.6.9.1.

In addition to the compliance and information statements in 5.1.3.10, 5.1.3.12, and 5.1.3.14, 5.9.1.10, 5.9.1.12, and 5.9.1.15, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (5/64 in.) high.

1. Manufacturer's name, identification, or designation
2. Manufacturer's address
3. Country of manufacture
4. Manufacturer's product identification
5. Model, style, lot, or serial number

Where detachable components must be used with a life safety harness in order for the life safety harness to be compliant with this standard, at least the following statement and information shall also be printed legibly on the product label of the life safety harness. All letters shall be at least 2.5 mm (3/32 in.) high. The detachable component(s) shall be listed following the statement by type, identification, and how properly used.

“TO BE COMPLIANT WITH NFPA 1983, THE FOLLOWING ADDITIONAL COMPONENTS MUST BE USED IN CONJUNCTION WITH THIS LIFE SAFETY HARNESS:”
   [The detachable component(s) shall be listed here.]

Life Safety Harness User Information.

The manufacturer of life safety harnesses that are certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

The manufacturer shall provide information for the user regarding at least the following issues:
1. Inspecting the harness periodically according to the manufacturer's inspection procedure.
(2) Removing the harness from service and destroying it if the harness does not pass inspection or if there is any doubt about the safety or serviceability of the harness.

(3) For a life safety harness certified to only the nonoptional requirements of the standard, not exposing the harness to flame or high temperature and carrying the harness where it will be protected, as the harness could melt or burn and fail if exposed to flame or high temperature.

(4) Repairing the harness only in accordance with the manufacturer's instructions.

(5) Keeping the user instructions/information after they are separated from the harness and retaining them in a permanent record; copying the user instructions/information and keeping the copy with the harness.

(6) Referring to the user instructions/information before and after each use.

(7) Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences.

5.2.3.3 5.2.9.3 The manufacturer shall provide information for the user that additional information regarding life safety harnesses can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.

5.2.3.4 5.2.9.4 The manufacturer of life safety harnesses that are certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of life safety harnesses and a list of items that the records need to contain.

5.2.3.5 5.2.9.5 The manufacturer of life safety harnesses that are certified as being compliant with this standard shall indicate that tie-off is required for webbing ends if tie-off of webbing end(s) was required during testing. The instructions shall include location(s) and method(s) with text and/or illustrations.
5.1.4 5.10 Belts.

5.10.1 Belts Label Requirements.

5.1.4.1 5.10.1.1 Each belt item shall have a product label.

5.1.4.2 5.10.1.2 Belts used in manufactured systems shall be required to be individually labeled.

5.1.4.3 5.10.1.3 Belt product labels shall be embossed, printed, sewn, stapled, riveted, or otherwise permanently attached to the belt.

5.1.4.4 5.10.1.4 Belt product labels shall be conspicuously located on each belt when the belt is properly assembled with all components in place.

5.1.4.5–5.10.1.5 All letters shall be at least 2 mm (5/64 in.) high.

5.1.4.6 5.10.1.6 Multiple label pieces shall be permitted in order to carry all statements and information required to be on the product label; however, all label pieces comprising the entire product label shall be located adjacent to each other.

5.1.4.7 5.10.1.7 All worded portions of the required product label shall at least be in English.

5.1.4.8–5.10.1.8 Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.1.4.9 5.10.1.9 The certification organization's label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2.5 mm (3/32 in.) high.

5.1.4.10 5.10.1.10 Where the belt is certified as compliant with only the nonoptional requirements of the standard and is not certified with the optional flame resistance requirements, the following statement shall be printed legibly on the product label:

“THIS BELT MEETS THE BELT REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2017 EDITION, TYPE ____________. THIS BELT IS NOT FLAME-RESISTANT! DO NOT REMOVE THIS LABEL!”

5.1.4.11–5.10.1.11 Where the belt is certified as compliant with nonoptional requirements of this standard and also certified as compliant with the optional flame resistance requirements specified in 6.4.9, the following statement shall be printed legibly on the product label:


5.1.4.12 5.10.1.12 In addition to the compliance statement specified in 5.1.4.10 or 5.1.4.11 5.10.1.10 or 5.10.1.11, at least the following information shall be provided on the product label:

“Fits waist size ________”
5.1.4.13 5.10.1.13 The type designation of belt required to be stated on the product label shall be as determined by the certification organization in accordance with 6.4.16.10.1.

5.1.4.14 5.10.1.14 In addition to the compliance and information statements in 5.1.4.10, 5.1.4.12, and 5.1.4.15, or 5.10.1.11, 5.10.12, and 5.10.1.15, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high.

1. Manufacturer's name, identification, or designation
2. Manufacturer's address
3. Country of manufacture
4. Manufacturer's product identification
5. Model, style, lot, or serial number

5.1.4.15 5.10.1.15 Where detachable components must be used with the belt in order for the belt to be compliant with this standard, at least the following statement and information shall also be printed legibly on the product label of the belt. All letters shall be at least 2.5 mm (\(\frac{3}{32}\) in.) high. The detachable component(s) shall be listed following the statement by type, identification, and how properly used.

“TO BE COMPLIANT WITH NFPA 1983, THE FOLLOWING ADDITIONAL COMPONENTS MUST BE USED IN CONJUNCTION WITH THIS BELT:”
[The detachable component(s) shall be listed here.]

5.2.4–5.10.2 Belt User Information.

5.2.4.1–5.10.2.1 The manufacturer of belts that are certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.2.4.2–5.10.2.2 The manufacturer shall provide information for the user regarding at least the following issues:
1. Inspecting the belt periodically according to the manufacturer's inspection procedure.
2. Removing the belt from service and destroying it if the belt does not pass inspection or if there is any doubt about the safety or serviceability of the belt.
3. For belts certified to only the nonoptional requirements of the standard, not exposing the belt to flame or high temperature and carrying the belt where it will be protected, as the belt could melt or burn and fail if exposed to flame or high temperature.
4. Repairing the belt only in accordance with the manufacturer's instructions.
5. Keeping the user instructions/information after they are separated from the belt and retaining them in a permanent record; copying the user instructions/information and keeping the copy with the belt.
6. Referring to the user instructions/information before and after each use.
7. Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences.
5.2.4.3–5.10.2.3 The manufacturer shall provide information for the user that additional information regarding belts can be found in NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, and NFPA 1983, *Standard on Life Safety Rope and Equipment for Emergency Services*.

5.2.4.4–5.10.2.4 The manufacturer of belts that are certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of belts and a list of items that the records need to contain.

5.2.4.5–5.10.2.5 The manufacturer of belts that are certified as being compliant with this standard shall indicate that tie-off of webbing end(s) is required for webbing end(s) if tie-off of webbing end(s) was required during testing. The instructions shall include location(s) and method(s) with text and/or illustrations.
5.1.7 5.11 Victim Extrication Device.

5.11.1 Victim Extrication Device Label Requirements.

5.1.7.1 5.11.1.1 Each victim extrication device shall have a product label.

5.1.7.2 5.11.1.2 Each victim extrication device shall have a product label stamped, engraved, or otherwise permanently marked with the portions of the product label information.

5.1.7.2.1 5.11.1.2.1 Each victim extrication device shall display the mark or logo of the certification organization, and the manufacturer's name or identifying mark.

5.1.7.3 5.11.1.3 All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high.

5.1.7.4–5.11.1.4 Multiple label pieces shall be permitted in order to carry all statements and information required to be on the product label; however, all label pieces comprising the entire product label shall be located adjacent to each other.

5.1.7.5–5.11.1.5 All worded portions of the required product label shall be at least in English.

5.1.7.6 5.11.1.6 Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.1.7.7–5.11.1.7 The certification organization's label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high.

5.1.7.8 5.11.1.8 Each victim extrication device shall have the following compliance statement on the product label:

"MEETS THE VICTIM EXTRICATION DEVICE REQUIREMENTS OF NFPA 1983,

STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES,

2017 EDITION, CLASS _______."

5.1.7.9–5.11.1.9 In addition to the compliance and information statements in 5.1.7.8–5.11.1.8, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high.

(1) Manufacturer's name, identification, or designation
(2) Manufacturer's address
(3) Country of manufacture
(4) Manufacturer's product identification
(5) Model, style, lot, or serial number

5.1.7.10 5.11.1.10 Where detachable components must be used with a victim extrication device in order for the device to be compliant with this standard, at least the following statement and information shall also be printed legibly on the product label of the device. All labels shall be at least 2 mm (\(\frac{5}{64}\) in.) high. The detachable components shall be listed following the statement by type, identification, and how properly used.
“TO BE COMPLIANT WITH NFPA 1983, THE FOLLOWING ADDITIONAL COMPONENTS MUST BE USED IN CONJUNCTION WITH THIS VICTIM EXTRICATION DEVICE:” [The detachable component(s) shall be listed here.]

5.2.7  5.11.2  Victim Extrication Device User Information.

5.2.7.1  5.11.2.1  The manufacturer of the victim extrication device that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.2.7.2  5.11.2.2  The manufacturer shall provide information for the user regarding at least the following issues:

1. Inspecting the victim extrication device periodically according to the manufacturer's inspection procedure
2. Removing the victim extrication device from service if the equipment does not pass inspection or if there is any doubt about the safety or serviceability of the equipment
3. Maintaining the victim extrication device in accordance with the manufacturer's instructions where metal components are subjected to corrosion or deterioration
4. Returning victim extrication device to the manufacturer or to a qualified inspection person/center if the equipment is dropped or impact-loaded
5. Not exposing any software component of the victim extrication device to flame or high temperature and carrying the equipment where it will be protected as it could melt or burn and fail if exposed to flame or high temperature
6. Repairing the victim extrication device only in accordance with the manufacturer's instructions
7. Keeping the user instructions/information after they are separated from the victim extrication device and retaining them in a permanent record; copying the user instructions/information and keeping the copy with the equipment
8. Referring to the user instructions/information before and after each use
9. Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences

5.2.7.3  5.11.2.3  The manufacturer of a victim extrication device that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of the victim extrication device and a list of items that the records need to contain.
5.12 End-to-End Straps.

5.12.1 End-to-End Straps Label Requirements.

5.12.1.1 Each end-to-end strap shall have a product label.

5.12.1.2 End-to-End strap labels shall be embossed, printed, sewn, stapled, riveted, or otherwise permanently attached to the strap.

5.12.1.3 End-to-End strap labels shall be conspicuously located on each strap when the strap is properly assembled with all components in place.

5.12.1.4 All letters shall be at least 2 mm (5/64 in.) high.

5.12.1.5 Multiple label pieces shall be permitted in order to carry all statements and information required to be on the product label; however, all label pieces comprising the entire product label shall be located adjacent to each other.

5.12.1.6 All worded portions of the required product label shall at least be in English.

5.12.1.7 Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.12.1.8 The certification organization’s label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2 mm (5/64 in.) high.

5.12.1.9 End-to-End Strap labels shall display a “G” for general use and “T” for technical use. The designation “G” or “T” shall be designated in accordance with 6.12.1.

5.12.1.10 Each end-to-end strap shall have the following compliance statement on the product label:

“MEETS THE END-TO-END STRAP REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2017 EDITION”

5.12.1.11 In addition to the compliance statement specified in 5.12.1.10, the following information shall be provided on the product label:

“MINIMUM BREAKING STRENGTH OF _______ kN WHEN PULLED END TO END.” (TIA)

5.12.1.12 In addition to the compliance and information statements in 5.12.1.9, 5.12.1.10, and 5.12.1.11, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (5/64 in.) high.

(1) Manufacturer’s name, identification, or designation
(2) Manufacturer’s address
(3) Country of manufacture
(4) Manufacturer’s product identification
(5) Model, style, lot, or serial number
5.12.2 End-to-End Strap User Information

5.12.2.1 The manufacturer of end-to-end straps that are certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.12.2.2 The manufacturer shall provide information for the user regarding at least the following issues:

1. Inspecting the strap periodically according to the manufacturer's inspection procedure.
2. Removing the strap from service if the equipment does not pass inspection or if there is any doubt about the safety or serviceability of the strap.
3. Maintaining the strap in accordance with the manufacturer's instructions where metal components are subjected to corrosion or deterioration.
4. Returning straps to the manufacturer or to a qualified inspection person/center if the strap is dropped or impact-loaded.
5. Not exposing the strap to flame or high temperature and carrying the strap where it will be protected as it could melt or burn and fail if exposed to flame or high temperature.
6. Repairing the strap only in accordance with the manufacturer's instructions.
7. Keeping the user instructions/information after they are separated from the strap and retaining them in a permanent record; copying the user instructions/information and keeping the copy with the strap.
8. Referring to the user instructions/information before and after each use.
9. Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences.

5.12.2.3 The manufacturer shall provide information for the user that additional information regarding end-to-end straps can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.

5.12.2.4 The manufacturer of end-to-end straps that are certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of the strap and a list of items that the records need to contain.
5.13 Multiple Configuration Straps.

5.13.1 Multiple Configuration Straps Label Requirements.

5.13.1.1 Each multiple configuration strap shall have a product label.

5.13.1.2 Multiple Configuration strap labels shall be embossed, printed, sewn, stapled, riveted, or otherwise permanently attached to the strap.

5.13.1.3 Multiple Configuration strap labels shall be conspicuously located on each strap when the strap is properly assembled with all components in place.

5.13.1.4 All letters shall be at least 2 mm (5/64 in.) high.

5.13.1.5 Multiple label pieces shall be permitted in order to carry all statements and information required to be on the product label; however, all label pieces comprising the entire product label shall be located adjacent to each other.

5.13.1.6 All worded portions of the required product label shall at least be in English.

5.13.1.7 Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.13.1.8 The certification organization’s label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2 mm (5/64 in.) high.

5.13.1.9 Multiple Configuration labels shall display a “G” for general use and “T” for technical use. The designation “G” or “T” shall be designated in accordance with 6.13.1.

5.13.1.10 Each multiple configuration strap shall have the following compliance statement on the product label:

“MEETS THE MULTIPLE CONFIGURATION STRAP REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2017 EDITION”

5.13.1.11 In addition to the compliance statement specified in 5.13.1.10, the following information shall be provided on the product label:

“MINIMUM BREAKING STRENGTH AND RATING ARE DETERMINED USING A BASKET (U) CONFIGURATION. IN ADDITION, THIS STRAP HAS A MINIMUM BREAKING STRENGTH OF: 
  _________ kN IN A CHOKER CONFIGURATION 
  _________ kN WHEN PULLED END TO END.” (TIA)

5.13.1.12 In addition to the compliance and information statements in 5.13.1.9, 5.13.1.10, and 5.13.1.11, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (5/64 in.) high.

(1) Manufacturer's name, identification, or designation
(2) Manufacturer's address
5.13.2 Multiple Configuration Strap User Information

5.13.2.1 The manufacturer of multiple configuration straps that are certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.13.2.2 The manufacturer shall provide information for the user regarding at least the following issues:

1. Inspecting the strap periodically according to the manufacturer's inspection procedure.
2. Removing the strap from service if the equipment does not pass inspection or if there is any doubt about the safety or serviceability of the strap.
3. Maintaining the strap in accordance with the manufacturer's instructions where metal components are subjected to corrosion or deterioration.
4. Returning straps to the manufacturer or to a qualified inspection person/center if the strap is dropped or impact-loaded.
5. Not exposing the strap to flame or high temperature and carrying the strap where it will be protected as it could melt or burn and fail if exposed to flame or high temperature.
6. Repairing the strap only in accordance with the manufacturer's instructions.
7. Keeping the user instructions/information after they are separated from the strap and retaining them in a permanent record; copying the user instructions/information and keeping the copy with the strap.
8. Referring to the user instructions/information before and after each use.
9. Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences.

5.13.2.3 The manufacturer shall provide information for the user that additional information regarding multiple configuration straps can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.

5.13.2.4 The manufacturer of multiple configuration straps that are certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of the strap and a list of items that the records need to contain.
5.14 Belay Devices.

5.14.1 Belay Devices Label Requirements.

5.14.1.1 Each belay device shall have a product label.

5.14.1.2 Each belay device shall have a product label stamped, engraved, or otherwise permanently marked with the portions of the product label information specified in 5.14.1.2.1 through 5.14.1.2.4.

5.14.1.2.1 Each belay shall have the following compliance statement:

“MEETS NFPA 1983 (2017 ED).”

5.14.1.2.2 Each belay device shall display the mark or logo of the certification organization and the manufacturer's name or identifying mark.

5.14.1.2.3 Each belay device shall display a “G” for general use or “T” for technical use. The designation “G” or “T” shall be designated in accordance with 6.14.2.

5.14.1.2.4 Each belay device shall also display the range of rope diameters with which the device is intended to be used.

5.14.1.3 The product label for the portions of the product label information not specified in 5.14.1.2.1 through 5.14.1.2.4 shall be permitted to be a hang tag affixed to each individual auxiliary equipment item or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the auxiliary equipment item.

5.14.1.4 All letters shall be at least 2 mm (5/64 in.) high.

5.14.1.5 Multiple label pieces shall be permitted in order to carry all statements and information required to be on the product label; however, all label pieces comprising the entire product label shall be located adjacent to each other.

5.14.1.6 All worded portions of the required product label shall at least be in English.

5.14.1.7 Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.14.1.8 The certification organization's label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2 mm (5/64 in.) high.

5.14.1.9 Each belay device shall have the following compliance statement on the product label.

“MEETS THE BELAY DEVICE REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2017 EDITION.”

5.14.1.10 In addition to the compliance statement specified in 5.14.1.9, at least the information required in 5.14.1.2.3 and 5.14.1.2.4 shall also be provided on the printed product label.
5.14.1.11 In addition to the compliance and information statements in 5.14.1.9 and 5.14.1.10, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (5/64 in.) high.

1. Manufacturer's name, identification, or designation
2. Manufacturer's address
3. Country of manufacture
4. Manufacturer's product identification
5. Model, style, lot, or serial number

5.14.2 Belay Devices User Information.

5.14.2.1 The manufacturer of belay device that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.14.2.2 The manufacturer shall provide information for the user regarding at least the following issues:

1. Inspecting the belay device periodically according to the manufacturer's inspection procedure.
2. Removing the belay device from service if the equipment does not pass inspection or if there is any doubt about the safety or serviceability of the equipment.
3. Maintaining the belay device in accordance with the manufacturer's instructions where metal components are subjected to corrosion or deterioration.
4. Returning belay device to the manufacturer or to a qualified inspection person/center if the equipment is dropped or impact-loaded.
5. Repairing the belay device only in accordance with the manufacturer's instructions.
6. Keeping the user instructions/information after they are separated from the belay device and retaining them in a permanent record; copying the user instructions/information and keeping the copy with the equipment.
7. Referring to the user instructions/information before and after each use.
8. Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences.

5.14.2.3 The manufacturer shall provide information for the user that additional information regarding auxiliary equipment can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.

5.14.2.4 The manufacturer of belay device that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of the belay device and a list of items that the records need to contain.

5.14.2.5* Because belay is tested with a rope, the following statement shall be provided in the user instructions:

“This BELAY DEVICE HAS PASSED THE MANNER OF FUNCTION TEST USING THE FOLLOWING ROPE: [insert rope manufacturer name, designation, part number, and diameter here].”
5.14.2.6 Where the auxiliary equipment has been tested with multiple ropes, each rope shall be listed in the user instructions.
5.15 Carabiners and Snap Links.

5.15.1 Carabiners and Snap Links Label Requirements.

5.15.1.1 Each carabiner and snap-link shall have a product label.

5.15.1.2 Each carabiner and snap-link shall have a product label stamped, engraved, or otherwise permanently marked with the portions of the product label information specified in 5.15.1.2.1 through 5.15.1.2.5.

5.15.1.2.1 Each carabiner and snap-link shall have the following compliance statement:

“MEETS NFPA 1983 (2017 ED).”

5.15.1.2.2 Each carabiner and snap-link shall display the mark or logo of the certification organization and the manufacturer's name or identifying mark.

5.15.1.2.3 Each carabiner and snap-link shall display at least the minimum rated breaking strength prefaced by the letters “MBS.” The minimum breaking strength value stated on the product label shall be permitted to be any value greater than the actual “pass” requirement value determined by the certification testing, but shall not be greater than the calculated minimum breaking strength.

5.15.1.2.4 Each carabiner and snap-link shall display a “G” for general use items or a “T” for technical use items. The designation “G” or “T” shall be designated in accordance with 6.15.2.

5.15.1.3 The product label for the portions of the product label information not specified in 5.15.1.2.1 through 5.15.1.2.4 shall be permitted to be a hang tag affixed to each individual auxiliary equipment item or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the auxiliary equipment item.

5.15.1.4 All letters shall be at least 2 mm (5/64 in.) high.

5.15.1.5 Multiple label pieces shall be permitted in order to carry all statements and information required to be on the product label; however, all label pieces comprising the entire product label shall be located adjacent to each other.

5.15.1.6 All worded portions of the required product label shall at least be in English.

5.15.1.7 Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.15.1.8 The certification organization's label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2 mm (5/64 in.) high.

5.15.1.9 Each carabiner and snap-link shall have the following compliance statement on the product label.

5.15.1.10 In addition to the compliance statement specified in 5.15.1.9, at least the information required in 5.15.1.2.3 and 5.15.1.2.4 shall also be provided on the printed product label.

5.15.1.12 In addition to the compliance and information statements in 5.15.1.9 and 5.15.1.10, at least the following information shall also be provided on the product label(s). All letters shall be at least 2 mm (\(\frac{3}{64}\) in.) high.

1. Manufacturer's name, identification, or designation
2. Manufacturer's address
3. Country of manufacture
4. Manufacturer's product identification
5. Model, style, lot, or serial number

5.15.2 Carabiner and Snap-Link User Information.

5.15.2.1 The manufacturer of carabiner and snap-link that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.15.2.2 The manufacturer shall provide information for the user regarding at least the following issues:

1. Inspecting the carabiner or snap-link periodically according to the manufacturer's inspection procedure.
2. Removing the carabiner or snap-link from service if the equipment does not pass inspection or if there is any doubt about the safety or serviceability of the equipment.
3. Maintaining the carabiner or snap-link in accordance with the manufacturer's instructions where metal components are subjected to corrosion or deterioration.
4. Returning carabiner or snap-link to the manufacturer or to a qualified inspection person/center if the equipment is dropped or impact-loaded.
5. Repairing the carabiner or snap-link only in accordance with the manufacturer's instructions.
6. Keeping the user instructions/information after they are separated from the carabiner or snap-link and retaining them in a permanent record: copying the user instructions/information and keeping the copy with the equipment.
7. Referring to the user instructions/information before and after each use.
8. Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences.

5.15.2.3 The manufacturer shall provide information for the user that additional information regarding carabiners and snap-links can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.

5.15.2.4 The manufacturer of carabiner or snap-link that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of the carabiner or snap-link and a list of items that the records need to contain.
5.16 Descent Control Devices.

5.16.1 Descent Control Devices Label Requirements.

5.16.1 Each descent control device shall have a product label.

5.16.1.2 Each descent control device shall have a product label stamped, engraved, or otherwise permanently marked with the portions of the product label information specified in 5.16.1.2.1 through 5.16.1.2.5.

5.16.1.2.1 Each descent control device shall have the following compliance statement:

“MEETS NFPA 1983 (2017 ED).”

5.16.1.2.2 Each descent control device shall display the mark or logo of the certification organization and the manufacturer's name or identifying mark.

5.16.1.2.3 Each descent control device shall display at least the minimum rated breaking strength prefaced by the letters “MBS.” The minimum breaking strength value stated on the product label shall be permitted to be any value greater than the actual “pass” requirement value determined by the certification testing, but shall not be greater than the calculated minimum breaking strength.

5.16.1.2.4 Each descent control device shall display a “G” for general use items, a “T” for technical use items, or an “E” for escape use items. The designation “G,” “T,” or “E” shall be designated in accordance with 6.16.2.

5.16.1.2.5 Each descent control device shall also display the range of rope diameters with which the device is intended to be used.

5.16.1.3 The product label for the portions of the product label information not specified in 5.16.1.2.1 through 5.16.1.2.5 shall be permitted to be a hang tag affixed to each individual auxiliary equipment item or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the auxiliary equipment item.

5.16.1.4 All letters shall be at least 2 mm (5/64 in.) high.

5.16.1.5 Multiple label pieces shall be permitted in order to carry all statements and information required to be on the product label; however, all label pieces comprising the entire product label shall be located adjacent to each other.

5.16.1.6 All worded portions of the required product label shall at least be in English.

5.16.1.7 Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.16.1.8 The certification organization's label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2 mm (5/64 in.) high.

5.16.1.9 Each descent control device shall have the following compliance statement on the product label.
“MEETS THE DESCENT CONTROL DEVICE OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2017 EDITION.”

5.16.1.10  In addition to the compliance statement specified in 5.16.1.9, at least the information required in 5.16.1.2.3 through 5.16.1.2.5 shall also be provided on the printed product label.

5.16.1.11  In addition to the compliance and information statements in 5.16.1.9 and 5.16.1.10 at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (5/64 in.) high.

(1) Manufacturer's name, identification, or designation
(2) Manufacturer's address
(3) Country of manufacture
(4) Manufacturer's product identification
(5) Model, style, lot, or serial number

5.16.1.12  Where detachable components must be used with the descent control device in order for the descent control device to be compliant with this standard, at least the following statement and information shall also be printed legibly on the product label of the item. All letters shall be at least 2 mm (5/64 in.) high. The detachable component(s) shall be listed following the statement by type, identification, and how properly used.

“TO BE COMPLIANT WITH NFPA 1983, THE FOLLOWING ADDITIONAL COMPONENTS MUST BE USED IN CONJUNCTION WITH THIS DESCENT CONTROL DEVICE:"

[The detachable component(s) shall be listed here.]

5.16.2  Descent Control Device User Information.

5.16.2.1  The manufacturer of descent control device that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.16.2.2  The manufacturer shall provide information for the user regarding at least the following issues:
(1) Inspecting the descent control device periodically according to the manufacturer's inspection procedure.
(2) Removing the descent control device from service if the equipment does not pass inspection or if there is any doubt about the safety or serviceability of the equipment.
(3) Maintaining the descent control device in accordance with the manufacturer's instructions where metal components are subjected to corrosion or deterioration.
(4) Returning descent control device to the manufacturer or to a qualified inspection person/center if the descent control device is dropped or impact-loaded.
(5) Not exposing the rope or webbing used with the descent control device and any other software to flame or high temperature and carrying the equipment where it will be protected as it could melt or burn and fail if exposed to flame or high temperature.
(6) Repairing the descent control device only in accordance with the manufacturer's instructions.
(7) Keeping the user instructions/information after they are separated from the descent control device and retaining them in a permanent record; copying the user instructions/information and keeping the copy with the descent control device.
(8) Referring to the user instructions/information before and after each use.
(9) Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences.

5.16.2.3 The manufacturer shall provide information for the user that additional information regarding descent control devices can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.

5.16.2.4 The manufacturer of descent control device that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of the descent control device and a list of items that the records need to contain.

5.16.2.5* Because the descent control device is tested with a rope or escape webbing, the following statement shall be provided in the user instructions:

For rope:

“This descent control device has passed the minimum breaking strength and holding load test using the following rope: [insert rope manufacturer name, designation, part number, and diameter here].”

For escape webbing:

“This descent control device has passed the minimum breaking strength and holding load test using the following escape webbing: [insert webbing manufacturer name, designation, part number, and perimeter here].”

5.16.2.6 Where the descent control device has been tested with multiple ropes and/or escape webbings, each rope and/or escape webbing shall be listed in the user instructions.
5.17 ESCAPE ANCHOR

5.17.1 Escape Anchor Label Requirements.

5.17.1.1 Each escape anchor shall have a product label.

5.17.1.2 Each escape anchor shall have a product label stamped, engraved, or otherwise permanently marked with the portions of the product label information specified in 5.17.1.2.1 through 5.17.1.2.4

5.17.1.2.1 Each escape anchor shall have the following compliance statement:

“MEETS NFPA 1983 (2017 ED).”

5.17.1.2.2 Each escape anchor shall display the mark or logo of the certification organization and the manufacturer's name or identifying mark.

5.17.1.2.3 Each escape anchor shall display at least the minimum rated breaking strength prefaced by the letters “MBS.” The minimum breaking strength value stated on the product label shall be permitted to be any value greater than the actual “pass” requirement value determined by the certification testing, but shall not be greater than the calculated minimum breaking strength.

5.17.1.2.4 Each escape anchor shall display an “E” for escape use items.

5.17.1.3 The product label for the portions of the product label information not specified in 5.17.1.2.1 through 5.17.1.2.5 shall be permitted to be a hang tag affixed to each individual escape anchor or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the escape anchor.

5.17.1.4 All letters shall be at least 2 mm (3/64 in.) high.

5.17.1.5 Multiple label pieces shall be permitted in order to carry all statements and information required to be on the product label; however, all label pieces comprising the entire product label shall be located adjacent to each other.

5.17.1.6 All worded portions of the required product label shall at least be in English.

5.17.1.7 Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.17.1.8 The certification organization's label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2 mm (3/64 in.) high.

5.17.1.9 Each escape anchor shall have the following compliance statement on the product label.

“MEETS THE ESCAPE ANCHOR REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2017 EDITION.”

5.17.1.10 In addition to the compliance statement specified in 5.17.1.9, at least the information required in 5.17.1.2.3 and 5.17.1.2.4 shall also be provided on the printed product label.
5.17.11 In addition to the compliance and information statements in 5.17.1.9 and 5.17.1.10, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm ($\frac{5}{64}$ in.) high.

(1) Manufacturer's name, identification, or designation
(2) Manufacturer's address
(3) Country of manufacture
(4) Manufacturer's product identification
(5) Model, style, lot, or serial number

5.17.2 Escape Anchor User Information.

5.17.2.1 The manufacturer of escape anchor that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.17.2.2 The manufacturer shall provide information for the user regarding at least the following issues:
(1) Inspecting the escape anchor periodically according to the manufacturer's inspection procedure.
(2) Removing the escape anchor from service if the equipment does not pass inspection or if there is any doubt about the safety or serviceability of the equipment.
(3) Maintaining the escape anchor in accordance with the manufacturer's instructions where metal components are subjected to corrosion or deterioration.
(4) Returning escape anchor to the manufacturer or to a qualified inspection person/center if the equipment is dropped or impact-loaded.
(6) Repairing the escape anchor only in accordance with the manufacturer's instructions.
(7) Keeping the user instructions/information after they are separated from the escape anchor and retaining them in a permanent record; copying the user instructions/information and keeping the copy with the equipment.
(8) Referring to the user instructions/information before and after each use.
(9) Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences.

5.17.2.3 The manufacturer shall provide information for the user that additional information regarding escape anchors can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.

5.17.2.4 The manufacturer of escape anchor that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of the escape anchor and a list of items that the records need to contain.
5.18 LITTERS.

5.1.8—5.1.1 Litters Label Requirements.

5.1.8.1—5.1.8.1.1 Each litter shall have a product label.

5.1.8.2—5.1.8.1.2 Each litter shall have a product label stamped, engraved, or otherwise permanently marked with the portions of the product label information specified in 5.1.8.2.1 through 5.1.8.2.2, 5.18.1.2.1 and 5.18.1.2.2.

5.1.8.2.1—5.1.8.2.1.1 Each litter shall have the following compliance statement:

“MEETS NFPA 1983 (2017 ED)”

5.1.8.2.2—5.1.8.2.2.1 Each litter shall display the mark or logo of the certification organization and the manufacturer's name or identifying mark.

5.1.8.3—5.1.8.3.1 The product label for the portions of the product label information not specified in 5.1.8.2.1 and 5.1.8.2.2, 5.18.1.2.1 and 5.18.1.2.2 shall be permitted to be a hang tag affixed to each individual litter.

5.1.8.4—5.1.8.4.1 All letters shall be at least 2 mm (5/64 in.) high.

5.1.8.5—5.1.8.5.1 Multiple label pieces shall be permitted in order to carry all statements and information required to be on the product label; however, all label pieces comprising the entire product label shall be located adjacent to each other.

5.1.8.6—5.1.8.6.1 All worded portions of the required product label shall be at least in English.

5.1.8.7—5.1.8.7.1 Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.1.8.8—5.1.8.8.1 The certification organization's label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2 mm (5/64 in.) high.

5.1.8.9—5.1.8.9.1 Each litter shall have the following compliance statement on the product label:

“MEETS THE LITTER REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2017 EDITION.”

5.1.8.10—5.1.8.10.1 In addition to the compliance statement specified in 5.1.8.9 5.18.1.9, litters shall include the following additional information on the product label:

“VERTICAL BREAKING STRENGTH: ______kn.
HORIZONTAL BREAKING STRENGTH: ______kn”

5.1.8.11—5.1.8.11.1 In addition to the compliance and information statements in 5.1.8.9 and 5.1.8.11, 5.18.1.9 and 5.18.1.10, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (5/64 in.) high.

(1) Manufacturer's name, identification, or designation
5.2.8–5.18.2 Litter User Information.

5.2.8.1–5.18.2.1 The manufacturer of the litter that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.2.8.2–5.18.2.2 The manufacturer shall provide information for the user regarding at least the following issues:

1. Inspecting the litter periodically according to the manufacturer's inspection procedure
2. Removing the litter from service if the equipment does not pass inspection or if there is any doubt about the safety or serviceability of the equipment
3. Maintaining the litter in accordance with the manufacturer's instructions where metal components are subjected to corrosion or deterioration
4. Returning litter to the manufacturer or to a qualified inspection person/center if the equipment is dropped or impact-loaded
5. Not exposing any software component of the litter to flame or high temperature and carrying the equipment where it will be protected as it could melt or burn and fail if exposed to flame or high temperature
6. Repairing the litter only in accordance with the manufacturer's instructions
7. Keeping the user instructions/information after they are separated from the litter and retaining them in a permanent record; copying the user instructions/information and keeping the copy with the equipment
8. Referring to the user instructions/information before and after each use
9. Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences

5.2.8.3–5.18.2.3 The manufacturer shall provide information for the user that additional information regarding litters can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.

5.2.8.4–5.18.2.4 The manufacturer of a litter that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of the litter and a list of items that the records need to contain.
5.19 PORTABLE ANCHORS.

5.19.1 Portable Anchors Label Requirements.

5.19.1.1 Each portable anchor shall have a product label.

5.19.1.2 Each portable anchor shall have a product label stamped, engraved, or otherwise permanently marked with the portions of the product label information specified in 5.19.1.2.1 through 5.19.1.2.4.

5.19.1.2.1 Each portable anchor shall have the following compliance statement:

“MEETS NFPA 1983 (2017 ED).”

5.19.1.2.2 Each portable anchor shall display the mark or logo of the certification organization and the manufacturer's name or identifying mark.

5.19.1.2.3 Each portable anchor shall display at least the minimum rated breaking strength prefaced by the letters “MBS.” The minimum breaking strength value stated on the product label shall be permitted to be any value greater than the actual “pass” requirement value determined by the certification testing, but shall not be greater than the calculated minimum breaking strength.

5.19.1.2.4 Each portable anchor shall display a “G” for general use items or a “T” for technical use. The designation “G” or “T” shall be designated in accordance with 6.19.2.

5.19.1.3 The product label for the portions of the product label information not specified in 5.19.1.2.1 through 5.19.1.2.4 shall be permitted to be a hang tag affixed to each portable anchor or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains portable anchor.

5.19.1.4 All letters shall be at least 2 mm (5/64 in.) high.

5.19.1.5 Multiple label pieces shall be permitted in order to carry all statements and information required to be on the product label; however, all label pieces comprising the entire product label shall be located adjacent to each other.

5.19.1.6 All worded portions of the required product label shall at least be in English.

5.19.1.7 Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.19.1.8 The certification organization's label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2 mm (5/64 in.) high.

5.19.1.9 Each portable anchor shall have the following compliance statement on the product label.

“MEETS THE PORTABLE ANCHOR REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2017 EDITION.”
5.19.1.10 In addition to the compliance statement specified in 5.19.1.9, at least the information required in 5.19.1.2.3 through 5.19.1.2.4 shall also be provided on the printed product label.

5.19.1.11 In addition to the compliance statement specified in 5.19.1.9, portable anchors shall include the following additional information on the product label:

“MINIMUM BREAKING STRENGTH AND RATING ARE DETERMINED AT THE CONFIGURATION OF LOWEST STRENGTH PER MANUFACTURER’S INSTRUCTIONS.”

5.19.1.12 In addition to the compliance and information statements in 5.19.1.9, 5.19.1.10, and 5.19.1.11, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (5/64 in.) high.

1. Manufacturer's name, identification, or designation
2. Manufacturer's address
3. Country of manufacture
4. Manufacturer's product identification
5. Model, style, lot, or serial number

5.19.1.13 Where detachable components must be used with the portable anchor in order for the portable anchor to be compliant with this standard, at least the following statement and information shall also be printed legibly on the product label of the item. All letters shall be at least 2 mm (5/64 in.) high. The detachable component(s) shall be listed following the statement by type, identification, and how properly used.

“TO BE COMPLIANT WITH NFPA 1983, THE FOLLOWING ADDITIONAL COMPONENTS MUST BE USED IN CONJUNCTION WITH THIS PORTABLE ANCHOR:”

[The detachable component(s) shall be listed here.]

5.19.2 Portable Anchor User Information.

5.19.2.1 The manufacturer of the portable anchor that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.19.2.2 The manufacturer shall provide information for the user regarding at least the following issues:

1. Inspecting the portable anchor periodically according to the manufacturer's inspection procedure.
2. Removing the portable anchor from service if the equipment does not pass inspection or if there is any doubt about the safety or serviceability of the equipment.
3. Maintaining the portable anchor in accordance with the manufacturer's instructions where metal components are subjected to corrosion or deterioration.
4. Returning portable anchor to the manufacturer or to a qualified inspection person/center if the equipment is dropped or impact-loaded.
(5) Repairing the portable anchor only in accordance with the manufacturer's instructions.
(6) Keeping the user instructions/information after they are separated from the portable anchor and retaining them in a permanent record; copying the user instructions/information and keeping the copy with the equipment.
(7) Referring to the user instructions/information before and after each use.
(8) Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences.

5.19.2.3 The manufacturer shall provide information for the user that additional information regarding portable anchors can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.

5.19.2.4 The manufacturer of portable anchor that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of the portable anchor and a list of items that the records need to contain.

5.19.2.5 The manufacturer of portable anchors shall provide information for the user that indicates the actual configuration of the device when meeting the breaking strength requirement, including the height, attachment points, and angular configuration of the legs, such that the user can set up the equipment in the same configuration as tested.
5.20 PULLEYS.

5.20.1 Pulley Label Requirements.

5.20.1.1 Each pulley shall have a product label.

5.20.1.2 Each pulley shall have a product label stamped, engraved, or otherwise permanently marked with the portions of the product label information specified in 5.1.5.2.1 through 5.1.5.2.5.

5.20.1.2.1 Each pulley shall have the following compliance statement:

“MEETS NFPA 1983 (2017 ED).”

5.20.1.2.2 Each pulley shall display the mark or logo of the certification organization and the manufacturer's name or identifying mark.

5.20.1.2.3 Each pulley shall display at least the minimum rated breaking strength prefaced by the letters “MBS.” The minimum breaking strength value stated on the product label shall be permitted to be any value greater than the actual “pass” requirement value determined by the certification testing, but shall not be greater than the calculated minimum breaking strength.

5.20.1.2.4 Each pulley shall display a “G” for general use items or “T” for technical use items. The designation “G” or “T” shall be designated in accordance with 6.20.2.

5.20.1.3 The product label for the portions of the product label information not specified in 5.20.1.2.1 through 5.20.1.2.4 shall be permitted to be a hang tag affixed to each individual pulley or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the pulley.

5.20.1.4 All letters shall be at least 2 mm (5/64 in.) high.

5.20.1.5 Multiple label pieces shall be permitted in order to carry all statements and information required to be on the product label; however, all label pieces comprising the entire product label shall be located adjacent to each other.

5.20.1.6 All worded portions of the required product label shall at least be in English.

5.20.1.7 Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.20.1.8 The certification organization's label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2 mm (5/64 in.) high.

5.20.1.9 Each pulley shall have the following compliance statement on the product label.

“MEETS THE PULLEY REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2017 EDITION.”

5.20.1.10 In addition to the compliance statement specified in 5.20.1.9, at least the information required in 5.20.1.2.3 and 5.20.1.2.4 shall also be provided on the printed product label.
5.20.1.11 In addition to the compliance and information statements in 5.20.1.9 and 5.20.1.10, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high.

1. Manufacturer's name, identification, or designation
2. Manufacturer's address
3. Country of manufacture
4. Manufacturer's product identification
5. Model, style, lot, or serial number

5.20.2 Pulley User Information.

5.20.2.1 The manufacturer of pulley that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.20.2.2 The manufacturer shall provide information for the user regarding at least the following issues:

1. Inspecting the pulley periodically according to the manufacturer's inspection procedure.
2. Removing the pulley from service if the equipment does not pass inspection or if there is any doubt about the safety or serviceability of the equipment.
3. Maintaining the pulley in accordance with the manufacturer's instructions where metal components are subjected to corrosion or deterioration.
4. Returning pulley to the manufacturer or to a qualified inspection person/center if the equipment is dropped or impact-loaded.
5. Repairing the pulley only in accordance with the manufacturer's instructions.
6. Keeping the user instructions/information after they are separated from the pulley and retaining them in a permanent record; copying the user instructions/information and keeping the copy with the equipment.
7. Referring to the user instructions/information before and after each use.
8. Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences.

5.20.2.3 The manufacturer shall provide information for the user that additional information regarding pulleys can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.

5.20.2.4 The manufacturer of pulley that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of the pulley and a list of items that the records need to contain.
5.21 ROPE GRABS AND ASCENDING DEVICES.

5.21.1 Rope Grabs and Ascending Devices Label Requirements.

5.21.1.1 Each rope grab and ascending device shall have a product label.

5.21.1.2 Each rope grab and ascending device shall have a product label stamped, engraved, or otherwise permanently marked with the portions of the product label information specified in 5.21.1.2.1 through 5.21.1.2.4.

5.21.1.2.1 Each rope grab and ascending device shall have the following compliance statement:

“MEETS NFPA 1983 (2017 ED).”

5.21.1.2.2 Each rope grab and ascending device shall display the mark or logo of the certification organization and the manufacturer's name or identifying mark.

5.21.1.2.3 Each rope grab and ascending device shall display a “G” for general use or “T” for technical use. The designation “G” or “T” shall be designated in accordance with 6.21.2.

5.21.1.2.4 Each rope grab and ascending device shall also display the range of rope diameters with which the device is intended to be used.

5.21.1.3 The product label for the portions of the product label information not specified in 5.21.1.2.1 through 5.21.1.2.4 shall be permitted to be a hang tag affixed to each individual auxiliary equipment item or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the rope grab or ascending device.

5.21.1.4 All letters shall be at least 2 mm (5/64 in.) high.

5.21.1.5 Multiple label pieces shall be permitted in order to carry all statements and information required to be on the product label; however, all label pieces comprising the entire product label shall be located adjacent to each other.

5.21.1.6 All worded portions of the required product label shall at least be in English.

5.21.1.7 Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.21.1.8 The certification organization's label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2 mm (5/64 in.) high.

5.21.1.9 Each rope grab and ascending device shall have the following compliance statement on the product label.


5.21.1.10 In addition to the compliance statement specified in 5.21.1.9, at least the information required in 5.21.1.2.3 and 5.21.1.2.4 shall also be provided on the printed product label.
5.21.1.11 In addition to the compliance and information statements in 5.21.1.9 and 5.21.1.10, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (5/64 in.) high.

1. Manufacturer's name, identification, or designation
2. Manufacturer's address
3. Country of manufacture
4. Manufacturer's product identification
5. Model, style, lot, or serial number

5.21.2 Rope Grab and Ascending Devices User Information.

5.21.2.1 The manufacturer of rope grab or ascending device that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.21.2.2 The manufacturer shall provide information for the user regarding at least the following issues:

1. Inspecting the rope grab or ascending device periodically according to the manufacturer's inspection procedure.
2. Removing the rope grab or ascending device from service if the equipment does not pass inspection or if there is any doubt about the safety or serviceability of the equipment.
3. Maintaining the rope grab or ascending device in accordance with the manufacturer's instructions where metal components are subjected to corrosion or deterioration.
4. Returning rope grab or ascending device to the manufacturer or to a qualified inspection person/center if the equipment is dropped or impact-loaded.
5. Repairing the rope grab or ascending device only in accordance with the manufacturer's instructions.
6. Keeping the user instructions/information after they are separated from the rope grab or ascending device and retaining them in a permanent record; copying the user instructions/information and keeping the copy with the equipment.
7. Referring to the user instructions/information before and after each use.
8. Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences.

5.21.2.3 The manufacturer shall provide information for the user that additional information regarding rope grabs and ascending devices can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.

5.21.2.4 The manufacturer of rope grab or ascending device that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of the rope grab or ascending device and a list of items that the records need to contain.

5.21.2.5* Because rope grab or ascending device is tested with a rope, the following statement shall be provided in the user instructions:
“THIS [insert ROPE GRAB OR ASCENDING DEVICE here] HAS PASSED THE MANNER OF FUNCTION TEST USING THE FOLLOWING ROPE: [insert rope manufacturer name, designation, part number, and diameter here].”

5.2.5.8 Where the rope grab or ascending device has been tested with multiple ropes, each rope shall be listed in the user instructions.
5.22 OTHER AUXILIARY EQUIPMENT.

§ 5.1.5–5.22.1 Other Auxiliary Equipment Label Requirements.

§ 5.1.5.1–5.22.1 Each auxiliary equipment item shall have a product label.

§ 5.1.5.2–5.22.1.2 Each load-bearing hardware auxiliary equipment item shall have a product label stamped, engraved, or otherwise permanently marked with the portions of the product label information specified in § 5.1.5.2.1 through § 5.1.5.2.5, § 5.21.1.2.1 through § 5.21.1.2.4.

§ 5.1.5.2.1–5.22.1.2.1 Each load-bearing hardware auxiliary equipment item shall have the following compliance statement:

“MEETS NFPA 1983 (2017 ED).”

§ 5.1.5.2.2–5.22.1.2.2 Each load-bearing hardware auxiliary equipment shall display the mark or logo of the certification organization and the manufacturer's name or identifying mark.

§ 5.1.5.2.3–5.22.1.2.3 Each load-bearing hardware auxiliary equipment shall display at least the minimum rated breaking strength prefaced by the letters “MBS.” The minimum breaking strength value stated on the product label shall be permitted to be any value greater than the actual “pass” requirement value determined by the certification testing, but shall not be greater than the calculated minimum breaking strength.

§ 5.1.5.2.4–5.22.1.2.4 Each load-bearing hardware auxiliary equipment shall display a “G” for general use items, a “T” for technical use items, or an “E” for escape use items. The designation “G,” “T,” or “E” shall be designated in accordance with § 6.5.2, § 6.22.2.

§ 5.1.5.2.5–5.22.1.2.5 Each auxiliary equipment ascending device, rope grab device, and descent control device shall also display the range of rope diameters with which the device is intended to be used.

§ 5.1.5.3–5.22.1.3 The product label for the portions of the product label information not specified in §§ 5.1.5.2.1 through § 5.1.5.2.5, § 5.21.1.2.1 through § 5.21.1.2.4 shall be permitted to be a hang tag affixed to each individual auxiliary equipment item or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the auxiliary equipment item.

§ 5.1.5.4–5.22.1.4 All letters shall be at least 2 mm (\(5/64\) in.) high.

§ 5.1.5.5–5.22.1.5 Multiple label pieces shall be permitted in order to carry all statements and information required to be on the product label; however, all label pieces comprising the entire product label shall be located adjacent to each other.

§ 5.1.5.6–5.22.1.6 All worded portions of the required product label shall at least be in English.

§ 5.1.5.7–5.22.1.7 Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).
5.1.5.8–5.22.1.8 The certification organization's label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2 mm ($\frac{5}{64}$ in.) high.

5.1.5.9–5.22.1.9 Each auxiliary equipment item shall have the following compliance statement on the product label:

“This [insert name of equipment item here] MEETS THE AUXILIARY EQUIPMENT REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2017 EDITION.”

5.1.5.10–5.22.1.10 In addition to the compliance statement specified in 5.1.5.9–5.22.1.9, at least the information required in 5.1.5.2.3 through 5.1.5.2.5, 5.22.1.2.3 and 5.22.1.2.4 shall also be provided on the printed product label.

5.1.5.11 In addition to the compliance statement specified in 5.1.5.9, portable anchor auxiliary equipment devices shall include the following additional information on the product label:

“MINIMUM BREAKING STRENGTH AND RATING ARE DETERMINED AT THE CONFIGURATION OF LOWEST STRENGTH PER MANUFACTURER'S INSTRUCTIONS.”

5.1.5.12 In addition to the compliance statement specified in 5.1.5.9, rigging and anchor each straps shall include the following additional statement on the product label:

For multiple configuration straps:

“MINIMUM BREAKING STRENGTH AND RATING ARE DETERMINED USING A BASKET (U) CONFIGURATION. IN ADDITION, THIS STRAP HAS A MINIMUM BREAKING STRENGTH OF:

___________ kN IN A CHOKER CONFIGURATION

___________ kN WHEN PULLED END TO END.”

For end to end straps:

“MINIMUM BREAKING STRENGTH OF

___________ kN WHEN PULLED END TO END.”

(TIA)

5.1.5.13–5.22.1.11 In addition to the compliance and information statements in 5.1.5.9, 5.1.5.10, and 5.1.5.11, 5.22.1.9 and 5.22.1.10, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm ($\frac{5}{64}$ in.) high.

(1) Manufacturer's name, identification, or designation

(2) Manufacturer's address

(3) Country of manufacture

(4) Manufacturer's product identification

(5) Model, style, lot, or serial number

5.1.5.14–5.22.1.12 Where detachable components must be used with the auxiliary equipment item in order for the auxiliary equipment item to be compliant with this standard, at least the
following statement and information shall also be printed legibly on the product label of the item. All letters shall be at least 2 mm \( \left( \frac{5}{64} \text{ in.} \right) \) high. The detachable component(s) shall be listed following the statement by type, identification, and how properly used.

“TO BE COMPLIANT WITH NFPA 1983, THE FOLLOWING ADDITIONAL COMPONENTS MUST BE USED IN CONJUNCTION WITH THIS [insert type of auxiliary equipment here]:”

[The detachable component(s) shall be listed here.]

5.2.5. Other Auxiliary Equipment User Information.

5.2.5.1. The manufacturer of auxiliary equipment that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.2.5.2. The manufacturer shall provide information for the user regarding at least the following issues:

1. Inspecting the auxiliary equipment periodically according to the manufacturer's inspection procedure.
2. Removing the auxiliary equipment from service if the equipment does not pass inspection or if there is any doubt about the safety or serviceability of the equipment.
3. Maintaining the auxiliary equipment in accordance with the manufacturer's instructions where metal components are subjected to corrosion or deterioration.
4. Returning auxiliary equipment to the manufacturer or to a qualified inspection person/center if the equipment is dropped or impact-loaded.
5. Not exposing the software auxiliary equipment to flame or high temperature and carrying the equipment where it will be protected as it could melt or burn and fail if exposed to flame or high temperature.
6. Repairing the auxiliary equipment only in accordance with the manufacturer's instructions.
7. Keeping the user instructions/information after they are separated from the auxiliary equipment and retaining them in a permanent record; copying the user instructions/information and keeping the copy with the equipment.
8. Referring to the user instructions/information before and after each use.
9. Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences.

5.2.5.3. The manufacturer shall provide information for the user that additional information regarding auxiliary equipment can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.

5.2.5.4. The manufacturer of auxiliary equipment that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of the auxiliary equipment and a list of items that the records need to contain.

5.2.5.5. In addition to the requirements for auxiliary equipment, the manufacturer of portable anchors shall provide information for the user that indicates the actual configuration of the device when meeting the breaking strength requirement, including the height, attachment points,
and angular configuration of the legs, such that the user can set up the equipment in the same configuration as tested.

5.2.5.6—The manufacturer of manufactured systems auxiliary equipment certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of the manufactured system auxiliary equipment.

5.2.5.7 Where auxiliary equipment is tested with a rope or escape webbing, the following statement shall be provided in the user instructions:

For rope:

“THIS [insert name of equipment item here] HAS PASSED THE MINIMUM BREAKING STRENGTH AND HOLDING LOAD TEST USING THE FOLLOWING ROPE: [insert rope manufacturer name, designation, part number, and diameter here].”

For escape webbing:

“THIS [insert name of equipment item here] HAS PASSED THE MINIMUM BREAKING STRENGTH AND HOLDING LOAD TEST USING THE FOLLOWING ESCAPE WEBBING: [insert webbing manufacturer name, designation, part number, and perimeter here].”

5.2.5.8 Where the auxiliary equipment has been tested with multiple ropes and/or escape webbings, each rope and/or escape webbing shall be listed in the user instructions.
5.23 ESCAPE SYSTEMS.

5.1.11—5.23.1 Escape Systems Label Requirements, Compliance and Information Statements.

5.1.11.1—5.23.1.1 Each escape system shall have a product label.

5.1.11.2—5.23.1.2 Each escape system load-bearing hardware item shall have a product label stamped, engraved, or otherwise permanently marked with the portions of the product label information specified in 5.1.5.2.1 through 5.23.1.2.5.

5.1.11.2.1—5.23.1.2.1 Each load-bearing escape system component shall have the following compliance statement:

“MEETS NFPA 1983 (2017 ED)”

5.1.11.2.2—5.23.1.2.2 Each load-bearing hardware escape system component shall display the mark or logo of the certification organization and the manufacturer’s name or identifying mark.

5.1.11.2.3—5.23.1.2.3 Each load-bearing hardware escape system component shall display at least the minimum rated breaking strength prefaced by the letters “MBS.” The minimum breaking strength value stated on the product label shall be permitted to be any value greater than the actual “pass” requirement value determined by the certification testing, but shall not be greater than the calculated minimum breaking strength.

5.1.11.2.4—5.23.1.2.4 Each load-bearing escape system component shall display an “E” for escape use items. The designation “E” shall be designated in accordance with 6.5.2—6.23.2.

5.1.11.2.5—5.23.1.2.5 Each system device, rope grab device, and descent control device shall also display the range of rope diameters with which the device is intended to be used.

5.1.11.3—5.23.1.3 The product label for the portions of the product label information not specified in 5.1.5.2.1 shall be permitted to be a hang tag affixed to each individual equipment item or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the escape system.

5.1.11.4—5.23.1.4 All letters shall be at least 2 mm (5/64 in.) high.

5.1.11.5—5.23.1.5 Multiple label pieces shall be permitted in order to carry all statements and information required to be on the product label; however, all label pieces comprising the entire product label shall be located adjacent to each other.

5.1.11.6—5.23.1.6 All worded portions of the required product label shall be at least in English.

5.1.11.7—5.23.1.7 Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.1.11.8—5.23.1.8 The certification organization’s label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2.5 mm (3/32 in.) high.
5.1.11.9–5.23.1.9 Each escape system shall have the following compliance statement on the product label:

For fire escape systems: “THIS [insert name of equipment item here] MEETS THE FIRE ESCAPE SYSTEM REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2017 EDITION.”

For escape systems: “THIS [insert name of equipment item here] MEETS THE ESCAPE SYSTEM REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2017 EDITION.”

5.23.1.10 In addition to the compliance statement specified in 5.23.1.9, at least the information required in 5.23.1.2.3 through 5.23.1.2.5 shall also be provided on the printed product label.

5.1.11.10–5.23.1.11 In addition to the compliance and information statements in 5.1.5.9, 5.1.5.10, and 5.1.5.11, 5.23.1.9 and 5.23.1.10, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high.

(1) Manufacturer’s name, identification, or designation
(2) Manufacturer’s address
(3) Country of manufacture
(4) Manufacturer’s product identification
(5) Model, style, lot, or serial number

5.1.11.11–5.23.1.12 Where detachable components must be used with the escape system item in order for the escape system to be compliant with this standard, at least the following statement and information shall also be printed legibly on the product label of the item. All letters shall be at least 2.5 mm (\(\frac{3}{32}\) in.) high. The detachable component(s) shall be listed following the statement by type, identification, and how properly used.

“TO BE COMPLIANT WITH NFPA 1983, THE FOLLOWING ADDITIONAL COMPONENTS MUST BE USED IN CONJUNCTION WITH THIS ESCAPE SYSTEM

[The detachable component(s) shall be listed here.]

5.2.5–5.23.2 Escape Systems User Information.

5.2.5.1–5.23.2.1 The manufacturer of escape system that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.2.5.2–5.23.2.2 The manufacturer shall provide information for the user regarding at least the following issues:

(1) Inspecting the escape system periodically according to the manufacturer's inspection procedure.
(2) Removing the escape system from service if the equipment does not pass inspection or if there is any doubt about the safety or serviceability of the equipment.
(3) Maintaining the escape system in accordance with the manufacturer's instructions where metal components are subjected to corrosion or deterioration.
(4) Returning escape system to the manufacturer or to a qualified inspection person/center if the equipment is dropped or impact-loaded.

(5) Not exposing the software auxiliary equipment to flame or high temperature and carrying the equipment where it will be protected as it could melt or burn and fail if exposed to flame or high temperature.

(6) Repairing escape system only in accordance with the manufacturer's instructions.

(7) Keeping the user instructions/information after they are separated from the escape system and retaining them in a permanent record; copying the user instructions/information and keeping the copy with the equipment.

(8) Referring to the user instructions/information before and after each use.

(9) Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences.

5.2.5.3  5.23.2.3 The manufacturer shall provide information for the user that additional information regarding escape systems can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.

5.2.5.4  5.23.2.4 The manufacturer of escape system that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of the escape system and a list of items that the records need to contain.
5.24 FIRE ESCAPE SYSTEMS.

5.1.11–5.24.1 Fire Escape Systems Label Requirements Compliance and Information Statements.

5.1.11.1–5.24.1.1 Each fire escape system shall have a product label.

5.1.11.2–5.24.1.2 Each fire escape system load-bearing hardware item shall have a product label stamped, engraved, or otherwise permanently marked with the portions of the product label information specified in 5.1.5.2.1 through 5.1.5.2.5.

5.1.11.2.1–5.24.1.2.1 Each load-bearing fire escape system component shall have the following compliance statement:

“MEETS NFPA 1983 (2017 ED)”

5.1.11.2.2–5.24.1.2.2 Each load-bearing hardware fire escape system component shall display the mark or logo of the certification organization and the manufacturer’s name or identifying mark.

5.1.11.2.3–5.24.1.2.3 Each load-bearing hardware fire escape system component shall display at least the minimum rated breaking strength prefaced by the letters “MBS.” The minimum breaking strength value stated on the product label shall be permitted to be any value greater than the actual “pass” requirement value determined by the certification testing, but shall not be greater than the calculated minimum breaking strength.

5.1.11.2.4–5.24.1.2.4 Each load-bearing fire escape system component shall display an “E” for escape use items. The designation “E” shall be designated in accordance with 6.5.2.1.

5.1.11.2.5–5.24.1.2.5 Each system device, rope grab device, and descent control device shall also display the range of rope diameters with which the device is intended to be used.

5.1.11.3–5.24.1.3 The product label for the portions of the product label information not specified in 5.1.5.2.1 shall be permitted to be a hang tag affixed to each individual equipment item or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the escape system.

5.1.11.4–5.24.1.4 All letters shall be at least 2 mm (5/64 in.) high.

5.1.11.5–5.24.1.5 Multiple label pieces shall be permitted in order to carry all statements and information required to be on the product label; however, all label pieces comprising the entire product label shall be located adjacent to each other.

5.1.11.6–5.24.1.6 All worded portions of the required product label shall be at least in English.

5.1.11.7–5.24.1.7 Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.1.11.8–5.24.1.8 The certification organization’s label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2.5 mm (3/32 in.) high.
Each fire escape system shall have the following compliance statement on the product label:

For fire escape systems: “THIS [insert name of equipment item here] MEETS THE FIRE ESCAPE SYSTEM REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2017 EDITION.”

For escape systems: “THIS [insert name of equipment item here] MEETS THE ESCAPE SYSTEM REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2017 EDITION.”

In addition to the compliance statement specified in 5.24.1.9, at least the information required in 5.24.1.2.3 through 5.24.1.2.5 shall also be provided on the printed product label.

In addition to the compliance and information statements in 5.1.5.9, 5.1.5.10, and 5.1.5.11, and 5.24.1.9 and 5.24.1.10, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high.

1. Manufacturer’s name, identification, or designation
2. Manufacturer’s address
3. Country of manufacture
4. Manufacturer’s product identification
5. Model, style, lot, or serial number

Where detachable components must be used with the fire escape system item in order for the fire escape system to be compliant with this standard, at least the following statement and information shall also be printed legibly on the product label of the item. All letters shall be at least 2.5 mm (\(\frac{3}{32}\) in.) high. The detachable component(s) shall be listed following the statement by type, identification, and how properly used.

“TO BE COMPLIANT WITH NFPA 1983, THE FOLLOWING ADDITIONAL COMPONENTS MUST BE USED IN CONJUNCTION WITH THIS FIRE ESCAPE SYSTEM:”

[The detachable component(s) shall be listed here.]

The manufacturer of fire escape system that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

The manufacturer shall provide information for the user regarding at least the following issues:

1. Inspecting the fire escape system periodically according to the manufacturer's inspection procedure.
2. Removing the fire escape system from service if the equipment does not pass inspection or if there is any doubt about the safety or serviceability of the equipment.
3. Maintaining the fire escape system in accordance with the manufacturer's instructions where metal components are subjected to corrosion or deterioration.
(4) Returning fire escape system to the manufacturer or to a qualified inspection person/center if the equipment is dropped or impact-loaded.
(5) Not exposing the software auxiliary equipment to flame or high temperature and carrying the equipment where it will be protected as it could melt or burn and fail if exposed to flame or high temperature.
(6) Repairing fire escape system only in accordance with the manufacturer's instructions.
(7) Keeping the user instructions/information after they are separated from the fire escape system and retaining them in a permanent record; copying the user instructions/information and keeping the copy with the equipment.
(8) Referring to the user instructions/information before and after each use.
(9) Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences.

5.2.5.3–5.24.2.3 The manufacturer shall provide information for the user that additional information regarding fire escape systems can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.

5.2.5.4–5.24.2.4 The manufacturer of fire escape system that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of the fire escape system and a list of items that the records need to contain.
5.25 MANUFACTURED SYSTEMS.

5.25.1 Manufactured Systems Label Requirements.

5.25.1.1 Each manufactured system shall have a product label.

5.25.1.2 Each manufactured system load-bearing hardware item shall have a product label stamped, engraved, or otherwise permanently marked with the portions of the product label information specified in 5.25.1.2.1 through 5.25.1.2.5.

5.25.1.2.1 Each manufactured system load-bearing component shall have the following compliance statement:

“MEETS NFPA 1983 (2017 ED).”

5.25.1.2.2 Each load-bearing hardware manufactured system component shall display the mark or logo of the certification organization and the manufacturer's name or identifying mark.

5.25.1.2.3 Each load-bearing hardware manufactured system component shall display at least the minimum rated breaking strength prefaced by the letters “MBS.” The minimum breaking strength value stated on the product label shall be permitted to be any value greater than the actual “pass” requirement value determined by the certification testing, but shall not be greater than the calculated minimum breaking strength.

5.25.1.2.4 Each load-bearing hardware manufactured system component shall display a “G” for general use items, a “T” for technical use items, or an “E” for escape use items. The designation “G,” “T,” or “E” shall be designated in accordance with 6.25.2.

5.25.1.2.5 Each manufactured system ascending device, rope grab device, and descent control device shall also display the range of rope diameters with which the device is intended to be used.

5.25.1.3 The product label for the portions of the product label information not specified in 5.25.1.2.1 through 5.25.1.2.5 shall be permitted to be a hang tag affixed to each manufacturer system or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the manufactured system.

5.25.1.4 All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high.

5.25.1.5 Multiple label pieces shall be permitted in order to carry all statements and information required to be on the product label; however, all label pieces comprising the entire product label shall be located adjacent to each other.

5.25.1.6 All worded portions of the required product label shall at least be in English.

5.25.1.7 Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.25.1.8 The certification organization's label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high.
5.25.1.9 Each manufactured system shall have the following compliance statement on the product label.

“MEETS THE MANUFACTURED SYSTEM REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2017 EDITION.”

5.25.1.10 In addition to the compliance statement specified in 5.25.1.9, at least the information required in 5.25.1.2.1 through 5.25.1.2.5 shall also be provided on the printed product label.

5.25.1.11 In addition to the compliance and information statements in 5.25.1.9 and 5.25.1.10, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high.

(1) Manufacturer's name, identification, or designation
(2) Manufacturer's address
(3) Country of manufacture
(4) Manufacturer's product identification
(5) Model, style, lot, or serial number

5.25.1.12 Where detachable components must be used with the manufactured system in order for the manufactured system to be compliance with this standard, at least the following statement and information shall also be printed legibly on the product label of the item. All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high. The detachable component(s) shall be listed following the statement by type, identification, and how properly used.

“TO BE COMPLIANT WITH NFPA 1983, THE FOLLOWING ADDITIONAL COMPONENTS MUST BE USED IN CONJUNCTION WITH THIS MANUFACTURED SYSTEM;”

[The detachable component(s) shall be listed here.]

5.25.2 Manufactured Systems User Information.

5.25.2.1 The manufacturer of manufactured system that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.25.2.2 The manufacturer shall provide information for the user regarding at least the following issues:

(1) Inspecting the manufactured system periodically according to the manufacturer's inspection procedure.
(2) Removing the manufactured system from service if the equipment does not pass inspection or if there is any doubt about the safety or serviceability of the equipment.
(3) Maintaining the manufactured system in accordance with the manufacturer's instructions where metal components are subjected to corrosion or deterioration.
(4) Returning manufactured system to the manufacturer or to a qualified inspection person/center if the equipment is dropped or impact-loaded.
(5) Not exposing the software **components of the manufactured system** to flame or high temperature and carrying the equipment where it will be protected as it could melt or burn and fail if exposed to flame or high temperature.

(6) Repairing the **manufactured system** only in accordance with the manufacturer's instructions.

(7) Keeping the user instructions/information after they are separated from the **manufactured system** and retaining them in a permanent record; copying the user instructions/information and keeping the copy with the equipment.

(8) Referring to the user instructions/information before and after each use.

(9) Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences.

5.25.2.3 The manufacturer shall provide information for the user that additional information regarding **manufactured systems** can be found in NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, and NFPA 1983, *Standard on Life Safety Rope and Equipment for Emergency Services*.

5.25.2.4 The manufacturer of **manufactured systems auxiliary equipment** certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of the manufactured system auxiliary equipment.
See 5.6  5.1.6—Throwlines.

5.1.6.1* Each throwline item shall have a product label.

5.1.6.2 Where a throwline is an integral and nonseparable piece of a manufactured system and that manufactured system is certified as compliant with this standard, the throwline shall be required to have at least the continuous identification tape specified in 5.1.6.12.

5.1.6.3 The throwline product label shall be permitted to be a hang tag affixed to each individual throwline or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the throwline.

5.1.6.4 All letters shall be at least 2 mm (5/64 in.) high.

5.1.6.5 All worded portions of the required product label shall at least be in English.

5.1.6.6 Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.1.6.7 The certification organization's label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2 mm (5/64 in.) high.

5.1.6.8* Each throwline shall have the following compliance statement on the product label:


5.1.6.9 In addition to the compliance statement specified in 5.1.6.8, at least the following information shall be provided on the product label.

“Minimum breaking strength: _______ kN Diameter: _______ mm

Type of fiber(s) _____________________________”

5.1.6.10 The minimum breaking strength value of the throwline, which is required in 5.1.6.9 to be stated on the product label, shall be permitted to be any value greater than the actual “pass” requirement value determined by the certification testing in accordance with 7.3.1, but shall not be greater than the calculated minimum breaking strength.

5.1.6.11 The diameter of the throwline, which is required in 5.1.6.8 to be stated on the product label, shall be as determined by the certification organization in accordance with 7.3.2.

5.1.6.12 In addition to the compliance statement specified in 5.1.6.8, each throwline shall also be marked for its full length by insertion of a continuous identification tape(s). At least the following statement and information shall be legibly printed on the tape not less than every 1 m (39 in.).
5.1.6.13—In addition to the compliance and information statements in 5.1.6.8 and 5.1.6.9, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (5/64 in.) high.

(1) Manufacturer's name, identification, or designation

(2) Manufacturer's address

(3) Country of manufacture

(4) Manufacturer's product identification

(5) Model, style, lot, or serial number

See 5.11 5.1.7—Victim Extrication Device.

5.1.7.1—Each victim extrication device shall have a product label.

5.1.7.2—Each victim extrication device shall have a product label stamped, engraved, or otherwise permanently marked with the portions of the product label information.

5.1.7.2.1 Each victim extrication device shall display the mark or logo of the certification organization, and the manufacturer's name or identifying mark.

5.1.7.3—All letters shall be at least 2 mm (5/64 in.) high.

5.1.7.4—Multiple label pieces shall be permitted in order to carry all statements and information required to be on the product label; however, all label pieces comprising the entire product label shall be located adjacent to each other.

5.1.7.5—All worded portions of the required product label shall be at least in English.

5.1.7.6—Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.1.7.7—The certification organization's label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2 mm (5/64 in.) high.

5.1.7.8—Each victim extrication device shall have the following compliance statement on the product label:

“MEETS THE VICTIM EXTRICATION DEVICE REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2012 EDITION, CLASS________.”
5.1.7.9 In addition to the compliance and information statements in 5.1.7.8, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high:

1. Manufacturer's name, identification, or designation
2. Manufacturer's address
3. Country of manufacture
4. Manufacturer's product identification
5. Model, style, lot, or serial number

5.1.7.10 Where detachable components must be used with a victim extrication device in order for the device to be compliant with this standard, at least the following statement and information shall also be printed legibly on the product label of the device. All labels shall be at least 2 mm (\(\frac{5}{64}\) in.) high. The detachable components shall be listed following the statement by type, identification, and how properly used.

"TO BE COMPLIANT WITH NFPA 1983, THE FOLLOWING ADDITIONAL COMPONENTS MUST BE USED IN CONJUNCTION WITH THIS VICTIM EXTRICATION DEVICE:" [The detachable component(s) shall be listed here.]

See 5.18 5.1.8 Litters.

5.1.8.1 Each litter shall have a product label.

5.1.8.2 Each litter shall have a product label stamped, engraved, or otherwise permanently marked with the portions of the product label information specified in 5.1.8.2.1 through 5.1.8.2.2.

5.1.8.2.1 Each litter shall have the following compliance statement:

"MEETS NFPA 1983 (2012 ED)"

5.1.8.2.2 Each litter shall display the mark or logo of the certification organization and the manufacturer's name or identifying mark.

5.1.8.3 The product label for the portions of the product label information not specified in 5.1.8.2.1 and 5.1.8.2.2 shall be permitted to be a hang tag affixed to each individual litter.

5.1.8.4 All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high.

5.1.8.5 Multiple label pieces shall be permitted in order to carry all statements and information required to be on the product label; however, all label pieces comprising the entire product label shall be located adjacent to each other.

5.1.8.6 All worded portions of the required product label shall be at least in English.
5.1.8.7—Symbols and other pictorial-graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.1.8.8—The certification organization's label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high.

5.1.8.9—Each litter shall have the following compliance statement on the product label:

“MEETS THE LITTER REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2012 EDITION.”

5.1.8.10—In addition to the compliance statement specified in 5.1.8.9, litters shall include the following additional information on the product label:

“VERTICAL BREAKING STRENGTH: _____ kN. HORIZONTAL BREAKING STRENGTH: _____ kN”

5.1.8.11—In addition to the compliance and information statements in 5.1.8.9 and 5.1.8.10, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high.

(1) Manufacturer's name, identification, or designation
(2) Manufacturer's address
(3) Country of manufacture
(4) Manufacturer's product identification
(5) Model, style, lot, or serial number

See 5.3 5.1.9—Escape Webbing.

5.1.9.1—Escape webbing shall meet the labeling requirements in 5.1.2, excluding 5.1.2.8, 5.1.2.9, 5.1.2.10, 5.1.2.11, and 5.1.2.12.

5.1.9.2—Each escape webbing shall have the following compliance statement on the product label:

“THIS WEBBING MEETS THE ESCAPE WEBBING REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2012 EDITION.”

5.1.9.3*—In addition to the compliance statement specified in 5.1.9.3, at least the following information shall be provided on the product label:

“MINIMUM BREAKING STRENGTH: _____ kN PERIMETER: _____ mm
Type of fiber(s) _______________________________”
5.1.9.4—The perimeter of the escape webbing, which is required in 5.1.9.3 to be stated on the product label, shall be as determined by the certification organization in accordance with 7.9.2.

5.1.9.5—In addition to the compliance statement specified in 5.1.9.3, each escape webbing shall also be marked for its full length by insertion of a continuous identification tape(s). At least the following statement and information shall be legibly printed on the tape not less than every 1 m (39 in.).

“MEETS REQUIREMENTS FOR ESCAPE WEBBING OF NFPA 1983”

{Certification organization's label, symbol, or identifying mark}

{Name of manufacturer}

{Year and quarter of manufacture (not-coded)}

5.1.9.6 The minimum breaking strength value of the escape webbing, which is required in 5.1.9.3 to be stated on the product label, shall be permitted to be any value greater than the actual “pass” requirement value determined by the certification testing in accordance with 7.9.1, but shall not be greater than the calculated minimum breaking strength.

See 5.4 5.1.10—Fire Escape Webbing.

5.1.10.1—Fire escape webbing shall meet the labeling requirements in 5.1.2, escape rope, excluding 5.1.2.8, 5.1.2.9, 5.1.2.10, 5.1.2.11, and 5.1.2.12.

5.1.10.2—Each fire escape webbing shall have the following compliance statement on the product label:

“THIS WEBBING MEETS THE FIRE ESCAPE WEBBING REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2012 EDITION.”

5.1.10.3* In addition to the compliance statement specified in 5.1.10.2, at least the following information shall be provided on the product label:

“MINIMUM BREAKING STRENGTH: _______ kN PERIMETER: ______ mm

Type of fiber(s) _______________________________”

5.1.10.4—The perimeter of the fire escape webbing, which is required in 5.1.10.3 to be stated on the product label, shall be as determined by the certification organization in accordance with 7.10.2.

5.1.10.5—In addition to the compliance statement specified in 5.1.10.2, each fire escape webbing shall also be marked for its full length by insertion of a continuous identification tape(s). At least the following statement and information shall be legibly printed on the tape not less than every 1 m (39 in.).

“MEETS REQUIREMENTS FOR FIRE ESCAPE WEBBING OF NFPA 1983”

{Certification organization's label, symbol, or identifying mark}
The minimum breaking strength value of the escape webbing, which is required in 5.1.9.3 to be stated on the product label, shall be permitted to be any value greater than the actual “pass” requirement value determined by the certification testing in accordance with 7.10.1, but shall not be greater than the calculated minimum breaking strength.

See 5.23 and 5.24

5.1.11.1—Each escape system shall have a product label.

5.1.11.2—Each escape system load-bearing hardware item shall have a product label stamped, engraved, or otherwise permanently marked with the portions of the product label information specified in 5.1.5.2.1 5.1.11.2.1 through 5.1.5.2.5 5.11.2.5.

5.1.11.2.1—Each load-bearing escape system component shall have the following compliance statement:

“MEETS NFPA 1983 (2012 ED)”

5.1.11.2.2—Each load-bearing hardware escape system component shall display the mark or logo of the certification organization and the manufacturer’s name or identifying mark.

5.1.11.2.3—Each load-bearing hardware escape system component shall display at least the minimum rated breaking strength prefaced by the letters “MBS.” The minimum breaking strength value stated on the product label shall be permitted to be any value greater than the actual “pass” requirement value determined by the certification testing, but shall not be greater than the calculated minimum breaking strength.

5.1.11.2.4—Each load-bearing escape system component shall display an “E” for escape use items. The designation “E” shall be designated in accordance with 6.5.2.1.

5.1.11.2.5—Each system device, rope grab device, and descent control device shall also display the range of rope diameters with which the device is intended to be used.

5.1.11.3—The product label for the portions of the product label information not specified in 5.1.5.2.1 shall be permitted to be a hang tag affixed to each individual equipment item or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the escape system.

5.1.11.4—All letters shall be at least 2 mm (5⁄64 in.) high.

5.1.11.5—Multiple label pieces shall be permitted in order to carry all statements and information required to be on the product label; however, all label pieces comprising the entire product label shall be located adjacent to each other.

5.1.11.6—All worded portions of the required product label shall be at least in English.
5.1.11.7—Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.1.11.8—The certification organization’s label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2.5 mm ($\frac{3}{32}$ in.) high.

5.1.11.9—Each escape system shall have the following compliance statement on the product label:

For fire escape systems: “THIS [insert name of equipment item here] MEETS THE FIRE ESCAPE SYSTEM REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2012 EDITION.”

For escape systems: “THIS [insert name of equipment item here] MEETS THE ESCAPE SYSTEM REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2012 EDITION.”

5.1.11.10—In addition to the compliance and information statements in 5.1.5.9, 5.1.5.10, and 5.1.11, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high:

(1) Manufacturer’s name, identification, or designation
(2) Manufacturer’s address
(3) Country of manufacture
(4) Manufacturer’s product identification
(5) Model, style, lot, or serial number

5.1.11.11—Where detachable components must be used with the escape system item in order for the escape system to be compliant with this standard, at least the following statement and information shall also be printed legibly on the product label of the item. All letters shall be at least 2.5 mm ($\frac{3}{32}$ in.) high. The detachable component(s) shall be listed following the statement by type, identification, and how properly used.

“TO BE COMPLIANT WITH NFPA 1983, THE FOLLOWING ADDITIONAL COMPONENTS MUST BE USED IN CONJUNCTION WITH THIS [insert type of escape system here]:

[The detachable component(s) shall be listed here.]

See 5.25.1.12—Fire Escape Rope.

5.1.12.1—Each fire escape rope item shall have a product label.

5.1.12.2—Where fire escape rope is an integral and nonseparable piece of a manufactured system and that manufactured system is certified as compliant with this standard, the fire escape rope shall be required to have at least the continuous identification tape specified in 5.1.2.12.
5.1.12.3—The fire escape rope product label shall be permitted to be a hang tag affixed to each fire escape rope or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the fire escape rope.

5.1.12.4—All letters shall be at least 1.6 mm (1/16 in.) 2mm (5/64 in.) high.

5.1.12.5—All worded portions of the required product label shall be at least in English.

5.1.12.6—Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.1.12.7—The certification organization’s label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2.5 mm (3/32 in.) high.

5.1.12.8—Each fire escape rope shall have the following compliance statement on the product label:

“THIS ROPE MEETS THE FIRE ESCAPE ROPE REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2012 EDITION.”

5.1.12.9* In addition to the compliance statement specified in 5.1.12.8, at least the following information shall be provided on the product label:

“MINIMUM BREAKING STRENGTH: _______ kN DIAMETER: ______ mm
Type of fiber(s) _____________________________”

5.1.12.10—The minimum breaking strength value of the fire escape rope, which is required in 5.1.12.9 to be stated on the product label, shall be permitted to be any value greater than the actual “pass” requirement value determined by the certification testing in accordance with 7.2.1, but shall not be greater than the calculated minimum breaking strength.

5.1.12.11—The diameter of the fire escape rope, which is required in 5.1.12.9 to be stated on the product label, shall be as determined by the certification organization in accordance with 7.2.2.

5.1.12.12* In addition to the compliance statement specified in 5.1.12.9, each fire escape rope shall also be marked for its full length by insertion of a continuous identification tape(s). At least the following statement and information shall be legibly printed on the tape not less than every 1 m (39 in.):

“MEETS REQUIREMENTS FOR FIRE ESCAPE ROPE OF NFPA 1983”
{Certification organization’s label, symbol, or identifying mark}
{Name of manufacturer}
{Year and quarter of manufacture (not coded)}

5.1.12.13—In addition to the compliance and information statements in 5.1.12.8, and 5.1.12.9, and 5.1.12.12, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (5/64 in.) high.
5.1.13.1 Each manufacturer-supplied eye termination shall have a product label.

5.1.13.2 The manufacturer-supplied eye termination product label shall be permitted to be a hang tag affixed to each manufacturer-supplied eye termination or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the manufacturer-supplied eye termination.

5.1.13.3 All letters shall be at least 2 mm (5/64 in.) high.

5.1.13.4 All worded portions of the required product label shall be at least in English.

5.1.13.5 Symbols and other pictorialgraphic representations shall be permitted to be used to supplement worded statements on the product label(s).

5.1.13.6 The certification organization’s label, symbol, or identifying mark shall be legibly printed on the product label. All letters shall be at least 2.5 mm (3/32 in.) high.

5.1.13.7 Each manufacturer-supplied eye termination shall have the following compliance statement on the product label:
5.1.13.8 In addition to the compliance statement specified in 5.1.13.7, at least the following information shall be provided on the product label:

“THIS (ROPE OR ESCAPE WEBBING) IS CERTIFIED AS CLASS: ______ (ROPE OR WEBBING) WITH MBS OF ___kN
DIAMETER: _____mm
Type of Fibers: ______________,
Thread Fiber: _____”

5.1.13.9 In addition to the compliance and information statements in 5.1.13.7 and 5.1.13.8, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (\(\frac{5}{64}\) in.) high.

1. Manufacturer’s name, identification, or designation
2. Manufacturer’s address
3. Country of manufacturer
4. Manufacturer’s product identification
5. Model, style, lot, or serial number

5.1.13.10 Where the manufacturer of the life safety, escape, or fire escape rope, and the manufacturer of the manufacturer supplied eye termination are the same, the labeling for both the rope and the manufacturer supplied eye termination shall be permitted to be combined, as long as all required product label information of the rope and of the manufacturer supplied eye termination as given in 5.1.13.1 through 5.1.13.9 is included on the label.

5.1.13.11 Where the manufacturer of the manufactured system, escape system, or fire escape system, and the manufacturer of the manufacturer supplied eye termination are the same, the labeling for both the system and the manufacturer supplied eye termination shall be permitted to be combined, as long as all required product label information of the manufactured system and of the manufacturer supplied eye termination as given in 5.1.13.1 through 5.1.13.9 is included on the label. Where the manufacturer of the escape webbing and the manufacturer of the manufacturer supplied eye termination are the same, the labeling for both the escape webbing and the manufacturer supplied eye termination shall be permitted to be combined, as long as all required product label information of the escape webbing and of the manufacturer supplied eye termination as given in 5.1.13 through 5.1.13.9 is included on label.

5.1.13.12 Where the manufacturer of the escape webbing and the manufacturer of the manufacturer supplied eye termination are the same, the labeling for both the escape webbing and
the manufacturer-supplied eye termination shall be permitted to be combined, as long as all
required product label information of the escape webbing and of the manufacturer-supplied eye
termination as given in 5.1.12.1 through 5.1.12.8 is included on label.

5.1.13.13 Where the manufacturer of the throwline and the manufacturer of the manufacturer-
supplied eye termination are the same, the labeling for both the throwline and the manufacturer-
supplied eye termination shall be permitted to be combined, as long as all required product label
information of the escape webbing and of the manufacturer-supplied eye termination as given in
5.1.13 through 5.1.13.9 is included on label.

See 5.7 5.1.14—Moderate Elongation Laid Life-Saving Rope.

5.1.14.1—Each moderate elongation laid life saving rope shall have a product label.

5.1.14.2—The moderate elongation laid life saving rope product label shall be permitted to be a
hang tag affixed to each rope or shall be permitted to be printed on a sheet that is inserted and
sealed in the packaging that immediately contains the moderate elongation laid life saving rope.

5.1.14.3—All letters shall be at least 2 mm (5/64 in.) high.

5.1.14.4—All worded portions of the required product label shall be at least in English.

5.1.14.5—Symbols and other pictorial graphic representations shall be permitted to be used to
supplement worded statements on the product label(s).

5.1.14.6—The certification organization’s label, symbol, or identifying mark shall be legibly
printed on the product label. All letters shall be at least 2.5 mm (3/32 in.) high.

5.1.14.7—Each moderate elongation laid life saving rope shall have the following compliance
statement on the product label:

“THIS ROPE MEETS THE MODERATE ELONGATION LAID LIFE-SAVING ROPE
REQUIREMENTS OF NFPA 1983, STANDARD ON LIFE SAFETY ROPE AND
EQUIPMENT FOR EMERGENCY SERVICES, 2012 EDITION.”

5.1.14.8—In addition to the compliance statement specified in 5.1.14.7, at least the following
information shall be provided on the product label:

“MINIMUM BREAKING STRENGTH: ____ kN
DIAMETER: ____ mm
Type of Fiber(s): ________________”

5.1.14.9—The minimum breaking strength value of the moderate elongation laid life saving rope,
which is required in 5.1.14.8 to be stated on the product label, shall be permitted to be any value
greater than the actual “pass” requirement value determined by the certification testing in accordance with 7.14.1, but shall not be greater than the calculated minimum breaking strength.

5.1.14.10—The diameter of the moderate elongation laid life saving rope, which is required in 5.1.14.8 to be stated on the product label, shall be as determined by the certification organization in accordance with 7.14.2.

5.1.14.11—In addition to the compliance statement specified in 5.1.14.7, each moderate elongation laid life saving rope shall also be marked for its full length by insertion of a continuous identification tape(s). At least the following statement and information shall be legibly printed on the tape not less than every 1 m (39 in.):

“MEETS REQUIREMENTS FOR MODERATE ELONGATION LAID LIFE SAVING ROPE OF NFPA 1983”

[Certification organization’s label, symbol, or identifying mark]

[Name of manufacturer]

[Year and quarter of manufacture (not coded)]

5.1.14.12—In addition to the compliance and information statements specified in 5.1.14.7, 5.1.14.8, and 5.1.14.11, at least the following information shall also be printed legibly on the product label(s). All letters shall be at least 2 mm (5/64 in.) high.

(1) Manufacturer’s name, identification, or designation

(2) Manufacturer’s address

(3) Country of manufacture

(4) Manufacturer’s product identification

(5) Model, style, lot, or serial number

(6) Elongation at 1.35 kN (300 lbf)

(7) Elongation at 2.7 kN (600 lbf)

(8) Elongation at 4.4 kN (1000 lbf)

5.2—User Information.

See 5.1.2 5.2.1—Life Safety Rope User Information.
5.2.1.1—The manufacturer of life safety rope that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.2.1.2—The manufacturer shall provide information for the user to consider prior to reusing life safety rope, including that the rope be considered for reuse only if all of the following conditions are met:

(1) Rope has not been visually damaged.

(2) Rope has not been exposed to heat, direct flame impingement, or abrasion.

(3) Rope has not been subjected to any impact load.

(4) Rope has not been exposed to liquids, solids, gases, mists, or vapors of any chemical or other material that can deteriorate rope.

(5) Rope passes inspection when inspected by a qualified person following the manufacturer’s inspection procedures both before and after each use.

5.2.1.3—The manufacturer shall provide information for the user regarding not using the life safety rope and removing the rope from service if the rope does not meet all of the conditions in 5.2.1.2, if the rope does not pass inspection, or if there is any doubt about the safety or serviceability of the rope.

5.2.1.4—The manufacturer shall provide information for the user regarding at least the following issues:

(1)* Inspecting the rope periodically according to the manufacturer’s inspection procedure

(2) Removing the rope from service and destroying it if the rope does not pass inspection or if there is any doubt about the safety or serviceability of the rope

(3) Protecting the rope from abrasion

(4) Not exposing the rope to flame or high temperature and carrying the rope where it will be protected as the rope could melt or burn and fail if exposed to flame or high temperature

(5) Keeping the product label and user instructions/information after they are removed/separated from the rope and retaining them in the permanent rope record; copying the product label and user instructions/information and keeping the copies with the rope

(6) Referring to the user instructions/information before and after each use

(7) Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences

5.2.1.5—The manufacturer shall provide information for the user that additional information regarding moderate elongation laid life-saving life safety rope can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.
5.2.1.6—The manufacturer of life safety rope that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of life safety rope and a list of items that the records need to contain.

See 5.2.2, 5.3.2, 5.4.2, and 5.5.2

5.2.2—Escape Rope, Escape Webbing, Fire Escape Rope, and Fire Escape Webbing User Information.

5.2.2.1—The manufacturer of escape rope, escape webbing, fire escape rope, and fire escape webbing that are certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.2.2.2—The manufacturer shall provide information for the user regarding at least the following issues:

1. Using the rope only with a life safety harness or escape belt
2. Inspecting the rope periodically according to the manufacturers’ inspection procedure
3. Removing the rope from service and destroying it if the rope does not pass inspection or if there is any doubt about the safety or serviceability of the rope
4. Protecting the rope from abrasion
5. Not exposing the rope to flame or high temperature and carrying the rope where it will be protected as the rope could melt or burn and fail if exposed to flame or high temperature
6. Keeping the product label and user instructions/information after they are removed/separated from the rope for future reference
7. Referring to the user instructions/information before and after each use
8. Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences

5.2.2.3—The manufacturer shall provide information for the user that additional information regarding escape rope, escape webbing, fire escape rope, and fire escape webbing can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.

5.2.2.4—The manufacturer of escape rope, escape webbing, fire escape rope, and fire escape webbing that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of escape rope, escape webbing, fire escape rope, and fire escape webbing and a list of items that the records need to contain.

See 5.9.2

5.2.3—Life Safety Harness User Information.

5.2.3.1—The manufacturer of life safety harnesses that are certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.
5.2.3.2—The manufacturer shall provide information for the user regarding at least the following issues:

(1) Inspecting the harness periodically according to the manufacturer's inspection procedure.

(2) Removing the harness from service and destroying it if the harness does not pass inspection or if there is any doubt about the safety or serviceability of the harness.

(3) For a life safety harness certified to only the nonoptional requirements of the standard, not exposing the harness to flame or high temperature and carrying the harness where it will be protected, as the harness could melt or burn and fail if exposed to flame or high temperature.

(4) Repairing the harness only in accordance with the manufacturer's instructions.

(5) Keeping the user instructions/information after they are separated from the harness and retaining them in a permanent record; copying the user instructions/information and keeping the copy with the harness.

(6) Referring to the user instructions/information before and after each use.

(7) Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences.

5.2.3.3—The manufacturer shall provide information for the user that additional information regarding life safety harnesses can be found in NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, and NFPA 1983, *Standard on Life Safety Rope and Equipment for Emergency Services*.

5.2.3.4—The manufacturer of life safety harnesses that are certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of life safety harnesses and a list of items that the records need to contain.

5.2.3.5—The manufacturer of life safety harnesses that are certified as being compliant with this standard shall indicate that tie-off is required for webbing ends if tie-off of webbing end(s) was required during testing. The instructions shall include location(s) and method(s) with text and/or illustrations.

See 5.10.2 5.2.4—Belt User Information.

5.2.4.1—The manufacturer of belts that are certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.2.4.2—The manufacturer shall provide information for the user regarding at least the following issues:

(1) Inspecting the belt periodically according to the manufacturer's inspection procedure.

(2) Removing the belt from service and destroying it if the belt does not pass inspection or if there is any doubt about the safety or serviceability of the belt.
For belts certified to only the nonoptional requirements of the standard, not exposing the belt to flame or high temperature and carrying the belt where it will be protected, as the belt could melt or burn and fail if exposed to flame or high temperature.

Repairing the belt only in accordance with the manufacturer's instructions.

Keeping the user instructions/information after they are separated from the belt and retaining them in a permanent record; copying the user instructions/information and keeping the copy with the belt

Referring to the user instructions/information before and after each use.

Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences.

5.2.4.3 The manufacturer shall provide information for the user that additional information regarding belts can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.

5.2.4.4 The manufacturer of belts that are certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of belts and a list of items that the records need to contain.

5.2.4.5 The manufacturer of belts that are certified as being compliant with this standard shall indicate that tie-off of webbing end(s) is required for webbing end(s) if tie-off of webbing end(s) was required during testing. The instructions shall include location(s) and method(s) with text and/or illustrations.


5.2.5 Auxiliary Equipment User Information.

5.2.5.1 The manufacturer of auxiliary equipment that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.2.5.2 The manufacturer shall provide information for the user regarding at least the following issues:

(1) Inspecting the auxiliary equipment periodically according to the manufacturer's inspection procedure.

(2) Removing the auxiliary equipment from service if the equipment does not pass inspection or if there is any doubt about the safety or serviceability of the equipment.

(3) Maintaining the auxiliary equipment in accordance with the manufacturer's instructions where metal components are subjected to corrosion or deterioration.

(4) Returning auxiliary equipment to the manufacturer or to a qualified inspection person/center if the equipment is dropped or impact loaded.
(5) Not exposing the software auxiliary equipment to flame or high temperature and carrying the equipment where it will be protected as it could melt or burn and fail if exposed to flame or high temperature.

(6) Repairing the auxiliary equipment only in accordance with the manufacturer's instructions.

(7) Keeping the user instructions/information after they are separated from the auxiliary equipment and retaining them in a permanent record; copying the user instructions/information and keeping the copy with the equipment.

(8) Referring to the user instructions/information before and after each use.

(9) Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences.

5.2.5.3 The manufacturer shall provide information for the user that additional information regarding auxiliary equipment can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.

5.2.5.4 The manufacturer of auxiliary equipment that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of the auxiliary equipment and a list of items that the records need to contain.

5.2.5.5 In addition to the requirements for auxiliary equipment, the manufacturer of portable anchors shall provide information for the user that indicates the actual configuration of the device when meeting the breaking strength requirement, including the height, attachment points, and angular configuration of the legs, such that the user can set up the equipment in the same configuration as tested.

5.2.5.6 The manufacturer of manufactured systems auxiliary equipment certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of the manufactured system auxiliary equipment.

5.2.5.7 Where auxiliary equipment is tested with a rope or escape webbing, the following statement shall be provided in the user instructions:

For rope:

“This [insert name of equipment item here] has passed the minimum breaking strength and holding load test using the following rope: [insert rope manufacturer name, designation, part number, and diameter here].”

For escape webbing:

“This [insert name of equipment item here] has passed the minimum breaking strength and holding load test using the following escape webbing: [insert webbing manufacturer name, designation, part number, and perimeter here].”
5.2.5.8 Where the auxiliary equipment has been tested with multiple ropes and/or escape webbings, each rope and/or escape webbing shall be listed in the user instructions.

See 5.6.2 5.2.6 Water Rescue Throwline User Information. The manufacturer of a throwline that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

See 5.11.2 5.2.7 Victim Extrication Device User Information.

5.2.7.1 The manufacturer of the victim extrication device that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.2.7.2 The manufacturer shall provide information for the user regarding at least the following issues:

(1) Inspecting the victim extrication device periodically according to the manufacturer's inspection procedure

(2) Removing the victim extrication device from service if the equipment does not pass inspection or if there is any doubt about the safety or serviceability of the equipment

(3) Maintaining the victim extrication device in accordance with the manufacturer's instructions where metal components are subjected to corrosion or deterioration

(4) Returning victim extrication device to the manufacturer or to a qualified inspection person/center if the equipment is dropped or impact-loaded

(5) Not exposing any software component of the victim extrication device to flame or high temperature and carrying the equipment where it will be protected as it could melt or burn and fail if exposed to flame or high temperature

(6) Repairing the victim extrication device only in accordance with the manufacturer's instructions

(7) Keeping the user instructions/information after they are separated from the victim extrication device and retaining them in a permanent record, copying the user instructions/information and keeping the copy with the equipment

(8) Referring to the user instructions/information before and after each use

(9) Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences

5.2.7.3 The manufacturer of a victim extrication device that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by
the purchaser or user of the victim extrication device and a list of items that the records need to contain.

See 5.18.2 5.2.8—Litter User Information.

5.2.8.1 The manufacturer of the litter that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.2.8.2 The manufacturer shall provide information for the user regarding at least the following issues:

(1) Inspecting the litter periodically according to the manufacturer’s inspection procedure

(2) Removing the litter from service if the equipment does not pass inspection or if there is any doubt about the safety or serviceability of the equipment

(3) Maintaining the litter in accordance with the manufacturer’s instructions where metal components are subjected to corrosion or deterioration

(4) Returning litter to the manufacturer or to a qualified inspection person/center if the equipment is dropped or impact-loaded

(5) Not exposing any software component of the litter to flame or high temperature and carrying the equipment where it will be protected as it could melt or burn and fail if exposed to flame or high temperature

(6) Repairing the litter only in accordance with the manufacturer’s instructions

(7) Keeping the user instructions/information after they are separated from the litter and retaining them in a permanent record; copying the user instructions/information and keeping the copy with the equipment

(8) Referring to the user instructions/information before and after each use

(9) Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences

5.2.8.3 The manufacturer shall provide information for the user that additional information regarding litters can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.

5.2.8.4 The manufacturer of a litter that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of the litter and a list of items that the records need to contain.

See 5.8.2 5.2.9—Manufacturer-Supplied Eye Termination User Information.
5.2.9.1—The manufacturer of the manufacturer-supplied eye termination that is certified as being compliant with the this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.

5.2.9.2—The manufacturer shall provide information for the user to consider prior to reusing manufacturer-supplied eye termination, including that the rope be considered for reuse only if all of the following conditions are met:

1. Manufacturer-supplied eye termination has not been visually damaged.
2. Manufacturer-supplied eye termination has not been exposed to heat, direct flame impingement, or abrasion.
3. Manufacturer-supplied eye termination has not been subjected to any impact load.
4. Manufacturer-supplied eye termination has not been exposed to liquids, solids, gases, mists, or vapors of any chemical or other material that can deteriorate the manufacturer-supplied eye termination.
5. Manufacturer-supplied eye termination passes inspection when inspected by a qualified person following the manufacturer's inspection procedures both before and after each use.

5.2.9.3—The manufacturer shall provide information for the user regarding not using the manufacturer-supplied eye termination and removing the manufacturer-supplied eye termination from service if the rope does not meet all of the conditions in 5.2.9.2, if the manufacturer-supplied eye termination does not pass inspection, or if there is any doubt about the safety or serviceability of the manufacturer-supplied eye termination.

5.2.9.4—The manufacturer shall provide information for the user regarding at least the following issues:

1. Inspecting the manufacturer-supplied eye termination periodically according to the manufacturer's inspection procedure.
2. Removing the manufacturer-supplied eye termination from service and destroying it if the manufacturer-supplied eye termination does not pass inspection or if there is any doubt about the safety of the manufacturer-supplied eye termination.
3. Protecting the manufacturer-supplied eye termination from abrasion.
4. Not exposing the manufacturer-supplied eye termination to flame or high temperature and carrying the manufacturer-supplied eye termination where it will be protected as the manufacturer-supplied eye termination could melt or burn and fail if exposed to flame or high temperature.
5. Keeping the product label and user instructions/information after they are removed/separated from the manufacturer-supplied eye termination and retaining them in the permanent manufacturer-supplied eye termination record; copying the product label and user information/instructions and keeping copies with the manufacturer-supplied eye termination.
(6) Referring to the user instructions/information before and after each use.

(7) Cautioning that, if the instructions/information are not followed, the user could suffer serious consequences.

### 5.2.9.5
The manufacturer of manufacturer-supplied eye termination that is certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of manufacturer-supplied eye termination and a list of items that the records need to contain.

#### 5.2.9.5.1
The suggested inspection records shall include inspection of the loop of the eye, inspection for worn or broken thread in sewn termination, and inspection of contact point of swage and rope-in-swage termination.

#### 5.2.9.6
Where the manufacturer of the rope and the manufacturer of the manufacturer-supplied eye termination are the same, the user information/instructions for both the rope and the manufacturer-supplied eye termination shall be permitted to be combined, as long as all required user information/instructions of the rope and required user information/instructions of manufacturer-supplied eye termination as given in 5.2.9.4 through 5.2.9.5 are included in the user information/instructions.

#### 5.2.9.7
Where the manufacturer of the manufactured system and the manufacturer of the manufacturer-supplied eye termination are the same, the user information/instructions for both the manufactured system and the manufacturer-supplied eye termination shall be permitted to be combined, as long as all required user information/instructions of the manufactured system and required user information/instructions of the manufacturer-supplied eye termination as given in 5.2.9.1 through 5.2.9.5 are included in the user information/instructions.

#### 5.2.9.8
Where the manufacturer of the escape webbing and the manufacturer of the manufacturer-supplied eye termination are the same, the user information/instructions for both the escape webbing and the manufacturer-supplied eye termination shall be permitted to be combined, as long as all required user information/instructions of the escape webbing and required user information/instructions of manufacturer-supplied eye termination as given in 5.2.9.1 through 5.2.9.5 are included in the user information/instructions.

#### 5.2.9.9
The manufacturer shall provide information for the user that additional information regarding manufacturer-supplied eye termination can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.

See 5.7.2 5.2.10—Moderate Elongation Laid Life Saving Rope User Information.

#### 5.2.10.1
The manufacturer of moderate elongation laid life-saving rope that is certified as being compliant with this standard shall furnish the purchaser with at least use criteria, inspection procedures, maintenance procedures, and retirement criteria for the product.
5.2.10.2—The manufacturer shall provide information for the user to consider prior to reusing moderate elongation laid life saving rope, including that the rope be considered for reuse only if all of the following conditions are met:

(1) Rope has not been visually damaged.

(2) Rope has not been exposed to heat, direct flame impingement, or abrasion.

(3) Rope has not been subjected to any impact load.

(4) Rope has not been exposed to liquids, solids, gases, mists, or vapors of any chemical or other material that can deteriorate rope.

(5) Rope passes inspection when inspected by a qualified person following the manufacturer’s inspection procedures both before and after each use.

5.2.10.3—The manufacturer shall provide information for the user regarding not using the moderate elongation laid life saving rope and removing the rope from service if the rope does not meet all of the conditions in 5.2.10.2, if the rope does not pass inspection, or if there is any doubt about the safety or serviceability of the rope.

5.2.10.4—The manufacturer shall provide information for the user regarding at least the following issues:

(1) Inspecting the rope periodically according to the manufacturer’s inspection procedure

(2) Removing the rope from service and destroying it if the rope does not pass inspection or if there is any doubt about the safety or serviceability of the rope

(3) Protecting the rope from abrasion

(4) Not exposing the rope to flame or high temperature and carrying the rope where it will be protected as the rope could melt or burn and fail if exposed to flame or high temperature

(5) Keeping the product label and user instructions/information after they are removed/separated from the rope and retaining them in the permanent rope record; copying the product label and user instructions/information and keeping the copies with the rope

(6) Referring to the user instructions/information before and after each use

(7) Cautioning that if the instructions/information are not followed, the user could suffer serious consequences

5.2.10.5—The manufacturer shall provide information for the user that additional information regarding victim extrication devices/moderate elongation laid life saving rope can be found in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services.

5.2.10.6—The manufacturer of moderate elongation laid life saving ropes that are certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be
maintained by the purchaser or user of moderate elongation laid life-saving rope and a list of items that the records need to contain. (added through TIA)
Public Input No. 2-NFPA 1983-2013 [Section No. 5.1.5.12]

5.1.5.12

In addition to the compliance statement specified in 5.1.5.9, rigging and anchor, multiple configuration and end to end straps shall include the following additional statement on the product label:

For multiple configuration straps:

"MINIMUM BREAKING STRENGTH AND RATING ARE DETERMINED USING A BASKET (U) CONFIGURATION. IN ADDITION, THIS STRAP HAS A MINIMUM BREAKING STRENGTH OF:

________________________ kN IN A CHOKER CONFIGURATION

________________________ kN WHEN PULLED END TO END."

For end to end straps:

"MINIMUM BREAKING STRENGTH OF

___ kN WHEN PULLED END TO END"

Additional Proposed Changes

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Statement of Problem and Substantiation for Public Input

Note: This Public Input originates from Tentative Interim Amendment 1983-12-1 (TIA 1076) issued by the Standards Council on October 30, 2012.

1. Table 4.4.1 - The table is missing recertification for Moderate Elongation Life Saving Rope and includes several duplications and terminology errors.
2. 5.1.5.12 - The terminology in 5.1.5.12 is not consistent with the document. The terms “rigging and anchor” straps have been replaced with “multiple configuration and end to end” straps. The current required statement is incorrect for end to end straps in that they are not required to be tested in a U or choker configuration.
3. 5.2.10.6 - This added text is a requirement for other products covered by NFPA 1983 and provides users with valuable information on maintaining records for this life saving equipment.
4. 7.4.6.1 and 7.5.6.1 - The term “and hardware” was inadvertently added to these paragraphs. Additionally, the char length requirement does not apply to hardware items, and there are no specific requirements for the testing of hardware items in the test method. The requirement as written in the current edition is inappropriate for hardware items, would be impossible to determine and could inhibit product certification.
5. 7.5.7.10, 7.6.3.9, and 8.13.1.1 - Requirement 7.5.7.10 is redundant in that a manufactured system that includes an escape descent device would be classified as an Escape System – and therefore must meet all of the requirements of NFPA 1983 Section 7.11. Additionally, the requirement is incorrectly worded in that there is no torso used in the conduct of the test - thus the statement “shall not release the test torso” has no relevance.
Requirement 7.6.3.9 applies to all escape descent control devices (those that are sold separately – not as part of a system). As the test is to be conducted with “each type of rope for its intended use” (NFPA 1983, Section 8.13.2.3) it follows that all escape descent control devices may have to be tested with all escape ropes – or the device would be limited to the type of rope with which it was tested. This would present an undue hardship on the manufacturers, and contribute to confusion on the part of the users in determining what ropes are suitable with each device.
Requirement 8.13.1.1 is changed so the application of the test method is consistent with the performance requirements.
6. 7.6.3.12 - This performance requirement mandates the minimum breaking strength for these particular devices and is therefore a critical safety issue.
7. 7.11.6, 7.11.6.2, and 7.11.6.3 (New) - The change in 7.11.6 adds the requirement of thread heat resistance to fire escape systems.
The change in 7.11.6.2 corrects the terminology from “escape anchors” to “fire escape system” as section 7.11.6
## NFPA 1983-2012

*Standard on Life Safety Rope and Equipment for Emergency Services*

**TIA Log No. 1076**

**Reference:** Table 4.4.1, 5.1.5.12, 5.2.10.6, 7.4.6.1, 7.5.6.1, 7.5.7.10, 7.6.3.9, 8.13.1.1, 7.6.3.12, 7.11.6, 7.11.6.2, 7.11.6.3 (New), 7.15.1, 7.15.2, 7.17, 7.6.3.1.1, 7.11.7 (New), 8.15.5, and 8.15.6.1

**Comment Closing Date:** October 4, 2012

**Submitter:** Dean Cox, Fairfax County Fire & Rescue Department

1. Revise Table 4.4.1 to read as follows:

<table>
<thead>
<tr>
<th>Product</th>
<th>Test</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>All component product</td>
<td>Corrosion testing</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>All component product</td>
<td>Product label durability testing</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>Life safety rope</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Water rescue Throwlines</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Water rescue Throwlines</td>
<td>Floatability</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety harness</td>
<td>Static</td>
<td>Alternating years with drop test</td>
</tr>
<tr>
<td>Life safety harness</td>
<td>Drop</td>
<td>Alternating years with static test</td>
</tr>
<tr>
<td>Belt</td>
<td>Static</td>
<td>Alternating years with drop test</td>
</tr>
<tr>
<td>Belt</td>
<td>Drop</td>
<td>Alternating years with static test</td>
</tr>
<tr>
<td>Auxiliary equipment</td>
<td>Carabiners and snap link</td>
<td>All, every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment</td>
<td>Rope grab devices</td>
<td>All, every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment system</td>
<td>dDescent control devices – auto stop</td>
<td>Passive brake holding, every year</td>
</tr>
<tr>
<td>Auxiliary equipment system</td>
<td>dDescent control devices – non-auto stop</td>
<td>Manner of function, every year</td>
</tr>
<tr>
<td>Auxiliary equipment system</td>
<td>dDescent control devices – auto stop</td>
<td>All, every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment</td>
<td>Portable anchor</td>
<td>All, initial cert only</td>
</tr>
<tr>
<td>Auxiliary equipment</td>
<td>Pulley</td>
<td>All, every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment</td>
<td>Pick off, anchor and rigging Multiple configuration and end to end straps</td>
<td>Breaking strength, every year</td>
</tr>
<tr>
<td>Auxiliary equipment</td>
<td>MManufactured systems</td>
<td>All, every year</td>
</tr>
<tr>
<td>Escape Systems</td>
<td>All</td>
<td>Diameter, rope breaking, and elongation, every year</td>
</tr>
<tr>
<td>Life safety rope</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
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<tr>
<td>Fire escape rope</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing</td>
<td>Perimeter, rope breaking, and elongation</td>
<td>Every year</td>
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<td>Elevated rope temperature test</td>
<td>Every year</td>
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<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Moderate elongation laid life saving rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
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<tr>
<td>Moderate elongation laid life saving rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
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<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Victim extrication devices</td>
<td>Static</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Component</td>
<td>Test Description</td>
<td>Frequency</td>
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<tr>
<td>Litter strength test – vertical</td>
<td>Litter Strength test – horizontal</td>
<td>Initial only, alternating years with vertical</td>
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<tr>
<td>Load-bearing textiles used in victim extrication devices</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in victim extrication devices</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Webbing components</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
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<tr>
<td>Thread components</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
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<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
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<tr>
<td>Load-bearing textiles used in belts with optional flame resistance</td>
<td>Flame resistance</td>
<td>Every year</td>
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<tr>
<td>Load-bearing textiles used in life safety harnesses with optional flame resistance</td>
<td>Flame resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Hardware used in belts with optional flame resistance</td>
<td>Heat Resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in belts with optional flame resistance</td>
<td>Thread heat resistance</td>
<td>Every year</td>
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<tr>
<td>Manufacturer-supplied eye termination</td>
<td>Breaking strength</td>
<td>Every year</td>
</tr>
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<td>Manufacturer-supplied eye termination</td>
<td>Thread melting</td>
<td>Every year</td>
</tr>
</tbody>
</table>

2. Revise 5.1.5.12 to read as follows:

5.1.5.12 In addition to the compliance specified in 5.1.5.9, rigging and anchor multiple configuration and end to end straps shall include the following additional statement on the product label:

For multiple configuration straps:

“MINIMUM BREAKING STRENGTH AND RATING ARE DETERMINED USING A BASKET (U) CONFIGURATION. IN ADDITION, THIS STRAP HAS A MINIMUM BREAKING STRENGTH OF:

___ kN IN A CHOKER CONFIGURATION
___ kN WHEN PULLED END TO END.”

For end to end straps:

“MINIMUM BREAKING STRENGTH OF ___ kN WHEN PULLED END TO END”

3. Add a new paragraph 5.2.10.6 as follows:
5.2.10.6 The manufacturer of moderate elongation laid life saving ropes that are certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of moderate elongation laid life saving rope and a list of items that the records need to contain.

4. Revise 7.4.6.1 and 7.5.6.1 to read as follows:

7.4.6.1 Where harnesses are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

7.5.6.1 Where belts are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

5. Delete paragraph 7.5.7.10 and 7.6.3.9 and renumber subsequent paragraphs; revise paragraph 8.13.1.1 as follows:

7.5.7.10 Where the manufactured system incorporates an escape descent control device that incorporates a passive or active breaking feature that creates friction between the device and the rope, the system shall be tested for maximum payout force as specified in Section 8.13, Payout Test, shall not release the test torso, and shall not exceed 90 N (20 lb).

7.6.3.9 Where the escape descent control device incorporates a passive or active breaking feature that creates friction between the device and the rope, the maximum force required to pay a specific type of rope through the descent control device shall be tested as specified in Section 8.13, Payout Test, and shall not exceed 90 N (20 lb).

8.13.1.1 This test shall apply to descent control systems with passive and active braking systems, and escape manufactured systems.

6. Add a new paragraph 7.6.3.12 as follows:

7.6.3.12 Technical use descent control devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure B, and shall have a minimum breaking strength of at least 13.5 kN (3034 lbf).

7. Revise 7.11.6, 7.11.6.2 and add new 7.11.6.3 to read as follows:

7.11.6 Where an escape system is designated as a fire escape system, additional tests as specified in 7.11.6.1, and 7.11.6.2, and 7.11.6.3 shall be conducted.

7.11.6.2 Where fire escape system anchors are represented as being flame resistant, materials, labels, and hardware shall be tested individually for heat resistance as specified in Section 8.17, Heat Resistance Test, and shall not melt, drip, separate, or ignite; hardware items shall remain functional.

7.11.6.3 Sewing thread utilized in the construction of fire escape systems shall be tested for heat resistance as specified in Section 8.18, Thread Heat Resistance Test, and shall not melt at or below a temperature of 260ºC (500ºF).

8. Revise paragraph 7.15.1 and 7.15.2 as follows:

7.15.1 Technical use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

7.15.2 General-use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m, and with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

9. Delete Section 7.17, and add new paragraphs 7.6.3.11 and 7.11.7 as follows:

7.17 Escape Descent Control Device Performance Requirements. Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or device, and shall remain functional.

7.6.3.11 Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.
7.11.7 Escape systems shall be tested for maximum impact force as specified in Section 8.14. Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.

10. Revise 8.15.5 to read as follows:

8.15.5 Report. The time to failure shall be recorded from each test and the average and standard deviation calculated.

11. Delete 8.15.6.1 as follows:

8.15.6.1 Pass/fail performance shall be based on the average time to failure.

Submitter’s Substantiation:
1. Table 4.4.1 - The table is missing recertification for Moderate Elongation Life Saving Rope and includes several duplications and terminology errors.
2. 5.1.5.12 - The terminology in 5.1.5.12 is not consistent with the document. The terms “rigging and anchor” straps have been replaced with “multiple configuration and end to end” straps. The current required statement is incorrect for end to end straps in that they are not required to be tested in a U or choker configuration.
3. 5.2.10.6 - This added text is a requirement for other products covered by NFPA 1983 and provides users with valuable information on maintaining records for this life saving equipment.
4. 7.4.6.1 and 7.5.6.1 - The term “and hardware” was inadvertently added to these paragraphs. Additionally, the char length requirement does not apply to hardware items, and there are no specific requirements for the testing of hardware items in the test method. The requirement as written in the current edition is inappropriate for hardware items, would be impossible to determine and could inhibit product certification.
5. 7.5.7.10, 7.6.3.9, and 8.13.1.1 - Requirement 7.5.7.10 is redundant in that a manufactured system that includes an escape descent device would be classified as an Escape System – and therefore must meet all of the requirements of NFPA 1983 Section 7.11.

Additionally, the requirement is incorrectly worded in that there is no torso used in the conduct of the test - thus the statement “shall not release the test torso” has no relevance.

Requirement 7.6.3.9 applies to all escape descent control devices (those that are sold separately – not as part of a system). As the test is to be conducted with “each type of rope for its intended use” (NFPA 1983, Section 8.13.2.3) it follows that all escape descent control devices may have to be tested with all escape ropes – or the device would be limited to the type of rope with which it was tested. This would present an undue hardship on the manufacturers, and contribute to confusion on the part of the users in determining what ropes are suitable with each device.

Requirement 8.13.1.1 is changed so the application of the test method is consistent with the performance requirements.
6. 7.6.3.12 - This performance requirement mandates the minimum breaking strength for these particular devices and is therefore a critical safety issue.
7. 7.11.6, 7.11.6.2, and 7.11.6.3 (New) - The change in 7.11.6 adds the requirement of thread heat resistance to fire escape systems.

The change in 7.11.6.2 corrects the terminology from “escape anchors” to “fire escape system” as section 7.11.6 contains the requirements for fire escape systems and this requirement applies to the system not just the anchor.

The addition of 7.11.6.3 adds the thread heat resistance test to threads used in the construction of fire escape systems. This was inadvertently omitted in the 2012 edition. Testing of thread in a fire escape system evaluates a critical safety property of the fire escape system. Using a thread that will not withstand heat can cause the system to fail under high heat conditions.
8. 7.15.1 and 7.15.2 - These requirements are currently located in NFPA 1983-2012 Section 8.6.4.5.6. As these parameters are utilized to determine pass/fail of the device they should be relocated to the Performance Requirements. Additionally, this is a manner of function requirement – not a breaking strength requirement. It is impossible to determine breaking strength without failure of the device or rope.
9. 7.17, 7.6.3.1.1 and 7.11.7 (New) - This added text is part of the requirements that apply to escape descent control devices and escape systems. As such, this language should appear with the group of performance requirements for descent control devices (Section 7.6.3) and escape systems (Section 7.11). Having this requirement separate and distinct from the other performance requirements for these devices/systems can lead to confusion and the possibility of neglect of the remainder of the requirements.
10. and 11. 8.15.5 and 8.15.6.1 -This change resolves a conflict with the requirements in 7.10.3 and 7.12.5.

Emergency Nature: This TIA seeks to correct errors and omissions that were overlooked during the Fall 2011 revision cycle process of NFPA 1983. Additionally, some parts of this TIA intend to offer to the public a benefit that would lessen a known hazard, and correct circumstances in which the standard could adversely affect impact on a product or method that was inadvertently overlooked in the total revision process.
contains the requirements for fire escape systems and the requirement applies to the system not just the anchor. The addition of 7.11.6.3 adds the thread heat resistance test to threads used in the construction of fire escape systems. This was inadvertently omitted in the 2012 edition. Testing of thread in a fire escape system evaluates a critical safety property of the fire escape system. Using a thread that will not withstand heat can cause the system to fail under high heat conditions.

8. 7.15.1 and 7.15.2 - These requirements are currently located in NFPA 1983-2012 Section 8.6.4.5.6. As these parameters are utilized to determine pass/fail of the device they should be relocated to the Performance Requirements. Additionally, this is a manner of function requirement – not a breaking strength requirement. It is impossible to determine breaking strength without failure of the device or rope.

9. 7.17, 7.6.3.1.1 and 7.11.7 (New) - This added text is part of the requirements that apply to escape descent control devices and escape systems. As such, this language should appear with the group of performance requirements for descent control devices (Section 7.6.3) and escape systems (Section 7.11). Having this requirement separate and distinct from the other performance requirements for these devices/systems can lead to confusion and the possibility of neglect of the remainder of the requirements.

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Submitter Information Verification

Submitter Full Name: TC on FAE-SCE
Organization: TC on Special Operations Protective Clothing and Equipment
Street Address: 
City: 
State: 
Zip: 
Submittal Date: Mon Sep 09 09:27:30 EDT 2013
5.2.5.X(NEW)
For Escape Systems and Fire Escape Systems, the compliant configuration(s) of the Payout Test shall be described.

Statement of Problem and Substantiation for Public Input

This moves the User Guide requirement from 8.13.6.4 to the User Guide Section.

Related Public Inputs for This Document

<table>
<thead>
<tr>
<th>Related Input</th>
<th>Relationship</th>
</tr>
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<tbody>
<tr>
<td>Public Input No. 47-NFPA 1983-2014 [Section No. 8.13.6.4]</td>
<td></td>
</tr>
</tbody>
</table>

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Street Address: 
City: 
State: 
Zip: 
Submittal Date: Tue Dec 09 14:56:28 EST 2014
**Public Input No. 3-NFPA 1983-2013 [ New Section after 5.2.10.5 ]**

5.2.10.6. The manufacturer of moderate elongation laid life saving ropes that are certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of moderate elongation laid life saving rope and a list of items that the records need to contain.

### Additional Proposed Changes

<table>
<thead>
<tr>
<th>File Name</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Proposed_TIA_1983_.docx</td>
<td>Balloted TIA</td>
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</table>

### Statement of Problem and Substantiation for Public Input

Note: This Public Input originates from Tentative Interim Amendment 1983-12-1 (TIA 1076) issued by the Standards Council on October 30, 2012.

1. Table 4.4.1 - The table is missing recertification for Moderate Elongation Life Saving Rope and includes several duplications and terminology errors.
2. 5.1.5.12 - The terminology in 5.1.5.12 is not consistent with the document. The terms “rigging and anchor” straps have been replaced with “multiple configuration and end to end” straps. The current required statement is incorrect for end to end straps in that they are not required to be tested in a U or choker configuration.
3. 5.2.10.6 - This added text is a requirement for other products covered by NFPA 1983 and provides users with valuable information on maintaining records for this life saving equipment.
4. 7.4.6.1 and 7.5.6.1 - The term “and hardware” was inadvertently added to these paragraphs. Additionally, the char length requirement does not apply to hardware items, and there are no specific requirements for the testing of hardware items in the test method. The requirement as written in the current edition is inappropriate for hardware items, would be impossible to determine and could inhibit product certification.
5. 7.5.7.10, 7.6.3.9, and 8.13.1.1 - Requirement 7.5.7.10 is redundant in that a manufactured system that includes an escape descent device would be classified as an Escape System – and therefore must meet all of the requirements of NFPA 1983 Section 7.11. Additionally, the requirement is incorrectly worded in that there is no torso used in the conduct of the test - thus the statement “shall not release the test torso” has no relevance.
6. Requirement 7.6.3.9 applies to all escape descent control devices (those that are sold separately – not as part of a system). As the test is to be conducted with “each type of rope for its intended use” (NFPA 1983, Section 8.13.2.3) it follows that all escape descent control devices may have to be tested with all escape ropes – or the device would be limited to the type of rope with which it was tested. This would present an undue hardship on the manufacturers, and contribute to confusion on the part of the users in determining what ropes are suitable with each device.
7. Requirement 8.13.1.1 is changed so the application of the test method is consistent with the performance requirements.
8. 7.6.3.12 - This performance requirement mandates the minimum breaking strength for these particular devices and is therefore a critical safety issue.
9. 7.11.6, 7.11.6.2, and 7.11.6.3 (New) - The change in 7.11.6 adds the requirement of thread heat resistance to fire escape systems.
   The change in 7.11.6.2 corrects the terminology from “escape anchors” to “fire escape system” as section 7.11.6 contains the requirements for fire escape systems and this requirement applies to the system not just the anchor.
   The addition of 7.11.6.3 adds the thread heat resistance test to threads used in the construction of fire escape systems. This was inadvertently omitted in the 2012 edition. Testing of thread in a fire escape system evaluates a critical safety property of the fire escape system. Using a thread that will not withstand heat can cause the system to fail under high heat conditions.
10. 7.17, 7.6.3.1.1 and 7.11.7 (New) - This added text is part of the requirements that apply to escape descent control devices and escape systems. As such, this language should appear with the group of performance requirements. 

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requirements for descent control devices (Section 7.6.3) and escape systems (Section 7.11). Having this requirement separate and distinct from the other performance requirements for these devices/systems can lead to confusion and the possibility of neglect of the remainder of the requirements.

10. and 11. 8.15.5 and 8.15.6.1 - This change resolves a conflict with the requirements in 7.10.3 and 7.12.5.

Emergency Nature: This TIA seeks to correct errors and omissions that were overlooked during the Fall 2011 revision cycle process of NFPA 1983. Additionally, some parts of this TIA intend to offer to the public a benefit that would lessen a known hazard, and correct circumstances in which the standard could adversely affect impact on a product or method that was inadvertently overlooked in the total revision process.

Submitter Information Verification

Submitter Full Name: TC on FAE-SCE
Organization: TC on Special Operations Protective Clothing and Equipment
Street Address: 
City: 
State: 
Zip: 
Submittal Date: Mon Sep 09 09:31:01 EDT 2013
1. Revise Table 4.4.1 to read as follows:

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2. Revise 5.1.5.12 to read as follows:

5.1.5.12 In addition to the compliance specified in 5.1.5.9, rigging and anchor multiple configuration and end to end straps shall include the following additional statement on the product label:

For multiple configuration straps:

“MINIMUM BREAKING STRENGTH AND RATING ARE DETERMINED USING A BASKET (U) CONFIGURATION. IN ADDITION, THIS STRAP HAS A MINIMUM BREAKING STRENGTH OF: ___ kN IN A CHOKER CONFIGURATION ___ kN WHEN PULLED END TO END.”

For end to end straps:

“MINIMUM BREAKING STRENGTH OF ___ kN WHEN PULLED END TO END”

3. Add a new paragraph 5.2.10.6 as follows:
5.2.10.6 The manufacturer of moderate elongation laid life saving ropes that are certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of moderate elongation laid life saving rope and a list of items that the records need to contain.

4. Revise 7.4.6.1 and 7.5.6.1 to read as follows:

7.4.6.1 Where harnesses are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

7.5.6.1 Where belts are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

5. Delete paragraph 7.5.7.10 and 7.6.3.9 and renumber subsequent paragraphs; revise paragraph 8.13.1.1 as follows:

7.5.7.10 Where the manufactured system incorporates an escape descent control device that incorporates a passive or active breaking feature that creates friction between the device and the rope, the system shall be tested for maximum payout force as specified in Section 8.13, Payout Test, shall not release the test torso, and shall not exceed 90 N (20 lb).

7.6.3.9 Where the escape descent control device incorporates a passive or active breaking feature that creates friction between the device and the rope, the maximum force required to pay a specific type of rope through the descent control device shall be tested as specified in Section 8.13, Payout Test, and shall not exceed 90 N (20 lb).

8.13.1.1 This test shall apply to descent control systems with passive and active braking systems, and escape manufactured systems.

6. Add a new paragraph 7.6.3.12 as follows:

7.6.3.12 Technical use descent control devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure B, and shall have a minimum breaking strength of at least 13.5 kN (3034 lbf).

7. Revise 7.11.6, 7.11.6.2 and add new 7.11.6.3 to read as follows:

7.11.6 Where an escape system is designated as a fire escape system, additional tests as specified in 7.11.6.1, and 7.11.6.2, and 7.11.6.3 shall be conducted.

7.11.6.2 Where fire escape system anchors are represented as being flame resistant, materials, labels, and hardware shall be tested individually for heat resistance as specified in Section 8.17, Heat Resistance Test, and shall not melt, drip, separate, or ignite; hardware items shall remain functional.

7.11.6.3 Sewing thread utilized in the construction of fire escape systems shall be tested for heat resistance as specified in Section 8.18, Thread Heat Resistance Test, and shall not melt at or below a temperature of 260ºC (500ºF).

8. Revise paragraph 7.15.1 and 7.15.2 as follows:

7.15.1 Technical use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

7.15.2 General-use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m, and with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

9. Delete Section 7.17, and add new paragraphs 7.6.3.11 and 7.11.7 as follows:

7.17 Escape Descent Control Device Performance Requirements. Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall not exceed 8 kN (1798.5 lbf), shall not damage the rope or device, and shall remain functional.

7.6.3.11 Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.
7.11.7 Escape systems shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.

10. Revise 8.15.5 to read as follows:

8.15.5 Report. The time to failure shall be recorded from each test and the average and standard deviation calculated.

11. Delete 8.15.6.1 as follows:

8.15.6.1 Pass/fail performance shall be based on the average time to failure.

Submitter’s Substantiation:
1. Table 4.4.1 - The table is missing recertification for Moderate Elongation Life Saving Rope and includes several duplications and terminology errors.
2. 5.1.5.12 - The terminology in 5.1.5.12 is not consistent with the document. The terms “rigging and anchor” straps have been replaced with “multiple configuration and end to end” straps. The current required statement is incorrect for end to end straps in that they are not required to be tested in a U or choker configuration.
3. 5.2.10.6 - This added text is a requirement for other products covered by NFPA 1983 and provides users with valuable information on maintaining records for this life saving equipment.
4. 7.4.6.1 and 7.5.6.1 - The term “and hardware” was inadvertently added to these paragraphs. Additionally, the char length requirement does not apply to hardware items, and there are no specific requirements for the testing of hardware items in the test method. The requirement as written in the current edition is inappropriate for hardware items, would be impossible to determine and could inhibit product certification.
5. 7.5.7.10, 7.6.3.9, and 8.13.1.1 - Requirement 7.5.7.10 is redundant in that a manufactured system that includes an escape descent device would be classified as an Escape System – and therefore must meet all of the requirements of NFPA 1983 Section 7.11. Additionally, the requirement is incorrectly worded in that there is no torso used in the conduct of the test - thus the statement “shall not release the test torso” has no relevance.
   Requirement 7.6.3.9 applies to all escape descent control devices (those that are sold separately – not as part of a system). As the test is to be conducted with “each type of rope for its intended use” (NFPA 1983, Section 8.13.2.3) it follows that all escape descent control devices may have to be tested with all escape ropes – or the device would be limited to the type of rope with which it was tested. This would present an undue hardship on the manufacturers, and contribute to confusion on the part of the users in determining what ropes are suitable with each device.
   Requirement 8.13.1.1 is changed so the application of the test method is consistent with the performance requirements.
6. 7.6.3.12 - This performance requirement mandates the minimum breaking strength for these particular devices and is therefore a critical safety issue.
7. 7.11.6, 7.11.6.2, and 7.11.6.3 (New) - The change in 7.11.6 adds the requirement of thread heat resistance to fire escape systems. The change in 7.11.6.2 corrects the terminology from “escape anchors” to “fire escape system” as section 7.11.6 contains the requirements for fire escape systems and this requirement applies to the system not just the anchor.
   The addition of 7.11.6.3 adds the thread heat resistance test to threads used in the construction of fire escape systems. This was inadvertently omitted in the 2012 edition. Testing of thread in a fire escape system evaluates a critical safety property of the fire escape system. Using a thread that will not withstand heat can cause the system to fail under high heat conditions.
8. 7.15.1 and 7.15.2 - These requirements are currently located in NFPA 1983-2012 Section 8.6.4.5.6. As these parameters are utilized to determine pass/fail of the device they should be relocated to the Performance Requirements. Additionally, this is a manner of function requirement – not a breaking strength requirement. It is impossible to determine breaking strength without failure of the device or rope.
9. 7.17, 7.6.3.1.1 and 7.11.7 (New) - This added text is part of the requirements that apply to escape descent control devices and escape systems. As such, this language should appear with the group of performance requirements for descent control devices (Section 7.6.3) and escape systems (Section 7.11). Having this requirement separate and distinct from the other performance requirements for these devices/systems can lead to confusion and the possibility of neglect of the remainder of the requirements.
10. and 11. 8.15.5 and 8.15.6.1 -This change resolves a conflict with the requirements in 7.10.3 and 7.12.5.

Emergency Nature: This TIA seeks to correct errors and omissions that were overlooked during the Fall 2011 revision cycle process of NFPA 1983. Additionally, some parts of this TIA intend to offer to the public a benefit that would lessen a known hazard, and correct circumstances in which the standard could adversely affect impact on a product or method that was inadvertently overlooked in the total revision process.
Chapter 6 - Design and Construction Requirements

6.1 - Life Safety Rope.

6.1.1 - Life safety rope shall be constructed of virgin fiber.

6.1.2 - Life safety rope shall be of block creel construction.

6.1.3 - Primary load-bearing elements of life safety rope shall be constructed of continuous filament fiber.

6.1.4 - Where life safety rope is a component of equipment with electric-current carrying capabilities, the equipment including the life safety rope shall meet the requirements of ANSI/UL 913, Standard for Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division I, Hazardous (Classified) Locations, for Class I, Division I, Groups A, B, C, and D and Class II, Division 1, Groups E, F, and G hazardous locations.

6.2 - Escape Rope.

6.2.1 - Escape rope shall be constructed of virgin fiber.

6.2.2 - Escape rope shall be of block creel construction.

6.2.3 - Primary load-bearing elements of escape rope shall be constructed of continuous filament fiber.

6.3 - Life Safety Harness.

6.3.1 - Life safety harness shall be designed and designated in accordance with the requirements for either Class II or Class III.

6.3.1.1 - Class II.

A harness that fastens around the waist and around thighs or under buttocks and is designed for rescue with a design load of 2.67 kN (600 lbf) shall be designated as a Class II life safety harness.

6.3.1.1.1 - Class II life safety harness shall be permitted to consist of one or more parts.

6.3.1.2 - Class III.

6.3.1.2.1 - A harness that fastens around the waist, around thighs, or under buttocks, and over shoulders and is designed for rescue with a design load of 2.67 kN (600 lbf) shall be designated as Class III life safety harness.

6.3.1.2.2 - Class III life safety harness shall be permitted to consist of one or more parts.

6.3.2 - Life safety harness shall be permitted to be adjustable within a range of sizes, provided in a range of sizes, or custom-fitted for individuals.

6.3.3 - Load-bearing textile materials used in the construction of life safety harness shall be made from virgin, synthetic, continuous filament fiber.

6.3.4 - All webbing ends shall be secured by heat sealing or by another method that prevents unraveling.

6.3.5 - All thread utilized in the construction of life safety harness shall allow for ease of inspection by the unaided eye with 20/20 vision or vision corrected to 20/20 at a nominal distance of 305 mm (12 in.). All stitching breaks or ends shall be backtacked not less than 13 mm ( \( \frac{1}{2} \) in.).
6.3.6  Life safety harness shall have at least one load-bearing attachment point located at the front waist or sternal location of the harness.

6.3.7  Load-bearing hardware components of life safety harnesses shall be constructed of forged, machined, stamped, extruded, or cast metal.

6.3.7.1  Castings shall meet Class I, Grade A requirements of SAE-STD-2175A, Castings, Classification and Inspection of .

6.3.8  Where a buckle is an integral part of a life safety harness, the buckle manufacturer shall provide written evidence that all load-bearing buckles have been proof-loaded to at least 11 kN (2473 lbf).

6.3.9  Optional Requirements for Flame-Resistant Life Safety Harnesses.  Sewing thread utilized in the construction of life safety harnesses shall be made of inherently flame-resistant fiber.

6.4  Belts.

6.4.1  Belts shall be designed and designated in accordance with one of the types in 6.4.1.1 or 6.4.1.2 .

6.4.1.1  A belt that fastens only around the waist, includes at least one positioning attachment point, and is a positioning device for a person on a ladder shall be designated as a ladder belt.

6.4.1.2  A belt that fastens only around the waist, includes at least one load-bearing attachment point, and is intended for use by the wearer as an emergency self-rescue device shall be designated as an escape belt.

6.4.2 *  All belts shall be permitted to be adjustable within a range of sizes, provided in a range of sizes, or custom-fitted for individuals.

6.4.3 *  Load-bearing textile materials used in the construction of all belts shall be made from virgin, synthetic, continuous filament fiber.

6.4.4 *  All belts shall have webbing ends secured by heat sealing or by another method that prevents unraveling.

6.4.5 *  All thread utilized in the construction of all belts shall allow for ease of inspection by the unaided eye with 20/20 vision, or vision corrected to 20/20, at a nominal distance of 305 mm (12 in.). All stitching breaks or ends shall be backtacked not less than 13 mm ( . 1/2 · in.).

6.4.6  Ladder belts shall include a tether or device that connects the wearer to a ladder. The tether or device shall not extend greater than 610 mm (24 in.) in total length including connection hardware on each end when measured from the surface of the belt to the inside of the connector device at the greatest distance from the belt.

6.4.7  Load-bearing hardware components of belts shall be constructed of forged, machined, stamped, extruded, or cast metal.

6.4.7.1  Castings shall meet Class I, Grade A requirements of SAE-STD-2175A, Castings, Classification and Inspection of .

6.4.8  Where a buckle is an integral part of a belt, the buckle manufacturer shall provide written evidence that all load-bearing buckles have been proof-loaded to at least 11 kN (2473 lbf).

6.4.9  Optional Requirements for Flame-Resistant Belts.  Sewing thread utilized in the construction of belts shall be made of inherently flame-resistant fiber.

6.5  Auxiliary Equipment System Component.

6.5.1  Auxiliary equipment shall not be designed or constructed in a manner that allows self-destructive action.
6.5.2. Auxiliary equipment, other than rope grab devices as specified in 6.5.2.2, shall be designated by the manufacturer for its intended use and design load as either escape, technical use, or general use.

6.5.2.1. The designation of escape shall apply to auxiliary equipment intended for the sole use of the rescuer for personal escape or self-rescue.

6.5.2.2. Rope grab devices shall be designated as being designed for either technical use or for general use.

6.5.3. Load-bearing hardware auxiliary equipment shall be constructed of forged, machined, stamped, extruded, or cast metal.

6.5.3.1. Castings shall meet Class I, Grade A requirements of SAE-STD-2175A, Castings, Classification and Inspection of.

6.5.4. Where a buckle is an integral part of an auxiliary equipment system component, the buckle manufacturer shall provide written evidence that all load-bearing buckles have been proof-loaded to at least 11 kN (2473 lbf).

6.5.5. Snap-link and carabiner gates shall be self-closing and of a locking design.

6.5.6. Webbing used to construct auxiliary equipment software shall be constructed of virgin, synthetic, continuous filament fiber.

6.5.7. All webbing ends used to construct auxiliary equipment software shall be secured by heat sealing or by another method that prevents unraveling.

6.5.8. All thread utilized to construct auxiliary equipment software shall allow for ease of inspection by the unaided eye with 20/20 vision or vision corrected to 20/20 at a nominal distance of 305 mm (12 in.). All stitching breaks or ends shall be backtacked not less than 13 mm (\( \frac{1}{2}\) in.).

6.6. Throwline.

6.6.1. Throwline shall be constructed of virgin fiber.

6.6.2. Throwline shall be of block creel construction.

6.6.3. Throwline load-bearing elements shall be constructed of continuous filament fiber.

6.7. Victim Extrication Devices.

6.7.1. Victim extrication devices shall be designed and designated in accordance with the requirements for either Class II or Class III.

6.7.1.1. Class II Victim Extrication Device.

A device that secures around the waist and around the thighs or under the buttocks to be used for victim extrication in an upright position shall be designated as a Class II victim extrication device.

6.7.1.2. Class III Victim Extrication Device.

A device that secures around the waist, around the thighs, or under the buttocks, and over the shoulders or that otherwise encapsulates a body to be used for victim extrication in an upright or horizontal configuration shall be designated as a Class III victim extrication device.

6.7.2. Victim extrication devices shall be permitted to consist of one or more parts.
6.7.3 Load-bearing textile materials used in the construction of victim extrication devices shall be made from virgin, synthetic, continuous filament fiber.

6.7.4 All webbing ends shall be secured by heat sealing or by another method that prevents unraveling.

6.7.5 All thread used in the construction of victim extrication devices shall allow for ease of inspection by the unaided eye with 20/20 vision at nominal distance of 305 mm (12 in.). All stitching breaks or ends shall be backtacked not less than 13 mm (1/2 in.).

6.7.6 Victim extrication devices shall have at least one load-bearing attachment point as identified by manufacturer's instructions.

6.7.7 Load-bearing hardware components of victim extrication devices shall be constructed of forged, machined, stamped, extruded, or cast metal.

6.7.7.1 Castings shall meet Class I, Grade A requirements of SAE-STD-2175A, Castings Classifications and Inspection of.

6.7.8 Where a buckle is an integral part of a victim extrication device, the buckle manufacturer shall provide written evidence that all load-bearing buckles have been proof-loaded to at least 11 kN (2473 lbf).

6.8 Litters.

6.8.1 Litters shall not be designed or constructed in a manner that allows self-destructive action.

6.8.2 Litters designed to split apart shall have an integral connection system.

6.9 Escape Webbing.

6.9.1 Escape webbing shall be constructed of virgin fiber.

6.9.2 Escape webbing shall be of block creel construction.

6.9.3 Primary load-bearing elements of escape webbing shall be constructed of continuous filament fiber.

6.10 Fire Escape Webbing.

6.10.1 Fire escape webbing shall be constructed of virgin fiber.

6.10.2 Fire escape webbing shall be of block creel construction.

6.10.3 Primary load-bearing elements of fire escape webbing shall be constructed of continuous filament fiber.

6.11 Escape System.

The escape system shall comprise a flexible lifeline (e.g., rope/webbing/cable); a descent control device and a connector from the system to the user not to include the harness; and a means of attaching the system to an anchoring point (e.g., an escape anchor) that is capable of supporting human loads. The design and construction requirements of the escape system shall meet the requirements of the individual components.

6.12 Fire Escape Rope.

6.12.1 Fire escape rope shall be constructed of virgin fiber.

6.12.2 Primary load-bearing elements of fire escape rope shall be constructed of continuous filament fiber.

6.13 Manufacturer-Supplied Eye Termination.
6.13.1
Manufacturer-supplied eye termination shall include rope or escape webbing that has been tested to and
certified to the requirements of rope or escape webbing as specified in this standard.

6.13.2
All thread utilized in the construction of manufacturer-supplied eye termination shall allow for ease of
inspection by the unaided eye with 20/20 vision or vision corrected to 20/20 at a nominal distance of 305
mm (12 in.).

6.14 - Moderate Elongation Laid Life-Saving Rope.

6.14.1
Moderate elongation laid life saving rope shall be constructed of virgin fiber.

6.14.2
Moderate elongation laid life saving rope shall be of block creel construction.

6.14.3
Primary load-bearing elements of moderate elongation laid life saving rope shall be constructed of
continuous filament fiber.

6.14.4
Where moderate elongation laid life saving rope is a component of equipment with electric-current carrying
capabilities, the equipment including the moderate elongation laid life saving rope shall meet the
requirements of ANSI/UL 913, Standard for Intrinsically Safe Apparatus and Associated Apparatus for Use
in Class I, II, and III, Division I, Hazardous (Classified) Locations, for Class I, Division I, Groups A, B, C,
and D and Class II, Division 1, Groups E, F, and G hazardous locations.

Additional Proposed Changes

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Statement of Problem and Substantiation for Public Input

NFPA 1983 contains an extensive variety of products. The current format can be difficult to navigate and is not
easily followed by users and manufacturers. At the TC’s request, the document was reorganized for clarity and
ease of use. This input includes the language in TIA 12-1. No new material is contained in this input.

Submitter Information Verification

Submitter Full Name: Beverly Stutts
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jan 05 14:47:30 EST 2015
6.1 Life Safety Rope Design Requirements.

6.1.1 Life safety rope shall be constructed of virgin fiber.

6.1.2 Life safety rope shall be of block creel construction.

6.1.3 Primary load-bearing elements of life safety rope shall be constructed of continuous filament fiber.

6.1.4 Where life safety rope is a component of equipment with electric-current carrying capabilities, the equipment including the life safety rope shall meet the requirements of ANSI/UL 913, *Standard for Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division I, Hazardous (Classified) Locations*, for Class I, Division I, Groups A, B, C, and D and Class II, Division 1, Groups E, F, and G hazardous locations.

6.2 Escape Rope Design Requirements.

6.2.1 Escape rope shall be constructed of virgin fiber.

6.2.2 Escape rope shall be of block creel construction.

6.2.3 Primary load-bearing elements of escape rope shall be constructed of continuous filament fiber.

6.9 Escape Webbing Design Requirements.

6.9.1 Escape webbing shall be constructed of virgin fiber.

6.9.2 Escape webbing shall be of block creel construction.

6.9.3 Primary load-bearing elements of escape webbing shall be constructed of continuous filament fiber.
6.12 Fire Escape Rope Design Requirements.

6.12.1 Fire escape rope shall be constructed of virgin fiber.

6.12.2 Fire escape rope shall be of block creel construction.

6.12.3 Primary load-bearing elements of fire escape rope shall be constructed of continuous filament fiber.

6.10 Fire Escape Webbing Design Requirements.

6.10.1 Fire escape webbing shall be constructed of virgin fiber.

6.10.2 Fire escape webbing shall be of block creel construction.

6.10.3 Primary load-bearing elements of fire escape webbing shall be constructed of continuous filament fiber.

6.6 Throwline Design Requirements.

6.6.1 Throwline shall be constructed of virgin fiber.

6.6.2 Throwline shall be of block creel construction.

6.6.3 Throwline load-bearing elements shall be constructed of continuous filament fiber.
6.14  6.7  Moderate Elongation Laid Life Saving Rope Design Requirements.

6.14.1  6.7.1*  Moderate elongation laid life saving rope shall be constructed of virgin fiber.

6.14.2  6.7.2  Moderate elongation laid life saving rope shall be of block creel construction.

6.14.3  6.7.3  Primary load-bearing elements of moderate elongation laid life saving rope shall be constructed of continuous filament fiber.

6.14.4  6.7.4  Where moderate elongation laid life saving rope is a component of equipment with electric-current carrying capabilities, the equipment including the moderate elongation laid life saving rope shall meet the requirements of ANSI/UL 913, Standard for Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division I, Hazardous (Classified) Locations, for Class I, Division I, Groups A, B, C, and D and Class II, Division 1, Groups E, F, and G hazardous locations.

6.13  6.8  Manufacturer-Supplied Eye Termination Design Requirements.

6.13.1  6.8.1  Manufacturer-supplied eye termination shall include rope or escape webbing that has been tested to and certified to the requirements of rope or escape webbing as specified in this standard.

6.13.2  6.8.2  All thread utilized in the construction of manufacturer-supplied eye termination shall allow for ease of inspection by the unaided eye with 20/20 vision or vision corrected to 20/20 at a nominal distance of 305 mm (12 in.).
6.3 6.9 Life Safety Harness Design Requirements.

6.3.1 6.9.1 Life safety harness shall be designed and designated in accordance with the requirements for either Class II or Class III.

6.3.1.1 6.9.1.1 Class II. A harness that fastens around the waist and around thighs or under buttocks and is designed for rescue with a design load of 2.67 kN (600 lbf) shall be designated as a Class II life safety harness.

6.3.1.1.1 6.9.1.1.1 Class II life safety harness shall be permitted to consist of one or more parts.

6.3.1.2 6.9.1.2 Class III.

6.3.1.2.1 6.9.1.2.1 A harness that fastens around the waist, around thighs, or under buttocks, and over shoulders and is designed for rescue with a design load of 2.67 kN (600 lbf) shall be designated as Class III life safety harness.

6.3.1.2.2 6.9.1.2.2 Class III life safety harness shall be permitted to consist of one or more parts.

6.3.2 6.9.2* Life safety harness shall be permitted to be adjustable within a range of sizes, provided in a range of sizes, or custom-fitted for individuals.

6.3.3 6.9.3* Load-bearing textile materials used in the construction of life safety harness shall be made from virgin, synthetic, continuous filament fiber.

6.3.4 6.9.4* All webbing ends shall be secured by heat sealing or by another method that prevents unraveling.

6.3.5 6.9.5* All thread utilized in the construction of life safety harness shall allow for ease of inspection by the unaided eye with 20/20 vision or vision corrected to 20/20 at a nominal distance of 305 mm (12 in.). All stitching breaks or ends shall be backtacked not less than 13 mm (½ in.).

6.3.6 6.9.6 Life safety harness shall have at least one load-bearing attachment point located at the front waist or sternal location of the harness.

6.3.7–6.9.7 Load-bearing hardware components of life safety harnesses shall be constructed of forged, machined, stamped, extruded, or cast metal.

6.3.7.1–6.9.7.1 Castings shall meet Class I, Grade A requirements of SAE-STD-2175A, Castings, Classification and Inspection of.

6.3.8 6.9.8 Where a buckle is an integral part of a life safety harness, the buckle manufacturer shall provide written evidence that all load-bearing buckles have been proof-loaded to at least 11 kN (2473 lbf).

6.3.9 6.9.9 Optional Requirements for Flame-Resistant Life Safety Harnesses. Sewing thread utilized in the construction of life safety harnesses shall be made of inherently flame-resistant fiber.
6.4.10 Belts Design Requirements.

6.4.1.1 Belts shall be designed and designated in accordance with one of the types in 6.4.1.1 or 6.4.1.2.

6.4.1.1 Belts shall be designed and designated in accordance with one of the types in 6.4.1.1 or 6.4.1.2.

6.4.1.2 A belt that fastens only around the waist, includes at least one positioning attachment point, and is a positioning device for a person on a ladder shall be designated as a ladder belt.

6.4.1.2 A belt that fastens only around the waist, includes at least one load-bearing attachment point, and is intended for use by the wearer as an emergency self-rescue device shall be designated as an escape belt.

6.4.2 All belts shall be permitted to be adjustable within a range of sizes, provided in a range of sizes, or custom-fitted for individuals.

6.4.3 Load-bearing textile materials used in the construction of all belts shall be made from virgin, synthetic, continuous filament fiber.

6.4.4 All belts shall have webbing ends secured by heat sealing or by another method that prevents unraveling.

6.4.5 All thread utilized in the construction of all belts shall allow for ease of inspection by the unaided eye with 20/20 vision, or vision corrected to 20/20, at a nominal distance of 305 mm (12 in.). All stitching breaks or ends shall be backtacked not less than 13 mm (½ in.).

6.4.6 Ladder belts shall include a tether or device that connects the wearer to a ladder. The tether or device shall not extend greater than 610 mm (24 in.) in total length including connection hardware on each end when measured from the surface of the belt to the inside of the connector device at the greatest distance from the belt.

6.4.7 Load-bearing hardware components of belts shall be constructed of forged, machined, stamped, extruded, or cast metal.

6.4.7.1 Castings shall meet Class I, Grade A requirements of SAE-STD-2175A, Castings, Classification and Inspection of.

6.4.8 Where a buckle is an integral part of a belt, the buckle manufacturer shall provide written evidence that all load-bearing buckles have been proof-loaded to at least 11 kN (2473 lbf).

6.4.9 Optional Requirements for Flame-Resistant Belts. Sewing thread utilized in the construction of belts shall be made of inherently flame-resistant fiber.
6.7– 6.11 Victim Extrication Devices Design Requirements.

6.7.1 6.11.1 Victim extrication devices shall be designed and designated in accordance with the requirements for either Class II or Class III.

6.7.1.1 6.11.1.1 Class II Victim Extrication Device. A device that secures around the waist and around the thighs or under the buttocks to be used for victim extrication in an upright position shall be designated as a Class II victim extrication device.

6.7.1.2 6.11.1.2 Class III Victim Extrication Device. A device that secures around the waist, around the thighs, or under the buttocks, and over the shoulders or that otherwise encapsulates a body to be used for victim extrication in an upright or horizontal configuration shall be designated as a Class III victim extrication device.

6.7.2 6.11.2 Victim extrication devices shall be permitted to consist of one or more parts.

6.7.3 6.11.3 Load-bearing textile materials used in the construction of victim extrication devices shall be made from virgin, synthetic, continuous filament fiber.

6.7.4 6.11.4 All webbing ends shall be secured by heat sealing or by another method that prevents unraveling.

6.7.5 6.11.5 All thread used in the construction of victim extrication devices shall allow for ease of inspection by the unaided eye with 20/20 vision at nominal distance of 305 mm (12 in.). All stitching breaks or ends shall be backtacked not less than 13 mm (½ in.).

6.7.6 6.11.6 Victim extrication devices shall have at least one load-bearing attachment point as identified by manufacturer's instructions.

6.7.7 6.11.7 Load-bearing hardware components of victim extrication devices shall be constructed of forged, machined, stamped, extruded, or cast metal.

6.7.7.1 6.11.7.1 Castings shall meet Class I, Grade A requirements of SAE-STD-2175A, Castings Classifications and Inspection of.

6.7.8 6.11.8 Where a buckle is an integral part of a victim extrication device, the buckle manufacturer shall provide written evidence that all load-bearing buckles have been proof-loaded to at least 11 kN (2473 lbf).
6.12 End-to-End Strap Design Requirements.

6.12.1 End-to-end straps shall not be designed or constructed in a manner that allows self-destructive action.

6.12.2 End-to-End straps shall be designed by the manufacturer for its intended use and design load as either technical use or general use.

6.12.3 Load-bearing hardware auxiliary equipment shall be constructed of forged, machined, stamped, extruded, or cast metal.

6.12.3.1 Castings shall meet Class I, Grade A requirements of SAE-STD-2175A, Castings, Classification and Inspection of.

6.12.4 Where a buckle is an integral part of the strap, the buckle manufacturer shall provide written evidence that all load-bearing buckles have been proof-loaded to at least 11 kN (2473 lbf).

6.12.5 Webbing used to construct strap shall be constructed of virgin, synthetic, continuous filament fiber.

6.12.6* All webbing ends used to construct straps shall be secured by heat sealing or by another method that prevents unraveling.

6.12.7* All thread utilized to construct straps shall allow for ease of inspection by the unaided eye with 20/20 vision or vision corrected to 20/20 at a nominal distance of 305 mm (12 in.). All stitching breaks or ends shall be backtacked not less than 13 mm (½ in.).
6.13 Multiple Configuration Strap Design Requirements.

6.13.1 Multiple configuration straps shall not be designed or constructed in a manner that allows self-destructive action.

6.13.2 Multiple configuration straps shall be designed by the manufacturer for its intended use and design load as either technical use or general use.

6.12.3 Load-bearing hardware auxiliary equipment shall be constructed of forged, machined, stamped, extruded, or cast metal.

6.13.3.1 Castings shall meet Class I, Grade A requirements of SAE-STD-2175A, Castings, Classification and Inspection of.

6.13.4 Where a buckle is an integral part of the strap, the buckle manufacturer shall provide written evidence that all load-bearing buckles have been proof-loaded to at least 11 kN (2473 lbf).

6.13.5 Webbing used to construct strap shall be constructed of virgin, synthetic, continuous filament fiber.

6.13.6 All webbing ends used to construct straps shall be secured by heat sealing or by another method that prevents unraveling.

6.13.7 All thread utilized to construct straps shall allow for ease of inspection by the unaided eye with 20/20 vision or vision corrected to 20/20 at a nominal distance of 305 mm (12 in.). All stitching breaks or ends shall be backtacked not less than 13 mm (½ in.).
6.14 Belay Device Design Requirements

6.14.1 Belay devices shall not be designed or constructed in a manner that allows self-destructive action.

6.14.2 Belay devices shall be designated as being designed for either technical use or for general use.

6.14.3 Load-bearing hardware auxiliary equipment shall be constructed of forged, machined, stamped, extruded, or cast metal.

6.15.3.1 Castings shall meet Class I, Grade A requirements of SAE-STD-2175A, Castings, Classification and Inspection of.

6.15 Carabiner and Snap-Link Design Requirements

6.15.1 Carabiners and snap-links shall not be designed or constructed in a manner that allows self-destructive action.

6.15.2 Carabiners and snap-links shall be designated as being designed for either technical use or for general use.

6.15.3 Load-bearing hardware auxiliary equipment shall be constructed of forged, machined, stamped, extruded, or cast metal.

6.15.4 Castings shall meet Class I, Grade A requirements of SAE-STD-2175A, Castings, Classification and Inspection of.

6.15.5* Snap-link and carabiner gates shall be self-closing and of a locking design.

6.16 Descent Control Device Design Requirements

6.16.1 Descent control devices shall not be designed or constructed in a manner that allows self-destructive action.

6.16.2 Descent control devices shall be designated by the manufacturer for its intended use and design load as either escape, technical use, or general use.

6.16.2.1 The designation of escape shall apply to descent control devices intended for the sole use of the rescuer for personal escape or self-rescue.

6.16.3 Load-bearing hardware auxiliary equipment shall be constructed of forged, machined, stamped, extruded, or cast metal.

6.16.3.1 Castings shall meet Class I, Grade A requirements of SAE-STD-2175A, Castings, Classification and Inspection of.

6.16.9 All descent control devices shall be classified by type in accordance with Section 3.2.1 of ISO 22159, Personal equipment for protection against falls — descending devices.
6.17 Escape Anchors Design Requirements

6.17.1 Escape anchors shall not be designed or constructed in a manner that allows self-destructive action.

6.17.2 Escape anchors are intended for the sole use of the rescuer for personal escape or self-rescue.

6.17.3 Load-bearing hardware auxiliary equipment shall be constructed of forged, machined, stamped, extruded, or cast metal.

6.17.4 Castings shall meet Class I, Grade A requirements of SAE-STD-2175A, Castings, Classification and Inspection of.

6.18 Litters Design Requirements

6.18.1 Litters shall not be designed or constructed in a manner that allows self-destructive action.

6.18.2 Litters designed to split apart shall have an integral connection system.

6.19 Portable Anchor Design Requirements

6.19.1 Portable anchors shall not be designed or constructed in a manner that allows self-destructive action

6.19.2 Portable anchors shall be designated as being designed for either technical use or for general use.

6.19.3 Load-bearing hardware auxiliary equipment shall be constructed of forged, machined, stamped, extruded, or cast metal.

6.19.3.1 Castings shall meet Class I, Grade A requirements of SAE-STD-2175A, Castings, Classification and Inspection of.

6.20 Pulley Design Requirements

6.20.1 Pulleys shall not be designed or constructed in a manner that allows self-destructive action.

6.20.2 Pulleys shall be designated by the manufacturer for its intended use and design load as either technical use or general use.

6.20.3 Load-bearing hardware auxiliary equipment shall be constructed of forged, machined, stamped, extruded, or cast metal.

6.20.3.1 Castings shall meet Class I, Grade A requirements of SAE-STD-2175A, Castings, Classification and Inspection of.
6.21 Rope Grab and Ascending Device Design Requirements.

6.21.1 Ascending and rope grab devices shall not be designed or constructed in a manner that allows self-destructive action.

6.21.2 Ascending and rope grab devices shall be designated as being designed for either technical use or for general use.

6.21.3 Load-bearing hardware auxiliary equipment shall be constructed of forged, machined, stamped, extruded, or cast metal.

6.21.3.1 Castings shall meet Class I, Grade A requirements of SAE-STD-2175A, Castings, Classification and Inspection of.
6.5.9 – 6.22 Other Auxiliary Equipment Design Requirements System Component.

6.5.1 – 6.22.1 Auxiliary equipment shall not be designed or constructed in a manner that allows self-destructive action.

6.5.2 – 6.22.2 Auxiliary equipment, other than rope grab devices as specified in 6.5.2.2, shall be designated by the manufacturer for its intended use and design load as either escape, technical use, or general use.

6.5.2.1 – 6.22.2.1 The designation of escape shall apply to auxiliary equipment intended for the sole use of the rescuer for personal escape or self-rescue.

6.5.2.2 – 6.22.2.2 Rope grab devices shall be designated as being designed for either technical use or for general use.

6.5.3 – 6.22.3 Load-bearing hardware auxiliary equipment shall be constructed of forged, machined, stamped, extruded, or cast metal.

6.5.3.1 – 6.22.3.1 Castings shall meet Class I, Grade A requirements of SAE-STD-2175A, Castings, Classification and Inspection of.

6.5.4 – 6.22.4 Where a buckle is an integral part of an auxiliary equipment system component, the buckle manufacturer shall provide written evidence that all load-bearing buckles have been proof-loaded to at least 11 kN (2473 lbf).

6.5.5* – 6.22.5* Snap link and carabiner gates shall be self-closing and of a locking design.

6.5.6 – 6.22.6 Webbing used to construct auxiliary equipment software shall be constructed of virgin, synthetic, continuous filament fiber.

6.5.7 6.22.6* All webbing ends used to construct auxiliary equipment software shall be secured by heat sealing or by another method that prevents unraveling.

6.5.8 6.22.7* All thread utilized to construct auxiliary equipment software shall allow for ease of inspection by the unaided eye with 20/20 vision or vision corrected to 20/20 at a nominal distance of 305 mm (12 in.). All stitching breaks or ends shall be backtacked not less than 13 mm (½ in.).

6.5.9 – 6.22.7 All descent control devices shall be classified by type in accordance with Section 3.2.1 of ISO 22159, Personal equipment for protection against falls—descending devices.
6.23* Escape Systems Design Requirements.

6.23.1 The escape system shall be designed for the sole use of the rescuer for personal escape or self-rescue.

6.23.2 The escape system shall comprise a flexible lifeline (e.g., rope/webbing/cable); a descent control device and a connector from the system to the user not to include the harness; and a means of attaching the system to an anchoring point (e.g., an escape anchor) that is capable of supporting human loads. The design and construction requirements of the escape system shall meet the requirements of the individual components.


6.24.1 The fire escape system shall be designed for the sole use of the rescuer for personal escape or self-rescue from an immediately hazardous environment involving elevated temperatures.

6.24.2 The fire escape system shall comprise a flexible lifeline (e.g., rope/webbing/cable); a descent control device and a connector from the system to the user not to include the harness; and a means of attaching the system to an anchoring point (e.g., an escape anchor) that is capable of supporting human loads. The design and construction requirements of the fire escape system shall meet the requirements of the individual components.
6.25 Manufactured System Design Requirements.

6.25.1 Manufactured systems shall not be designed or constructed in a manner that allows self-destructive action.

6.25.2 Manufactured Systems shall be designated by the manufacturer for its intended use and design load as either technical use or general use.

6.25.3 Load-bearing hardware auxiliary equipment shall be constructed of forged, machined, stamped, extruded, or cast metal.

6.25.3.1 Castings shall meet Class I, Grade A requirements of SAE-STD-2175A, Castings, Classification and Inspection of.

6.25.4 Where a buckle is an integral part a manufactured system, the buckle manufacturer shall provide written evidence that all load-bearing buckles have been proof-loaded to at least 11 kN (2473 lbf).

6.25.5 Webbing used to construct manufactured system software shall be constructed of virgin, synthetic, continuous filament fiber.

6.25.6* All webbing ends used to construct manufactured system software shall be secured by heat sealing or by another method that prevents unraveling.

6.25.7* All thread utilized to construct manufactured system software shall allow for ease of inspection by the unaided eye with 20/20 vision or vision corrected to 20/20 at a nominal distance of 305 mm (12 in.). All stitching breaks or ends shall be backtacked not less than 13 mm (½ in.).
See 6.6 6.6—Throwline.

6.6.1*—Throwline shall be constructed of virgin fiber.

6.6.2—Throwline shall be of block creel construction.

6.6.3—Throwline load-bearing elements shall be constructed of continuous filament fiber.

See 6.11 6.7—Victim Extrication Devices.

6.7.1—Victim extrication devices shall be designed and designated in accordance with the requirements for either Class II or Class III.

6.7.1.1—Class II Victim Extrication Device. A device that secures around the waist and around the thighs or under the buttocks to be used for victim extrication in an upright position shall be designated as a Class II victim extrication device.

6.7.1.2—Class III Victim Extrication Device. A device that secures around the waist, around the thighs, or under the buttocks, and over the shoulders or that otherwise encapsulates a body to be used for victim extrication in an upright or horizontal configuration shall be designated as a Class III victim extrication device.

6.7.2—Victim extrication devices shall be permitted to consist of one or more parts.

6.7.3—Load-bearing textile materials used in the construction of victim extrication devices shall be made from virgin, synthetic, continuous filament fiber.

6.7.4—All webbing ends shall be secured by heat sealing or by another method that prevents unraveling.

6.7.5—All thread used in the construction of victim extrication devices shall allow for ease of inspection by the unaided eye with 20/20 vision at nominal distance of 305 mm (12 in.). All stitching breaks or ends shall be backtacked not less than 13 mm (½ in.).

6.7.6—Victim extrication devices shall have at least one load-bearing attachment point as identified by manufacturer’s instructions.

6.7.7—Load-bearing hardware components of victim extrication devices shall be constructed of forged, machined, stamped, extruded, or cast metal.

6.7.7.1—Castings shall meet Class I, Grade A requirements of SAE-STD-2175A, Castings Classifications and Inspection of.

6.7.8—Where a buckle is an integral part of a victim extrication device, the buckle manufacturer shall provide written evidence that all load-bearing buckles have been proof-loaded to at least 11 kN (2473 lbf).

See 6.18 6.8—Litters.
6.8.1—Litters shall not be designed or constructed in a manner that allows self-destructive action.

6.8.2—Litters designed to split apart shall have an integral connection system.

See 6.3 6.9—Escape Webbing.

6.9.1—Escape webbing shall be constructed of virgin fiber.

6.9.2—Escape webbing shall be of block creel construction.

6.9.3—Primary load-bearing elements of escape webbing shall be constructed of continuous filament fiber.

See 6.5 6.10—Fire Escape Webbing.

6.10.1*—Fire escape webbing shall be constructed of virgin fiber.

6.10.2—Fire escape webbing shall be of block creel construction.

6.10.3—Primary load-bearing elements of fire escape webbing shall be constructed of continuous filament fiber.

See 6.23 6.11*—Escape System.

The escape system shall comprise a flexible lifeline (e.g., rope/webbing/cable); a descent control device and a connector from the system to the user not to include the harness; and a means of attaching the system to an anchoring point (e.g., an escape anchor) that is capable of supporting human loads. The design and construction requirements of the escape system shall meet the requirements of the individual components.

See 6.4 6.12—Fire Escape Rope.

6.12.1*—Fire escape rope shall be constructed of virgin fiber.

6.12.2—Fire escape rope shall be of block creel construction.

6.12.3—Primary load-bearing elements of fire escape rope shall be constructed of continuous filament fiber.

See 6.8 6.13—Manufacturer-Supplied Eye Termination.

6.13.1—Manufacturer-supplied eye termination shall include rope or escape webbing that has been tested to and certified to the requirements of rope or escape webbing as specified in this standard.

6.13.2—All thread utilized in the construction of manufacturer-supplied eye termination shall allow for ease of inspection by the unaided eye with 20/20 vision or vision corrected to 20/20 at a nominal distance of 305 mm (12 in.).

See 6.7 6.14—Moderate Elongation Laid Life Saving Rope.
6.14.1 Moderate elongation laid life saving rope shall be constructed of virgin fiber.

6.14.2 Moderate elongation laid life saving rope shall be of block creel construction.

6.14.3 Primary load-bearing elements of moderate elongation laid life saving rope shall be constructed of continuous filament fiber.

6.14.4 Where moderate elongation laid life saving rope is a component of equipment with electric current carrying capabilities, the equipment including the moderate elongation laid life saving rope shall meet the requirements of ANSI/UL 913, Standard for Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division I, Hazardous (Classified) Locations, for Class I, Division I, Groups A, B, C, and D and Class II, Division I, Groups E, F, and G hazardous locations.
Chapter 7 - Performance Requirements

7.1 * - Life Safety Rope Performance Requirements.

7.1.1 * - Life Safety Rope Performance Requirements.

Technical use life safety rope shall be tested for breaking strength and elongation as specified in Section 8.2, Rope Breaking and Elongation Test and shall have a minimum breaking strength of not less than 20 kN (4496 lbf), the minimum elongation shall not be less than 1 percent at 10 percent of breaking strength; and the maximum elongation shall not be more than 10 percent at 10 percent of breaking strength.

7.1.2 * - Life Safety Rope Performance Requirements.

General use life safety rope shall be tested for breaking strength and elongation as specified in Section 8.2, Rope Breaking and Elongation Test and shall have a minimum breaking strength of not less than 40 kN (8992 lbf); the minimum elongation shall not be less than 1 percent at 10 percent of breaking strength; and the maximum elongation shall not be more than 10 percent at 10 percent of breaking strength.

7.1.3 * - Life Safety Rope Performance Requirements.

Technical use life safety rope shall be tested for size as specified in Section 9.1 of Cordage Institute Standard CI 1801, Low Stretch and Static Kernmantle Life Safety Rope, and shall have a diameter of 9.5 mm (0.38 in.) or greater but less than 12.5 mm (0.49 in.). For the purpose of reporting, the calculated diameter of all new life safety rope shall be rounded to the nearest 0.5 mm (0.02 in.).

7.1.4 * - Life Safety Rope Performance Requirements.

General use life safety rope shall be tested for size as specified in Section 9.1 of Cordage Institute Standard CI 1801, Low Stretch and Static Kernmantle Life Safety Rope, and shall have a diameter of 11 mm (0.43 in.) or greater but less than or equal to 16 mm (0.63 in.). For the purpose of reporting, the calculated diameter of all new life safety rope shall be rounded to the nearest 0.5 mm (0.02 in.).

Fiber utilized for all life safety rope shall be tested for melting as specified in ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

7.1.6 * - Life Safety Rope Performance Requirements.

Life safety rope product labels and identification tape shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, and shall be legible, shall remain in place, and shall not be torn or otherwise damaged.

7.2 * - Escape Rope Performance Requirements.

7.2.1 * - Escape Rope Performance Requirements.

Escape rope shall be tested for breaking strength and elongation as specified in Section 8.2, Rope Breaking and Elongation Test, and shall have a minimum breaking strength of not less than 13.5 kN (3034 lbf), the minimum elongation shall not be less than 1 percent at 10 percent of breaking strength, and the maximum elongation shall not be more than 10 percent at 10 percent of breaking strength.

7.2.2 * - Escape Rope Performance Requirements.

Escape rope shall be tested for size as specified in Section 9.1 of Cordage Institute Standard CI 1801, Low Stretch and Static Kernmantle Life Safety Rope, and shall have a diameter of 7.5 mm (0.29 in.) or greater, but less than or equal to 9.5 mm (0.38 in.). For the purpose of reporting, the calculated diameter of all new escape rope shall be rounded to the nearest 0.5 mm (0.02 in.).

7.2.3 * - Escape Rope Performance Requirements.

Fiber utilized for all escape rope shall be tested for melting in accordance with ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

7.2.4 * - Escape Rope Performance Requirements.

Escape rope product labels and identification tape shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, and shall be legible, shall remain in place, and shall not be torn or otherwise damaged.

7.3 * - Throwline Performance Requirements.
7.3.1 Throwline shall be tested for minimum breaking strength as specified in Section 8.2, Rope Breaking and Elongation Test, and shall have a minimum breaking strength of not less than 13 kN (2923 lbf).

7.3.2 Throwline shall be tested for size as specified in Section 9.1 of Cordage Institute Standard CI 1801, Low Stretch and Static Kernmantle Life Safety Rope, and shall have a diameter of 7 mm (0.19/64 in.) or greater, but less than 9.5 mm (0.3/8 in.). For the purpose of reporting, the calculated diameter of all new life safety rope shall be rounded to the nearest 0.5 mm (0.0019/64 in.).

7.3.3 Throwline shall be tested for the ability to float as specified in Section 8.9, Floatability Test, and shall float.

7.3.4 Throwline product labels and identification tape shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, and shall remain in place and shall be legible.

7.4 Life Safety Harness Performance Requirements.

7.4.1 Class II Life Safety Harness.

7.4.1.1 Class II life safety harness shall be tested for strength as specified in Section 8.3, Static Test, and shall not release from the test torso, the harness buckles and adjusting devices shall not slip more than 25 mm (1 in.), and the harness shall show no visible signs of damage that would affect its function.

7.4.1.2 Class II life safety harness shall be tested for drop as specified in Section 8.4, Drop Test, and the test torso shall not contact the ground during any of the test drops.

7.4.1.3 Where Class II life safety harness include side D-rings and attachment points designated by the manufacturer as positioning attachments only, these attachments shall be tested for strength as specified in Section 8.3, Static Test, and shall show no visible signs of damage that would affect its function.

7.4.2 Class III Life Safety Harness.

7.4.2.1 Class III life safety harness shall be tested for strength as specified in Section 8.3, Static Test, and shall not release from the test torso; the harness buckles and adjusting devices shall not slip more than 25 mm (1 in.); and the harness shall show no visible signs of damage that would affect its function.

7.4.2.2 Class III life safety harness shall be tested for drop as specified in Section 8.4, Drop Test, and the test torso shall not contact the ground during any of the test drops.

7.4.2.3 Where Class III life safety harness include side D-rings and attachment points designated by the manufacturer as positioning attachments only, these attachments shall be tested for strength as specified in Section 8.3, Static Test, and shall show no visible signs of damage that would affect its function.

7.4.3 All life safety harness product labels shall be tested for durability as specified in Section 8.10, Product Label Durability Test, and shall be legible, and shall not be torn or otherwise damaged.

7.4.4 All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface-type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturers' operating instructions.

7.4.5 All fiber and thread used in load-bearing materials and thread used in the construction of Class II and Class III life safety harness shall be tested for melting as specified in ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

7.4.6 Optional Requirements for Flame-Resistant Life Safety Harnesses.
7.4.6.1 Where harnesses are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

7.4.6.2 Where harnesses are represented as being flame-resistant, materials, labels, and hardware shall be tested individually for heat resistance as specified in Section 8.16, Heat Resistance Test, and shall not melt, drip, separate, or ignite; hardware items shall remain functional.

7.4.6.3 Where harnesses are represented as being flame-resistant, sewing thread utilized in the construction of harnesses shall be tested for heat resistance as specified in Section 8.18, Thread Heat Resistance Test, and shall not melt.

7.5 Belt Performance Requirements.

7.5.1 Ladder belts shall be tested for strength as specified in Section 8.3, Static Test, and shall not release from the test torso, shall not slip more than 25 mm (1 in.), and shall show no visible signs of damage that would affect their function.

7.5.1.1 Where ladder belts include side D-rings and attachment points designated by the manufacturer as positioning attachments only, these attachments shall be tested for strength as specified in Section 8.3, Static Test, and shall show no visible signs of damage that would affect their function.

7.5.2 Escape belts shall be tested for strength as specified in Section 8.3, Static Test, and shall not release from the test torso, shall not slip more than 25 mm (1 in.), and shall show no visible signs of damage that would affect their function.

7.5.2.1 Where escape belts include side D-rings and attachment points designated by the manufacturer as positioning attachments only, these attachments shall be tested for strength as specified in Section 8.3, Static Test, and shall show no visible signs of damage that would affect their function.

7.5.3 Escape belts shall be tested for drop as specified in Section 8.4, Drop Test, and the test torso shall not contact the ground during any of the test drops.

7.5.4 All belt product labels shall be tested for durability as specified in Section 8.10, Product Label Durability Test, shall be legible, and shall not be torn or otherwise damaged.

7.5.5 Metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface-type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer's operating instructions.

7.5.6 Optional Requirements for Flame-Resistant Belts.

7.5.6.1 Where belts are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

7.5.6.2 Where belts are represented as being flame-resistant, materials, labels, and hardware shall be tested individually for heat resistance as specified in Section 8.17, Heat Resistance Test, and shall not melt, drip, separate, or ignite; and hardware items shall not ignite and shall remain functional.

7.5.6.3 Where belts are represented as being flame-resistant, sewing thread utilized in the construction of harnesses shall be tested for heat resistance as specified in Section 8.18, Thread Heat Resistance Test, and shall not melt.

7.5.7 Manufactured Systems Performance Requirements.
7.5.7.1
Technical use manufactured systems shall be tested for deformation as specified in Section 8.7, Breaking Strength Test, Procedure A, and shall have no permanent damage to the system or its component parts or visible deformation to the general shape of the system or components.

7.5.7.2
Technical use manufactured systems shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile strength of at least 22 kN (4946 lbf) without failure.

7.5.7.3
General use manufactured systems shall be tested for deformation as specified in Section 8.7, Breaking Strength Test, Procedure A, and shall have no permanent damage to the system or its component parts or visible deformation to the general shape of the system or components.

7.5.7.4
General use manufactured systems shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile strength of at least 36 kN (8093 lbf) without failure.

7.5.7.5
Permanently attached manufactured system product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, and shall be legible, shall remain in place, and shall not be torn or otherwise damaged.

7.5.7.6
All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface-type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturers' operating instructions.

7.5.7.7
Where a manufactured system contains a life safety harness subcomponent, the life safety harness shall be individually tested, labeled, and certified to meet the appropriate requirements specified in Section 7.3, Throwline Performance Requirements, and 7.4, Life Safety Harness Performance Requirements, in addition to the manufactured system requirements of 7.5.7.1 through 7.5.7.6 as applicable.

7.5.7.8
Where a manufactured system contains a belt subcomponent, the belt shall be individually tested, labeled, and certified to meet the appropriate requirements specified in Section 7.5, Belt Performance Requirements, in addition to the manufactured system requirements of 7.5.7.1 through 7.5.7.6 as applicable.

7.5.7.9
Where a manufactured system contains an ascending device, rope grab device, or descent control device, the system shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure A, and shall not show any permanent damage or visible deformation to the general shape of the device and shall not show any damage to the rope.

7.5.7.10
Where the manufactured system incorporates an escape descent control device that incorporates a passive or active breaking feature that creates friction between the device and the rope, the system shall be tested for maximum payout force as specified in Section 8.13, Payout Test, shall not release the test torso, and shall not exceed 90 N (20 lb).

7.5.7.11
All fiber and thread used in load-bearing materials and thread used in the construction of manufactured systems shall be tested for melting as specified in ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

7.5.8
End-to-End and Multiple Configuration Strap Performance Requirements.

7.5.8.1
Technical use multiple configuration straps shall be tested for breaking strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum breaking strength of at least 32 kN (7194 lbf) without failure.
7.5.8.1.1 Where the strap includes an adjustment device, the adjustment device shall not slip more than 50 mm (2 in.).

7.5.8.2 General use multiple configuration straps shall be tested for breaking strength as specified in Section 8.7, Breaking Strength Test, and shall have a minimum breaking strength of at least 45 kN (10,120 lbf) without failure.

7.5.8.2.1 Where the strap includes an adjustment device, the adjustment device shall not slip more than 50 mm (2 in.).

7.5.8.3 Technical use end-to-end straps shall be tested for breaking strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum breaking strength of at least 20 kN (4500 lbf) without failure.

7.5.8.3.1 Where the strap includes an adjustment device, the adjustment device shall not slip more than 50 mm (2 in.).

7.5.8.4 General use end-to-end straps shall be tested for breaking strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum breaking strength of at least 27 kN (6070 lbf) without failure.

7.5.8.4.1 Where the strap includes an adjustment device, the adjustment device shall not slip more than 50 mm (2 in.).

7.5.8.5 Permanently attached end-to-end and multiple configuration strap product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, shall be legible, and shall not be torn or otherwise damaged.

7.5.8.6 All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface-type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer's operating instructions.

7.5.8.7 All fiber and thread used for end-to-end and multiple configuration straps shall be tested for melting as specified in ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

7.5.9 Other Auxiliary Equipment Performance Requirements.

7.5.9.1 Other technical use auxiliary equipment shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile strength of at least 22 kN (4946 lbf) without failure.

7.5.9.2 Other general use auxiliary equipment shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile strength of at least 36 kN (8093 lbf).

7.5.9.3 All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface-type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer's operating instructions.

7.5.9.4 All fiber and thread utilized in the construction of all auxiliary equipment systems and system components shall be tested for melting as specified in ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).
7.5.9.5 All auxiliary equipment systems and system component product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, shall be legible, and shall not be torn or otherwise damaged.

7.5.10 All fiber and thread used in the construction of all belts shall be tested for melting as specified in ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

7.5.11 All fiber and thread used in load-bearing materials and thread used in the construction of belts shall be tested for melting as specified in ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

7.6 Auxiliary Equipment Performance Requirements.

7.6.1 Carabiners and Snap-Link Performance Requirements.

7.6.1.1 Technical use carabiners and snap-links shall be tested for strength as specified in Section 8.5, Carabiner and Snap-Link Tensile Test, and shall, with the gate closed, have a major axis minimum breaking strength of at least 27 kN (6069 lbf).

7.6.1.2 Technical use carabiners and snap-links shall be tested for strength as specified in Section 8.5, Carabiner and Snap-Link Tensile Test, and shall, with the gate open, have a major axis minimum breaking strength of at least 7 kN (1574 lbf).

7.6.1.3 Technical use carabiners and snap-links shall be tested for strength as specified in Section 8.5, Carabiner and Snap-Link Tensile Test, and shall have a minor axis minimum breaking strength of at least 7 kN (1574 lbf).

7.6.1.4 General use carabiners and snap-links shall be tested for breaking strength as specified in Section 8.5, Carabiner and Snap-Link Tensile Test, and shall, with the gate closed, have a major axis minimum breaking strength of at least 40 kN (8992 lbf).

7.6.1.5 General use carabiners and snap-links shall be tested for breaking strength as specified in Section 8.5, Carabiner and Snap-Link Tensile Test, and shall, with the gate open, have a major axis minimum breaking strength of at least 11 kN (2473 lbf).

7.6.1.6 General use carabiners and snap-links shall be tested for breaking strength as specified in Section 8.5, Carabiner and Snap-Link Tensile Test, and shall have a minor axis minimum breaking strength of at least 11 kN (2473 lbf).

7.6.1.7 Permanently attached carabiner and snap-link product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, and shall be legible, and shall not be torn or otherwise damaged.

7.6.1.8 All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface-type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturers' operating instructions.

7.6.2 Rope Grab and Ascending Devices Performance Requirements.

7.6.2.1 Technical use rope grab and ascending devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure A, and shall show no permanent damage to the device or damage to the rope.

7.6.2.2 General use rope grab and ascending devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure A, and shall show no permanent damage to the device or damage to the rope.
7.6.2.3 Permanently attached rope grab and ascending device product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, and shall be legible, and shall not be torn or otherwise damaged.

7.6.2.4 All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface-type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer's operating instructions.

7.6.3 Descent Control Device Performance Requirements.

7.6.3.1 Escape descent control devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure A, and shall show no permanent damage or visible deformation to the general shape of the device or damage to the rope.

7.6.3.2 Escape descent control devices shall be tested for breaking strength as specified in Section 8.6, Manner of Function Tensile Test, Procedure B, and shall have a minimum breaking strength of at least 13.5 kN (3034 lbf).

7.6.3.3 Technical use descent control devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure A, and shall show no permanent damage or visible deformation to the general shape of the device or damage to the rope.

7.6.3.4 General use descent control devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure A, and shall show no permanent damage or visible deformation to the general shape of the device or damage to the rope.

7.6.3.5 General use descent control devices shall be tested for breaking strength as specified in Section 8.6, Manner of Function Tensile Test, Procedure B, and shall have a minimum breaking strength of at least 22 kN (4946 lbf).

7.6.3.5.1 Where the descent control device is designed to slip under high load, general use descent control devices shall be tested for slippage as specified in Section 8.6, Manner of Function Tensile Test, Procedure B, and shall not slip under a test load of 9 kN (2023 lbf).

7.6.3.6 ISO 22159, Personal equipment for protection against falls — Descending devices, Type 2, 3, and 4 descent control devices with a hands-free locking element shall be tested in accordance with Section 8.11, Holding Test, and shall meet the requirements in 4.6.1 of ISO 22159.

7.6.3.6.1 ISO 22159 Type 2 and 3 descent control devices with a panic-locking element shall be tested in accordance with Section 8.11, Holding Test, and shall meet the requirements in 4.6.2 of ISO 22159.

7.6.3.6.2 ISO 22159 Type 5 and 6 descent control devices shall be tested in accordance with Section 8.11, Holding Test, and shall meet the requirements in 4.6.3 of ISO 22159.

7.6.3.7 Permanently attached descent control device product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, and shall be legible, and shall not be torn or otherwise damaged.

7.6.3.8 All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface-type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer's operating instructions.
7.6.3.9 Where the escape descent control device incorporates a passive or active breaking feature that creates friction between the device and the rope, the maximum force required to pay a specific type of rope through the descent control device shall be tested as specified in Section 8.13, Payout Test, and shall not exceed 90 N (20 lb).

7.6.3.10 System Level Drop Test
Escape systems shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8.0 kN (1798.5 lbf), shall not damage the rope or device, and shall remain functional.

7.6.4 Portable Anchor Performance Requirements

7.6.4.1 Technical use portable anchor devices shall be tested for deformation as specified in Section 8.7, Breaking Strength Test, Procedure A, and all adjustments or moving parts shall remain functional, and shall exhibit no condition that would cause the safety of the user to be compromised.

7.6.4.2 General use portable anchor devices shall be tested for deformation as specified in Section 8.7, Breaking Strength Test, Procedure A, and all adjustments or moving parts shall remain functional, and shall exhibit no condition that would cause the safety of the user to be compromised.

7.6.4.3 Technical use portable anchor devices shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall withstand a minimum load of at least 22 kN (4946 lbf) without failure.

7.6.4.4 General use portable anchor devices shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall withstand a minimum load of at least 36 kN (8093 lbf) without failure.

7.6.4.5 Permanently attached portable anchor product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, shall be legible, and shall not be torn or otherwise damaged.

7.6.4.6 All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface-type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer’s operating instructions.

7.6.5 Pulley Performance Requirements

7.6.5.1 Technical use pulleys shall be tested for deformation as specified in Section 8.7, Breaking Strength Test, Procedure A, and shall show no permanent damage to the device or damage to the rope.

7.6.5.2 Technical use pulleys shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile strength of at least 22 kN (4946 lbf) without failure.

7.6.5.3 General use pulleys shall be tested for deformation as specified in Section 8.7, Breaking Strength Test, Procedure A, and shall show no permanent damage to the device or damage to the rope.

7.6.5.4 General use pulleys shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile strength of at least 36 kN (8093 lbf) without failure.

7.6.5.5 The becket on technical use pulleys shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile strength of at least 12 kN (2698 lbf) without failure.

7.6.5.6 The becket on general use pulleys shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile strength of at least 19.5 kN (4383 lbf) without failure.
7.6.5.7 - Permanently attached pulley product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, and shall be legible, and shall not be torn or otherwise damaged.

7.6.5.8 - All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface-type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer's operating instructions.

7.7 - Victim Extrication Device Performance Requirements.

7.7.1 - Class II Victim Extrication Devices.

7.7.1.1 - Class II victim extrication devices shall be tested for strength as specified in Section 8.3, Static Test, and shall not release the test torso. The device buckles and adjusting devices shall not slip more than 25 mm (1 in.), and the device shall show no visible signs of damage that would affect its function.

7.7.1.2 - Where Class II victim extrication devices include alternate D-rings and attachment points designated by the manufacturer as alternate lifting points or configurations, these attachments shall be tested for strength as specified as in Section 8.3, Static Test, and shall show no visual signs of damage that would affect its function.

7.7.2 - Class III Victim Extrication Device.

7.7.2.1 - Class III victim extrication devices shall be tested for strength as specified in Section 8.3, Static Test, and shall not release the test torso. The device buckles and adjusting devices shall not slip more than 25 mm (1 in.), and the device shall show no visible signs of damage that would affect its function.

7.7.2.2 - Where Class III victim extrication devices include alternate D-rings and attachment points designated by the manufacture as alternate lifting points or configurations, these attachments shall be tested for strength as specified as in Section 8.3, Static Test, and shall show no visual signs of damage that would affect its function.

7.7.3 - All victim extrication device product labels shall be tested for durability as specified in Section 8.10, Product Label Durability Test, and shall be legible and shall not be torn or otherwise damaged.

7.7.4 - All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface-type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer's operating instructions.

7.7.5 - All fiber used in load-bearing materials and thread used in the construction of Class II and Class III victim extrication devices shall be tested for melting as specified ASTM 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

7.8 - Litter Performance Requirements.

Litters shall be tested for strength and deformation as specified in Section 8.12, Litter Strength Test, and shall withstand a minimum load of 11 kN (2473 lbf) without failure or deformation of the structural element of more than 50 mm ± 5 mm (2 in. ± 0.2 in.).

7.9 - Escape Webbing Performance Requirements.

7.9.1 - Escape webbing shall meet the performance requirements specified in Section 7.2, Escape Rope Performance Requirements, excluding 7.2.2.

7.9.2 - Escape webbing shall be tested for size as specified in Section 9.1 of Cordage Institute Standard CI 1801, Low Stretch and Static Kernmantle Life Safety Rope, and shall have a minimum perimeter of 25 mm (1 in). For the purpose of reporting, the perimeter of all new escape webbing shall be rounded to the nearest 0.5 mm (.1/64 in.).
7.10 Fire Escape Webbing Performance Requirements.

7.10.1 Fire escape webbing shall meet the performance requirements specified in Section 7.12, Fire Escape Rope Performance Requirements, excluding 7.12.2.

7.10.2 Fire escape webbing shall be tested for size as specified in Section 9.1 of Cordage Institute Standard CI 1801, Low Stretch and Static Kernmantle Life Safety Rope, and shall have a minimum perimeter of 25 mm (1 in.). For the purpose of reporting, the perimeter of all new escape webbing shall be rounded to the nearest 1/64 in.

7.10.3 Fire escape webbing shall be tested for high temperature exposure as specified in Section 8.15, Elevated Temperature Rope Test. This test shall be conducted at two independent conditions and shall have a minimum time to failure of 45 seconds at 600°C while holding 300 lb and of 5 minutes at 400°C while holding 300 lb.

7.11 Escape System Performance Requirements.

7.11.1 Escape systems shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile strength of at least 13.5 kN (3034 lbf) without failure.

7.11.2 All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface-type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer’s operating instructions.

7.11.3 All fiber and thread utilized in the construction of the escape systems and system components shall be tested for melting as specified in ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

7.11.4 All escape system equipment and system component product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, shall be legible, and shall not be torn or otherwise damaged.

7.11.5 Where the escape descent control device incorporates a passive or active breaking feature that creates friction between the device and the rope, the system shall be tested for maximum payout force as specified in Section 8.13, Payout Test, and shall not release the test torso and shall not exceed 90 N (20 lb).

7.11.6 Where an escape system is designated as a fire escape system, additional tests as specified in 7.11.6.1 and 7.11.6.2 shall be conducted.

7.11.6.1 Fire escape system rope shall be tested for high temperature exposure as specified in Section 8.15, Elevated Temperature Rope Test. This test shall be conducted at two independent conditions and shall have a minimum time to failure of 45 seconds at 600°C while holding 300 lb and of 5 minutes at 400°C while holding 300 lb.

7.11.6.2 Where escape anchors are represented as being flame resistant, materials, labels, and hardware shall be tested individually for heat resistance as specified in Section 8.17, Heat Resistance Test, and shall not melt, drip, separate, or ignite; hardware items shall remain functional.

7.12 Fire Escape Rope Performance Requirements.

7.12.1 Fire escape rope shall be tested for breaking strength and elongation as specified in Section 8.2, Rope Breaking and Elongation Test, and shall have a minimum breaking strength of not less than 13.5 kN (3034 lbf); the minimum elongation shall not be less than 1 percent at 10 percent of breaking strength; and the maximum elongation shall not be more than 10 percent at 10 percent of breaking strength.
Fire escape rope shall be tested for size as specified in Section 9.1 of Cordage Institute Standard CI 1801, *Low Stretch and Static Kernmantle Life Safety Rope*, and shall have a diameter of at least 7.5 mm (7/64 in.) but less than 9.5 mm (3/8 in.). For the purpose of reporting, the calculated diameter of all new fire escape rope shall be rounded to the nearest 0.5 mm (1/64 in.).

Fiber utilized for all fire escape rope shall be tested for melting in accordance with ASTM E 794, *Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis*, and shall have a melting point of not less than 204°C (400°F).

Fire escape rope product labels and identification tape shall be tested for legibility as specified in Section 8.10, *Product Label Durability Test*, and shall be legible, shall remain in place, and shall not be torn or otherwise damaged.

Fire escape rope shall be tested for high-temperature exposure as specified in Section 8.15, *Elevated Temperature Rope Test*. This test shall be conducted at two independent conditions and shall have a minimum time to failure of 45 seconds at 600°C while holding 300 lb and of 5 minutes at 400°C while holding 300 lb.

Manufacturer-supplied eye termination shall be tested for breaking strength as specified in Section 8.2, *Rope Breaking and Elongation Test*, and shall meet one of the following criteria:

1. It shall have a minimum breaking strength of not less than 85 percent of the certified rope's calculated minimum breaking strength, as determined by the certifying organization.
2. It shall have a minimum breaking strength of not less than 20 kN (4496 lbf) for technical use life safety rope.
3. It shall have a minimum breaking strength of not less than 40 kN (8992 lbf) for general use life safety rope.
4. It shall have a minimum breaking strength of not less than 13.5 kN (3034 lbf) for escape rope.
5. It shall have a minimum breaking strength of not less than 13.5 kN (3034 lbf) for throwline.
6. It shall have a minimum breaking strength of not less than 13.5 kN (3034 lbf) for fire escape rope.

All thread used in the construction of manufacturer-supplied eye termination shall be tested for melting as specified in ASTM E 794, *Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis*, and shall have a melting point of not less than 204°C (400°F).

All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, *Corrosion Resistance Test*, and metals inherently resistant to corrosion, including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface-type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer's operating instructions.

Moderate elongation laid life saving rope shall be tested for breaking strength and elongation as specified in Section 8.2, *Rope Breaking and Elongation Test*, and shall have a minimum breaking strength of not less than 40 kN (8992 lbf); the minimum elongation shall not be less than 1 percent at 10 percent of breaking strength and the maximum elongation shall not be more than 25 percent at 10 percent of breaking strength.
7.14.2
Moderate elongation laid life saving rope shall be tested for size as specified in Section 9.1 of Cordage Institute Standard CI 1805, 3-Strand Life Safety Rope, Moderate Stretch, and shall have a diameter of 11 mm (7/16 in.) or greater but less than or equal to 16 mm (5/8 in.). For the purpose of reporting, the calculated diameter of all new three-strand life saving rope shall be rounded to the nearest 0.5 mm (1/64 in.).

7.14.3
Fiber utilized for all moderate elongation laid life saving rope shall be tested for melting as specified in ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

7.14.4
Moderate elongation laid life saving rope product labels and identification tape shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, and shall be legible, shall remain in place, and shall not be torn or otherwise damaged.

7.15  Belay Device Performance Requirements.
7.15.1
Technical use belay devices shall be tested for breaking strength as specified in Section 8.6, Manner of Function Tensile Test, Procedure C without failure of the device or failure of the rope.

7.15.2
General use belay devices shall be tested for breaking strength as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m, and with an impact force of less than 15 kN (3372 lbf).

7.16  Escape Anchor Device Performance Requirements.
7.16.1
Escape anchor devices shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile strength of at least 13.5 kN (3034 lbf).

7.16.2
Permanently attached escape anchor device product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, shall be legible, and shall not be torn or otherwise damaged.

7.16.3
All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface-type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer's operating instructions.

7.16.4
Escape anchor devices constructed of nonmetallic materials shall be tested for heat resistance as specified in Section 8.17, Heat Resistance Test, and shall not melt, drip, separate, or ignite; hardware items shall remain functional.

7.17  Escape Descent Control Device Performance Requirements.
Escape descent control devices and systems shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, shall have the maximum impact force not exceed 8.0 kN (1798.5 lbf), shall not damage the rope or device, and shall remain functional.

Additional Proposed Changes

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Statement of Problem and Substantiation for Public Input

NFPA 1983 contains an extensive variety of products. The current format can be difficult to navigate and is not easily followed by users and manufacturers. At the TC's request, the document was reorganized for clarity and ease of use. This input includes the language in TIA 12-1. No new material is contained in this input.

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Chapter 7  Performance Requirements

7.1* Life Safety Rope Performance Requirements.

7.1.1* Technical use life safety rope shall be tested for breaking strength and elongation as specified in Section 8.2, Rope Breaking and Elongation Test and shall have a minimum breaking strength of not less than 20 kN (4496 lbf), the minimum elongation shall not be less than 1 percent at 10 percent of breaking strength; and the maximum elongation shall not be more than 10 percent at 10 percent of breaking strength.

7.1.2* General use life safety rope shall be tested for breaking strength and elongation as specified in Section 8.2, Rope Breaking and Elongation Test and shall have a minimum breaking strength of not less than 40 kN (8992 lbf); the minimum elongation shall not be less than 1 percent at 10 percent of breaking strength; and the maximum elongation shall not be more than 10 percent at 10 percent of breaking strength.

7.1.3* Technical use life safety rope shall be tested for size as specified in Section 9.1 of Cordage Institute Standard CI 1801, Low Stretch and Static Kernmantle Life Safety Rope, and shall have a diameter of 9.5 mm (5/8 in.) or greater but less than 12.5 mm (½ in.). For the purpose of reporting, the calculated diameter of all new life safety rope shall be rounded to the nearest 0.5 mm (1/64 in.).

7.1.4* General use life safety rope shall be tested for size as specified in Section 9.1 of Cordage Institute Standard CI 1801, Low Stretch and Static Kernmantle Life Safety Rope, and shall have a diameter of 11 mm (7/16 in.) or greater but less than or equal to 16 mm (5/8 in.). For the purpose of reporting, the calculated diameter of all new life safety rope shall be rounded to the nearest 0.5 mm (1/64 in.).

7.1.5* Fiber utilized for all life safety rope shall be tested for melting as specified in ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

7.1.6  Life safety rope product labels and identification tape shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, and shall be legible, shall remain in place, and shall not be torn or otherwise damaged.
7.2* Escape Rope Performance Requirements.

7.2.1* Escape rope shall be tested for breaking strength and elongation as specified in Section 8.2, Rope Breaking and Elongation Test, and shall have a minimum breaking strength of not less than 13.5 kN (3034 lbf), the minimum elongation shall not be less than 1 percent at 10 percent of breaking strength, and the maximum elongation shall not be more than 10 percent at 10 percent of breaking strength.

7.2.2* Escape rope shall be tested for size as specified in Section 9.1 of Cordage Institute Standard CI 1801, Low Stretch and Static Kernmantle Life Safety Rope, and shall have a diameter of 7.5 mm (19/64 in.) or greater, but less than 9.5 mm (3/8 in.). For the purpose of reporting, the calculated diameter of all new escape rope shall be rounded to the nearest 0.5 mm (1/64 in.).

7.2.3* Fiber utilized for all escape rope shall be tested for melting in accordance with ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

7.2.4 Escape rope product labels and identification tape shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, and shall be legible, shall remain in place, and shall not be torn or otherwise damaged.
7.9–7.3 Escape Webbing Performance Requirements.

7.9.1 Escape webbing shall meet the performance requirements specified in Section 7.2, Escape Rope Performance Requirements, excluding 7.2.2. Escape webbing shall be tested for breaking strength and elongation as specified in Section 8.2, Rope Breaking and Elongation Test, and shall have a minimum breaking strength of not less than 13.5 kN (3034 lbf), the minimum elongation shall not be less than 1 percent at 10 percent of breaking strength, and the maximum elongation shall not be more than 10 percent at 10 percent of breaking strength.

7.9.2 Escape webbing shall be tested for size as specified in Section 9.1 of Cordage Institute Standard CI 1801, Low Stretch and Static Kernmantle Life Safety Rope, and shall have a minimum perimeter of 25 mm (1 in). For the purpose of reporting, the perimeter of all new escape webbing shall be rounded to the nearest 0.5 mm (1/64 in.).

7.3* Fiber utilized for all escape webbing shall be tested for melting in accordance with ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

7.2.4 Escape webbing product labels and identification tape shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, and shall be legible, shall remain in place, and shall not be torn or otherwise damaged.
7.12.1 Fire escape rope shall be tested for breaking strength and elongation as specified in Section 8.2, Rope Breaking and Elongation Test, and shall have a minimum breaking strength of not less than 13.5 kN (3034 lbf); the minimum elongation shall not be less than 1 percent at 10 percent of breaking strength; and the maximum elongation shall not be more than 10 percent at 10 percent of breaking strength.

7.12.2 Fire escape rope shall be tested for size as specified in Section 9.1 of Cordage Institute Standard CI 1801, Low Stretch and Static Kernmantle Life Safety Rope, and shall have a diameter of at least 7.5 mm ($\frac{19}{64}$ in.) but less than 9.5 mm ($\frac{3}{8}$ in.). For the purpose of reporting, the calculated diameter of all new fire escape rope shall be rounded to the nearest 0.5 mm ($\frac{1}{64}$ in.).

7.12.3 Fiber utilized for all fire escape rope shall be tested for melting in accordance with ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

7.12.4 Fire escape rope product labels and identification tape shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, and shall be legible, shall remain in place, and shall not be torn or otherwise damaged.

7.12.5 Fire escape rope shall be tested for high-temperature exposure as specified in Section 8.15, Elevated Temperature Rope Test. This test shall be conducted at two independent conditions, different temperatures and shall have a minimum time to failure of 45 seconds at 600°C while holding 300 lb and of 5 minutes at 400°C while holding 300 lb.
7.10–7.5 Fire Escape Webbing Performance Requirements.

7.10.1 Fire escape webbing shall meet the performance requirements specified in Section 7.12.7.10, Fire Escape Rope Performance Requirements, excluding 7.12.2. Fire escape webbing shall be tested for breaking strength and elongation as specified in Section 8.2, Rope Breaking and Elongation Test, and shall have a minimum breaking strength of not less than 13.5 kN (3034 lbf), the minimum elongation shall not be less than 1 percent at 10 percent of breaking strength, and the maximum elongation shall not be more than 10 percent at 10 percent of breaking strength.

7.10.2 Fire escape webbing shall be tested for size as specified in Section 9.1 of Cordage Institute Standard CI 1801, Low Stretch and Static Kernmantle Life Safety Rope, and shall have a minimum perimeter of 25 mm (1 in). For the purpose of reporting, the perimeter of all new escape webbing shall be rounded to the nearest 0.5 mm (\( \frac{1}{64} \) in.).

7.5.3* Fiber utilized for all fire escape rope shall be tested for melting in accordance with ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

7.5.4 Fire escape webbing product labels and identification tape shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, and shall be legible, shall remain in place, and shall not be torn or otherwise damaged.

7.10.3 Fire escape webbing shall be tested for high temperature exposure as specified in Section 8.15, Elevated Temperature Rope Test. This test shall be conducted at two independent conditions, different temperatures, and shall have a minimum time to failure of 45 seconds at 600°C while holding 300 lb load and of 5 minutes at 400°C while holding 300 lb load.
7.3–7.6 Throwline Performance Requirements.

7.3.1 7.6.1 Throwline shall be tested for minimum breaking strength as specified in Section 8.2, Rope Breaking and Elongation Test, and shall have a minimum breaking strength of not less than 13 kN (2923 lbf).

7.3.2 7.6.2* Throwline shall be tested for size as specified in Section 9.1 of Cordage Institute Standard CI 1801, Low Stretch and Static Kernmantle Life Safety Rope, and shall have a diameter of 7 mm (1\(\frac{3}{64}\) in.) or greater, but less than 9.5 mm (3\(\frac{1}{8}\) in.). For the purpose of reporting, the calculated diameter of all new life safety rope shall be rounded to the nearest 0.5 mm (1\(\frac{1}{64}\) in.).

7.3.3–7.6.3 Throwline shall be tested for the ability to float as specified in Section 8.9, Floatability Test, and shall float.

7.3.4–7.6.4 Throwline product labels and identification tape shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, and shall remain in place and shall be legible.
7.14 7.7 Moderate Elongation Laid Life Saving Rope Performance Requirements.

7.14.1 7.7.1 Moderate elongation laid life saving rope shall be tested for breaking strength and elongation as specified in Section 8.2, Rope Breaking and Elongation Test, and shall have a minimum breaking strength of not less than 40 kN (8992 lbf); the minimum elongation shall not be less than 1 percent at 10 percent of breaking strength and the maximum elongation shall not be more than 25 percent at 10 percent of breaking strength.

7.14.2 7.7.2 Moderate elongation laid life saving rope shall be tested for size as specified in Section 9.1 of Cordage Institute Standard CI 1805, 3-Strand Life Safety Rope, Moderate Stretch, and shall have a diameter of 11 mm (\( \frac{7}{16} \) in.) or greater but less than or equal to 16 mm (\( \frac{5}{8} \) in.). For the purpose of reporting, the calculated diameter of all new three-strand life saving rope shall be rounded to the nearest 0.5 mm (\( \frac{1}{64} \) in.).

7.14.3 7.7.3* Fiber utilized for all moderate elongation laid life saving rope shall be tested for melting as specified in ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

7.14.4 7.7.4 Moderate elongation laid life saving rope product labels and identification tape shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, and shall be legible, shall remain in place, and shall not be torn or otherwise damaged.
7.13–7.8 Manufacturer-Supplied Eye Termination Performance Requirements.

7.13.1–7.8.1 Manufacturer-supplied eye termination shall be tested for breaking strength as specified in Section 8.2, Rope Breaking and Elongation Test, and shall meet one of the following criteria:

1. It shall have a minimum breaking strength of not less than 85 percent of the certified rope’s calculated minimum breaking strength, as determined by the certifying organization.

2. It shall have a minimum breaking strength of not less than 20 kN (4496 lbf) for technical use life safety rope.

3. It shall have a minimum breaking strength of not less than 40 kN (8992 lbf) for general use life safety rope.

4. It shall have a minimum breaking strength of not less than 13.5 kN (3034 lbf) for escape rope and fire escape rope.

5. It shall have a minimum breaking strength of not less than 13.5 kN (3034 lbf) for escape webbing and fire escape webbing rope.

6. It shall have a minimum breaking strength of not less than 13.5 kN (3034 lbf) for throwline.

7.13.2–7.8.2 All thread used in the construction of manufacturer-supplied eye termination shall be tested for melting as specified in ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204ºC (400ºF).

7.13.3–7.8.3 All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion, including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface–type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer’s operating instructions.
7.4–7.9 Life Safety Harness Performance Requirements.

7.4.1–7.9.1 Class II Life Safety Harness.

7.4.1.1–7.9.1.1 Class II life safety harness shall be tested for strength as specified in Section 8.3, Static Test, and shall not release from the test torso, the harness buckles and adjusting devices shall not slip more than 25 mm (1 in.), and the harness shall show no visible signs of damage that would affect its function.

7.4.1.2–7.9.1.2 Class II life safety harness shall be tested for drop as specified in Section 8.4, Drop Test, and the test torso shall not contact the ground during any of the test drops.

7.4.1.3–7.9.1.3 Where Class II life safety harness include side D-rings and attachment points designated by the manufacturer as positioning attachments only, these attachments shall be tested for strength as specified in Section 8.3, Static Test, and shall show no visible signs of damage that would affect its function.

7.4.2–7.9.2 Class III Life Safety Harness.

7.4.2.1–7.9.2.1 Class III life safety harness shall be tested for strength as specified in Section 8.3, Static Test, and shall not release from the test torso; the harness buckles and adjusting devices shall not slip more than 25 mm (1 in.); and the harness shall show no visible signs of damage that would affect its function.

7.4.2.2–7.9.2.2 Class III life safety harness shall be tested for drop as specified in Section 8.4, Drop Test, and the test torso shall not contact the ground during any of the test drops.

7.4.2.3–7.9.2.3 Where Class III life safety harness include side D-rings and attachment points designated by the manufacturer as positioning attachments only, these attachments shall be tested for strength as specified in Section 8.3, Static Test, and shall show no visible signs of damage that would affect its function.

7.4.3–7.9.3 All life safety harness product labels shall be tested for durability as specified in Section 8.10, Product Label Durability Test, and shall be legible, and shall not be torn or otherwise damaged.

7.4.4–7.9.4 All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface–type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturers’ operating instructions.

7.4.5–7.9.5* All fiber and thread used in load-bearing materials and thread used in the construction of Class II and Class III life safety harness shall be tested for melting as specified in ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

7.4.6–7.9.6 Optional Requirements for Flame-Resistant Life Safety Harnesses.
7.4.6.1 Where harnesses are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip. (TIA)

7.4.6.2 Where harnesses are represented as being flame-resistant, materials, labels, and hardware shall be tested individually for heat resistance as specified in Section 8.167, Heat Resistance Test, and shall not melt, drip, separate, or ignite; hardware items shall remain functional.

7.4.6.3 Where harnesses are represented as being flame-resistant, sewing thread utilized in the construction of harnesses shall be tested for heat resistance as specified in Section 8.18, Thread Heat Resistance Test, and shall not melt.
7.5–7.10 Belt Performance Requirements.

7.5.1–7.10.1 Ladder belts shall be tested for strength as specified in Section 8.3, Static Test, and shall not release from the test torso, shall not slip more than 25 mm (1 in.), and shall show no visible signs of damage that would affect their function.

7.5.1.1–7.10.1.1 Where ladder belts include side D-rings and attachment points designated by the manufacturer as positioning attachments only, these attachments shall be tested for strength as specified in Section 8.3, Static Test, and shall show no visible signs of damage that would affect their function.

7.5.2–7.10.2 Escape belts shall be tested for strength as specified in Section 8.3, Static Test, and shall not release from the test torso, shall not slip more than 25 mm (1 in.), and shall show no visible signs of damage that would affect their function.

7.5.2.1–7.10.2.1 Where escape belts include side D-rings and attachment points designated by the manufacturer as positioning attachments only, these attachments shall be tested for strength as specified in Section 8.3, Static Test, and shall show no visible signs of damage that would affect their function.

7.5.3–7.10.3 Escape belts shall be tested for drop as specified in Section 8.4, Drop Test, and the test torso shall not contact the ground during any of the test drops.

7.5.4–7.10.4 All belt product labels shall be tested for durability as specified in Section 8.10, Product Label Durability Test, shall be legible, and shall not be torn or otherwise damaged.

7.5.5–7.10.5 Metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface–type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer’s operating instructions.

7.10.6 All fiber and thread used in load-bearing materials and thread used in the construction of belts shall be tested for melting as specified in ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

7.5.6–7.10.7 Optional Requirements for Flame-Resistant Belts.

7.5.6.1–7.10.7.1 Where belts are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip. (TIA)

7.5.6.2–7.10.7.2 Where belts are represented as being flame-resistant, materials, labels, and hardware shall be tested individually for heat resistance as specified in Section 8.17, Heat Resistance Test, and shall not melt, drip, separate, or ignite; and hardware items shall not ignite and shall remain functional.
7.5.6.3–7.10.6.3 Where belts are represented as being flame-resistant, sewing thread utilized in the construction of harnesses shall be tested for heat resistance as specified in Section 8.18, Thread Heat Resistance Test, and shall not melt.

7.7–7.11 Victim Extrication Device Performance Requirements.

7.7.1–7.11.1 Class II Victim Extrication Devices.

7.7.1.1–7.11.1.1 Class II victim extrication devices shall be tested for strength as specified in Section 8.3, Static Test, and shall not release the test torso. The device buckles and adjusting devices shall not slip more than 25 mm (1 in.), and the device shall show no visible signs of damage that would affect its function.

7.7.1.2–7.11.1.2 Where Class II victim extrication devices include alternate D-rings and attachment points designated by the manufacture's as alternate lifting points or configurations, these attachments shall be tested for strength as specified as in Section 8.3, Static Test, and shall show no visual signs of damage that would affect its function.

7.7.2–7.11.2 Class III Victim Extrication Devices.

7.7.2.1–7.11.2.1 Class III Victim extrication devices shall be tested for strength as specified in Section 8.3, Static Test, and shall not release the test torso. The device buckles and adjusting devices shall not slip more than 25 mm (1 in.), and the device shall show no visible signs of damage that would affect its function.

7.7.2.2–7.11.2.2 Where Class III victim extrication devices include alternate D-rings and attachment points designated by the manufacture as alternate lifting points or configurations, these attachments shall be tested for strength as specified as in Section 8.3, Static Test, and shall show no visual signs of damage that would affect its function.

7.7.3–7.11.3 All victim extrication device product labels shall be tested for durability as specified in Section 8.10, Product Label Durability Test, and shall be legible and shall not be torn or otherwise damaged.

7.7.4–7.11.4 All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface–type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer’s operating instructions.

7.7.5–7.11.5 All fiber used in load-bearing materials and thread used in the construction of Class II and Class III victim extrication devices shall be tested for melting as specified ASTM 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).
7.5.8–7.12 End-to-End and Multiple Configuration Strap Performance Requirements.

7.5.8.1—Technical use multiple configuration straps shall be tested for breaking strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum breaking strength of at least 32 kN (7194 lbf) without failure.

7.5.8.1.1—Where the strap includes an adjustment device, the adjustment device shall not slip more than 50 mm (2 in.).

7.5.8.2—General use multiple configuration straps shall be tested for breaking strength as specified in Section 8.7, Breaking Strength Test, and shall have a minimum breaking strength of at least 45 kN (10,120 lbf) without failure.

7.5.8.2.1—Where the strap includes an adjustment device the adjustment device shall not slip more than 50 mm (2 in.).

7.5.8.3–7.12.1 Technical use end-to-end straps shall be tested for breaking strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum breaking strength of at least 20 kN (4500 lbf) without failure.

7.5.8.3.1–7.12.1.1 Where the strap includes an adjustment device, the adjustment device shall not slip more than 50 mm (2 in.).

7.5.8.4–7.12.2 General use end-to-end straps shall be tested for breaking strength as specified Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum breaking strength of at least 27 kN (6070 lbf) without failure.

7.5.8.4.1–7.12.2.1 Where the strap includes an adjustment device, the adjustment device shall not slip more than 50 mm (2 in.).

7.5.8.5–7.12.3 Permanently attached end-to-end and multiple configuration strap product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, shall be legible, and shall not be torn or otherwise damaged.

7.5.8.6–7.12.4 All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface–type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer's operating instructions.

7.5.8.7 7.12.5 All fiber and thread used for end-to-end and multiple configuration straps shall be tested for melting as specified in ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).
7.5.8–7.13 End-to-End and Multiple Configuration Strap Performance Requirements.

7.5.8.1–7.13 Technical use multiple configuration straps shall be tested for breaking strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum breaking strength of at least 32 kN (7194 lbf) without failure.

7.5.8.1.1–7.13.1 Where the strap includes an adjustment device, the adjustment device shall not slip more than 50 mm (2 in.).

7.5.8.2–7.13.2 General use multiple configuration straps shall be tested for breaking strength as specified in Section 8.7, Breaking Strength Test, and shall have a minimum breaking strength of at least 45 kN (10,120 lbf) without failure.

7.5.8.2.1–7.13.2.1 Where the strap includes an adjustment device, the adjustment device shall not slip more than 50 mm (2 in.).

7.5.8.3–7.13.3 Technical use end-to-end straps shall be tested for breaking strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum breaking strength of at least 20 kN (4500 lbf) without failure.

7.5.8.3.1 Where the strap includes an adjustment device, the adjustment device shall not slip more than 50 mm (2 in.).

7.5.8.4–7.13.4 General use end-to-end straps shall be tested for breaking strength as specified Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum breaking strength of at least 27 kN (6070 lbf) without failure.

7.5.8.4.1 Where the strap includes an adjustment device, the adjustment device shall not slip more than 50 mm (2 in.).

7.5.8.5–7.13.3 Permanently attached end-to-end and multiple configuration strap product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, shall be legible, and shall not be torn or otherwise damaged.

7.5.8.6–7.13.4 All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface–type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer's operating instructions.

7.5.8.7 7.13.5* All fiber and thread used for end-to-end and multiple configuration straps shall be tested for melting as specified in ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).
7.15–7.14 Belay Device Performance Requirements.

7.15.1–7.14.1 Technical use belay devices shall be tested for breaking strength, manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C without failure of the device or failure of the rope, with a belay system extension of less than 1 m, with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner. (TIA)

7.15.2–7.14.2 General use belay devices shall be tested for breaking strength, manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m, and with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner. (TIA)

7.14.3 All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface–type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer's operating instructions.

7.14.4 All auxiliary equipment systems and system component product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, shall be legible, and shall not be torn or otherwise damaged.
7.6.1–7.15 Carabiners and Snap-Link Performance Requirements.

7.6.1.1–7.15.1 Technical use carabiners and snap-links shall be tested for strength as specified in Section 8.5, Carabiner and Snap-Link Tensile Test, and shall, with the gate closed, have a major axis minimum breaking strength of at least 27 kN (6069 lbf).

7.6.1.2–7.15.2 Technical use carabiners and snap-links shall be tested for strength as specified in Section 8.5, Carabiner and Snap-Link Tensile Test, and shall, with the gate open, have a major axis minimum breaking strength of at least 7 kN (1574 lbf).

7.6.1.3–7.15.3 Technical use carabiners and snap-links shall be tested for strength as specified in Section 8.5, Carabiner and Snap-Link Tensile Test, and shall have a minor axis minimum breaking strength of at least 7 kN (1574 lbf).

7.6.1.4–7.15.4 General use carabiners and snap-links shall be tested for breaking strength as specified in Section 8.5, Carabiner and Snap-Link Tensile Test, and shall, with the gate closed, have a major axis minimum breaking strength of at least 40 kN (8992 lbf).

7.6.1.5–7.15.5 General use carabiners and snap-links shall be tested for breaking strength as specified in Section 8.5, Carabiner and Snap-Link Tensile Test, and shall, with the gate open, have a major axis minimum breaking strength of at least 11 kN (2473 lbf).

7.6.1.6–7.15.6 General use carabiners and snap-links shall be tested for breaking strength as specified in Section 8.5, Carabiner and Snap-Link Tensile Test, and shall have a minor axis minimum breaking strength of at least 11 kN (2473 lbf).

7.6.1.7–7.15.7 Permanently attached carabiner and snap-link product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, and shall be legible, and shall not be torn or otherwise damaged.

7.6.1.8–7.15.8 All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface–type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturers’ operating instructions.
7.6.3–7.16 Descent Control Device Performance Requirements.

7.6.3.1–7.16.1 Escape descent control devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure A, and shall show no permanent damage or visible deformation to the general shape of the device or damage to the rope.

7.6.3.2–7.16.2 Escape descent control devices shall be tested for breaking strength as specified in Section 8.6, Manner of Function Tensile Test, Procedure B, and shall have a minimum breaking strength of at least 13.5 kN (3034 lbf).

7.6.3.3–7.16.3 Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the device or rope, and shall remain functional. (TIA)

7.6.3.4–7.16.4 Technical use descent control devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure A, and shall show no permanent damage or visible deformation to the general shape of the device or damage to the rope.

7.6.3.5–7.16.5 Technical use descent control devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure B, and shall have a minimum breaking strength of at least 13.5 kN (3034 lbf). (TIA)

7.6.3.6–7.16.6 General use descent control devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure A, and shall show no permanent damage or visible deformation to the general shape of the device or damage to the rope.

7.6.3.7–7.16.7 General use descent control devices shall be tested for breaking strength as specified in Section 8.6, Manner of Function Tensile Test, Procedure B, and shall have a minimum breaking strength of at least 22 kN (4946 lbf).

7.6.3.8 Where the descent control device is designed to slip under high load, general use descent control devices shall be tested for slippage as specified in Section 8.6, Manner of Function Tensile Test, Procedure B, and shall not slip under a test load of 9 kN (2023 lbf).

7.6.3.9 ISO 22159, Personal equipment for protection against falls — Descending devices, Type 2, 3, and 4 descent control devices with a hands-free locking element shall be tested in accordance with Section 8.11, Holding Test, and shall meet the requirements in 4.6.1 of ISO 22159.

7.6.3.10 ISO 22159 Type 2 and 3 descent control devices with a panic-locking element shall be tested in accordance with Section 8.11, Holding Test, and shall meet the requirements in 4.6.2 of ISO 22159.

7.6.3.11 ISO 22159 Type 5 and 6 descent control devices shall be tested in accordance with Section 8.11, Holding Test, and shall meet the requirements in 4.6.3 of ISO 22159.

7.6.3.12 Permanently attached descent control device product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, and shall be legible, and shall not be torn or otherwise damaged.
7.6.3.8–7.16.10 All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface–type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer's operating instructions.

7.6.3.9 Where the escape descent control device incorporates a passive or active breaking feature that creates friction between the device and the rope, the maximum force required to pay a specific type of rope through the descent control device shall be tested as specified in Section 8.13, Payout Test, and shall not exceed 90 N (20 lb). *(TIA)*

7.6.3.10 System Level Drop Test. Escape systems shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8.0 kN (1798.5 lbf), shall not damage the rope or device, and shall remain functional. *(TIA)*
7.16–7.17 Escape Anchor Device Performance Requirements.

7.16.1 7.17.1 Escape anchor devices shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile-breaking strength of at least 13.5 kN (3034 lbf).

7.16.2 7.17.2 Permanently attached escape anchor device product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, shall be legible, and shall not be torn or otherwise damaged.

7.16.3 7.17.3 All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface–type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer's operating instructions.

7.16.4 7.17.4 Escape anchor devices constructed of nonmetallic materials shall be tested for heat resistance as specified in Section 8.17, Heat Resistance Test, and shall not melt, drip, separate, or ignite; hardware items shall remain functional.
7.8–7.18 Litter Performance Requirements.

7.18.1 Litters shall be tested for strength and deformation as specified in Section 8.12, Litter Strength Test, and shall withstand a minimum load of 11 kN (2473 lbf) without failure or deformation of the structural element of more than 50 mm ± 5 mm (2 in. ± 0.2 in.).

7.18.2 All litter product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, shall be legible, and shall not be torn or otherwise damaged.
7.6.4.1–7.19.1 Technical use portable anchor devices shall be tested for deformation as specified in Section 8.7, Breaking Strength Test, Procedure A, and all adjustments or moving parts shall remain functional, and shall exhibit no condition that would cause the safety of the user to be compromised.

7.6.4.2–7.19.2 General use portable anchor devices shall be tested for deformation as specified in Section 8.7, Breaking Strength Test, Procedure A, and all adjustments or moving parts shall remain functional, and shall exhibit no condition that would cause the safety of the user to be compromised.

7.6.4.3–7.19.3 Technical use portable anchor devices shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall withstand a minimum load of at least 22 kN (4946 lbf) without failure.

7.6.4.4–7.19.4 General use portable anchor devices shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall withstand a minimum load of at least 36 kN (8093 lbf) without failure.

7.6.4.5–7.19.5 Permanently attached portable anchor product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, shall be legible, and shall not be torn or otherwise damaged.

7.6.4.6–7.19.6 All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface–type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer's operating instructions.
7.6.5 **7.20 Pulley Performance Requirements.**

7.6.5.1 **7.20.1** Technical use pulleys shall be tested for deformation as specified in Section 8.7, Breaking Strength Test, Procedure A, and shall show no permanent damage to the device or damage to the rope.

7.6.5.2 **7.20.2** Technical use pulleys shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile strength of at least 22 kN (4946 lbf) without failure.

7.6.5.3 **7.20.3** General use pulleys shall be tested for deformation as specified in Section 8.7, Breaking Strength Test, Procedure A, and shall show no permanent damage to the device or damage to the rope.

7.6.5.4 **7.20.4** General use pulleys shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile strength of at least 36 kN (8093 lbf) without failure.

7.6.5.5 **7.20.5** The becket on technical use pulleys shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile strength of at least 12 kN (2698 lbf) without failure.

7.6.5.6 **7.20.6** The becket on general use pulleys shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile strength of at least 19.5 kN (4383 lbf) without failure.

7.6.5.7 **7.20.7** Permanently attached pulley product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, and shall be legible, and shall not be torn or otherwise damaged.

7.6.5.8 **7.20.8** All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface–type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer's operating instructions.
7.6.2–7.21 Rope Grab and Ascending Devices Performance Requirements.

7.6.2.1-7.21.1 Technical use rope grab and ascending devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure A, and shall show no permanent damage to the device or damage to the rope.

7.6.2.2–7.21.2 General use rope grab and ascending devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure A, and shall show no permanent damage to the device or damage to the rope.

7.6.2.3–7.21.3 Permanently attached rope grab and ascending device product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, and shall be legible, and shall not be torn or otherwise damaged.

7.6.2.4–7.21.4 All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface–type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer's operating instructions.
Other Auxiliary Equipment Performance Requirements.

7.5.9.1. Other technical use auxiliary equipment shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile strength of at least 22 kN (4946 lbf) without failure.

7.5.9.2. Other general use auxiliary equipment shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile strength of at least 36 kN (8093 lbf).

7.5.9.3. All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface–type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer's operating instructions.

7.5.9.4. All fiber and thread utilized in the construction of all auxiliary equipment systems and system components shall be tested for melting as specified in ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

7.5.9.5. All auxiliary equipment systems and system component product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, shall be legible, and shall not be torn or otherwise damaged.

7.5.10. All fiber and thread used in the construction of all belts shall be tested for melting as specified in ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

7.5.11. All fiber and thread used in load-bearing materials and thread used in the construction of belts shall be tested for melting as specified in ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).
7.11—7.23 Escape System Performance Requirements.

7.11.1—7.23.1 Escape systems shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile strength of at least 13.5 kN (3034 lbf) without failure.

7.11.2—7.23.2 All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface-type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer’s operating instructions.

7.11.3—7.23.3 All fiber and thread utilized in the construction of the escape systems and system components shall be tested for melting as specified in ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

7.11.4—7.23.4 All escape system equipment and system component product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, shall be legible, and shall not be torn or otherwise damaged.

7.11.5—7.23.5 Where the escape descent control device used in the escape system incorporates a passive or active breaking feature that creates friction between the device and the rope, the system shall be tested for maximum payout force as specified in Section 8.13, Payout Test, and shall not release the test torso and shall not exceed 90 N (20 lb).

7.11.6—Where an escape system is designated as a fire escape system, additional tests as specified in 7.11.6.1, and 7.11.6.2, and 7.11.6.3 shall be conducted. (TIA)

7.11.6.1—Fire escape system rope shall be tested for high-temperature exposure as specified in Section 8.15, Elevated Temperature Rope Test. This test shall be conducted at two independent conditions and shall have a minimum time to failure of 45 seconds at 600°C while holding 300 lb and of 5 minutes at 400°C while holding 300 lb.

7.11.6.2—Where escape anchors are represented as being flame-resistant, fire escape system materials, labels, and hardware shall be tested individually for heat resistance as specified in Section 8.17, Heat Resistance Test, and shall not melt, drip, separate, or ignite; hardware items shall remain functional. (TIA)

7.11.6.3—Sewing thread utilized in the construction of fire escape systems shall be tested for heat resistance as specified in Section 8.18, Thread Heat Resistance, and shall not melt at or below a temperature of 260°C (500°F). (TIA)

7.11.7—7.23.6 Escape systems shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8.0 kN (1798.5 lbf), shall not damage the rope or device, and shall remain functional. (TIA)
7.11—7.24 Fire Escape System Performance Requirements.

7.11.1—7.24.1 Fire escape systems shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile strength of at least 13.5 kN (3034 lbf) without failure.

7.11.2—7.24.2 All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface–type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer’s operating instructions.

7.11.3—All fiber and thread utilized in the construction of the escape systems and system components shall be tested for melting as specified in ASTM E-794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

7.11.4—7.24.3 All escape system equipment and system component product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, shall be legible, and shall not be torn or otherwise damaged.

7.11.5—7.24.4 Where the escape descent control device used in the fire escape system incorporates a passive or active breaking feature that creates friction between the device and the rope, the system shall be tested for maximum payout force as specified in Section 8.13, Payout Test, and shall not release the test torso and shall not exceed 90 N (20 lb).

7.11.6—Where an escape system is designated as a fire escape system, additional tests as specified in 7.11.6.1, and 7.11.6.2, and 7.11.6.3 shall be conducted. (TIA)

7.11.6.1—7.24.5 Fire escape system rope shall be tested for high-temperature exposure as specified in Section 8.15, Elevated Temperature Rope Test. This test shall be conducted at two independent conditions and shall have a minimum time to failure of 45 seconds at 600°C while holding 300 lb and of 5 minutes at 400°C while holding 300 lb.

7.11.6.2—7.24.6 Where escape anchors are represented as being flame-resistant, Fire escape system materials, labels, and hardware shall be tested individually for heat resistance as specified in Section 8.17, Heat Resistance Test, and shall not melt, drip, separate, or ignite; hardware items shall remain functional. (TIA)

7.11.6.3—7.24.7 Sewing thread utilized in the construction of fire escape systems shall be tested for heat resistance as specific in Section 8.18, Thread Heat Resistance, and shall not melt at or below a temperature of 260°C (500°F). (TIA)

7.11.7—7.24.8 Escape systems shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8.0 kN (1798.5 lbf), shall not damage the rope or device, and shall remain functional. (TIA)
7.5.7.1** Manufactured Systems Performance Requirements.**

7.5.7.1.1Technical use manufactured systems shall be tested for deformation as specified in Section 8.7, Breaking Strength Test, Procedure A, and shall have no permanent damage to the system or its component parts or visible deformation to the general shape of the system or components.

7.5.7.2Technical use manufactured systems shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile strength of at least 22 kN (4946 lbf) without failure.

7.5.7.3General use manufactured systems shall be tested for deformation as specified in Section 8.7, Breaking Strength Test, Procedure A, and shall have no permanent damage to the system or its component parts or visible deformation to the general shape of the system or components.

7.5.7.4General use manufactured systems shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile strength of at least 36 kN (8093 lbf) without failure.

7.5.7.5Permanently attached manufactured system product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, and shall be legible, shall remain in place, and shall not be torn or otherwise damaged.

7.5.7.6All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface–type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturers' operating instructions.

7.5.7.7Where a manufactured system contains a life safety harness subcomponent, the life safety harness shall be individually tested, labeled, and certified to meet the appropriate requirements specified in Section 7.3, Throwline Performance Requirements, and 7.4, Life Safety Harness Performance Requirements, in addition to the manufactured system requirements of 7.5.7.1 through 7.5.7.6 as applicable.

7.5.7.8Where a manufactured system contains a belt subcomponent, the belt shall be individually tested, labeled, and certified to meet the appropriate requirements specified in Section 7.5, Belt Performance Requirements, in addition to the manufactured system requirements of 7.5.7.1 through 7.5.7.6 as applicable.

7.5.7.9Where a manufactured system contains an ascending device, rope grab device, or descent control device, the system shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure A, and shall not show any permanent damage or visible deformation to the general shape of the device and shall not show any damage to the rope.
7.5.7.10  Where the manufactured system incorporates an escape descent control device that incorporates a passive or active breaking feature that creates friction between the device and the rope, the system shall be tested for maximum payout force as specified in Section 8.13, Payout Test, shall not release the test torso, and shall not exceed 90 N (20 lb). (TIA)

7.5.7.11–7.25.9  All fiber and thread used in load-bearing materials and thread used in the construction of manufactured systems shall be tested for melting as specified in ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F). (TIA)
See 7.12 and 7.13 7.5.8—End-to-End and Multiple Configuration Strap Performance Requirements.

7.5.8.1—Technical use multiple configuration straps shall be tested for breaking strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum breaking strength of at least 32 kN (7194 lbf) without failure.

7.5.8.1.1—Where the strap includes an adjustment device, the adjustment device shall not slip more than 50 mm (2 in.).

7.5.8.2—General use multiple configuration straps shall be tested for breaking strength as specified in Section 8.7, Breaking Strength Test, and shall have a minimum breaking strength of at least 45 kN (10,120 lbf) without failure.

7.5.8.2.1—Where the strap includes an adjustment device the adjustment device shall not slip more than 50 mm (2 in.).

7.5.8.3—Technical use end-to-end straps shall be tested for breaking strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum breaking strength of at least 20 kN (4500 lbf) without failure.

7.5.8.3.1—Where the strap includes an adjustment device, the adjustment device shall not slip more than 50 mm (2 in.).

7.5.8.4—General use end-to-end straps shall be tested for breaking strength as specified Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum breaking strength of at least 27 kN (6070 lbf) without failure.

7.5.8.4.1—Where the strap includes an adjustment device, the adjustment device shall not slip more than 50 mm (2 in.).

7.5.8.5—Permanently attached end-to-end and multiple configuration strap product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, shall be legible, and shall not be torn or otherwise damaged.

7.5.8.6—All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface-type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer's operating instructions.

7.5.8.7—All fiber and thread used for end-to-end and multiple configuration straps shall be tested for melting as specified in ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

See 7.22, 7.5.9—Other Auxiliary Equipment Performance Requirements.
7.5.9.1—Other technical use auxiliary equipment shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile strength of at least 22 kN (4946 lbf) without failure.

7.5.9.2—Other general use auxiliary equipment shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile strength of at least 36 kN (8093 lbf)

7.5.9.3—All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface–type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer's operating instructions.

7.5.9.4—All fiber and thread utilized in the construction of all auxiliary equipment systems and system components shall be tested for melting as specified in ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

7.5.9.5—All auxiliary equipment systems and system component product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, shall be legible, and shall not be torn or otherwise damaged.

7.5.10—All fiber and thread used in the construction of all belts shall be tested for melting as specified in ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

7.5.11—All fiber and thread used in load-bearing materials and thread used in the construction of belts shall be tested for melting as specified in ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

7.6—Auxiliary Equipment Performance Requirements.

See 7.15 7.6.1—Carabiners and Snap-Link Performance Requirements.

7.6.1.1—Technical use carabiners and snap-links shall be tested for strength as specified in Section 8.5, Carabiner and Snap-Link Tensile Test, and shall, with the gate closed, have a major axis minimum breaking strength of at least 27 kN (6069 lbf).

7.6.1.2—Technical use carabiners and snap-links shall be tested for strength as specified in Section 8.5, Carabiner and Snap-Link Tensile Test, and shall, with the gate open, have a major axis minimum breaking strength of at least 7 kN (1574 lbf).

7.6.1.3—Technical use carabiners and snap-links shall be tested for strength as specified in Section 8.5, Carabiner and Snap-Link Tensile Test, and shall have a minor axis minimum breaking strength of at least 7 kN (1574 lbf).
7.6.1.4—General use carabiners and snap-links shall be tested for breaking strength as specified in Section 8.5, Carabiner and Snap-Link Tensile Test, and shall, with the gate closed, have a major axis minimum breaking strength of at least 40 kN (8992 lbf).

7.6.1.5—General use carabiners and snap-links shall be tested for breaking strength as specified in Section 8.5, Carabiner and Snap-Link Tensile Test, and shall, with the gate open, have a major axis minimum breaking strength of at least 11 kN (2473 lbf).

7.6.1.6—General use carabiners and snap-links shall be tested for breaking strength as specified in Section 8.5, Carabiner and Snap-Link Tensile Test, and shall have a minor axis minimum breaking strength of at least 11 kN (2473 lbf).

7.6.1.7—Permanently attached carabiner and snap-link product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, and shall be legible, and shall not be torn or otherwise damaged.

7.6.1.8—All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface-type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer's operating instructions.

See 7.21 7.6.2—Rope Grab and Ascending Devices Performance Requirements.

7.6.2.1—Technical use rope grab and ascending devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure A, and shall show no permanent damage to the device or damage to the rope.

7.6.2.2—General use rope grab and ascending devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure A, and shall show no permanent damage to the device or damage to the rope.

7.6.2.3—Permanently attached rope grab and ascending device product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, and shall be legible, and shall not be torn or otherwise damaged.

7.6.2.4—All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface-type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer's operating instructions.

See 7.16 7.6.3—Descent Control Device Performance Requirements.

7.6.3.1—Escape descent control devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure A, and shall show no permanent damage or visible deformation to the general shape of the device or damage to the rope.
7.6.3.2—Escape descent control devices shall be tested for breaking strength as specified in Section 8.6, Manner of Function Tensile Test, Procedure B, and shall have a minimum breaking strength of at least 13.5 kN (3034 lbf).

7.6.3.3—Technical use descent control devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure A, and shall show no permanent damage or visible deformation to the general shape of the device or damage to the rope.

7.6.3.4—General use descent control devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure A, and shall show no permanent damage or visible deformation to the general shape of the device or damage to the rope.

7.6.3.5—General use descent control devices shall be tested for breaking strength as specified in Section 8.6, Manner of Function Tensile Test, Procedure B, and shall have a minimum breaking strength of at least 22 kN (4946 lbf).

7.6.3.5.1—Where the descent control device is designed to slip under high load, general use descent control devices shall be tested for slippage as specified in Section 8.6, Manner of Function Tensile Test, Procedure B, and shall not slip under a test load of 9 kN (2023 lbf).

7.6.3.6—ISO 22159, Personal equipment for protection against falls—Descending devices, Type 2, 3, and 4 descent control devices with a hands-free locking element shall be tested in accordance with Section 8.11, Holding Test, and shall meet the requirements in 4.6.1 of ISO 22159.

7.6.3.6.1—ISO 22159 Type 2 and 3 descent control devices with a panic-locking element shall be tested in accordance with Section 8.11, Holding Test, and shall meet the requirements in 4.6.2 of ISO 22159.

7.6.3.6.2—ISO 22159 Type 5 and 6 descent control devices shall be tested in accordance with Section 8.11, Holding Test, and shall meet the requirements in 4.6.3 of ISO 22159.

7.6.3.7—Permanently attached descent control device product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, and shall be legible, and shall not be torn or otherwise damaged.

7.6.3.8—All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface-type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer's operating instructions.

7.6.3.9—Where the escape descent control device incorporates a passive or active breaking feature that creates friction between the device and the rope, the maximum force required to pay a specific type of rope through the descent control device shall be tested as specified in Section 8.13, Payout Test, and shall not exceed 90 N (20 lb). (TIA)

7.6.3.10—System Level Drop Test. Escape systems shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have
the maximum impact force not exceed 8.0 kN (1798.5 lbf), shall not damage the rope or device, and shall remain functional. (TIA)

7.6.3.11 Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the device or rope, and shall remain functional. (TIA) but should be 7.6.3.9

7.6.3.12 Technical use descent control devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure B, and shall have a minimum breaking strength of at least 13.5 kN (3034 lbf). (TIA) but should be 7.6.3.10

See 7.19 7.6.4 Portable Anchor Performance Requirements.

7.6.4.1 Technical use portable anchor devices shall be tested for deformation as specified in Section 8.7, Breaking Strength Test, Procedure A, and all adjustments or moving parts shall remain functional, and shall exhibit no condition that would cause the safety of the user to be compromised.

7.6.4.2 General use portable anchor devices shall be tested for deformation as specified in Section 8.7, Breaking Strength Test, Procedure A, and all adjustments or moving parts shall remain functional, and shall exhibit no condition that would cause the safety of the user to be compromised.

7.6.4.3 Technical use portable anchor devices shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall withstand a minimum load of at least 22 kN (4946 lbf) without failure.

7.6.4.4 General use portable anchor devices shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall withstand a minimum load of at least 36 kN (8093 lbf) without failure.

7.6.4.5 Permanently attached portable anchor product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, shall be legible, and shall not be torn or otherwise damaged.

7.6.4.6 All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface-type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer's operating instructions.

See 7.20 7.6.5 Pulley Performance Requirements.

7.6.5.1 Technical use pulleys shall be tested for deformation as specified in Section 8.7, Breaking Strength Test, Procedure A, and shall show no permanent damage to the device or damage to the rope.
7.6.5.2—Technical use pulleys shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile strength of at least 22 kN (4946 lbf) without failure.

7.6.5.3—General use pulleys shall be tested for deformation as specified in Section 8.7, Breaking Strength Test, Procedure A, and shall show no permanent damage to the device or damage to the rope.

7.6.5.4—General use pulleys shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile strength of at least 36 kN (8093 lbf) without failure.

7.6.5.5—The becket on technical use pulleys shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile strength of at least 12 kN (2698 lbf) without failure.

7.6.5.6—The becket on general use pulleys shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile strength of at least 19.5 kN (4383 lbf) without failure.

7.6.5.7—Permanently attached pulley product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, and shall be legible, and shall not be torn or otherwise damaged.

7.6.5.8—All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface-type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer’s operating instructions.

See 7.11 7.7—Victim Extrication Device Performance Requirements.

7.7.1—Class II Victim Extrication Devices.

7.7.1.1—Class II victim extrication devices shall be tested for strength as specified in Section 8.3, Static Test, and shall not release the test torso. The device buckles and adjusting devices shall not slip more than 25 mm (1 in.), and the device shall show no visible signs of damage that would affect its function.

7.7.1.2—Where Class II victim extrication devices include alternate D-rings and attachment points designated by the manufacturer’s as alternate lifting points or configurations, these attachments shall be tested for strength as specified as in Section 8.3, Static Test, and shall show no visual signs of damage that would affect its function.

7.7.2—Class III Victim Extrication Device.

7.7.2.1—Class III Victim extrication devices shall be tested for strength as specified in Section 8.3, Static Test, and shall not release the test torso. The device buckles and adjusting devices
shall not slip more than 25 mm (1 in.), and the device shall show no visible signs of damage that would affect its function.

7.7.2.2 Where Class III victim extrication devices include alternate D-rings and attachment points designated by the manufacturer as alternate lifting points or configurations, these attachments shall be tested for strength as specified as in Section 8.3, Static Test, and shall show no visual signs of damage that would affect its function.

7.7.3 All victim extrication device product labels shall be tested for durability as specified in Section 8.10, Product Label Durability Test, and shall be legible and shall not be torn or otherwise damaged.

7.7.4 All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface–type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer’s operating instructions.

7.7.5 All fiber used in load–bearing materials and thread used in the construction of Class II and Class III victim extrication devices shall be tested for melting as specified ASTM 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

See 7.18 7.8 – Litter Performance Requirements.

Litters shall be tested for strength and deformation as specified in Section 8.12, Litter Strength Test, and shall withstand a minimum load of 11 kN (2473 lbf) without failure or deformation of the structural element of more than 50 mm ± 5 mm (2 in. ± 0.2 in.).

See 7.3 7.9 – Escape Webbing Performance Requirements.

7.9.1 Escape webbing shall meet the performance requirements specified in Section 7.2, Escape Rope Performance Requirements, excluding 7.2.2.

7.9.2 Escape webbing shall be tested for size as specified in Section 9.1 of Cordage Institute Standard CI-1801, Low-Stretch and Static Kernmantle Life Safety Rope, and shall have a minimum perimeter of 25 mm (1 in). For the purpose of reporting, the perimeter of all new escape webbing shall be rounded to the nearest 0.5 mm (1/64 in.).

See 7.5 7.10 – Fire Escape Webbing Performance Requirements.

7.10.1 Fire escape webbing shall meet the performance requirements specified in Section 7.12, Fire Escape Rope Performance Requirements, excluding 7.12.2.

7.10.2 Fire escape webbing shall be tested for size as specified in Section 9.1 of Cordage Institute Standard CI-1801, Low-Stretch and Static Kernmantle Life Safety Rope, and shall have a minimum perimeter of 25 mm (1 in). For the purpose of reporting, the perimeter of all new escape webbing shall be rounded to the nearest 1/2 mm (1/64 in.).
7.10.3—Fire escape webbing shall be tested for high-temperature exposure as specified in Section 8.15, Elevated Temperature Rope Test. This test shall be conducted at two independent conditions and shall have a minimum time to failure of 45 seconds at 600°C while holding 300 lb and of 5 minutes at 400°C while holding 300 lb.

See 7.23 and 7.24

7.11—Escape System Performance Requirements.

7.11.1—Escape systems shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile strength of at least 13.5 kN (3034 lbf) without failure.

7.11.2—All metal hardware and hardware that includes metallic parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface-type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer’s operating instructions.

7.11.3—All fiber and thread utilized in the construction of the escape systems and system components shall be tested for melting as specified in ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

7.11.4—All escape system equipment and system component product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, shall be legible, and shall not be torn or otherwise damaged.

7.11.5—Where the escape descent control device incorporates a passive or active breaking feature that creates friction between the device and the rope, the system shall be tested for maximum payout force as specified in Section 8.13, Payout Test, and shall not release the test torso and shall not exceed 90 N (20 lbf).

7.11.6—Where an escape system is designated as a fire escape system, additional tests as specified in 7.11.6.1, and 7.11.6.2, and 7.11.6.3 shall be conducted. (TIA)

7.11.6.1—Fire escape system rope shall be tested for high-temperature exposure as specified in Section 8.15, Elevated Temperature Rope Test. This test shall be conducted at two independent conditions and shall have a minimum time to failure of 45 seconds at 600°C while holding 300 lb and of 5 minutes at 400°C while holding 300 lb.

7.11.6.2—Where escape anchors are represented as being flame-resistant, fire escape system materials, labels, and hardware shall be tested individually for heat resistance as specified in Section 8.17, Heat Resistance Test, and shall not melt, drip, separate, or ignite; hardware items shall remain functional. (TIA)

7.11.6.3 Sewing thread utilized in the construction of fire escape systems shall be tested for heat resistance as specific in Section 8.18, Thread Heat Resistance, and shall not melt at or below a temperature of 260°C (500°F). (TIA)
7.6.3.109 – 7.11.7 Escape systems shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8.0 kN (1798.5 lbf), shall not damage the rope or device, and shall remain functional. (TIA)

See 7.4 7.12* Fire Escape Rope Performance Requirements.

7.12.1* Fire escape rope shall be tested for breaking strength and elongation as specified in Section 8.2, Rope Breaking and Elongation Test, and shall have a minimum breaking strength of not less than 13.5 kN (3034 lbf); the minimum elongation shall not be less than 1 percent at 10 percent of breaking strength; and the maximum elongation shall not be more than 10 percent at 10 percent of breaking strength.

7.12.2* Fire escape rope shall be tested for size as specified in Section 9.1 of Cordage Institute Standard CI-1801, Low Stretch and Static Kernmantle Life Safety Rope, and shall have a diameter of at least 7.5 mm (\(\frac{10}{64}\) in.) but less than 9.5 mm (\(\frac{3}{8}\) in.). For the purpose of reporting, the calculated diameter of all new fire escape rope shall be rounded to the nearest 0.5 mm (\(\frac{1}{64}\) in.).

7.12.3* Fiber utilized for all fire escape rope shall be tested for melting in accordance with ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204°C (400°F).

7.12.4 Fire escape rope product labels and identification tape shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, and shall be legible, shall remain in place, and shall not be torn or otherwise damaged.

7.12.5 Fire escape rope shall be tested for high-temperature exposure as specified in Section 8.15, Elevated Temperature Rope Test. This test shall be conducted at two independent conditions and shall have a minimum time to failure of 45 seconds at 600°C while holding 300 lb and of 5 minutes at 400°C while holding 300 lb.

See 7.8 7.13 Manufacturer-Supplied Eye Termination.

7.13.1 Manufacturer-supplied eye termination shall be tested for breaking strength as specified in Section 8.2, Rope Breaking and Elongation Test, and shall meet one of the following criteria:

(1) It shall have a minimum breaking strength of not less than 85 percent of the certified rope’s calculated minimum breaking strength, as determined by the certifying organization.

(2) It shall have a minimum breaking strength of not less than 20 kN (4496 lbf) for technical use life safety rope.

(3) It shall have a minimum breaking strength of not less than 40 kN (8992 lbf) for general use life safety rope.

(4) It shall have a minimum breaking strength of not less than 13.5 kN (3034 lbf) for escape rope and fire escape rope.
(5) It shall have a minimum breaking strength of not less than 13.5 kN (3034 lbf) for throwline.

(6) It shall have a minimum breaking strength of not less than 13.5 kN (3034 lbf) for escape webbing and fire escape webbing rope.

7.13.2 All thread used in the construction of manufacturer-supplied eye termination shall be tested for melting as specified in ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204ºC (400ºF).

7.13.3 All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion, including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface-type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer’s operating instructions.

See 7.7

7.14 Moderate Elongation Laid Life Saving Rope Performance Requirements.

7.14.1 Moderate elongation laid life saving rope shall be tested for breaking strength and elongation as specified in Section 8.2, Rope Breaking and Elongation Test, and shall have a minimum breaking strength of not less than 40 kN (8992 lbf); the minimum elongation shall not be less than 1 percent at 10 percent of breaking strength and the maximum elongation shall not be more than 25 percent at 10 percent of breaking strength.

7.14.2 Moderate elongation laid life saving rope shall be tested for size as specified in Section 9.1 of Cordage Institute Standard CI 1805, 3-Strand Life Safety Rope, Moderate Stretch, and shall have a diameter of 11 mm (7/16 in.) or greater but less than or equal to 16 mm (5/8 in.). For the purpose of reporting, the calculated diameter of all new three-strand life saving rope shall be rounded to the nearest 0.5 mm (1/64 in.).

7.14.3* Fiber utilized for all moderate elongation laid life saving rope shall be tested for melting as specified in ASTM E 794, Standard Test Method for Melting and Crystallization Temperatures by Thermal Analysis, and shall have a melting point of not less than 204ºC (400ºF).

7.14.4 Moderate elongation laid life saving rope product labels and identification tape shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, and shall be legible, shall remain in place, and shall not be torn or otherwise damaged.

See 7.14

7.15 Belay Device Performance Requirements.

7.15.1 Technical use belay devices shall be tested for breaking strength/manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C without failure of the device or failure of the rope, with a belay system extension of less than 1 m, with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner. (TIA)
7.15.2—General use belay devices shall be tested for breaking strength and manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m, and with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner. (TIA)

See 7.17

7.16—Escape Anchor Device Performance Requirements.

7.16.1—Escape anchor devices shall be tested for strength as specified in Section 8.7, Breaking Strength Test, Procedure B, and shall have a minimum tensile breaking strength of at least 13.5 kN (3034 lbf).

7.16.2—Permanently attached escape anchor device product labels shall be tested for legibility as specified in Section 8.10, Product Label Durability Test, shall be legible, and shall not be torn or otherwise damaged.

7.16.3—All metal hardware and hardware that includes metal parts shall be tested for corrosion resistance as specified in Section 8.8, Corrosion Resistance Test, and metals inherently resistant to corrosion including but not limited to stainless steel, brass, copper, aluminum, and zinc shall show no more than light surface type corrosion or oxidation. Ferrous metals shall show no corrosion of the base metal. All hardware shall remain functional as specified in the manufacturer’s operating instructions.

7.16.4—Escape anchor devices constructed of nonmetallic materials shall be tested for heat resistance as specified in Section 8.17, Heat Resistance Test, and shall not melt, drip, separate, or ignite; hardware items shall remain functional.

See 7.16

7.17—Escape Descent Control Device Performance Requirements.

Escape descent control devices and systems shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, shall have the maximum impact force not exceed 8.0 kN (1798.5 lbf), shall not damage the rope or device, and shall remain functional. (TIA)
Public Input No. 4-NFPA 1983-2013 [ Section No. 7.4.6.1 ]

7.4.6.1
Where harnesses are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

Additional Proposed Changes

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Statement of Problem and Substantiation for Public Input

Note: This Public Input originates from Tentative Interim Amendment 1983-12-1 (TIA 1076) issued by the Standards Council on October 30, 2012.

1. Table 4.4.1 - The table is missing recertification for Moderate Elongation Life Saving Rope and includes several duplications and terminology errors.
2. 5.1.5.12 - The terminology in 5.1.5.12 is not consistent with the document. The terms “rigging and anchor” straps have been replaced with “multiple configuration and end to end” straps. The current required statement is incorrect for end to end straps in that they are not required to be tested in a U or choker configuration.
3. 5.2.10.6 - This added text is a requirement for other products covered by NFPA 1983 and provides users with valuable information on maintaining records for this life saving equipment.
4. 7.4.6.1 and 7.5.6.1 - The term “and hardware” was inadvertently added to these paragraphs. Additionally, the char length requirement does not apply to hardware items, and there are no specific requirements for the testing of hardware items in the test method. The requirement as written in the current edition is inappropriate for hardware items, would be impossible to determine and could inhibit product certification.
5. 7.5.7.10, 7.6.3.9, and 8.13.1.1 - Requirement 7.5.7.10 is redundant in that a manufactured system that includes an escape descent device would be classified as an Escape System – and therefore must meet all of the requirements of NFPA 1983 Section 7.11. Additionally, the requirement is incorrectly worded in that there is no torso used in the conduct of the test - thus the statement “shall not release the test torso” has no relevance.
   Requirement 7.6.3.9 applies to all escape descent control devices (those that are sold separately – not as part of a system). As the test is to be conducted with “each type of rope for its intended use” (NFPA 1983, Section 8.13.2.3) it follows that all escape descent control devices may have to be tested with all escape ropes – or the device would be limited to the type of rope with which it was tested. This would present an undue hardship on the manufacturers, and contribute to confusion on the part of the users in determining what ropes are suitable with each device.
   Requirement 8.13.1.1 is changed so the application of the test method is consistent with the performance requirements.
6. 7.6.3.12 - This performance requirement mandates the minimum breaking strength for these particular devices and is therefore a critical safety issue.
7. 7.11.6, 7.11.6.2, and 7.11.6.3 (New) - The change in 7.11.6 adds the requirement of thread heat resistance to fire escape systems.
   The change in 7.11.6.2 corrects the terminology from “escape anchors” to “fire escape system” as section 7.11.6 contains the requirements for fire escape systems and this requirement applies to the system not just the anchor.
   The addition of 7.11.6.3 adds the thread heat resistance test to threads used in the construction of fire escape systems. This was inadvertently omitted in the 2012 edition. Testing of thread in a fire escape system evaluates a critical safety property of the fire escape system. Using a thread that will not withstand heat can cause the system to fail under high heat conditions.
8. 7.15.1 and 7.15.2 - These requirements are currently located in NFPA 1983-2012 Section 8.6.4.5.6. As these parameters are utilized to determine pass/fail of the device they should be relocated to the Performance Requirements. Additionally, this is a manner of function requirement – not a breaking strength requirement. It is impossible to determine breaking strength without failure of the device or rope.
9. 7.17, 7.6.3.1.1 and 7.11.7 (New) - This added text is part of the requirements that apply to escape descent control devices and escape systems. As such, this language should appear with the group of performance
requirements for descent control devices (Section 7.6.3) and escape systems (Section 7.11). Having this requirement separate and distinct from the other performance requirements for these devices/systems can lead to confusion and the possibility of neglect of the remainder of the requirements.

10. and 11. 8.15.5 and 8.15.6.1 - This change resolves a conflict with the requirements in 7.10.3 and 7.12.5.

Emergency Nature: This TIA seeks to correct errors and omissions that were overlooked during the Fall 2011 revision cycle process of NFPA 1983. Additionally, some parts of this TIA intend to offer to the public a benefit that would lessen a known hazard, and correct circumstances in which the standard could adversely affect impact on a product or method that was inadvertently overlooked in the total revision process.

Submitter Information Verification

Submitter Full Name: TC on FAE-SCE
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Submittal Date: Mon Sep 09 09:33:59 EDT 2013
1. Revise Table 4.4.1 to read as follows:

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<tr>
<th>Product</th>
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<td>Rope grab devices</td>
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<td>dDescent control devices – non-auto stop</td>
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</tr>
<tr>
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<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope</td>
<td>Diameter, rope breaking, and elongation</td>
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<td>Fire escape rope</td>
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<td>Melting and crystallization temperatures by thermal analysis</td>
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<td>Escape webbing</td>
<td>Perimeter, rope breaking, and elongation</td>
<td>Every year</td>
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<td>Elevated rope temperature test</td>
<td>Every year</td>
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<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
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<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
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<td>Moderate elongation laid life saving rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
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<td>Fire escape webbing</td>
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</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Victim extrication devices</td>
<td>Static</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Component</td>
<td>Test Method</td>
<td>Frequency</td>
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<td>------------------</td>
</tr>
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<td>Litters</td>
<td>Litter strength test – vertical</td>
<td>Initial only</td>
</tr>
<tr>
<td></td>
<td>Litter Strength test – horizontal</td>
<td>Alternating years with vertical</td>
</tr>
<tr>
<td>Load-bearing textiles used in victim extrication devices</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in victim extrication devices</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Webbing components</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread components</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
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<td>Load-bearing textiles used in belts with optional flame resistance</td>
<td>Flame resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in life safety harnesses with optional flame resistance</td>
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<td>Every year</td>
</tr>
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<td>Hardware used in belts with optional flame resistance</td>
<td>Heat Resistance</td>
<td>Every year</td>
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<td>Thread used in belts with optional flame resistance</td>
<td>Thread heat resistance</td>
<td>Every year</td>
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<td>Thread heat resistance</td>
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<td>Every year</td>
</tr>
<tr>
<td>Manufacturer-supplied eye termination</td>
<td>Thread melting</td>
<td>Every year</td>
</tr>
</tbody>
</table>

2. Revise 5.1.5.12 to read as follows:

5.1.5.12 In addition to the compliance specified in 5.1.5.9, rigging and anchor multiple configuration and end to end straps shall include the following additional statement on the product label:

For multiple configuration straps:

"MINIMUM BREAKING STRENGTH AND RATING ARE DETERMINED USING A BASKET (U) CONFIGURATION. IN ADDITION, THIS STRAP HAS A MINIMUM BREAKING STRENGTH OF: ___ kN IN A CHOKER CONFIGURATION ___ kN WHEN PULLED END TO END."

For end to end straps:

"MINIMUM BREAKING STRENGTH OF ___ kN WHEN PULLED END TO END"

3. Add a new paragraph 5.2.10.6 as follows:
5.2.10.6 The manufacturer of moderate elongation laid life saving ropes that are certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of moderate elongation laid life saving rope and a list of items that the records need to contain.

4. Revise 7.4.6.1 and 7.5.6.1 to read as follows:

7.4.6.1 Where harnesses are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

7.5.6.1 Where belts are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

5. Delete paragraph 7.5.7.10 and 7.6.3.9 and renumber subsequent paragraphs; revise paragraph 8.13.1.1 as follows:

7.5.7.10 Where the manufactured system incorporates an escape descent control device that incorporates a passive or active breaking feature that creates friction between the device and the rope, the system shall be tested for maximum payout force as specified in Section 8.13, Payout Test, shall not release the test torso, and shall not exceed 90 N (20 lb).

7.6.3.9 Where the escape descent control device incorporates a passive or active breaking feature that creates friction between the device and the rope, the maximum force required to pay a specific type of rope through the descent control device shall be tested as specified in Section 8.13, Payout Test, and shall not exceed 90 N (20 lb).

8.13.1.1 This test shall apply to descent control systems with passive and active braking systems, and escape manufactured systems.

6. Add a new paragraph 7.6.3.12 as follows:

7.6.3.12 Technical use descent control devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure B, and shall have a minimum breaking strength of at least 13.5 kN (3034 lbf).

7. Revise 7.11.6, 7.11.6.2 and add new 7.11.6.3 to read as follows:

7.11.6 Where an escape system is designated as a fire escape system, additional tests as specified in 7.11.6.1, and 7.11.6.2, and 7.11.6.3 shall be conducted.

7.11.6.2 Where fire escape system anchors are represented as being flame resistant, materials, labels, and hardware shall be tested individually for heat resistance as specified in Section 8.17, Heat Resistance Test, and shall not melt, drip, separate, or ignite; hardware items shall remain functional.

7.11.6.3 Sewing thread utilized in the construction of fire escape systems shall be tested for heat resistance as specified in Section 8.18, Thread Heat Resistance Test, and shall not melt at or below a temperature of 260ºC (500ºF).

8. Revise paragraph 7.15.1 and 7.15.2 as follows:

7.15.1 Technical use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

7.15.2 General-use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m, and with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

9. Delete Section 7.17, and add new paragraphs 7.6.3.11 and 7.11.7 as follows:

7.17. Escape Descent Control Device Performance Requirements. Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or device, and shall remain functional.

7.6.3.11 Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.
7.11.7 Escape systems shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.

10. Revise 8.15.5 to read as follows:

8.15.5 Report. The time to failure shall be recorded from each test and the average and standard deviation calculated.

11. Delete 8.15.6.1 as follows:

8.15.6.1 Pass/fail performance shall be based on the average time to failure.

Submitter’s Substantiation:

1. Table 4.4.1 - The table is missing recertification for Moderate Elongation Life Saving Rope and includes several duplications and terminology errors.
2. 5.1.5.12 - The terminology in 5.1.5.12 is not consistent with the document. The terms “rigging and anchor” straps have been replaced with “multiple configuration and end to end” straps. The current required statement is incorrect for end to end straps in that they are not required to be tested in a U or choker configuration.
3. 5.2.10.6 - This added text is a requirement for other products covered by NFPA 1983 and provides users with valuable information on maintaining records for this life saving equipment.
4. 7.4.6.1 and 7.5.6.1 - The term “and hardware” was inadvertently added to these paragraphs. Additionally, the chart length requirement does not apply to hardware items, and there are no specific requirements for the testing of hardware items in the test method. The requirement as written in the current edition is inappropriate for hardware items, would be impossible to determine and could inhibit product certification.
5. 7.5.10, 7.6.3.9, and 8.13.1.1 - Requirement 7.5.7.10 is redundant in that a manufactured system that includes an escape descent device would be classified as an Escape System – and therefore must meet all of the requirements of NFPA 1983 Section 7.11. Additionally, the requirement is incorrectly worded in that there is no torso used in the conduct of the test - thus the statement “shall not release the test torso” has no relevance.
   Requirement 7.6.3.9 applies to all escape descent control devices (those that are sold separately – not as part of a system). As the test is to be conducted with “each type of rope for its intended use” (NFPA 1983, Section 8.13.2.3) it follows that all escape descent control devices may have to be tested with all escape ropes – or the device would be limited to the type of rope with which it was tested. This would present an undue hardship on the manufacturers, and contribute to confusion on the part of the users in determining what ropes are suitable with each device.
   Requirement 8.13.1.1 is changed so the application of the test method is consistent with the performance requirements.
6. 7.6.3.12 - This performance requirement mandates the minimum breaking strength for these particular devices and is therefore a critical safety issue.
7. 7.11.6, 7.11.6.2, and 7.11.6.3 (New) - The change in 7.11.6 adds the requirement of thread heat resistance to fire escape systems.
   The change in 7.11.6.2 corrects the terminology from “escape anchors” to “fire escape system” as section 7.11.6 contains the requirements for fire escape systems and this requirement applies to the system not just the anchor.
   The addition of 7.11.6.3 adds the thread heat resistance test to threads used in the construction of fire escape systems. This was inadvertently omitted in the 2012 edition. Testing of thread in a fire escape system evaluates a critical safety property of the fire escape system. Using a thread that will not withstand heat can cause the system to fail under high heat conditions.
8. 7.15.1 and 7.15.2 - These requirements are currently located in NFPA 1983-2012 Section 8.6.4.5.6. As these parameters are utilized to determine pass/fail of the device they should be relocated to the Performance Requirements. Additionally, this is a manner of function requirement – not a breaking strength requirement. It is impossible to determine breaking strength without failure of the device or rope.
9. 7.17, 7.6.3.1.1 and 7.11.7 (New) - This added text is part of the requirements that apply to escape descent control devices and escape systems. As such, this language should appear with the group of performance requirements for descent control devices (Section 7.6.3) and escape systems (Section 7.11). Having this requirement separate and distinct from the other performance requirements for these devices/systems can lead to confusion and the possibility of neglect of the remainder of the requirements.
10. and 11. 8.15.5 and 8.15.6.1 -This change resolves a conflict with the requirements in 7.10.3 and 7.12.5.

Emergency Nature: This TIA seeks to correct errors and omissions that were overlooked during the Fall 2011 revision cycle process of NFPA 1983. Additionally, some parts of this TIA intend to offer to the public a benefit that would lessen a known hazard, and correct circumstances in which the standard could adversely affect impact on a product or method that was inadvertently overlooked in the total revision process.
Public Input No. 5-NFPA 1983-2013 [ Section No. 7.5.6.1 ]

7.5.6.1
Where belts are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

Additional Proposed Changes

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<td>Balloted TIA</td>
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</table>

Statement of Problem and Substantiation for Public Input

Note: This Public Input originates from Tentative Interim Amendment 1983-12-1 (TIA 1076) issued by the Standards Council on October 30, 2012.

1. Table 4.4.1 - The table is missing recertification for Moderate Elongation Life Saving Rope and includes several duplications and terminology errors.
2. 5.1.5.12 - The terminology in 5.1.5.12 is not consistent with the document. The terms “rigging and anchor” straps have been replaced with “multiple configuration and end to end” straps. The current required statement is incorrect for end to end straps in that they are not required to be tested in a U or choker configuration.
3. 5.2.10.6 - This added text is a requirement for other products covered by NFPA 1983 and provides users with valuable information on maintaining records for this life saving equipment.
4. 7.4.6.1 and 7.5.6.1 - The term “and hardware” was inadvertently added to these paragraphs. Additionally, the char length requirement does not apply to hardware items, and there are no specific requirements for the testing of hardware items in the test method. The requirement as written in the current edition is inappropriate for hardware items, would be impossible to determine and could inhibit product certification.
5. 7.5.7.10, 7.6.3.9, and 8.13.1.1 - Requirement 7.5.7.10 is redundant in that a manufactured system that includes an escape descent device would be classified as an Escape System – and therefore must meet all of the requirements of NFPA 1983 Section 7.11. Additionally, the requirement is incorrectly worded in that there is no torso used in the conduct of the test - thus the statement “shall not release the test torso” has no relevance.
   Requirement 7.6.3.9 applies to all escape descent control devices (those that are sold separately – not as part of a system). As the test is to be conducted with “each type of rope for its intended use” (NFPA 1983, Section 8.13.2.3) it follows that all escape descent control devices may have to be tested with all escape ropes – or the device would be limited to the type of rope with which it was tested. This would present an undue hardship on the manufacturers, and contribute to confusion on the part of the users in determining what ropes are suitable with each device.
   Requirement 8.13.1.1 is changed so the application of the test method is consistent with the performance requirements.
6. 7.6.3.12 - This performance requirement mandates the minimum breaking strength for these particular devices and is therefore a critical safety issue.
7. 7.11.6, 7.11.6.2, and 7.11.6.3 (New) - The change in 7.11.6 adds the requirement of thread heat resistance to fire escape systems.
   The change in 7.11.6.2 corrects the terminology from “escape anchors” to “fire escape system” as section 7.11.6 contains the requirements for fire escape systems and this requirement applies to the system not just the anchor.
   The addition of 7.11.6.3 adds the thread heat resistance test to threads used in the construction of fire escape systems. This was inadvertently omitted in the 2012 edition. Testing of thread in a fire escape system evaluates a critical safety property of the fire escape system. Using a thread that will not withstand heat can cause the system to fail under high heat conditions.
8. 7.15.1 and 7.15.2 - These requirements are currently located in NFPA 1983-2012 Section 8.6.4.5.6. As these parameters are utilized to determine pass/fail of the device they should be relocated to the Performance Requirements. Additionally, this is a manner of function requirement – not a breaking strength requirement. It is impossible to determine breaking strength without failure of the device or rope.
9. 7.17, 7.6.3.1.1 and 7.11.7 (New) - This added text is part of the requirements that apply to escape descent control devices and escape systems. As such, this language should appear with the group of performance requirements.
1. Revise Table 4.4.1 to read as follows:

<table>
<thead>
<tr>
<th>Product</th>
<th>Test</th>
<th>Time</th>
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</thead>
<tbody>
<tr>
<td>All component product</td>
<td>Corrosion testing</td>
<td>Initial cert only</td>
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<tr>
<td>All component product</td>
<td>Product label durability testing</td>
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<td>Life safety rope</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Water rescue Throwlines</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Water rescue Throwlines</td>
<td>Floatability</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety harness</td>
<td>Static</td>
<td>Alternating years with drop test</td>
</tr>
<tr>
<td>Life safety harness</td>
<td>Drop</td>
<td>Alternating years with static test</td>
</tr>
<tr>
<td>Belt</td>
<td>Static</td>
<td>Alternating years with drop test</td>
</tr>
<tr>
<td>Belt</td>
<td>Drop</td>
<td>Alternating years with static test</td>
</tr>
<tr>
<td>Auxiliary equipment Carabiners and snap link</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment Rope grab devices</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment system Descent control devices – auto stop</td>
<td>Passive brake holding</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment system Descent control devices – non-auto stop</td>
<td>Manner of function</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment Portable anchor and rigging Multiple configuration and end to end straps</td>
<td>Breaking Strength</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment Manufactured systems</td>
<td>All</td>
<td>Every year</td>
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<tr>
<td>Escape Systems</td>
<td>All</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape rope</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing</td>
<td>Perimeter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape webbing</td>
<td>Elevated rope temperature test</td>
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<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Moderate elongation laid life saving rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Moderate elongation laid life saving rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
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<td>Victim extrication devices</td>
<td>Static</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Component</td>
<td>Test Method</td>
<td>Frequency</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>-------------------------------------------------</td>
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<tr>
<td>Litters</td>
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<td>Initial only, alternating years with vertical</td>
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<td>Litters</td>
<td>Litter strength test – horizontal</td>
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<td>Load-bearing textiles used in belts with optional flame resistance</td>
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<td>Heat Resistance</td>
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<td>Thread used in belts with optional flame resistance</td>
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<td>Load-bearing textiles used in life safety harnesses with optional flame resistance</td>
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<td>Load-bearing textiles used in life safety harnesses with optional flame resistance</td>
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<td>Every year</td>
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<td>Every year</td>
</tr>
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<td>Manufacturer-supplied eye termination</td>
<td>Breaking strength</td>
<td>Every year</td>
</tr>
<tr>
<td>Manufacturer-supplied eye termination</td>
<td>Thread melting</td>
<td>Every year</td>
</tr>
</tbody>
</table>

2. Revise 5.1.5.12 to read as follows:

5.1.5.12 In addition to the compliance specified in 5.1.5.9, rigging and anchor multiple configuration and end to end straps shall include the following additional statement on the product label:

For multiple configuration straps:

“MINIMUM BREAKING STRENGTH AND RATING
ARE DETERMINED USING A BASKET (U) CONFIGURATION. IN ADDITION, THIS STRAP HAS A MINIMUM BREAKING STRENGTH OF:
___ kN IN A CHOKER CONFIGURATION
___ kN WHEN PULLED END TO END.”

For end to end straps:

“MINIMUM BREAKING STRENGTH OF
___ kN WHEN PULLED END TO END”

3. Add a new paragraph 5.2.10.6 as follows:
5.2.10.6 The manufacturer of moderate elongation laid life saving ropes that are certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of moderate elongation laid life saving rope and a list of items that the records need to contain.

4. Revise 7.4.6.1 and 7.5.6.1 to read as follows:

7.4.6.1 Where harnesses are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

7.5.6.1 Where belts are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

5. Delete paragraph 7.5.7.10 and 7.6.3.9 and renumber subsequent paragraphs; revise paragraph 8.13.1.1 as follows:

7.5.7.10 Where the manufactured system incorporates an escape descent control device that incorporates a passive or active breaking feature that creates friction between the device and the rope, the system shall be tested for maximum payout force as specified in Section 8.13, Payout Test, shall not release the test torso, and shall not exceed 90 N (20 lb).

7.6.3.9 Where the escape descent control device incorporates a passive or active breaking feature that creates friction between the device and the rope, the maximum force required to pay a specific type of rope through the descent control device shall be tested as specified in Section 8.13, Payout Test, and shall not exceed 90 N (20 lb).

8.13.1.1 This test shall apply to descent control systems with passive and active braking systems, and escape manufactured systems.

6. Add a new paragraph 7.6.3.12 as follows:

7.6.3.12 Technical use descent control devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure B, and shall have a minimum breaking strength of at least 13.5 kN (3034 lbf).

7. Revise 7.11.6, 7.11.6.2 and add new 7.11.6.3 to read as follows:

7.11.6 Where an escape system is designated as a fire escape system, additional tests as specified in 7.11.6.1, 7.11.6.2, and 7.11.6.3 shall be conducted.

7.11.6.2 Where fire escape system anchors are represented as being flame resistant, materials, labels, and hardware shall be tested individually for heat resistance as specified in Section 8.17, Heat Resistance Test, and shall not melt, drip, separate, or ignite; hardware items shall remain functional.

7.11.6.3 Sewing thread utilized in the construction of fire escape systems shall be tested for heat resistance as specified in Section 8.18, Thread Heat Resistance Test, and shall not melt at or below a temperature of 260ºC (500ºF).

8. Revise paragraph 7.15.1 and 7.15.2 as follows:

7.15.1 Technical use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

7.15.2 General-use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m, and with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

9. Delete Section 7.17, and add new paragraphs 7.6.3.11 and 7.11.7 as follows:

7.17 Escape Descent Control Device Performance Requirements. Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or device, and shall remain functional.

7.6.3.11 Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.
7.11.7 Escape systems shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.

10. Revise 8.15.5 to read as follows:

8.15.5 Report. The time to failure shall be recorded from each test and the average and standard deviation calculated.

11. Delete 8.15.6.1 as follows:

8.15.6.1 Pass/fail performance shall be based on the average time to failure.

Submitter’s Substantiation:

1. Table 4.4.1 - The table is missing recertification for Moderate Elongation Life Saving Rope and includes several duplications and terminology errors.

2. 5.1.5.12 - The terminology in 5.1.5.12 is not consistent with the document. The terms “rigging and anchor” straps have been replaced with “multiple configuration and end to end” straps. The current required statement is incorrect for end to end straps in that they are not required to be tested in a U or choker configuration.

3. 5.2.10.6 - This added text is a requirement for other products covered by NFPA 1983 and provides users with valuable information on maintaining records for this life saving equipment.

4. 7.4.6.1 and 7.5.6.1 - The term “and hardware” was inadvertently added to these paragraphs. Additionally, the char length requirement does not apply to hardware items, and there are no specific requirements for the testing of hardware items in the test method. The requirement as written in the current edition is inappropriate for hardware items, would be impossible to determine and could inhibit product certification.

5. 7.5.7.10, 7.6.3.9, and 8.13.1.1 - Requirement 7.5.7.10 is redundant in that a manufactured system that includes an escape descent device would be classified as an Escape System – and therefore must meet all of the requirements of NFPA 1983 Section 7.11. Additionally, the requirement is incorrectly worded in that there is no torso used in the conduct of the test - thus the statement “shall not release the test torso” has no relevance.

6. 7.6.3.12 - This performance requirement mandates the minimum breaking strength for these particular devices and is therefore a critical safety issue.

7. 7.11.6, 7.11.6.2, and 7.11.6.3 (New) - The change in 7.11.6 adds the requirement of thread heat resistance to fire escape systems. The change in 7.11.6.2 corrects the terminology from “escape anchors” to “fire escape system” as section 7.11.6 contains the requirements for fire escape systems and this requirement applies to the system not just the anchor.

8. 7.15.1 and 7.15.2 - These requirements are currently located in NFPA 1983-2012 Section 8.6.4.5.6. As these parameters are utilized to determine pass/fail of the device they should be relocated to the Performance Requirements. Additionally, this is a manner of function requirement – not a breaking strength requirement. It is impossible to determine breaking strength without failure of the device or rope.

9. 7.17, 7.6.3.1.1 and 7.11.7 (New) - This added text is part of the requirements that apply to escape descent control devices and escape systems. As such, this language should appear with the group of performance requirements for descent control devices (Section 7.6.3) and escape systems (Section 7.11). Having this requirement separate and distinct from the other performance requirements for these devices/systems can lead to confusion and the possibility of neglect of the remainder of the requirements.

10. and 11. 8.15.5 and 8.15.6.1 -This change resolves a conflict with the requirements in 7.10.3 and 7.12.5.

Emergency Nature: This TIA seeks to correct errors and omissions that were overlooked during the Fall 2011 revision cycle process of NFPA 1983. Additionally, some parts of this TIA intend to offer to the public a benefit that would lessen a known hazard, and correct circumstances in which the standard could adversely affect impact on a product or method that was inadvertently overlooked in the total revision process.
requirements for descent control devices (Section 7.6.3) and escape systems (Section 7.11). Having this requirement separate and distinct from the other performance requirements for these devices/systems can lead to confusion and the possibility of neglect of the remainder of the requirements.

10. and 11. 8.15.5 and 8.15.6.1 - This change resolves a conflict with the requirements in 7.10.3 and 7.12.5.

Emergency Nature: This TIA seeks to correct errors and omissions that were overlooked during the Fall 2011 revision cycle process of NFPA 1983. Additionally, some parts of this TIA intend to offer to the public a benefit that would lessen a known hazard, and correct circumstances in which the standard could adversely affect impact on a product or method that was inadvertently overlooked in the total revision process.

Submitter Information Verification

Submitter Full Name: TC on FAE-SCE
Organization: TC on Special Operations Protective Clothing and Equipment
Street Address:
City:
State:
Zip:
Submittal Date: Mon Sep 09 09:36:01 EDT 2013
7.5.7.10 Where the manufactured system incorporates an escape descent control device that incorporates a passive or active breaking feature that creates friction between the device and the rope, the system shall be tested for maximum payout force as specified in Section 8.13, Payout Test, shall not release the test torso, and shall not exceed 90 N (20 lb).

Additional Proposed Changes

<table>
<thead>
<tr>
<th>File Name</th>
<th>Description</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Proposed_TIA_1983_.docx</td>
<td>Balloted TIA</td>
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</tbody>
</table>

Statement of Problem and Substantiation for Public Input

Note: This Public Input originates from Tentative Interim Amendment 1983-12-1 (TIA 1076) issued by the Standards Council on October 30, 2012.

1. Table 4.4.1 - The table is missing recertification for Moderate Elongation Life Saving Rope and includes several duplications and terminology errors.
2. 5.1.5.12 - The terminology in 5.1.5.12 is not consistent with the document. The terms “rigging and anchor” straps have been replaced with “multiple configuration and end to end” straps. The current required statement is incorrect for end to end straps in that they are not required to be tested in a U or choker configuration.
3. 5.2.10.6 - This added text is a requirement for other products covered by NFPA 1983 and provides users with valuable information on maintaining records for this life saving equipment.
4. 7.4.6.1 and 7.5.6.1 - The term “and hardware” was inadvertently added to these paragraphs. Additionally, the char length requirement does not apply to hardware items, and there are no specific requirements for the testing of hardware items in the test method. The requirement as written in the current edition is inappropriate for hardware items, would be impossible to determine and could inhibit product certification.
5. 7.5.7.10, 7.6.3.9, and 8.13.1.1 - Requirement 7.5.7.10 is redundant in that a manufactured system that includes an escape descent device would be classified as an Escape System – and therefore must meet all of the requirements of NFPA 1983 Section 7.11. Additionally, the requirement is incorrectly worded in that there is no torso used in the conduct of the test - thus the statement “shall not release the test torso” has no relevance.
   Requirement 7.6.3.9 applies to all escape descent control devices (those that are sold separately – not as part of a system). As the test is to be conducted with “each type of rope for its intended use” (NFPA 1983, Section 8.13.2.3) it follows that all escape descent control devices may have to be tested with all escape ropes – or the device would be limited to the type of rope with which it was tested. This would present an undue hardship on the manufacturers, and contribute to confusion on the part of the users in determining what ropes are suitable with each device.
   Requirement 8.13.1.1 is changed so the application of the test method is consistent with the performance requirements.
6. 7.6.3.12 - This performance requirement mandates the minimum breaking strength for these particular devices and is therefore a critical safety issue.
7. 7.11.6, 7.11.6.2, and 7.11.6.3 (New) - The change in 7.11.6 adds the requirement of thread heat resistance to fire escape systems.
   The change in 7.11.6.2 corrects the terminology from “escape anchors” to “fire escape system” as section 7.11.6 contains the requirements for fire escape systems and this requirement applies to the system not just the anchor.
   The addition of 7.11.6.3 adds the thread heat resistance test to threads used in the construction of fire escape systems. This was inadvertently omitted in the 2012 edition. Testing of thread in a fire escape system evaluates a critical safety property of the fire escape system. Using a thread that will not withstand heat can cause the system to fail under high heat conditions.
8. 7.15.1 and 7.15.2 - These requirements are currently located in NFPA 1983-2012 Section 8.6.4.5.6. As these parameters are utilized to determine pass/fail of the device they should be relocated to the Performance Requirements. Additionally, this is a manner of function requirement – not a breaking strength requirement. It is impossible to determine breaking strength without failure of the device or rope.
9. 7.17, 7.6.3.1.1 and 7.11.7 (New) - This added text is part of the requirements that apply to escape descent control devices and escape systems. As such, this language should appear with the group of performance
requirements for descent control devices (Section 7.6.3) and escape systems (Section 7.11). Having this requirement separate and distinct from the other performance requirements for these devices/systems can lead to confusion and the possibility of neglect of the remainder of the requirements.

10. and 11. 8.15.5 and 8.15.6.1 - This change resolves a conflict with the requirements in 7.10.3 and 7.12.5.

Emergency Nature: This TIA seeks to correct errors and omissions that were overlooked during the Fall 2011 revision cycle process of NFPA 1983. Additionally, some parts of this TIA intend to offer to the public a benefit that would lessen a known hazard, and correct circumstances in which the standard could adversely affect impact on a product or method that was inadvertently overlooked in the total revision process.

Submitter Information Verification

Submitter Full Name: TC on FAE-SCE
Organization: TC on Special Operations Protective Clothing and Equipment
Street Address:
City:
State:
Zip:
Submittal Date: Mon Sep 09 09:37:10 EDT 2013
1. Revise Table 4.4.1 to read as follows:

<table>
<thead>
<tr>
<th>Product</th>
<th>Test</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>All component product</td>
<td>Corrosion testing</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>All component product</td>
<td>Product label durability testing</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>Life safety rope</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Water rescue (Throwlines)</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Water rescue (Throwlines)</td>
<td>Floatability</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety harness</td>
<td>Static</td>
<td>Alternating years with drop test</td>
</tr>
<tr>
<td>Life safety harness</td>
<td>Drop</td>
<td>Alternating years with static test</td>
</tr>
<tr>
<td>Belt</td>
<td>Static</td>
<td>Alternating years with drop test</td>
</tr>
<tr>
<td>Belt</td>
<td>Drop</td>
<td>Alternating years with static test</td>
</tr>
<tr>
<td>Auxiliary equipment</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Carabiners and snap link</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auxiliary equipment</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Rope grab devices</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auxiliary equipment system</td>
<td>Passive brake Holding</td>
<td>Every year</td>
</tr>
<tr>
<td>Descent control devices – auto stop</td>
<td></td>
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<tr>
<td>Auxiliary equipment system</td>
<td>Manner of function</td>
<td>Every year</td>
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<tr>
<td>Descent control devices – auto stop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auxiliary equipment system</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Descent control devices – non-auto stop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auxiliary equipment</td>
<td>All</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>Portable anchor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auxiliary equipment</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Pulley</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auxiliary equipment</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Pick off, anchor and rigging</td>
<td>Breaking Strength</td>
<td>Every year</td>
</tr>
<tr>
<td>Multiple configuration and end to end straps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auxiliary equipment</td>
<td>All</td>
<td>Every year</td>
</tr>
<tr>
<td>Manufactured systems</td>
<td></td>
<td></td>
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<tr>
<td>Escape Systems</td>
<td>All</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape rope</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope fibers</td>
<td>Melting and crystallization temperatures</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope fibers</td>
<td>by thermal analysis</td>
<td></td>
</tr>
<tr>
<td>Escape webbing</td>
<td>Perimeter, rope breaking, and elongation</td>
<td>Every year</td>
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<td>Fire escape webbing</td>
<td>Elevated rope temperature test</td>
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<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures</td>
<td>Every year</td>
</tr>
<tr>
<td>Moderate elongation laid life saving rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape webbing</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
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<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures</td>
<td>Every year</td>
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<tr>
<td>Moderate elongation laid life saving rope</td>
<td>by thermal analysis</td>
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</tr>
<tr>
<td>Fire escape webbing</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures</td>
<td>Every year</td>
</tr>
<tr>
<td>Victim extrication devices</td>
<td>Static</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Item</td>
<td>Test Method</td>
<td>Frequency</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Litters</td>
<td>Litter strength test – vertical, Litter Strength test – horizontal</td>
<td>Initial only, alternating years with vertical</td>
</tr>
<tr>
<td>Load-bearing textiles used in victim extrication devices</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in victim extrication devices</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Webbing components</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
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<td>Thread components</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in belts with optional flame resistance</td>
<td>Flame resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in life safety harnesses with optional flame resistance</td>
<td>Flame resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Hardware used in belts with optional flame resistance</td>
<td>Heat Resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in belts with optional flame resistance</td>
<td>Thread heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in life safety harnesses with optional flame resistance</td>
<td>Heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Manufacturer-supplied eye termination</td>
<td>Breaking strength</td>
<td>Every year</td>
</tr>
<tr>
<td>Hardware used in life safety harnesses with optional flame resistance</td>
<td>Heat Resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in life safety harnesses with optional flame resistance</td>
<td>Thread heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Manufacturer-supplied eye termination</td>
<td>Thread melting</td>
<td>Every year</td>
</tr>
</tbody>
</table>

2. Revise 5.1.5.12 to read as follows:

**5.1.5.12** In addition to the compliance specified in 5.1.5.9, rigging and anchor multiple configuration and end to end straps shall include the following additional statement on the product label:

For multiple configuration straps:

“MINIMUM BREAKING STRENGTH AND RATING ARE DETERMINED USING A BASKET (U) CONFIGURATION. IN ADDITION, THIS STRAP HAS A MINIMUM BREAKING STRENGTH OF:
___ kN IN A CHOKER CONFIGURATION
___ kN WHEN PULLED END TO END.”

For end to end straps:

“MINIMUM BREAKING STRENGTH OF
___ kN WHEN PULLED END TO END”

3. Add a new paragraph 5.2.10.6 as follows:
5.2.10.6 The manufacturer of moderate elongation laid life saving ropes that are certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of moderate elongation laid life saving rope and a list of items that the records need to contain.

4. Revise 7.4.6.1 and 7.5.6.1 to read as follows:

7.4.6.1 Where harnesses are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

7.5.6.1 Where belts are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

5. Delete paragraph 7.5.7.10 and 7.6.3.9 and renumber subsequent paragraphs; revise paragraph 8.13.1.1 as follows:

7.5.7.10 Where the manufactured system incorporates an escape descent control device that incorporates a passive or active breaking feature that creates friction between the device and the rope, the system shall be tested for maximum payout force as specified in Section 8.13, Payout Test, shall not release the test torso, and shall not exceed 90 N (20 lb).

7.6.3.9 Where the escape descent control device incorporates a passive or active breaking feature that creates friction between the device and the rope, the maximum force required to pay a specific type of rope through the descent control device shall be tested as specified in Section 8.13, Payout Test, and shall not exceed 90 N (20 lb).

8.13.1.1 This test shall apply to descent control systems with passive and active braking systems, and escape manufactured systems.

6. Add a new paragraph 7.6.3.12 as follows:

7.6.3.12 Technical use descent control devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure B, and shall have a minimum breaking strength of at least 13.5 kN (3034 lbf).

7. Revise 7.11.6, 7.11.6.2 and add new 7.11.6.3 to read as follows:

7.11.6 Where an escape system is designated as a fire escape system, additional tests as specified in 7.11.6.1, and 7.11.6.2, and 7.11.6.3 shall be conducted.

7.11.6.2 Where Fire escape system anchors are represented as being flame resistant, materials, labels, and hardware shall be tested individually for heat resistance as specified in Section 8.17, Heat Resistance Test, and shall not melt, drip, separate, or ignite; hardware items shall remain functional.

7.11.6.3 Sewing thread utilized in the construction of fire escape systems shall be tested for heat resistance as specified in Section 8.18, Thread Heat Resistance Test, and shall not melt at or below a temperature of 260°C (500°F).

8. Revise paragraph 7.15.1 and 7.15.2 as follows:

7.15.1 Technical use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

7.15.2 General-use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m, and with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

9. Delete Section 7.17, and add new paragraphs 7.6.3.11 and 7.11.7 as follows:

7.17 Escape Descent Control Device Performance Requirements. Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or device, and shall remain functional.

7.6.3.11 Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.
7.11.7 Escape systems shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.

10. Revise 8.15.5 to read as follows:

8.15.5 Report. The time to failure shall be recorded from each test and the average and standard deviation calculated.

11. Delete 8.15.6.1 as follows:

8.15.6.1 Pass/fail performance shall be based on the average time to failure.

Submitter’s Substantiation:
1. Table 4.4.1 - The table is missing recertification for Moderate Elongation Life Saving Rope and includes several duplications and terminology errors.
2. 5.1.5.12 - The terminology in 5.1.5.12 is not consistent with the document. The terms “rigging and anchor” straps have been replaced with “multiple configuration and end to end” straps. The current required statement is incorrect for end to end straps in that they are not required to be tested in a U or choker configuration.
3. 5.2.10.6 - This added text is a requirement for other products covered by NFPA 1983 and provides users with valuable information on maintaining records for this life saving equipment.
4. 7.4.6.1 and 7.5.6.1 - The term “and hardware” was inadvertently added to these paragraphs. Additionally, the chart length requirement does not apply to hardware items, and there are no specific requirements for the testing of hardware items in the test method. The requirement as written in the current edition is inappropriate for hardware items, would be impossible to determine and could inhibit product certification.
5. 7.5.7.10, 7.6.3.9, and 8.13.1.1 - Requirement 7.5.7.10 is redundant in that a manufactured system that includes an escape descent device would be classified as an Escape System – and therefore must meet all of the requirements of NFPA 1983 Section 7.11.
6. Additionally, the requirement is incorrectly worded in that there is no torso used in the conduct of the test - thus the statement “shall not release the test torso” has no relevance.
7. Requirement 7.6.3.9 applies to all escape descent control devices (those that are sold separately – not as part of a system). As the test is to be conducted with “each type of rope for its intended use” (NFPA 1983, Section 8.13.2.3) it follows that all escape descent control devices may have to be tested with all escape ropes – or the device would be limited to the type of rope with which it was tested. This would present an undue hardship on the manufacturers, and contribute to confusion on the part of the users in determining what ropes are suitable with each device.
8. Requirement 8.13.1.1 is changed so the application of the test method is consistent with the performance requirements.
9. 7.11.6, 7.11.6.2, and 7.11.6.3 (New) - The change in 7.11.6 adds the requirement of thread heat resistance to fire escape systems.
7. The change in 7.11.6.2 corrects the terminology from “escape anchors” to “fire escape system” as section 7.11.6 contains the requirements for fire escape systems and this requirement applies to the system not just the anchor.
8. The addition of 7.11.6.3 adds the thread heat resistance test to threads used in the construction of fire escape systems. This was inadvertently omitted in the 2012 edition. Testing of thread in a fire escape system evaluates a critical safety property of the fire escape system. Using a thread that will not withstand heat can cause the system to fail under high heat conditions.
8. 7.15.1 and 7.15.2 - These requirements are currently located in NFPA 1983-2012 Section 8.6.4.5.6. As these parameters are utilized to determine pass/fail of the device they should be relocated to the Performance Requirements. Additionally, this is a manner of function requirement – not a breaking strength requirement. It is impossible to determine breaking strength without failure of the device or rope.
9. 7.17, 7.6.3.1.1 and 7.11.7 (New) - This added text is part of the requirements that apply to escape descent control devices and escape systems. As such, this language should appear with the group of performance requirements for descent control devices (Section 7.6.3) and escape systems (Section 7.11). Having this requirement separate and distinct from the other performance requirements for these devices/systems can lead to confusion and the possibility of neglect of the remainder of the requirements. 10. and 11. 8.15.5 and 8.15.6.1 - This change resolves a conflict with the requirements in 7.10.3 and 7.12.5.

Emergency Nature: This TIA seeks to correct errors and omissions that were overlooked during the Fall 2011 revision cycle process of NFPA 1983. Additionally, some parts of this TIA intend to offer to the public a benefit that would lessen a known hazard, and correct circumstances in which the standard could adversely affect impact on a product or method that was inadvertently overlooked in the total revision process.
7.6.3.9 - Where the escape descent control device incorporates a passive or active breaking feature that creates friction between the device and the rope, the maximum force required to pay a specific type of rope through the descent control device shall be tested as specified in Section 8.13, Payout Test, and shall not exceed 90 N (20 lb).

Additional Proposed Changes

<table>
<thead>
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Statement of Problem and Substantiation for Public Input

Note: This Public Input originates from Tentative Interim Amendment 1983-12-1 (TIA 1076) issued by the Standards Council on October 30, 2012.

1. Table 4.4.1 - The table is missing recertification for Moderate Elongation Life Saving Rope and includes several duplications and terminology errors.
2. 5.1.5.12 - The terminology in 5.1.5.12 is not consistent with the document. The terms “rigging and anchor” straps have been replaced with “multiple configuration and end to end” straps. The current required statement is incorrect for end to end straps in that they are not required to be tested in a U or choker configuration.
3. 5.2.10.6 - This added text is a requirement for other products covered by NFPA 1983 and provides users with valuable information on maintaining records for this life saving equipment.
4. 7.4.6.1 and 7.5.6.1 - The term “and hardware” was inadvertently added to these paragraphs. Additionally, the chain length requirement does not apply to hardware items, and there are no specific requirements for the testing of hardware items in the test method. The requirement as written in the current edition is inappropriate for hardware items, would be impossible to determine and could inhibit product certification.
5. 7.5.7.10, 7.6.3.9, and 8.13.1.1 - Requirement 7.5.7.10 is redundant in that a manufactured system that includes an escape descent device would be classified as an Escape System – and therefore must meet all of the requirements of NFPA 1983 Section 7.11. Additionally, the requirement is incorrectly worded in that there is no torso used in the conduct of the test - thus the statement “shall not release the test torso” has no relevance.
   Requirement 7.6.3.9 applies to all escape descent control devices (those that are sold separately – not as part of a system). As the test is to be conducted with “each type of rope for its intended use” (NFPA 1983, Section 8.13.2.3) it follows that all escape descent control devices may have to be tested with all escape ropes – or the device would be limited to the type of rope with which it was tested. This would present an undue hardship on the manufacturers, and contribute to confusion on the part of the users in determining what ropes are suitable with each device.
   Requirement 8.13.1.1 is changed so the application of the test method is consistent with the performance requirements.
6. 7.6.3.12 - This performance requirement mandates the minimum breaking strength for these particular devices and is therefore a critical safety issue.
7. 7.11.6, 7.11.6.2, and 7.11.6.3 (New) - The change in 7.11.6 adds the requirement of thread heat resistance to fire escape systems.
   The change in 7.11.6.2 corrects the terminology from “escape anchors” to “fire escape system” as section 7.11.6 contains the requirements for fire escape systems and this requirement applies to the system not just the anchor.
   The addition of 7.11.6.3 adds the thread heat resistance test to threads used in the construction of fire escape systems. This was inadvertently omitted in the 2012 edition. Testing of thread in a fire escape system evaluates a critical safety property of the fire escape system. Using a thread that will not withstand heat can cause the system to fail under high heat conditions.
8. 7.15.1 and 7.15.2 - These requirements are currently located in NFPA 1983-2012 Section 8.6.4.5.6. As these parameters are utilized to determine pass/fail of the device they should be relocated to the Performance Requirements. Additionally, this is a manner of function requirement – not a breaking strength requirement. It is impossible to determine breaking strength without failure of the device or rope.
9. 7.17, 7.6.3.1.1 and 7.11.7 (New) - This added text is part of the requirements that apply to escape descent control devices and escape systems. As such, this language should appear with the group of performance
requirements for descent control devices (Section 7.6.3) and escape systems (Section 7.11). Having this requirement separate and distinct from the other performance requirements for these devices/systems can lead to confusion and the possibility of neglect of the remainder of the requirements.

10. and 11. 8.15.5 and 8.15.6.1 -This change resolves a conflict with the requirements in 7.10.3 and 7.12.5.

Emergency Nature: This TIA seeks to correct errors and omissions that were overlooked during the Fall 2011 revision cycle process of NFPA 1983. Additionally, some parts of this TIA intend to offer to the public a benefit that would lessen a known hazard, and correct circumstances in which the standard could adversely affect impact on a product or method that was inadvertently overlooked in the total revision process.

Submitter Information Verification

Submitter Full Name: TC on FAE-SCE
Organization: TC on Special Operations Protective Clothing and Equipment
Street Address:
City:
State:
Zip:
Submittal Date: Mon Sep 09 09:38:59 EDT 2013
1. Revise Table 4.4.1 to read as follows:

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<th>Product</th>
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<tr>
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<td>Rope breaking and elongation</td>
</tr>
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<td>Rope breaking and elongation</td>
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<td>Floatability</td>
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<tr>
<td>Auxiliary equipment Rope grab devices</td>
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</tr>
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<td>Passive brake Holding</td>
</tr>
<tr>
<td>Auxiliary equipment system Descent control devices – auto stop</td>
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<tr>
<td>Auxiliary equipment system Descent control devices – non-auto stop</td>
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<tr>
<td>Auxiliary equipment Pulley</td>
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<tr>
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<td>Breaking Strength</td>
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<td>Auxiliary equipment Manufactured systems</td>
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<td>Escape Systems</td>
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<td>Life safety rope</td>
<td>Diameter, rope breaking, and elongation</td>
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<tr>
<td>Life safety rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
</tr>
<tr>
<td>Escape rope</td>
<td>Diameter, rope breaking, and elongation</td>
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<tr>
<td>Fire escape rope</td>
<td>Elevated rope temperature test</td>
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<td>Escape rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
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<tr>
<td>Escape webbing</td>
<td>Perimeter, rope breaking, and elongation</td>
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<tr>
<td>Fire escape webbing</td>
<td>Elevated rope temperature test</td>
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<td>Melting and crystallization temperatures by thermal analysis</td>
</tr>
<tr>
<td>Moderate elongation laid life saving rope</td>
<td>Diameter, rope breaking, and elongation</td>
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<td>Load-bearing textiles used in victim</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
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<tr>
<td>Load-bearing textiles used in belts with</td>
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<td>optional flame resistance</td>
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<tr>
<td>Hardware used in belts with optional flame</td>
<td>Heat Resistance</td>
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<td>resistance</td>
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<td>Thread used in belts with optional flame</td>
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<tr>
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<td>Flame resistance</td>
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<tr>
<td>harnesses with optional flame resistance</td>
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<td>Load-bearing textiles used in life safety</td>
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<td>harnesses with optional flame resistance</td>
<td></td>
</tr>
<tr>
<td>Hardware used in life safety harnesses with</td>
<td>Heat Resistance</td>
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<tr>
<td>optional flame resistance</td>
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<tr>
<td>Thread used in life safety harnesses with</td>
<td>Thread heat resistance</td>
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<td>Breaking strength</td>
</tr>
<tr>
<td>Manufacturer-supplied eye termination</td>
<td>Thread melting</td>
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</table>

2. Revise 5.1.5.12 to read as follows:

5.1.5.12 In addition to the compliance specified in 5.1.5.9, rigging and anchor multiple configuration and end to end straps shall include the following additional statement on the product label:

For multiple configuration straps:

“MINIMUM BREAKING STRENGTH AND RATING ARE DETERMINED USING A BASKET (U) CONFIGURATION. IN ADDITION, THIS STRAP HAS A MINIMUM BREAKING STRENGTH OF: ___ kN IN A CHOKER CONFIGURATION ___ kN WHEN PULLED END TO END.”

For end to end straps:

“MINIMUM BREAKING STRENGTH OF ___ kN WHEN PULLED END TO END”

3. Add a new paragraph 5.2.10.6 as follows:
5.2.10.6 The manufacturer of moderate elongation laid life saving ropes that are certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of moderate elongation laid life saving rope and a list of items that the records need to contain.

4. Revise 7.4.6.1 and 7.5.6.1 to read as follows:

7.4.6.1 Where harnesses are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

7.5.6.1 Where belts are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

5. Delete paragraph 7.5.7.10 and 7.6.3.9 and renumber subsequent paragraphs; revise paragraph 8.13.1.1 as follows:

7.5.7.10 Where the manufactured system incorporates an escape descent control device that incorporates a passive or active breaking feature that creates friction between the device and the rope, the system shall be tested for maximum payout force as specified in Section 8.13, Payout Test, shall not release the test torso, and shall not exceed 90 N (20 lb).

7.6.3.9 Where the escape descent control device incorporates a passive or active breaking feature that creates friction between the device and the rope, the maximum force required to pay a specific type of rope through the descent control device shall be tested as specified in Section 8.13, Payout Test, and shall not exceed 90 N (20 lb).

8.13.1.1 This test shall apply to descent control systems with passive and active braking systems, and escape manufactured systems.

6. Add a new paragraph 7.6.3.12 as follows:

7.6.3.12 Technical use descent control devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure B, and shall have a minimum breaking strength of at least 13.5 kN (3034 lbf).

7. Revise 7.11.6, 7.11.6.2 and add new 7.11.6.3 to read as follows:

7.11.6 Where an escape system is designated as a fire escape system, additional tests as specified in 7.11.6.1, and 7.11.6.2, and 7.11.6.3 shall be conducted.

7.11.6.2 Where fire escape system anchors are represented as being flame resistant, materials, labels, and hardware shall be tested individually for heat resistance as specified in Section 8.17, Heat Resistance Test, and shall not melt, drip, separate, or ignite; hardware items shall remain functional.

7.11.6.3 Sewing thread utilized in the construction of fire escape systems shall be tested for heat resistance as specified in Section 8.18, Thread Heat Resistance Test, and shall not melt at or below a temperature of 260°C (500°F).

8. Revise paragraph 7.15.1 and 7.15.2 as follows:

7.15.1 Technical use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

7.15.2 General-use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m, and with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

9. Delete Section 7.17, and add new paragraphs 7.6.3.11 and 7.11.7 as follows:

7.17 Escape Descent Control Device Performance Requirements. Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or device, and shall remain functional.

7.6.3.11 Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.
7.11.7 Escape systems shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.

10. Revise 8.15.5 to read as follows:

8.15.5 Report. The time to failure shall be recorded from each test and the average and standard deviation calculated.

11. Delete 8.15.6.1 as follows:

8.15.6.1 Pass/fail performance shall be based on the average time to failure.

Submitter’s Substantiation:
1. Table 4.4.1 - The table is missing recertification for Moderate Elongation Life Saving Rope and includes several duplications and terminology errors.
2. 5.1.5.12 - The terminology in 5.1.5.12 is not consistent with the document. The terms “rigging and anchor” straps have been replaced with “multiple configuration and end to end” straps. The current required statement is incorrect for end to end straps in that they are not required to be tested in a U or choker configuration.
3. 5.2.10.6 - This added text is a requirement for other products covered by NFPA 1983 and provides users with valuable information on maintaining records for this life saving equipment.
4. 7.4.6.1 and 7.5.6.1 - The term “and hardware” was inadvertently added to these paragraphs. Additionally, the char length requirement does not apply to hardware items, and there are no specific requirements for the testing of hardware items in the test method. The requirement as written in the current edition is inappropriate for hardware items, would be impossible to determine and could inhibit product certification.
5. 7.5.7.10, 7.6.3.9, and 8.13.1.1 - Requirement 7.5.7.10 is redundant in that a manufactured system that includes an escape descent device would be classified as an Escape System – and therefore must meet all of the requirements of NFPA 1983 Section 7.11. Additionally, the requirement is incorrectly worded in that there is no torso used in the conduct of the test - thus the statement “shall not release the test torso” has no relevance.
   Requirement 7.6.3.9 applies to all escape descent control devices (those that are sold separately – not as part of a system). As the test is to be conducted with “each type of rope for its intended use” (NFPA 1983, Section 8.13.2.3) it follows that all escape descent control devices may have to be tested with all escape ropes – or the device would be limited to the type of rope with which it was tested. This would present an undue hardship on the manufacturers, and contribute to confusion on the part of the users in determining what ropes are suitable with each device.
   Requirement 8.13.1.1 is changed so the application of the test method is consistent with the performance requirements.
6. 7.6.3.12 - This performance requirement mandates the minimum breaking strength for these particular devices and is therefore a critical safety issue.
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   The addition of 7.11.6.3 adds the thread heat resistance test to threads used in the construction of fire escape systems. This was inadvertently omitted in the 2012 edition. Testing of thread in a fire escape system evaluates a critical safety property of the fire escape system. Using a thread that will not withstand heat can cause the system to fail under high heat conditions.
8. 7.15.1 and 7.15.2 - These requirements are currently located in NFPA 1983-2012 Section 8.6.4.5.6. As these parameters are utilized to determine pass/fail of the device they should be relocated to the Performance Requirements. Additionally, this is a manner of function requirement – not a breaking strength requirement. It is impossible to determine breaking strength without failure of the device or rope.
9. 7.17, 7.6.3.1.1 and 7.11.7 (New) - This added text is part of the requirements that apply to escape descent control devices and escape systems. As such, this language should appear with the group of performance requirements for descent control devices (Section 7.6.3) and escape systems (Section 7.11). Having this requirement separate and distinct from the other performance requirements for these devices/systems can lead to confusion and the possibility of neglect of the remainder of the requirements.
10. and 11. 8.15.5 and 8.15.6.1 -This change resolves a conflict with the requirements in 7.10.3 and 7.12.5.

Emergency Nature: This TIA seeks to correct errors and omissions that were overlooked during the Fall 2011 revision cycle process of NFPA 1983. Additionally, some parts of this TIA intend to offer to the public a benefit that would lessen a known hazard, and correct circumstances in which the standard could adversely affect impact on a product or method that was inadvertently overlooked in the total revision process.
Public Input No. 9-NFPA 1983-2013 [ New Section after 7.6.3.10 ]

7.6.3.11 Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.

7.6.3.12 Technical use descent control devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure B, and shall have a minimum breaking strength of at least 13.5 kN (3034 lbf).

Additional Proposed Changes

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Statement of Problem and Substantiation for Public Input

Note: This Public Input originates from Tentative Interim Amendment 1983-12-1 (TIA 1076) issued by the Standards Council on October 30, 2012.

1. Table 4.4.1 - The table is missing recertification for Moderate Elongation Life Saving Rope and includes several duplications and terminology errors.
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3. 5.2.10.6 - This added text is a requirement for other products covered by NFPA 1983 and provides users with valuable information on maintaining records for this life saving equipment.
4. 7.4.6.1 and 7.5.6.1 - The term “and hardware” was inadvertently added to these paragraphs. Additionally, the char length requirement does not apply to hardware items, and there are no specific requirements for the testing of hardware items in the test method. The requirement as written in the current edition is inappropriate for hardware items, would be impossible to determine and could inhibit product certification.
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   Requirement 7.6.3.9 applies to all escape descent control devices (those that are sold separately – not as part of a system). As the test is to be conducted with “each type of rope for its intended use” (NFPA 1983, Section 8.13.2.3) it follows that all escape descent control devices may have to be tested with all escape ropes – or the device would be limited to the type of rope with which it was tested. This would present an undue hardship on the manufacturers, and contribute to confusion on the part of the users in determining what ropes are suitable with each device.
   Requirement 8.13.1.1 is changed so the application of the test method is consistent with the performance requirements.
6. 7.6.3.12 - This performance requirement mandates the minimum breaking strength for these particular devices and is therefore a critical safety issue.
7. 7.11.6, 7.11.6.2, and 7.11.6.3 (New) - The change in 7.11.6 adds the requirement of thread heat resistance to fire escape systems.
   The change in 7.11.6.2 corrects the terminology from “escape anchors” to “fire escape system” as section 7.11.6 contains the requirements for fire escape systems and this requirement applies to the system not just the anchor.
   The addition of 7.11.6.3 adds the thread heat resistance test to threads used in the construction of fire escape systems. This was inadvertently omitted in the 2012 edition. Testing of thread in a fire escape system evaluates a critical safety property of the fire escape system. Using a thread that will not withstand heat can cause the system to fail under high heat conditions.
8. 7.15.1 and 7.15.2 - These requirements are currently located in NFPA 1983-2012 Section 8.6.4.5.6. As these parameters are utilized to determine pass/fail of the device they should be relocated to the Performance Requirements. Additionally, this is a manner of function requirement – not a breaking strength requirement. It is
impossible to determine breaking strength without failure of the device or rope.

9. 7.17, 7.6.3.1.1 and 7.11.7 (New) - This added text is part of the requirements that apply to escape descent control devices and escape systems. As such, this language should appear with the group of performance requirements for descent control devices (Section 7.6.3) and escape systems (Section 7.11). Having this requirement separate and distinct from the other performance requirements for these devices/systems can lead to confusion and the possibility of neglect of the remainder of the requirements.

10. and 11. 8.15.5 and 8.15.6.1 - This change resolves a conflict with the requirements in 7.10.3 and 7.12.5.

Emergency Nature: This TIA seeks to correct errors and omissions that were overlooked during the Fall 2011 revision cycle process of NFPA 1983. Additionally, some parts of this TIA intend to offer to the public a benefit that would lessen a known hazard, and correct circumstances in which the standard could adversely affect impact on a product or method that was inadvertently overlooked in the total revision process.

Submitter Information Verification

Submitter Full Name: TC on FAE-SCE
Organization: TC on Special Operations Protective Clothing and Equipment
Street Address:
City:
State:
Zip:
Submittal Date: Mon Sep 09 09:43:36 EDT 2013
### NFPA 1983-2012

*Standard on Life Safety Rope and Equipment for Emergency Services*

**TIA Log No.** 1076

**Reference:** Table 4.4.1, 5.1.5.12, 5.2.10.6, 7.4.6.1, 7.5.6.1, 7.5.7.10, 7.6.3.9, 8.13.1.1, 7.6.3.12, 7.11.6, 7.11.6.2, 7.11.6.3 (New), 7.15.1, 7.15.2, 7.17, 7.6.3.1.1, 7.11.7 (New), 8.15.5, and 8.15.6.1

**Comment Closing Date:** October 4, 2012

**Submitter:** Dean Cox, Fairfax County Fire & Rescue Department

1. Revise Table 4.4.1 to read as follows:

<table>
<thead>
<tr>
<th>Product</th>
<th>Test</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>All component product</td>
<td>Corrosion testing</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>All component product</td>
<td>Product label durability testing</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>Life safety rope</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Water rescue (Throwlines)</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Water rescue (Throwlines)</td>
<td>Floatability</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety harness</td>
<td>Static</td>
<td>Alternating years with drop test</td>
</tr>
<tr>
<td>Life safety harness</td>
<td>Drop</td>
<td>Alternating years with static test</td>
</tr>
<tr>
<td>Belt</td>
<td>Static</td>
<td>Alternating years with drop test</td>
</tr>
<tr>
<td>Belt</td>
<td>Drop</td>
<td>Alternating years with static test</td>
</tr>
<tr>
<td>Auxiliary equipment Carabiners and snap link</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment Rope grab devices</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment Descent control devices – auto stop</td>
<td>Passive brake Holding</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment Descent control devices – auto stop</td>
<td>Manner of function</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment Descent control devices – non-auto stop</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment Portable anchor systems</td>
<td>All</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>Auxiliary equipment Pulley systems</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment Pick off, anchor and rigging Multiple configuration and end to end straps</td>
<td>Breaking Strength</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment Manufactured systems</td>
<td>All</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape Systems</td>
<td>All</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape rope</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing</td>
<td>Perimeter, rope breaking, and elongation</td>
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<td>Fire escape webbing</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
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<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Moderate elongation laid life saving rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Moderate elongation laid life saving rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape webbing</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Victim extrication devices</td>
<td>Static</td>
<td>Every 2 years</td>
</tr>
</tbody>
</table>
2. Revise 5.1.5.12 to read as follows:

5.1.5.12 In addition to the compliance specified in 5.1.5.9, rigging and anchor multiple configuration and end to end straps shall include the following additional statement on the product label:

For multiple configuration straps:

“MINIMUM BREAKING STRENGTH AND RATING ARE DETERMINED USING A BASKET (U) CONFIGURATION. IN ADDITION, THIS STRAP HAS A MINIMUM BREAKING STRENGTH OF: ___ kN IN A CHOKER CONFIGURATION ___ kN WHEN PULLED END TO END.”

For end to end straps:

“MINIMUM BREAKING STRENGTH OF ___ kN WHEN PULLED END TO END”

3. Add a new paragraph 5.2.10.6 as follows:

<table>
<thead>
<tr>
<th>Litters</th>
<th>Litter strength test – vertical Litter Strength test – horizontal</th>
<th>Initial only Alternating years with horizontal Initial only Alternating years with vertical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load-bearing textiles used in victim extraction devices</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in victim extraction devices</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Webbing components</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread components</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in belts with optional flame resistance</td>
<td>Flame resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in life safety harnesses with optional flame resistance</td>
<td>Flame resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in life safety harnesses with optional flame resistance</td>
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<td>Flame resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Hardware used in belts with optional flame resistance</td>
<td>Heat Resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in belts with optional flame resistance</td>
<td>Thread heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Hardware used in life safety harnesses with optional flame resistance</td>
<td>Heat Resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in life safety harnesses with optional flame resistance</td>
<td>Thread heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Manufacturer-supplied eye termination</td>
<td>Breaking strength</td>
<td>Every year</td>
</tr>
<tr>
<td>Manufacturer-supplied eye termination</td>
<td>Thread melting</td>
<td>Every year</td>
</tr>
</tbody>
</table>
5.2.10.6 The manufacturer of moderate elongation lay life saving ropes that are certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of moderate elongation lay life saving rope and a list of items that the records need to contain.

4. Revise 7.4.6.1 and 7.5.6.1 to read as follows:

7.4.6.1 Where harnesses are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

7.5.6.1 Where belts are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

5. Delete paragraph 7.5.7.10 and 7.6.3.9 and renumber subsequent paragraphs; revise paragraph 8.13.1.1 as follows:

8.13.1.1 This test shall apply to descent control systems with passive and active braking systems, and escape manufactured systems.

6. Add a new paragraph 7.6.3.12 as follows:

7.6.3.12 Technical use descent control devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure B, and shall have a minimum breaking strength of at least 13.5 kN (3034 lbf).

7. Revise 7.11.6, 7.11.6.2 and add new 7.11.6.3 to read as follows:

7.11.6 Where an escape system is designated as a fire escape system, additional tests as specified in 7.11.6.1, and 7.11.6.2, and 7.11.6.3 shall be conducted.

7.11.6.2 Where fire escape system anchors are represented as being flame resistant, materials, labels, and hardware shall be tested individually for heat resistance as specified in Section 8.17, Heat Resistance Test, and shall not melt, drip, separate, or ignite; hardware items shall remain functional.

7.11.6.3 Sewing thread utilized in the construction of fire escape systems shall be tested for heat resistance as specified in Section 8.18, Thread Heat Resistance Test, and shall not melt at or below a temperature of 260ºC (500ºF).

8. Revise paragraph 7.15.1 and 7.15.2 as follows:

7.15.1 Technical use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

7.15.2 General-use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m, and with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

9. Delete Section 7.17, and add new paragraphs 7.6.3.11 and 7.11.7 as follows:

7.17 Escape Descent Control Device Performance Requirements. Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or device, and shall remain functional.

7.6.3.11 Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.
7.11.7 Escape systems shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.

10. Revise 8.15.5 to read as follows:

8.15.5 Report. The time to failure shall be recorded from each test and the average and standard deviation calculated.

11. Delete 8.15.6.1 as follows:

8.15.6.1 Pass/fail performance shall be based on the average time to failure.

Submitter’s Substantiation:
1. Table 4.4.1 - The table is missing recertification for Moderate Elongation Life Saving Rope and includes several duplications and terminology errors.
2. 5.1.5.12 - The terminology in 5.1.5.12 is not consistent with the document. The terms “rigging and anchor” straps have been replaced with “multiple configuration and end to end” straps. The current required statement is incorrect for end to end straps in that they are not required to be tested in a U or choker configuration.
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6. 7.6.3.12 - This performance requirement mandates the minimum breaking strength for these particular devices and is therefore a critical safety issue.
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7.11.6
Where an escape system is designated as a fire escape system, additional tests as specified in 7.11.6.1, 7.11.6.2, and 7.11.6.3 shall be conducted.

7.11.6.1
Fire escape system rope shall be tested for high-temperature exposure as specified in Section 8.15, Elevated Temperature Rope Test. This test shall be conducted at two independent conditions and shall have a minimum time to failure of 45 seconds at 600°C while holding 300 lb and of 5 minutes at 400°C while holding 300 lb.

7.11.6.2
Where escape anchors are represented as being flame-resistant, fire escape system materials, labels, and hardware shall be tested individually for heat resistance as specified in Section 8.17, Heat Resistance Test, and shall not melt, drip, separate, or ignite; hardware items shall remain functional.

7.11.6.3
Sewing thread utilized in the construction of fire escape systems shall be tested for heat resistance as specified in Section 8.18, Thread Heat Resistance Test, and shall not melt at or below a temperature of 260°C (500°F).

### Additional Proposed Changes

<table>
<thead>
<tr>
<th>File Name</th>
<th>Description</th>
<th>Approved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposed_TIA_1983_.docx</td>
<td>Balloted TIA</td>
<td></td>
</tr>
</tbody>
</table>

### Statement of Problem and Substantiation for Public Input

Note: This Public Input originates from Tentative Interim Amendment 1983-12-1 (TIA 1076) issued by the Standards Council on October 30, 2012.

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Submitter Information Verification

Submitter Full Name: TC on FAE-SCE
Organization: TC on Special Operations Protective Clothing and Equipment
Street Address: 
City: 
State: 
Zip: 
Submittal Date: Mon Sep 09 09:45:59 EDT 2013


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<td>Alternating years with drop test</td>
</tr>
<tr>
<td>Belt</td>
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<td>Alternating years with static test</td>
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<td>Passive brake Holding</td>
<td>Every year</td>
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<tr>
<td>Auxiliary equipment system Descent control devices – non-auto stop</td>
<td>Manner of function</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment system Descent control devices – auto stop</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment system Descent control devices – non-auto stop</td>
<td>All</td>
<td>Every 2 years</td>
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<td>Every 2 years</td>
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<td>Breaking Strength</td>
<td>Every year</td>
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<tr>
<td>Life safety rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
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<td>Fire escape rope</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing</td>
<td>Perimeter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Moderate elongation laid life saving rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
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<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
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<td>Fire escape webbing</td>
<td>Elevated rope temperature test</td>
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<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
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<td>Victim extrication devices</td>
<td>Static</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Item</td>
<td>Test or Analysis Method</td>
<td>Frequency</td>
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<td>--------------------------------------------------------------</td>
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<td>Litters</td>
<td>Litter strength test – vertical</td>
<td>Initial only</td>
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<td>Litter Strength test – horizontal</td>
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<td></td>
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<td>years with</td>
</tr>
<tr>
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<td></td>
<td>vertical</td>
</tr>
<tr>
<td>Load-bearing textiles used in victim extrication devices</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in victim extrication devices</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Webbing components</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread components</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in belts</td>
<td>Flame resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>with optional flame resistance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Load-bearing textiles used in belts</td>
<td>Heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>with optional flame resistance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hardware used in belts with optional flame resistance</td>
<td>Heat Resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in belts with optional flame resistance</td>
<td>Thread heat resistance</td>
<td>Every year</td>
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<td>Load-bearing textiles used in life safety harnesses with</td>
<td>Flame resistance</td>
<td>Every year</td>
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<td>optional flame resistance</td>
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<tr>
<td>Load-bearing textiles used in life safety harnesses with</td>
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<td>Every year</td>
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<td>Load-bearing textiles used in life safety harnesses with</td>
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<td>Every year</td>
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<td>optional flame resistance</td>
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<td>Hardware used in life safety harnesses with optional flame</td>
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<td>Thread used in life safety harnesses with optional flame</td>
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</table>

2. Revise 5.1.5.12 to read as follows:

5.1.5.12 In addition to the compliance specified in 5.1.5.9, rigging and anchor multiple configuration and end to end straps shall include the following additional statement on the product label:

For multiple configuration straps:

“MINIMUM BREAKING STRENGTH AND RATING ARE DETERMINED USING A BASKET (U) CONFIGURATION. IN ADDITION, THIS STRAP HAS A MINIMUM BREAKING STRENGTH OF:

___ kN IN A CHOKER CONFIGURATION

___ kN WHEN PULLED END TO END.”

For end to end straps:

“MINIMUM BREAKING STRENGTH OF

___ kN WHEN PULLED END TO END”

3. Add a new paragraph 5.2.10.6 as follows:
5.2.10.6 The manufacturer of moderate elongation laid life saving ropes that are certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of moderate elongation laid life saving rope and a list of items that the records need to contain.

4. Revise 7.4.6.1 and 7.5.6.1 to read as follows:

7.4.6.1 Where harnesses are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

7.5.6.1 Where belts are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

5. Delete paragraph 7.5.7.10 and 7.6.3.9 and renumber subsequent paragraphs; revise paragraph 8.13.1.1 as follows:

7.5.7.10 Where the manufactured system incorporates an escape descent control device that incorporates a passive or active breaking feature that creates friction between the device and the rope, the system shall be tested for maximum payout force as specified in Section 8.13, Payout Test, shall not release the test torso, and shall not exceed 90 N (20 lb).

7.6.3.9 Where the escape descent control device incorporates a passive or active breaking feature that creates friction between the device and the rope, the maximum force required to pay a specific type of rope through the descent control device shall be tested as specified in Section 8.13, Payout Test, and shall not exceed 90 N (20 lb).

8.13.1.1 This test shall apply to descent control systems with passive and active braking systems, and escape manufactured systems.

6. Add a new paragraph 7.6.3.12 as follows:

7.6.3.12 Technical use descent control devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure B, and shall have a minimum breaking strength of at least 13.5 kN (3034 lbf).

7. Revise 7.11.6, 7.11.6.2 and add new 7.11.6.3 to read as follows:

7.11.6 Where an escape system is designated as a fire escape system, additional tests as specified in 7.11.6.1, and 7.11.6.2, and 7.11.6.3 shall be conducted.

7.11.6.2 Where fire escape system anchors are represented as being flame resistant, materials, labels, and hardware shall be tested individually for heat resistance as specified in Section 8.17, Heat Resistance Test, and shall not melt, drip, separate, or ignite; hardware items shall remain functional.

7.11.6.3 Sewing thread utilized in the construction of fire escape systems shall be tested for heat resistance as specified in Section 8.18, Thread Heat Resistance Test, and shall not melt at or below a temperature of 260ºC (500ºF).

8. Revise paragraph 7.15.1 and 7.15.2 as follows:

7.15.1 Technical use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

7.15.2 General-use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m, and with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

9. Delete Section 7.17, and add new paragraphs 7.6.3.11 and 7.11.7 as follows:

7.17 Escape Descent Control Device Performance Requirements. Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or device, and shall remain functional.

7.6.3.11 Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.
7.11.7 Escape systems shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.

10. Revise 8.15.5 to read as follows:

8.15.5 Report. The time to failure shall be recorded from each test and the average and standard deviation calculated.

11. Delete 8.15.6.1 as follows:

8.15.6.1 Pass/fail performance shall be based on the average time to failure.

Submitter’s Substantiation:
1. Table 4.4.1 - The table is missing recertification for Moderate Elongation Life Saving Rope and includes several duplications and terminology errors.
2. 5.1.5.12 - The terminology in 5.1.5.12 is not consistent with the document. The terms “rigging and anchor” straps have been replaced with “multiple configuration and end to end” straps. The current required statement is incorrect for end to end straps in that they are not required to be tested in a U or choker configuration.
3. 5.2.10.6 - This added text is a requirement for other products covered by NFPA 1983 and provides users with valuable information on maintaining records for this life saving equipment.
4. 7.4.6.1 and 7.5.6.1 - The term “and hardware” was inadvertently added to these paragraphs. Additionally, the char length requirement does not apply to hardware items, and there are no specific requirements for the testing of hardware items in the test method. The requirement as written in the current edition is inappropriate for hardware items, would be impossible to determine and could inhibit product certification.
5. 7.5.7.10, 7.6.3.9, and 8.13.1.1 - Requirement 7.5.7.10 is redundant in that a manufactured system that includes an escape descent device would be classified as an Escape System – and therefore must meet all of the requirements of NFPA 1983 Section 7.11. Additionally, the requirement is incorrectly worded in that there is no torso used in the conduct of the test - thus the statement “shall not release the test torso” has no relevance.
   Requirement 7.6.3.9 applies to all escape descent control devices (those that are sold separately – not as part of a system). As the test is to be conducted with “each type of rope for its intended use” (NFPA 1983, Section 8.13.2.3) it follows that all escape descent control devices may have to be tested with all escape ropes – or the device would be limited to the type of rope with which it was tested. This would present an undue hardship on the manufacturers, and contribute to confusion on the part of the users in determining what ropes are suitable with each device.
   Requirement 8.13.1.1 is changed so the application of the test method is consistent with the performance requirements.
6. 7.6.3.12 - This performance requirement mandates the minimum breaking strength for these particular devices and is therefore a critical safety issue.
7. 7.11.6, 7.11.6.2, and 7.11.6.3 (New) - The change in 7.11.6 adds the requirement of thread heat resistance to fire escape systems.
   The change in 7.11.6.2 corrects the terminology from “escape anchors” to “fire escape system” as section 7.11.6 contains the requirements for fire escape systems and this requirement applies to the system not just the anchor.
   The addition of 7.11.6.3 adds the thread heat resistance test to threads used in the construction of fire escape systems. This was inadvertently omitted in the 2012 edition. Testing of thread in a fire escape system evaluates a critical safety property of the fire escape system. Using a thread that will not withstand heat can cause the system to fail under high heat conditions.
8. 7.15.1 and 7.15.2 - These requirements are currently located in NFPA 1983-2012 Section 8.6.4.5.6. As these parameters are utilized to determine pass/fail of the device they should be relocated to the Performance Requirements. Additionally, this is a manner of function requirement – not a breaking strength requirement. It is impossible to determine breaking strength without failure of the device or rope.
9. 7.17, 7.6.3.1.1 and 7.11.7 (New) - This added text is part of the requirements that apply to escape descent control devices and escape systems. As such, this language should appear with the group of performance requirements for descent control devices (Section 7.6.3) and escape systems (Section 7.11). Having this requirement separate and distinct from the other performance requirements for these devices/systems can lead to confusion and the possibility of neglect of the remainder of the requirements. 10. and 11. 8.15.5 and 8.15.6.1 -This change resolves a conflict with the requirements in 7.10.3 and 7.12.5.

Emergency Nature: This TIA seeks to correct errors and omissions that were overlooked during the Fall 2011 revision cycle process of NFPA 1983. Additionally, some parts of this TIA intend to offer to the public a benefit that would lessen a known hazard, and correct circumstances in which the standard could adversely affect impact on a product or method that was inadvertently overlooked in the total revision process.
7.11.7  Escape systems shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.

Additional Proposed Changes

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<th>File Name</th>
<th>Description Approved</th>
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<td>Balloted TIA</td>
</tr>
</tbody>
</table>

Statement of Problem and Substantiation for Public Input

Note: This Public Input originates from Tentative Interim Amendment 1983-12-1 (TIA 1076) issued by the Standards Council on October 30, 2012.

1. Table 4.4.1 - The table is missing recertification for Moderate Elongation Life Saving Rope and includes several duplications and terminology errors.
2. 5.1.5.12 - The terminology in 5.1.5.12 is not consistent with the document. The terms “rigging and anchor” straps have been replaced with “multiple configuration and end to end” straps. The current required statement is incorrect for end to end straps in that they are not required to be tested in a U or choker configuration.
3. 5.2.10.6 - This added text is a requirement for other products covered by NFPA 1983 and provides users with valuable information on maintaining records for this life saving equipment.
4. 7.4.6.1 and 7.5.6.1 - The term “and hardware” was inadvertently added to these paragraphs. Additionally, the char length requirement does not apply to hardware items, and there are no specific requirements for the testing of hardware items in the test method. The requirement as written in the current edition is inappropriate for hardware items, would be impossible to determine and could inhibit product certification.
5. 7.5.7.10, 7.6.3.9, and 8.13.1.1 - Requirement 7.5.7.10 is redundant in that a manufactured system that includes an escape descent device would be classified as an Escape System – and therefore must meet all of the requirements of NFPA 1983 Section 7.11. Additionally, the requirement is incorrectly worded in that there is no torso used in the conduct of the test - thus the statement “shall not release the test torso” has no relevance. Requirement 7.6.3.9 applies to all escape descent control devices (those that are sold separately – not as part of a system). As the test is to be conducted with “each type of rope for its intended use” (NFPA 1983, Section 8.13.2.3) it follows that all escape descent control devices may have to be tested with all escape ropes – or the device would be limited to the type of rope with which it was tested. This would present an undue hardship on the manufacturers, and contribute to confusion on the part of the users in determining what ropes are suitable with each device.
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9. 7.17, 7.6.3.1.1 and 7.11.7 (New) - This added text is part of the requirements that apply to escape descent control devices and escape systems. As such, this language should appear with the group of performance
I. Revise Table 4.4.1 to read as follows:

<table>
<thead>
<tr>
<th>Product</th>
<th>Test</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>All component product</td>
<td>Corrosion testing</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>All component product</td>
<td>Product label durability testing</td>
<td>Initial cert only</td>
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<tr>
<td>Life safety rope</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Water rescue Throwlines</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Water rescue Throwlines</td>
<td>Floatability</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety harness</td>
<td>Static</td>
<td>Alternating years with drop test</td>
</tr>
<tr>
<td>Life safety harness</td>
<td>Drop</td>
<td>Alternating years with static test</td>
</tr>
<tr>
<td>Belt</td>
<td>Static</td>
<td>Alternating years with drop test</td>
</tr>
<tr>
<td>Belt</td>
<td>Drop</td>
<td>Alternating years with static test</td>
</tr>
<tr>
<td>Auxiliary equipment Carabiners and snap link</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment Rope grab devices</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment system Descent control devices – auto stop</td>
<td>Passive brake holding</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment system Descent control devices – non-auto stop</td>
<td>Manner of function</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment system Descent control devices – non-auto stop</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment Portable anchor and rigging Multiple configuration and end to end straps</td>
<td>Breaking Strength</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment Manufactured systems</td>
<td>All</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape Systems</td>
<td>All</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape rope</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape escape rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape escape rope fibers</td>
<td>Perimeter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape rope fibers</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
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<tr>
<td>Moderate elongation laid life saving rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
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<tr>
<td>Moderate elongation laid life saving rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
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<tr>
<td>Fire escape webbing fibers</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Victim extrication devices</td>
<td>Static</td>
<td>Every 2 years</td>
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<tr>
<td>Litters</td>
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<td>Litter Strength test – horizontal</td>
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<tr>
<td>Load-bearing textiles used in victim extrication devices</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in victim extrication devices</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Webbing components</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
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<tr>
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<td>Melting and crystallization temperatures by thermal analysis</td>
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<tr>
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<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in belts with optional flame resistance</td>
<td>Flame resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in belts with optional flame resistance</td>
<td>Heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Hardware used in belts with optional flame resistance</td>
<td>Heat Resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in belts with optional flame resistance</td>
<td>Thread heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in life safety harnesses with optional flame resistance</td>
<td>Flame resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in life safety harnesses with optional flame resistance</td>
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<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in life safety harnesses with optional flame resistance</td>
<td>Heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Hardware used in life safety harnesses with optional flame resistance</td>
<td>Heat Resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in life safety harnesses with optional flame resistance</td>
<td>Thread heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Manufacturer-supplied eye termination</td>
<td>Breaking strength</td>
<td>Every year</td>
</tr>
<tr>
<td>Manufacturer-supplied eye termination</td>
<td>Thread melting</td>
<td>Every year</td>
</tr>
</tbody>
</table>

2. Revise 5.1.5.12 to read as follows:

5.1.5.12 In addition to the compliance specified in 5.1.5.9, rigging and anchor multiple configuration and end to end straps shall include the following additional statement on the product label:

For multiple configuration straps:

“MINIMUM BREAKING STRENGTH AND RATING ARE DETERMINED USING A BASKET (U) CONFIGURATION. IN ADDITION, THIS STRAP HAS A MINIMUM BREAKING STRENGTH OF: ___ kN IN A CHOKER CONFIGURATION ___ kN WHEN PULLED END TO END.”

For end to end straps:

“MINIMUM BREAKING STRENGTH OF ___ kN WHEN PULLED END TO END”

3. Add a new paragraph 5.2.10.6 as follows:
5.2.10.6 The manufacturer of moderate elongation laid life saving ropes that are certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of moderate elongation laid life saving rope and a list of items that the records need to contain.

4. Revise 7.4.6.1 and 7.5.6.1 to read as follows:

7.4.6.1 Where harnesses are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

7.5.6.1 Where belts are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

5. Delete paragraph 7.5.7.10 and 7.6.3.9 and renumber subsequent paragraphs; revise paragraph 8.13.1.1 as follows:

7.5.7.10 Where the manufactured system incorporates an escape descent control device that incorporates a passive or active breaking feature that creates friction between the device and the rope, the system shall be tested for maximum payout force as specified in Section 8.13, Payout Test, shall not release the test torso, and shall not exceed 90 N (20 lb).

7.6.3.9 Where the escape descent control device incorporates a passive or active breaking feature that creates friction between the device and the rope, the maximum force required to pay a specific type of rope through the descent control device shall be tested as specified in Section 8.13, Payout Test, and shall not exceed 90 N (20 lb).

8.13.1.1 This test shall apply to descent control systems with passive and active braking systems, and escape manufactured systems.

6. Add a new paragraph 7.6.3.12 as follows:

7.6.3.12 Technical use descent control devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure B, and shall have a minimum breaking strength of at least 13.5 kN (3034 lbf).

7. Revise 7.11.6, 7.11.6.2 and add new 7.11.6.3 to read as follows:

7.11.6 Where an escape system is designated as a fire escape system, additional tests as specified in 7.11.6.1, and 7.11.6.2, and 7.11.6.3 shall be conducted.

7.11.6.2 Where fire escape system anchors are represented as being flame resistant, materials, labels, and hardware shall be tested individually for heat resistance as specified in Section 8.17, Heat Resistance Test, and shall not melt, drip, separate, or ignite; hardware items shall remain functional.

7.11.6.3 Sewing thread utilized in the construction of fire escape systems shall be tested for heat resistance as specified in Section 8.18, Thread Heat Resistance Test, and shall not melt at or below a temperature of 260ºC (500ºF).

8. Revise paragraph 7.15.1 and 7.15.2 as follows:

7.15.1 Technical use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

7.15.2 General-use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m, and with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

9. Delete Section 7.17, and add new paragraphs 7.6.3.11 and 7.11.7 as follows:

7.17. Escape Descent Control Device Performance Requirements. Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or device, and shall remain functional.

7.6.3.11 Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.
7.11.7 Escape systems shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.

10. Revise 8.15.5 to read as follows:

8.15.5 Report. The time to failure shall be recorded from each test and the average and standard deviation calculated.

11. Delete 8.15.6.1 as follows:

8.15.6.1 Pass/fail performance shall be based on the average time to failure.

Submitter’s Substantiation:
1. Table 4.4.1 - The table is missing recertification for Moderate Elongation Life Saving Rope and includes several duplications and terminology errors.
2. 5.1.5.12 - The terminology in 5.1.5.12 is not consistent with the document. The terms “rigging and anchor” straps have been replaced with “multiple configuration and end to end” straps. The current required statement is incorrect for end to end straps in that they are not required to be tested in a U or choker configuration.
3. 5.2.10.6 - This added text is a requirement for other products covered by NFPA 1983 and provides users with valuable information on maintaining records for this life saving equipment.
4. 7.4.6.1 and 7.5.6.1 - The term “and hardware” was inadvertently added to these paragraphs. Additionally, the char length requirement does not apply to hardware items, and there are no specific requirements for the testing of hardware items in the test method. The requirement as written in the current edition is inappropriate for hardware items, would be impossible to determine and could inhibit product certification.
5. 7.5.7.10, 7.6.3.9, and 8.13.1.1 - Requirement 7.5.7.10 is redundant in that a manufactured system that includes an escape descent device would be classified as an Escape System – and therefore must meet all of the requirements of NFPA 1983 Section 7.11. Additionally, the requirement is incorrectly worded in that there is no torso used in the conduct of the test - thus the statement “shall not release the test torso” has no relevance.
   Requirement 7.6.3.9 applies to all escape descent control devices (those that are sold separately – not as part of a system). As the test is to be conducted with “each type of rope for its intended use” (NFPA 1983, Section 8.13.2.3) it follows that all escape descent control devices may have to be tested with all escape ropes – or the device would be limited to the type of rope with which it was tested. This would present an undue hardship on the manufacturers, and contribute to confusion on the part of the users in determining what ropes are suitable with each device.
   Requirement 8.13.1.1 is changed so the application of the test method is consistent with the performance requirements.
6. 7.6.3.12 - This performance requirement mandates the minimum breaking strength for these particular devices and is therefore a critical safety issue.
7. 7.11.6, 7.11.6.2, and 7.11.6.3 (New) - The change in 7.11.6 adds the requirement of thread heat resistance to fire escape systems.
   The change in 7.11.6.2 corrects the terminology from “escape anchors” to “fire escape system” as section 7.11.6 contains the requirements for fire escape systems and this requirement applies to the system not just the anchor.
   The addition of 7.11.6.3 adds the thread heat resistance test to threads used in the construction of fire escape systems. This was inadvertently omitted in the 2012 edition. Testing of thread in a fire escape system evaluates a critical safety property of the fire escape system. Using a thread that will not withstand heat can cause the system to fail under high heat conditions.
8. 7.15.1 and 7.15.2 - These requirements are currently located in NFPA 1983-2012 Section 8.6.4.5.6. As these parameters are utilized to determine pass/fail of the device they should be relocated to the Performance Requirements. Additionally, this is a manner of function requirement – not a breaking strength requirement. It is impossible to determine breaking strength without failure of the device or rope.
9. 7.17, 7.6.3.1.1 and 7.11.7 (New) - This added text is part of the requirements that apply to escape descent control devices and escape systems. As such, this language should appear with the group of performance requirements for descent control devices (Section 7.6.3) and escape systems (Section 7.11). Having this requirement separate and distinct from the other performance requirements for these devices/systems can lead to confusion and the possibility of neglect of the remainder of the requirements.
10. and 11. 8.15.5 and 8.15.6.1 -This change resolves a conflict with the requirements in 7.10.3 and 7.12.5.

Emergency Nature: This TIA seeks to correct errors and omissions that were overlooked during the Fall 2011 revision cycle process of NFPA 1983. Additionally, some parts of this TIA intend to offer to the public a benefit that would lessen a known hazard, and correct circumstances in which the standard could adversely affect impact on a product or method that was inadvertently overlooked in the total revision process.
requirements for descent control devices (Section 7.6.3) and escape systems (Section 7.11). Having this requirement separate and distinct from the other performance requirements for these devices/systems can lead to confusion and the possibility of neglect of the remainder of the requirements.

10. and 11. 8.15.5 and 8.15.6.1 - This change resolves a conflict with the requirements in 7.10.3 and 7.12.5.

Emergency Nature: This TIA seeks to correct errors and omissions that were overlooked during the Fall 2011 revision cycle process of NFPA 1983. Additionally, some parts of this TIA intend to offer to the public a benefit that would lessen a known hazard, and correct circumstances in which the standard could adversely affect impact on a product or method that was inadvertently overlooked in the total revision process.

Submitter Information Verification

Submitter Full Name: TC on FAE-SCE
Organization: TC on Special Operations Protective Clothing and Equipment
Street Address:
City:
State:
Zip:
Submittal Date: Mon Sep 09 09:55:02 EDT 2013
7.12.5

Fire escape rope shall be tested for high-temperature exposure as specified in Section 8.15, Elevated Temperature Rope Test. This test shall be conducted at two independent conditions and shall have a minimum time to failure of 45 seconds at 600°C while holding 300 lb and of 5 minutes at 400°C while holding 300 lb.

Decomposition of aramid fibers begins above 500°C, therefore moving the tolerance band to 10 effectively moves the target for this test to 605°C. The target at 600°C, as currently required, we feel is already too high. We oppose any change to the current requirement that would require a higher target temperature.

Statement of Problem and Substantiation for Public Input

Decomposition of aramid fibers begins above 500°C, therefore moving the tolerance band to +10 effectively moves the target for this test to 605°C. The target at 600°C, as currently required, we feel is already too high.

Submitter Information Verification

Submitter Full Name: TRAVIS SHIPMAN
Organization: STERLING ROPE
Street Address:
City:
State:
Zip:
Submittal Date: Fri Dec 19 13:54:36 EST 2014
7.15  Belay Device Performance Requirements.

7.15.1  Technical use belay devices shall be tested for breaking strength as specified in Section 8.6. Manner of Function Tensile Test, Procedure C without failure of the device or failure of the rope.

7.15.2  General use belay devices shall be tested for breaking strength as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m, and with an impact force of less than 15 kN (3372 lbf).

7.15.3  Technical use belay devices shall be tested for breaking strength as specified in Section 8.6, Manner of Function Tensile Test, Procedure B and shall have a minimum breaking strength of at least 13.5 kN (3034 lbf).

7.15.4  General use belay devices shall be tested for breaking strength as specified in Section 8.6, Manner of Function Tensile Test, Procedure B and shall have a minimum breaking strength of at least 22 kN (4946 lbf).

Statement of Problem and Substantiation for Public Input

Belay devices are currently not tested for MBS as are all other descent control devices. This will add the MBS for these devices with the same performance requirement as other descent control devices.

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Street Address: 
City: 
State: 
Zip: 
Submittal Date: Tue Dec 09 13:38:50 EST 2014
Public Input No. 11-NFPA 1983-2013 [Sections 7.15.1, 7.15.2]

Sections 7.15.1, 7.15.2

7.15.1
Technical use belay devices shall be tested for breaking strength, manner of function, as specified in Section 8.6, Manner of Function Tensile Test, Procedure C without failure of the device or failure of the rope, with a belay system extension of less than 1 m with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

7.15.2
General use belay devices shall be tested for breaking strength, manner of function, as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m, and with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

Additional Proposed Changes

<table>
<thead>
<tr>
<th>File Name</th>
<th>Description</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Proposed_TIA_1983_.docx</td>
<td>Balloted TIA</td>
<td></td>
</tr>
</tbody>
</table>

Statement of Problem and Substantiation for Public Input

Note: This Public Input originates from Tentative Interim Amendment 1983-12-1 (TIA 1076) issued by the Standards Council on October 30, 2012.

1. Table 4.4.1 - The table is missing recertification for Moderate Elongation Life Saving Rope and includes several duplications and terminology errors.
2. 5.1.5.12 - The terminology in 5.1.5.12 is not consistent with the document. The terms “rigging and anchor” straps have been replaced with “multiple configuration and end to end” straps. The current required statement is incorrect for end to end straps in that they are not required to be tested in a U or choker configuration.
3. 5.2.10.6 - This added text is a requirement for other products covered by NFPA 1983 and provides users with valuable information on maintaining records for this life saving equipment.
4. 7.4.6.1 and 7.5.6.1 - The term “and hardware” was inadvertently added to these paragraphs. Additionally, the char length requirement does not apply to hardware items, and there are no specific requirements for the testing of hardware items in the test method. The requirement as written in the current edition is inappropriate for hardware items, would be impossible to determine and could inhibit product certification.
5. 7.5.7.10, 7.6.3.9, and 8.13.1.1 - Requirement 7.5.7.10 is redundant in that a manufactured system that includes an escape descent device would be classified as an Escape System – and therefore must meet all of the requirements of NFPA 1983 Section 7.11. Additionally, the requirement is incorrectly worded in that there is no torso used in the conduct of the test - thus the statement “shall not release the test torso” has no relevance.
   Requirement 7.6.3.9 applies to all escape descent control devices (those that are sold separately – not as part of a system). As the test is to be conducted with “each type of rope for its intended use” (NFPA 1983, Section 8.13.2.3) it follows that all escape descent control devices may have to be tested with all escape ropes – or the device would be limited to the type of rope with which it was tested. This would present an undue hardship on the manufacturers, and contribute to confusion on the part of the users in determining what ropes are suitable with each device.
   Requirement 8.13.1.1 is changed so the application of the test method is consistent with the performance requirements.
6. 7.6.3.12 - This performance requirement mandates the minimum breaking strength for these particular devices and is therefore a critical safety issue.
7. 7.11.6, 7.11.6.2, and 7.11.6.3 (New) - The change in 7.11.6 adds the requirement of thread heat resistance to fire escape systems.
   The change in 7.11.6.2 corrects the terminology from “escape anchors” to “fire escape system” as section 7.11.6 contains the requirements for fire escape systems and this requirement applies to the system not just the anchor.
   The addition of 7.11.6.3 adds the thread heat resistance test to threads used in the construction of fire escape systems. This was inadvertently omitted in the 2012 edition. Testing of thread in a fire escape system evaluates a critical safety property of the fire escape system. Using a thread that will not withstand heat can cause the system...
to fail under high heat conditions.
8. 7.15.1 and 7.15.2 - These requirements are currently located in NFPA 1983-2012 Section 8.6.4.5.6. As these parameters are utilized to determine pass/fail of the device they should be relocated to the Performance Requirements. Additionally, this is a manner of function requirement – not a breaking strength requirement. It is impossible to determine breaking strength without failure of the device or rope.
9. 7.17, 7.6.3.1.1 and 7.11.7 (New) - This added text is part of the requirements that apply to escape descent control devices and escape systems. As such, this language should appear with the group of performance requirements for descent control devices (Section 7.6.3) and escape systems (Section 7.11). Having this requirement separate and distinct from the other performance requirements for these devices/systems can lead to confusion and the possibility of neglect of the remainder of the requirements.
10. and 11. 8.15.5 and 8.15.6.1 -This change resolves a conflict with the requirements in 7.10.3 and 7.12.5.

Emergency Nature: This TIA seeks to correct errors and omissions that were overlooked during the Fall 2011 revision cycle process of NFPA 1983. Additionally, some parts of this TIA intend to offer to the public a benefit that would lessen a known hazard, and correct circumstances in which the standard could adversely affect impact on a product or method that was inadvertently overlooked in the total revision process.

Submitter Information Verification

Submitter Full Name: TC on FAE-SCE
Organization: TC on Special Operations Protective Clothing and Equipment
Street Address: 
City: 
State: 
Zip: 
Submittal Date: Mon Sep 09 09:50:59 EDT 2013
1. Revise Table 4.4.1 to read as follows:

<table>
<thead>
<tr>
<th>Product</th>
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<th>Time</th>
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</thead>
<tbody>
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<td>All component product</td>
<td>Corrosion testing</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>All component product</td>
<td>Product label durability testing</td>
<td>Initial cert only</td>
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<td>Life safety rope</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Water rescue throwlines</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Water rescue throwlines</td>
<td>Floatability</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety harness</td>
<td>Static</td>
<td>Alternating years with drop test</td>
</tr>
<tr>
<td>Life safety harness</td>
<td>Drop</td>
<td>Alternating years with static test</td>
</tr>
<tr>
<td>Belt</td>
<td>Static</td>
<td>Alternating years with drop test</td>
</tr>
<tr>
<td>Belt</td>
<td>Drop</td>
<td>Alternating years with static test</td>
</tr>
<tr>
<td>Auxiliary equipment carabiners and snap link</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment rope grab devices</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment system descent control devices – auto stop</td>
<td>Passive brake holding</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment system descent control devices – non-auto stop</td>
<td>Manner of function</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment system descent control devices – non-auto stop</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment portable anchor and rigging</td>
<td>Breaking Strength</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment manufactured systems</td>
<td>All</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope fibers</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape rope</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing</td>
<td>Perimeter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape webbing</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
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<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Moderate elongation laid life saving rope fibers</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
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<td>Fire escape webbing</td>
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<td>Escape webbing fibers</td>
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</tr>
<tr>
<td>Load-bearing textiles used in victim extrication devices</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in victim extrication devices</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
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</tr>
<tr>
<td>Webbing components</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread components</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
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<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
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<td>Load-bearing textiles used in belts with optional flame resistance</td>
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</tr>
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</table>

2. Revise 5.1.5.12 to read as follows:

5.1.5.12 In addition to the compliance specified in 5.1.5.9, rigging and anchor multiple configuration and end to end straps shall include the following additional statement on the product label:

For multiple configuration straps:

“MINIMUM BREAKING STRENGTH AND RATING ARE DETERMINED USING A BASKET (U) CONFIGURATION. IN ADDITION, THIS STRAP HAS A MINIMUM BREAKING STRENGTH OF:
___ kN IN A CHOKER CONFIGURATION
___ kN WHEN PULLED END TO END.”

For end to end straps:

“MINIMUM BREAKING STRENGTH OF
___ kN WHEN PULLED END TO END”

3. Add a new paragraph 5.2.10.6 as follows:
5.2.10.6 The manufacturer of moderate elongation laid life saving ropes that are certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of moderate elongation laid life saving rope and a list of items that the records need to contain.

4. Revise 7.4.6.1 and 7.5.6.1 to read as follows:

7.4.6.1 Where harnesses are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

7.5.6.1 Where belts are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

5. Delete paragraph 7.5.7.10 and 7.6.3.9 and renumber subsequent paragraphs; revise paragraph 8.13.1.1 as follows:

7.5.7.10 Where the manufactured system incorporates an escape descent control device that incorporates a passive or active breaking feature that creates friction between the device and the rope, the system shall be tested for maximum payout force as specified in Section 8.13, Payout Test, shall not release the test torso, and shall not exceed 90 N (20 lb).

7.6.3.9 Where the escape descent control device incorporates a passive or active breaking feature that creates friction between the device and the rope, the maximum force required to pay a specific type of rope through the descent control device shall be tested as specified in Section 8.13, Payout Test, and shall not exceed 90 N (20 lb).

8.13.1.1 This test shall apply to descent control systems with passive and active braking systems, and escape manufactured systems.

6. Add a new paragraph 7.6.3.12 as follows:

7.6.3.12 Technical use descent control devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure B, and shall have a minimum breaking strength of at least 13.5 kN (3034 lbf).

7. Revise 7.11.6, 7.11.6.2 and add new 7.11.6.3 to read as follows:

7.11.6 Where an escape system is designated as a fire escape system, additional tests as specified in 7.11.6.1, and 7.11.6.2, and 7.11.6.3 shall be conducted.

7.11.6.2 Where fire escape system anchors are represented as being flame resistant, materials, labels, and hardware shall be tested individually for heat resistance as specified in Section 8.17, Heat Resistance Test, and shall not melt, drip, separate, or ignite; hardware items shall remain functional.

7.11.6.3 Sewing thread utilized in the construction of fire escape systems shall be tested for heat resistance as specified in Section 8.18, Thread Heat Resistance Test, and shall not melt at or below a temperature of 260ºC (500ºF).

8. Revise paragraph 7.15.1 and 7.15.2 as follows:

7.15.1 Technical use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

7.15.2 General-use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m, and with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

9. Delete Section 7.17, and add new paragraphs 7.6.3.11 and 7.11.7 as follows:

7.17. Escape Descent Control Device Performance Requirements. Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or device, and shall remain functional.

7.6.3.11 Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.
7.11.7 Escape systems shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.

10. Revise 8.15.5 to read as follows:

8.15.5 Report. The time to failure shall be recorded from each test and the average and standard deviation calculated.

11. Delete 8.15.6.1 as follows:

8.15.6.1 Pass/fail performance shall be based on the average time to failure.

Submitter’s Substantiation:

1. Table 4.4.1 - The table is missing recertification for Moderate Elongation Life Saving Rope and includes several duplications and terminology errors.
2. 5.15.12 - The terminology in 5.1.5.12 is not consistent with the document. The terms “rigging and anchor” straps have been replaced with “multiple configuration and end to end” straps. The current required statement is incorrect for end to end straps in that they are not required to be tested in a U or choker configuration.
3. 5.2.10.6 - This added text is a requirement for other products covered by NFPA 1983 and provides users with valuable information on maintaining records for this life saving equipment.
4. 7.4.6.1 and 7.5.6.1 - The term “and hardware” was inadvertently added to these paragraphs. Additionally, the chart length requirement does not apply to hardware items, and there are no specific requirements for the testing of hardware items in the test method. The requirement as written in the current edition is inappropriate for hardware items, would be impossible to determine and could inhibit product certification.
5. 7.5.7.10, 7.6.3.9, and 8.13.1.1 - Requirement 7.5.7.10 is redundant in that a manufactured system that includes an escape descent device would be classified as an Escape System – and therefore must meet all of the requirements of NFPA 1983 Section 7.11. Additionally, the requirement is incorrectly worded in that there is no torso used in the conduct of the test - thus the statement “shall not release the test torso” has no relevance.
   Requirement 7.6.3.9 applies to all escape descent control devices (those that are sold separately – not as part of a system). As the test is to be conducted with “each type of rope for its intended use” (NFPA 1983, Section 8.13.2.3) it follows that all escape descent control devices may have to be tested with all escape ropes – or the device would be limited to the type of rope with which it was tested. This would present an undue hardship on the manufacturers, and contribute to confusion on the part of the users in determining what ropes are suitable with each device.
   Requirement 8.13.1.1 is changed so the application of the test method is consistent with the performance requirements.
6. 7.6.3.12 - This performance requirement mandates the minimum breaking strength for these particular devices and is therefore a critical safety issue.
7. 7.11.6, 7.11.6.2, and 7.11.6.3 (New) - The change in 7.11.6 adds the requirement of thread heat resistance to fire escape systems. The change in 7.11.6.2 corrects the terminology from “escape anchors” to “fire escape system” as section 7.11.6 contains the requirements for fire escape systems and this requirement applies to the system not just the anchor.
   The addition of 7.11.6.3 adds the thread heat resistance test to threads used in the construction of fire escape systems. This was inadvertently omitted in the 2012 edition. Testing of thread in a fire escape system evaluates a critical safety property of the fire escape system. Using a thread that will not withstand heat can cause the system to fail under high heat conditions.
8. 7.15.1 and 7.15.2 - These requirements are currently located in NFPA 1983-2012 Section 8.6.4.5.6. As these parameters are utilized to determine pass/fail of the device they should be relocated to the Performance Requirements. Additionally, this is a manner of function requirement – not a breaking strength requirement. It is impossible to determine breaking strength without failure of the device or rope.
9. 7.17, 7.6.3.1.1 and 7.11.7 (New) - This added text is part of the requirements that apply to escape descent control devices and escape systems. As such, this language should appear with the group of performance requirements for descent control devices (Section 7.6.3) and escape systems (Section 7.11). Having this requirement separate and distinct from the other performance requirements for these devices/systems can lead to confusion and the possibility of neglect of the remainder of the requirements.
10. and 11. 8.15.5 and 8.15.6.1 - This change resolves a conflict with the requirements in 7.10.3 and 7.12.5.

Emergency Nature: This TIA seeks to correct errors and omissions that were overlooked during the Fall 2011 revision cycle process of NFPA 1983. Additionally, some parts of this TIA intend to offer to the public a benefit that would lessen a known hazard, and correct circumstances in which the standard could adversely affect impact on a product or method that was inadvertently overlooked in the total revision process.
Public Input No. 12-NFPA 1983-2013 [Section No. 7.17]

7.17 - Escape Descent Control Device Performance Requirements.
Escape descent control devices and systems shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, shall have the maximum impact force not exceed 8.0 kN (1798.5 lbf), shall not damage the rope or device, and shall remain functional.

Additional Proposed Changes

<table>
<thead>
<tr>
<th>File Name</th>
<th>Description Approved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposed_TIA_1983_.docx</td>
<td>Balloted TIA</td>
</tr>
</tbody>
</table>

Statement of Problem and Substantiation for Public Input

Note: This Public Input originates from Tentative Interim Amendment 1983-12-1 (TIA 1076) issued by the Standards Council on October 30, 2012.

1. Table 4.4.1 - The table is missing recertification for Moderate Elongation Life Saving Rope and includes several duplications and terminology errors.
2. 5.1.5.12 - The terminology in 5.1.5.12 is not consistent with the document. The terms "rigging and anchor" straps have been replaced with "multiple configuration and end to end" straps. The current required statement is incorrect for end to end straps in that they are not required to be tested in a U or choker configuration.
3. 5.2.10.6 - This added text is a requirement for other products covered by NFPA 1983 and provides users with valuable information on maintaining records for this life saving equipment.
4. 7.4.6.1 and 7.5.6.1 - The term "and hardware" was inadvertently added to these paragraphs. Additionally, the char length requirement does not apply to hardware items, and there are no specific requirements for the testing of hardware items in the test method. The requirement as written in the current edition is inappropriate for hardware items, would be impossible to determine and could inhibit product certification.
5. 7.5.7.10, 7.6.3.9, and 8.13.1.1 - Requirement 7.5.7.10 is redundant in that a manufactured system that includes an escape descent device would be classified as an Escape System – and therefore must meet all of the requirements of NFPA 1983 Section 7.11. Additionally, the requirement is incorrectly worded in that there is no torso used in the conduct of the test - thus the statement "shall not release the test torso" has no relevance.
   Requirement 7.6.3.9 applies to all escape descent control devices (those that are sold separately – not as part of a system). As the test is to be conducted with "each type of rope for its intended use" (NFPA 1983, Section 8.13.2.3) it follows that all escape descent control devices may have to be tested with all escape ropes – or the device would be limited to the type of rope with which it was tested. This would present an undue hardship on the manufacturers, and contribute to confusion on the part of the users in determining what ropes are suitable with each device.
   Requirement 8.13.1.1 is changed so the application of the test method is consistent with the performance requirements.
6. 7.6.3.12 - This performance requirement mandates the minimum breaking strength for these particular devices and is therefore a critical safety issue.
7. 7.11.6, 7.11.6.2, and 7.11.6.3 (New) - The change in 7.11.6 adds the requirement of thread heat resistance to fire escape systems.
   The change in 7.11.6.2 corrects the terminology from "escape anchors" to "fire escape system" as section 7.11.6 contains the requirements for fire escape systems and this requirement applies to the system not just the anchor.
   The addition of 7.11.6.3 adds the thread heat resistance test to threads used in the construction of fire escape systems. This was inadvertently omitted in the 2012 edition. Testing of thread in a fire escape system evaluates a critical safety property of the fire escape system. Using a thread that will not withstand heat can cause the system to fail under high heat conditions.
8. 7.15.1 and 7.15.2 - These requirements are currently located in NFPA 1983-2012 Section 8.6.4.5.6. As these parameters are utilized to determine pass/fail of the device they should be relocated to the Performance Requirements. Additionally, this is a manner of function requirement – not a breaking strength requirement. It is impossible to determine breaking strength without failure of the device or rope.
9. 7.17, 7.6.3.1.1 and 7.11.7 (New) - This added text is part of the requirements that apply to escape descent control devices and escape systems. As such, this language should appear with the group of performance requirements for descent control devices (Section 7.6.3) and escape systems (Section 7.11). Having this
requirement separate and distinct from the other performance requirements for these devices/systems can lead to confusion and the possibility of neglect of the remainder of the requirements.

10. and 11. 8.15.5 and 8.15.6.1 - This change resolves a conflict with the requirements in 7.10.3 and 7.12.5.

Emergency Nature: This TIA seeks to correct errors and omissions that were overlooked during the Fall 2011 revision cycle process of NFPA 1983. Additionally, some parts of this TIA intend to offer to the public a benefit that would lessen a known hazard, and correct circumstances in which the standard could adversely affect impact on a product or method that was inadvertently overlooked in the total revision process.

Submitter Information Verification

Submitter Full Name: TC on FAE-SCE
Organization: TC on Special Operations Protective Clothing and Equipment
Street Address: TC on Special Operations Protective Clothing and Equipment
City:
State:
Zip:
Submittal Date: Mon Sep 09 09:53:15 EDT 2013
1. Revise Table 4.4.1 to read as follows:

<table>
<thead>
<tr>
<th>Product</th>
<th>Test</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>All component product</td>
<td>Corrosion testing</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>All component product</td>
<td>Product label durability testing</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>Life safety rope</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Water rescue Throwlines</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Water rescue Throwlines</td>
<td>Floatability</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety harness</td>
<td>Static</td>
<td>Alternating years with drop test</td>
</tr>
<tr>
<td>Life safety harness</td>
<td>Drop</td>
<td>Alternating years with static test</td>
</tr>
<tr>
<td>Belt</td>
<td>Static</td>
<td>Alternating years with drop test</td>
</tr>
<tr>
<td>Belt</td>
<td>Drop</td>
<td>Alternating years with static test</td>
</tr>
<tr>
<td>Auxiliary equipment Carabiners and snap link</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment Rope grab devices</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment system Descent control devices – auto stop</td>
<td>Passive brake Holding</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment system Descent control devices – auto stop</td>
<td>Manner of function</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment system Descent control devices – non-auto stop</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment Portable anchor systems</td>
<td>All</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>Auxiliary equipment Pulley</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment Pick-off, anchor and rigging</td>
<td>Breaking Strength</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment Manufactured systems</td>
<td>All</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape Systems</td>
<td>All</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape rope</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing</td>
<td>Perimeter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape webbing</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
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<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Moderate elongation laid life saving rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Moderate elongation laid life saving rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape webbing</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Victim extrication devices</td>
<td>Static</td>
<td>Every 2 years</td>
</tr>
</tbody>
</table>
2. Revise 5.1.5.12 to read as follows:

**5.1.5.12** In addition to the compliance specified in 5.1.5.9, rigging and anchor multiple configuration and end to end straps shall include the following additional statement on the product label:

For multiple configuration straps:

“**MINIMUM BREAKING STRENGTH AND RATING ARE DETERMINED USING A BASKET (U) CONFIGURATION. IN ADDITION, THIS STRAP HAS A MINIMUM BREAKING STRENGTH OF:**

___ kN IN A CHOKER CONFIGURATION

___ kN WHEN PULLED END TO END.”

For end to end straps:

“**MINIMUM BREAKING STRENGTH OF**

___ kN WHEN PULLED END TO END”

3. Add a new paragraph 5.2.10.6 as follows:

----------

<table>
<thead>
<tr>
<th>Litters</th>
<th>Litter strength test – vertical</th>
<th>Initial only/Alternating years with horizontal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Litter Strength test – horizontal</td>
<td>Initial only/Alternating years with vertical</td>
</tr>
<tr>
<td>Load-bearing textiles used in victim extrication devices</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in victim extrication devices</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Webbing components</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread components</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in belts with optional flame resistance</td>
<td>Flame resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in belts with optional flame resistance</td>
<td>Heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Hardware used in belts with optional flame resistance</td>
<td>Heat Resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in belts with optional flame resistance</td>
<td>Thread heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in life safety harnesses with optional flame resistance</td>
<td>Flame resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in life safety harnesses with optional flame resistance</td>
<td>Flame resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in life safety harnesses with optional flame resistance</td>
<td>Heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Hardware used in life safety harnesses with optional flame resistance</td>
<td>Heat Resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in life safety harnesses with optional flame resistance</td>
<td>Thread heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Manufacturer-supplied eye termination</td>
<td>Breaking strength</td>
<td>Every year</td>
</tr>
<tr>
<td>Manufacturer-supplied eye termination</td>
<td>Thread melting</td>
<td>Every year</td>
</tr>
</tbody>
</table>
5.2.10.6 The manufacturer of moderate elongation laid life saving ropes that are certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of moderate elongation laid life saving rope and a list of items that the records need to contain.

4. Revise 7.4.6.1 and 7.5.6.1 to read as follows:

7.4.6.1 Where harnesses are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

7.5.6.1 Where belts are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

5. Delete paragraph 7.5.7.10 and 7.6.3.9 and renumber subsequent paragraphs; revise paragraph 8.13.1.1 as follows:

7.5.7.10 Where the manufactured system incorporates an escape descent control device that incorporates a passive or active breaking feature that creates friction between the device and the rope, the system shall be tested for maximum payout force as specified in Section 8.13, Payout Test, shall not release the test torso, and shall not exceed 90 N (20 lb).

7.6.3.9 Where the escape descent control device incorporates a passive or active breaking feature that creates friction between the device and the rope, the maximum force required to pay a specific type of rope through the descent control device shall be tested as specified in Section 8.13, Payout Test, and shall not exceed 90 N (20 lb).

8.13.1.1 This test shall apply to descent control systems with passive and active braking systems, and escape manufactured systems.

6. Add a new paragraph 7.6.3.12 as follows:

7.6.3.12 Technical use descent control devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure B, and shall have a minimum breaking strength of at least 13.5 kN (3034 lbf).

7. Revise 7.11.6, 7.11.6.2 and add new 7.11.6.3 to read as follows:

7.11.6 Where an escape system is designated as a fire escape system, additional tests as specified in 7.11.6.1, and 7.11.6.2, and 7.11.6.3 shall be conducted.

7.11.6.2 Where fire escape system anchors are represented as being flame resistant, materials, labels, and hardware shall be tested individually for heat resistance as specified in Section 8.17, Heat Resistance Test, and shall not melt, drip, separate, or ignite; hardware items shall remain functional.

7.11.6.3 Sewing thread utilized in the construction of fire escape systems shall be tested for heat resistance as specified in Section 8.18, Thread Heat Resistance Test, and shall not melt at or below a temperature of 260ºC (500ºF).

8. Revise paragraph 7.15.1 and 7.15.2 as follows:

7.15.1 Technical use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

7.15.2 General-use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m, and with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

9. Delete Section 7.17, and add new paragraphs 7.6.3.11 and 7.11.7 as follows:

7.17 Escape Descent Control Device Performance Requirements. Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or device, and shall remain functional.

7.6.3.11 Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.
7.11.7 Escape systems shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.

10. Revise 8.15.5 to read as follows:

8.15.5 Report. The time to failure shall be recorded from each test and the average and standard deviation calculated.

11. Delete 8.15.6.1 as follows:

8.15.6.1 Pass/fail performance shall be based on the average time to failure.

Submitter’s Substantiation:
1. Table 4.4.1 - The table is missing recertification for Moderate Elongation Life Saving Rope and includes several duplications and terminology errors.
2. 5.1.5.12 - The terminology in 5.1.5.12 is not consistent with the document. The terms “rigging and anchor” straps have been replaced with “multiple configuration and end to end” straps. The current required statement is incorrect for end to end straps in that they are not required to be tested in a U or choker configuration.
3. 5.2.10.6 - This added text is a requirement for other products covered by NFPA 1983 and provides users with valuable information on maintaining records for this life saving equipment.
4. 7.4.6.1 and 7.5.6.1 - The term “and hardware” was inadvertently added to these paragraphs. Additionally, the char length requirement does not apply to hardware items, and there are no specific requirements for the testing of hardware items in the test method. The requirement as written in the current edition is inappropriate for hardware items, would be impossible to determine and could inhibit product certification.
5. 7.5.7.10, 7.6.3.9, and 8.13.1.1 - Requirement 7.5.7.10 is redundant in that a manufactured system that includes an escape descent device would be classified as an Escape System – and therefore must meet all of the requirements of NFPA 1983 Section 7.11. Additionally, the requirement is incorrectly worded in that there is no torso used in the conduct of the test - thus the statement “shall not release the test torso” has no relevance.

Requirement 7.6.3.9 applies to all escape descent control devices (those that are sold separately – not as part of a system). As the test is to be conducted with “each type of rope for its intended use” (NFPA 1983, Section 8.13.2.3) it follows that all escape descent control devices may have to be tested with all escape ropes – or the device would be limited to the type of rope with which it was tested. This would present an undue hardship on the manufacturers, and contribute to confusion on the part of the users in determining what ropes are suitable with each device.

Requirement 8.13.1.1 is changed so the application of the test method is consistent with the performance requirements.
6. 7.6.3.12 - This performance requirement mandates the minimum breaking strength for these particular devices and is therefore a critical safety issue.
7. 7.11.6, 7.11.6.2, and 7.11.6.3 (New) - The change in 7.11.6 adds the requirement of thread heat resistance to fire escape systems. The change in 7.11.6.2 corrects the terminology from “escape anchors” to “fire escape system” as section 7.11.6 contains the requirements for fire escape systems and this requirement applies to the system not just the anchor.

The addition of 7.11.6.3 adds the thread heat resistance test to threads used in the construction of fire escape systems. This was inadvertently omitted in the 2012 edition. Testing of thread in a fire escape system evaluates a critical safety property of the fire escape system. Using a thread that will not withstand heat can cause the system to fail under high heat conditions.
8. 7.15.1 and 7.15.2 - These requirements are currently located in NFPA 1983-2012 Section 8.6.4.5.6. As these parameters are utilized to determine pass/fail of the device they should be relocated to the Performance Requirements. Additionally, this is a manner of function requirement – not a breaking strength requirement. It is impossible to determine breaking strength without failure of the device or rope.
9. 7.17, 7.6.3.1.1 and 7.11.7 (New) - This added text is part of the requirements that apply to escape descent control devices and escape systems. As such, this language should appear with the group of performance requirements for descent control devices (Section 7.6.3) and escape systems (Section 7.11). Having this requirement separate and distinct from the other performance requirements for these devices/systems can lead to confusion and the possibility of neglect of the remainder of the requirements.
10. and 11. 8.15.5 and 8.15.6.1 -This change resolves a conflict with the requirements in 7.10.3 and 7.12.5.

Emergency Nature: This TIA seeks to correct errors and omissions that were overlooked during the Fall 2011 revision cycle process of NFPA 1983. Additionally, some parts of this TIA intend to offer to the public a benefit that would lessen a known hazard, and correct circumstances in which the standard could adversely affect impact on a product or method that was inadvertently overlooked in the total revision process.
Chapter 8 - Test Methods

8.1 - Sample Preparation Procedures.

8.1.1 - Application.

8.1.1.1 - The sample preparation procedures contained in this section shall apply to each test method in this chapter, as specifically referenced in the sample preparation section of each test method.

8.1.1.2 - Only the specific sample preparation procedure or procedures referenced in the sample preparation section of each test method shall be applied to that test method.

8.1.2 - Room Temperature Conditioning Procedure.

8.1.2.1 - Samples shall be conditioned at a temperature of 21°C ± 3°C (70°F ± 5°F) and a relative humidity of 65 percent ± 5 percent for at least 24 hours.

8.1.2.2 - Specimens shall be tested within 5 minutes after removal from conditioning.

8.2 - Rope Breaking and Elongation Test.

8.2.1 - Application.

8.2.1.1 - This test shall apply to life safety rope, moderate elongation laid life saving rope, escape rope, throwline, webbing, and manufacturer-supplied eye termination.

8.2.1.2 - Modifications to this test method for testing throwline shall be as specified in 8.2.7.

8.2.1.3 - Modifications to this test method for testing manufacturer-supplied eye termination shall be as specified in 8.2.8.

8.2.2 - Sample.

8.2.2.1 - Samples for conditioning shall be at least 1 m (1 yd) length of rope for each rope model.

8.2.2.2 - Samples shall be conditioned as specified in 8.1.2.

8.2.2.3 - All samples for each rope model shall be taken from the same production lot.

8.2.3 - Specimens.

8.2.3.1 - Specimens shall be as specified in Cordage Institute Standard CI 1801, Low Stretch and Static Kernmantle Life Safety Rope.

8.2.3.2 - A minimum of five specimens shall be tested.

8.2.4 - Procedure.

Specimens shall be tested for elongation and minimum breaking strength in accordance with Sections 8 and 9 of Cordage Institute Standard CI 1801, Low Stretch and Static Kernmantle Life Safety Rope.

8.2.5 - Report.

8.2.5.1 - The rope minimum breaking strength shall be determined by subtracting three standard deviations from the mean result of five samples from the same production lot and shall be reported to the nearest 1 N.
8.2.5.2

The standard deviation shall be calculated using the formula:

$$s = \sqrt{\frac{n(\sum x^2) - (\sum x)^2}{n(n - 1)}}$$

where:

- $s$ = standard deviation
- $n$ = number of samples
- $x$ = breaking strength

8.2.5.3

The elongation at 10 percent of the minimum breaking strength shall be reported to the nearest 0.1 percent.

8.2.5.4

The elongation at 1.35 kN (300 lbf), 2.7 kN (600 lbf), and 4.4 kN (1000 lbf) shall be reported to the nearest 0.1 percent.

8.2.6

Interpretation.

8.2.6.1

Pass/fail performance shall be based on the standard deviation from the mean breaking strength and the elongation at 10 percent of the minimum breaking strength.

8.2.6.1.1

The values obtained in 8.2.5.4 shall not be used to determine pass/fail.

8.2.6.2

One or more specimens failing this test shall constitute failing performance for the rope type.

8.2.7

Specific Requirements for Testing Throwline.

8.2.7.1

For specimens of throwline, only breaking strength testing shall be conducted.

8.2.7.2

Elongation shall not be evaluated.

8.2.8

Specific Requirements for Testing Manufacturer-Supplied Eye Termination.

8.2.8.1

For specimens of manufacturer-supplied eye terminations, only breaking strength testing shall be conducted.

8.2.8.2

Elongation shall not be evaluated.

8.2.8.3

Eye termination shall be connected to test apparatus with test pin.

8.2.8.4

Where testing is being conducted on manufacturer-supplied eye termination and the rope or webbing used in the manufacturer-supplied eye termination is certified as a life safety rope with a diameter of less than 12 mm as escape webbing, an escape rope, or a throwline, then a connector with a cross-sectional 6 mm ± 0.05 mm radii shall be used.

8.2.8.5

Where testing is being conducted on manufacturer-supplied eye termination and the rope used in the manufacturer-supplied eye termination is certified as a life safety rope with diameter of 12 mm or greater, then a connector with a cross-sectional 8 mm ± 0.05 mm radii shall be used.

8.3

Static Test.

8.3.1

Application.

8.3.1.1

This test shall apply to ladder belts, escape belts, and Class II and Class III life safety harness.

8.3.1.2

Each model of a belt or a life safety harness shall be tested in accordance with Table 8.3.1.2, as appropriate for the product.

Table 8.3.1.2 Static Test Matrix
<table>
<thead>
<tr>
<th>Test Class II</th>
<th>Class III</th>
<th>Ladder Belt</th>
<th>Victim Escape Belt</th>
<th>Class II Extrication Device</th>
<th>Class III Extrication Device</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
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<td>YES</td>
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<td>YES</td>
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<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
</tbody>
</table>

8.3.1.3 - Modifications to this test method for testing Class II harness shall be as specified in 8.3.8.
8.3.1.4 - Modifications to this test method for testing Class III harness shall be as specified in 8.3.9.
8.3.1.5 - Modifications to this test method for testing ladder belts shall be as specified in 8.3.10.
8.3.1.6 - Modifications to this test method for testing escape belts shall be as specified in 8.3.11.
8.3.1.7 - Modifications to this test method for testing positioning attachments shall be as specified in 8.3.12.
8.3.1.8 - Modifications to this test method for testing Class II victim extrication devices shall be as specified in 8.3.13.
8.3.1.9 - Modifications to this test method for testing Class III victim extrication devices shall be as specified in 8.3.14.

8.3.2 - Samples.
8.3.2.1 - Samples for conditioning shall be whole items.
8.3.2.2 - Samples shall be conditioned as specified in 8.1.2.
8.3.2.3 - Samples shall be new and in unused condition and shall conform in all respects to the manufacturer's specifications for the model being tested.

8.3.3 - Specimens.
8.3.3.1 - Specimens shall be whole items.
8.3.3.2 - A minimum of three specimens shall be tested for each test.
8.3.4 - Apparatus.
The rigid test torso specified in Figure 1 of ASTM F 1772, Standard Specification for Climbing Harnesses, shall be used with the following modifications, as shown in Figure 8.3.4:

1. The legs shall be 310 mm ± 30 mm (12 in. ± 1 in.) in length.
2. The distance between the inner thighs at the crotch shall be 50 mm ± 5 mm (2 in. ± 1/4 in.).

Figure 8.3.4 Outline of the Test Torso.

8.3.4.1 The test torso shall weigh 136 kg ± 1 kg (300 lb ± 2 1/4 lb).

8.3.4.2 The test torso with the sample harness attached shall be identified as the test mass.

8.3.5 Procedure.

8.3.5.1 The specimen shall be donned on the rigid test torso as specified in the manufacturer's user instructions.

8.3.5.2 The test mass shall be attached to the test machine at the load-bearing attachment point, in accordance with the manufacturer's instruction for use, with a suitable locking carabiner.

8.3.5.3 The test mass shall be properly positioned by pre-loading up to 800 N (181 lbf) with the test torso in the required position.
8.3.5.4
Under the load specified in 8.3.5.3, the load-bearing attachment point(s) shall be placed approximately symmetrically about the vertical axis of the test torso as shown in Figure 8.3.5.4.

Figure 8.3.5.4 Test Torso Orientations for Harness Test and Belt Test.

8.3.5.5
For the upright position, the test torso shall be oriented in an upright position. For the head-down position, the test torso shall be oriented in a head-down position. For the horizontal position, the test torso shall be oriented in a horizontal position supported by the neck and buttocks rings.

8.3.5.5.1
For the upright position, the force shall be applied to the buttocks ring, increasing to the specified load for the type of device over a period of 2 minutes +15/-0 seconds.

8.3.5.5.2
For the head-down position, the force shall be applied to the neck ring, increasing to the specified load for the type of device over a period of 2 minutes +15/-0 seconds.

8.3.5.5.3
For the horizontal position, the force shall be applied to the neck and buttocks rings in the plane of symmetry of the test torso and normal to its axis as shown in Figure 8.3.5.4, increasing to the specified load for the type of device over a period of 2 minutes +15/-0 seconds.

8.3.5.6
The specified load for the type of device being tested shall be held for 1 minute +15/-0 seconds and then tension shall be completely released over a maximum of 1 minute.

8.3.5.7
The specified load for the type of device being tested shall be reapplied immediately and held for 5 minutes +15/-0 seconds before release.
8.3.5.8
The sample shall be evaluated at the conclusion of each static test series.

8.3.6
Report.

8.3.6.1
For each position tested, any release from the test torso shall be reported.

8.3.6.2
For each position tested, the amount of slip of any buckles and adjustment devices shall be reported.

8.3.6.3
For each position tested, any visible signs of damage that would affect the function of the harness shall be reported.

8.3.6.4
Any methods of tie-off of webbing ends shall be reported.

8.3.7
Interpretation.

8.3.7.1
Any release from the test torso shall constitute failing performance.

8.3.7.2
The amount of slip of any buckles and adjustment devices shall be used to determine pass/fail.

8.3.8
Specific Requirements for Testing Class II Harness.

8.3.8.1
Class II harness shall be tested in the upright position, as specified in Table 8.3.1.2.

8.3.9
Specific Requirements for Testing Class III Harness.

8.3.9.1
Class III harness shall first be tested in the upright position, followed by the head-down position, as specified in Table 8.3.1.2.

8.3.10
Specific Requirements for Testing Ladder Belts.

8.3.10.1
Ladder belts shall first be tested in the upright position, followed by the horizontal position as specified in Table 8.3.1.2.

8.3.11
Specific Requirements for Testing Escape Belts.

8.3.11.1
Escape belts shall first be tested in the upright position, as specified in Table 8.3.1.2.

8.3.12
Specific Requirements for Testing Positioning Attachments.

8.3.12.1
Where used on ladder belts, side D-rings and attachment points designated by the manufacturer for use as positioning attachments only shall be tested as positioning attachments and shall be tested as specified in 8.3.5.5.1 for the upright position and 8.3.5.5.3 for the horizontal position.
8.3.12.1 The load applied for the upright position shall be 13 kN (2923 lbf) and the load applied for the horizontal position shall be 10 kN (2248 lbf).

8.3.12.2 Where used on escape belts and harnesses, side D-rings and attachment points designated by the manufacturer for use as positioning attachments only shall be tested as positioning attachments and shall be tested as specified in 8.3.5.5.1 for the upright position.

8.3.12.2.1 The load applied for the upright position shall be 13 kN (2923 lbf).

8.3.13 Specific Requirements for Testing Class II Victim Extrication Devices.

8.3.13.1 Class II victim extrication devices shall be tested in the upright position as specified in Table 8.3.1.2.

8.3.13.2 The load applied for the upright position shall be 16 kN (3597 lbf).

8.3.14 Specific Requirements for Testing Class III Victim Extrication Devices.

8.3.14.1 Class III victim extrication devices shall be tested in the upright position, followed by the head-down position, then followed by the horizontal position as specified in Table 8.3.1.2.

8.3.14.2 The load applied for the upright position shall be 16 kN (3597 lbf), and the load applied for the head-down and horizontal positions shall be 10 kN (2248 lbf).

8.4 Drop Test.

8.4.1 Application.

8.4.1.1 This test shall apply to life safety harness and escape belts.

8.4.1.2 Each model of escape belts or life safety harness shall be tested in accordance with Table 8.4.1.2 as appropriate for the type of belt and class of harness.

Table 8.4.1.2 Harness Drop Test Matrix

<table>
<thead>
<tr>
<th>Test</th>
<th>Class II</th>
<th>Class III</th>
<th>Ladder Belt</th>
<th>Escape Belt</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
</tr>
</tbody>
</table>

8.4.1.3 Modifications to this test method for testing escape belts shall be as specified in 8.4.8.

8.4.1.4 Modifications to this test method for testing life safety harness shall be as specified in 8.4.9.

8.4.2 Samples.

8.4.2.1 Samples for conditioning shall be whole items.

8.4.2.2 Samples shall be conditioned as specified in 8.1.2.

8.4.2.3 Samples shall be new and in unused condition and shall conform in all respects to the manufacturer's specifications for the model to be tested.

8.4.3 Specimens.

8.4.3.1 Specimens shall be whole items.

8.4.3.2 A total of three specimens shall be tested for each test.

8.4.4 Apparatus.
The rigid test torso specified in Figure 1 of ASTM F 1772, *Standard Specification for Climbing Harnesses*, shall be used with the following modifications, as shown in Figure 8.3.4:

1. The legs shall be 310 mm ± 30 mm (12 in. ± 1 in.) in length.
2. The distance between the inner thighs at the crotch shall be 50 mm ± 5 mm (2 in. ± 1/4 in.).

8.4.4.1.1 -
The test torso shall weigh 136 kg ± 1 kg (300 lb ± 2 1/4 lb).

8.4.4.1.2 -
The test torso with the sample harness attached shall be identified as the test mass.

8.4.4.2 -
A drop tower shall be used and shall have an anchorage point that shall not have a deflection greater than 1 mm (0.04 in.) when a force of 10 kN (2250 lbf) is applied.

8.4.4.3 -
A test lanyard shall be used to connect the load-bearing attachment point(s) to the test mass and shall be fabricated from Type 302 stainless steel, 7 × 19 aircraft cable construction in accordance with MIL-W-83420D, Military Specification: *General Specification for Flexible Wire Rope for Aircraft Control*.

8.4.4.3.1 -
The test lanyard shall be 9.5 mm (3/8 in.) in diameter and 1.2 m ± 13 mm (47 in. ± 1/2 in.) in length measured from bearing point to bearing point between snap hooks when the lanyard is under tension of 50 N (11 lbf).

8.4.4.3.2 -
The lanyard shall be equipped with a snap hook at each end.

8.4.4.3.3 -
The lanyard shall be connected to the load-bearing attachment point(s) of the test mass.

8.4.4.3.4 -
The lanyard ends shall be finished with swaged eyes in such a manner as to prevent slippage of the eyes and snap hooks that would change the length of the test lanyard.

8.4.5 - Procedure

8.4.5.1 -
The specimen shall be donned on the rigid test torso as specified in the manufacturer’s user instructions, and the test torso shall be connected to the drop tower anchorage point.

8.4.5.2 -
One end of the test lanyard shall be attached to a load-bearing attachment point, and the other end shall be attached to the anchorage.

8.4.5.3 -
The attachment point of the sample on the test mass shall be raised to and released from a point no more than 305 mm (12 in.) horizontally from the anchorage.

8.4.5.4 -
The attachment point of the sample on the test mass shall be in a position that will allow it to fall freely a distance of 1 m (39 in.) to a free-hanging position without interference or obstruction or striking the floor, ground, or any other object during the test.

8.4.6 - Report

For each sample tested during the drop test series, the result of each drop test shall be individually reported for each anchorage point.

8.4.6.1 -
Any methods of tie-off of webbing ends shall be reported.

8.4.7 - Interpretation

A specimen shall be considered to have failed the test if, during any one of the required drops for any sample, the test mass impacts the ground.

8.4.8 - Specific Requirements for Testing Escape Belts

8.4.8.1 -
Each model of belt shall be tested according to Table 8.4.1.2 for the appropriate belt type.
A minimum of two drop tests shall be conducted for each specimen.

8.4.8.2.1
The first drop test shall be conducted for each load-bearing attachment point with the test mass in a head-up position.

8.4.8.2.2
The second drop test shall be conducted for each load-bearing attachment point with the test mass in a head-down position.

8.4.8.2.3
A minimum of 5 minutes shall pass between consecutive drops.

8.4.9
Specific Requirements for Testing Life Safety Harness.

8.4.9.1
Each model of harness shall be tested according to Table 8.4.1.2 for the appropriate class harness.

8.4.9.2
A minimum of two drop tests shall be conducted for each specimen.

8.4.9.2.1
The first drop test shall be conducted for each load-bearing attachment point with the test mass in a head-up position.

8.4.9.2.2
The second drop test shall first be conducted for each load-bearing attachment point with the test mass in a head-down position.

8.4.9.2.3
A minimum of 5 minutes shall pass between consecutive drops.

8.5
Carabiner and Snap-Link Tensile Test.

8.5.1
Application.
This test method shall apply to all carabiners and snap links.

8.5.2
Samples.

8.5.2.1
Samples for conditioning shall be whole items.

8.5.2.2
Samples shall be conditioned as specified in 8.1.2.

8.5.2.3
Samples shall be new and in unused condition and shall conform in all respects to the manufacturer's specification for the model being tested.

8.5.2.4
Samples shall be taken from the same production lot for each model tested.

8.5.3
Specimens.

8.5.3.1
Specimens shall be whole items.

8.5.3.2
A total of five specimens shall be tested for each performance requirement.

8.5.3.3
A separate specimen shall be used for each test.

8.5.4
Procedure.
Test methods shall be conducted per ASTM F 1956, Standard Specification for Rescue Carabiners.

8.5.5
Report.

8.5.5.1
The breaking strength of each specimen shall be reported to the 0.1 kN (23 lb) of force.

8.5.5.2
An average breaking strength shall be calculated for each position tested.

8.5.5.3
The carabiner minimum breaking strength shall be determined by subtracting three standard deviations from the mean results of five samples from the same production lot and shall be reported to the nearest 0.1 kN (23 lb). The minimum breaking strength shall be provided on the product label as specified in Section 5.1, Product Label Requirements.
8.5.5.4
The standard deviation shall be calculated using the formula in 8.2.5.2.

8.5.6
Interpretation.

8.5.6.1
Pass/fail performance shall be based on the minimum breaking strength for each of the positions tested.

8.5.6.2
Failure in any position constitutes failure for the carabiner or snap link.

8.6
Manner of Function Tensile Test.

8.6.1
Application.

8.6.1.1
This test shall apply to ascending devices, rope grab devices, descent control devices, and belay devices.

8.6.1.2
Modifications to this test method for testing ascending devices and rope grab devices shall be as specified in 8.6.7.

8.6.1.3
Modifications to this test method for testing descent control devices shall be as specified in 8.6.8.

8.6.1.4
Modifications to this test method for testing belay devices shall be as specified in 8.6.4.5.

8.6.2
Samples.

8.6.2.1
Samples for conditioning shall be whole items.

8.6.2.2
Samples shall be conditioned as specified in 8.1.2.

8.6.2.3
Samples shall be new and in unused condition and shall conform in all respects to the manufacturer’s specifications for the model to be tested.

8.6.3
Specimens.

8.6.3.1
Specimens shall be whole items.

8.6.3.2
A total of five specimens shall be tested.

8.6.3.3
Each specimen shall be tested to both Procedure A and Procedure B.

8.6.4
Procedure.

8.6.4.1
Testing shall be conducted in the “manner of function” for the item being tested.

8.6.4.2
Testing shall be conducted using both the smallest and largest diameter life safety rope specified by the device manufacturer for testing.

8.6.4.2.1
Testing shall be conducted using a rope with the same NFPA designation as the device being tested, unless such rope is outside of the range of ropes that the manufacturer specifies for the safe and critical function of the device.

8.6.4.2.2
The rope used for testing shall meet the static rope requirements of Cordage Institute Standard CI 1801, Low Stretch and Static Kernmantle Life Safety Rope.

8.6.4.2.3
The device shall be attached to the rope according to the manufacturer’s instructions.

8.6.4.3
Procedure A.

8.6.4.3.1
One end of the rope shall be anchored on to a tensile testing machine and the device shall be anchored to the other end of the rope. The specified deformation force shall be applied to the device at the normal attachment point at a rate of 25 mm/min ± 5 mm/min (1 in./min ± 1/4 in./min).
8.6.4.3.2
The specified deformation force shall be held for 30 seconds +1/-0 second, and then the tension shall be completely released over a maximum of 1 minute.

8.6.4.3.3
The device shall then be inspected for damage to the device or to the rope used for testing.

8.6.4.4 - Procedure B.

8.6.4.4.1
Using the same item and test set up as in Procedure A, the load shall then be re-applied to the device until the breaking point of the device.

8.6.4.4.2
The force shall be applied at a rate of 25 mm/min ± 5 mm/min (1 in./min ± 1/4 in./min).

8.6.4.4.3
In the case of items that are designed to slip under high load, the rope shall be knotted or the device otherwise blocked to prevent slippage once the device has held at least 5 kN (1124 lbf) for technical use items and 9 kN (2023 lbf) for general use items.

8.6.4.5 - Procedure C.

8.6.4.5.1
The belay device shall be tested for function according to ASTM F 2436, Standard Test Method for Measuring the Performance of Synthetic Rope Rescue Belay Systems Using a Drop Test, as modified for this standard.

8.6.4.5.2
A rope that is 300 cm ± 0.5 cm shall be used between the bowline test–block contact and the most distal point of the gripping portion of the belay assembly.

8.6.4.5.3
A drop height of 60 cm ± 0.5 cm shall be used.

8.6.4.5.4
The test mass for a technical use belay device shall be 136 kg (300 lb).

8.6.4.5.5
The test mass for a general use belay device shall be 200 kg (617 lb).

8.6.4.5.6
The parameters specified in 8.6.4.5.6.1 and 8.6.4.5.6.2 shall be evaluated to determine pass/fail.

8.6.4.5.6.1
Maximum extension of the belay system shall be no more than 1 m ± 5 cm.

8.6.4.5.6.2
The device shall be able to release the load in a controlled manner.

8.6.5 - Report.

8.6.5.1
The condition of the item and the rope shall be recorded after the deformation load has been applied.

8.6.5.2
For Procedure C, the device shall be reported as technical use or general use.

8.6.5.3
The extension of the belay system shall be recorded.
Any damage to the rope, the belay device, or system components shall be recorded.

One or more specimens failing this test shall constitute failing performance for the item being tested.

Failure of the rope at a load less than the specified rope minimum breaking strength shall constitute failing performance.

Technical use ascent devices, rope grab devices, and escape manufactured systems shall be tested at a load of 5 kN (1124 lbf) for Procedure A.

General use ascending devices and rope grab devices shall be tested at a load of 11 kN (2500 lbf) for Procedure A.

Escape and technical use descent control devices shall be tested at a load of 5 kN (1124 lbf) for Procedure A.

The device shall be attached to the rope according to the manufacturer’s instructions in the locked-off mode of attachment.

General use descent control devices shall be tested at a load of 11 kN (2500 lbf) for Procedure A.

Breaking Strength Test.

This test shall apply to portable anchor devices, other auxiliary equipment, manufactured systems, pick-off straps, anchor straps, multiple configuration straps, and escape anchor devices.

Specific requirements for testing portable anchors shall be as specified in 8.7.8.

Specific requirements for testing pulleys shall be as specified in 8.7.9.

Specific requirements for testing auxiliary equipment systems, system components, and manufactured systems shall be as specified in 8.7.10.

Specific requirements for testing end-to-end straps shall be as specified in 8.7.11.

Specific requirements for testing escape anchor devices shall be as specified in 8.7.13.

Specific requirements for testing multiple configuration straps shall be as specified in 8.7.12.

Samples.

Samples for conditioning shall be whole items or systems.

Samples shall be conditioned as specified in 8.1.2.

Samples shall be new and in unused condition and shall conform in all respects to the manufacturer's specifications for the model being tested.

Specimens shall be whole items or systems.
8.7.3.2
A total of five specimens shall be tested.

8.7.4  Procedure A.

8.7.4.1
The device shall be positioned as required for the type of device being tested in the lowest strength configuration of the device as specified by the manufacturer.

8.7.4.2
A force shall be applied to the device, increasing to the load specified at a rate of 25 mm/min ± 5 mm/min (1 in./min ± ¼ in./min).

8.7.4.3
The force shall be held for 30 seconds, ± 1.0 second, and then the tension shall be completely released over a maximum of 1 minute.

8.7.4.4
The force shall be reapplied immediately and shall be increased to the same maximum force as previously exerted and held for 1 minute ±15/-0 seconds before release.

8.7.4.5
At the conclusion of Procedure A, the specimen device shall be inspected for deformation.

8.7.5  Procedure B.

8.7.5.1
Using a new specimen and the test set up as in Procedure A, the load shall be reapplied to the lowest strength configuration of the device as specified by the manufacturer until the breaking point of the device.

8.7.5.2
The force shall be applied at a rate of 25 mm/min ± 5 mm/min (1 in./min ± ¼ in./min).

8.7.5.3
During testing, where the rope breaks before the device and that breaking strength exceeds the designated use rating required for escape, technical use, or general use, then pins shall be permitted to be used to determine minimum breaking strength.

8.7.6  Report.

8.7.6.1
The minimum breaking strength shall be determined by subtracting three standard deviations from the mean results of five samples from the same production lot and shall be reported to the nearest 0.1 kN (23 lbf). The minimum breaking strength shall be provided on the product label as specified in Section 5.1.

8.7.6.2
The standard deviation shall be calculated using the formula in 8.2.5.2.

8.7.6.3
The deflection of the load-bearing members from their original position shall be recorded.

8.7.6.4
The functionality of adjustment and moving parts shall be recorded.

8.7.6.5
Where applicable, the movement of all base contact points from their original positions shall be recorded.

8.7.6.6
Any condition that would cause the safety of the user to be compromised shall be recorded.

8.7.6.7
Any fracture of the load-bearing members, collapse, or other condition that would cause the user to be dropped shall be reported.

8.7.6.8
The configuration of the attachment of the device to the testing machine shall be recorded and reported.

8.7.7  Interpretation.

One or more specimens failing this test shall constitute failing performance for the item being tested.

8.7.8  Specific Requirements for Testing Portable Anchors.

8.7.8.1
Two specimens shall be tested.
8.7.8.2
Where there are multiple load-bearing attachment points, Procedure A and Procedure B shall be repeated for each combination of load-bearing attachment points specified in the manufacturer's instructions.

8.7.8.3
The device shall be attached to the test machine at the load-bearing attachment point, in accordance with the manufacturer's instructions for use, with a suitable locking carabiner.

8.7.8.4
Before testing, the device shall be positioned with all surface contact points securely seated on a flat, unfinished concrete surface in the manner described by the manufacturer's instructions.

8.7.8.5
Where portable anchor devices are designed to be affixed to a base that is not part of the device, the manufacturer shall provide a test base that most closely resembles the structural element to which the device is designed to be affixed.

8.7.8.5.1
The test base shall be completely stable and shall be permitted to be bolted down to prevent movement during the test.

8.7.8.6
The portable anchor device shall be accompanied by all adjuncts required for use as described by the manufacturer's instructions for use.

8.7.8.6.1
Devices shall not be bolted to, tied off, or affixed to the test base in any way unless required to be by the manufacturer for normal use.

8.7.8.6.2
All adjuncts designed by the manufacturer to be used in conjunction with the device, including but not limited to ropes, chains, webbing, rope grabs, and bolts, shall be in place during the test.

8.7.8.7
For Procedure B, each point of contact with the test surface shall be marked in some manner to allow the ability to assess movement of the base during the test.

8.7.8.7.1
For Procedure B, the force specified in 7.6.4.3 for technical use and 7.6.4.4 for general use shall be applied and held for 2 minutes +15/-0 seconds, using the lower of the actual to pass/fail.

8.7.8.8
The test load used for Procedure A shall be 5 kN (1124 lbf) for technical use portable anchors and 13 kN (2923 lbf) for general use portable anchors.

8.7.8.9
For the report, breaking strength shall be the strength specified in 7.6.4.3 for technical use and 7.6.4.4 for general use.

8.7.9
Specific Requirements for Testing Pulleys.

8.7.9.1
Pulleys shall be tested using a wire rope with a diameter equal to or less than the maximum size of rope specified for the pulley and of sufficient strength. The wire rope shall include a swaged loop that fits the pulley being tested.
Tension shall be applied between the wire rope loop and a 12.5 mm (\(\frac{1}{2}\) in.) pin through the pulley carabiner hole as specified in Figure 8.7.9.2 until failure.

Figure 8.7.9.2 Pulley Tensile Test.
8.7.9.3  Fixture design and device placement in fixture shall not allow the fixture to interfere with the pulley during the test.

8.7.9.4  Pulleys with two or more sheaves shall have a single rope looped around all sheaves and the load applied to each loop.

8.7.9.5  Pulleys that include a becket at the bottom of the pulley shall have the becket tested by applying a load longitudinally between the carabiner hole and the becket.

8.7.9.6  The test load used for Procedure A shall be 5 kN (1124 lbf) for technical use pulleys and 22 kN (4946 lbf) for general use pulleys.

8.7.10  Specific Requirements for Auxiliary Equipment Systems, System Components, and Manufactured Systems.

8.7.10.1  Only Procedure B shall be conducted on auxiliary equipment systems, system components, and manufactured systems.

8.7.10.2  Auxiliary equipment and manufactured systems shall be tested using a rope with a diameter of the smallest and largest size specified by the auxiliary equipment manufacturer.

8.7.10.3  Where there are multiple load-bearing attachment points, Procedure B shall be repeated for each combination of load-bearing attachment points specified in the manufacturer's instructions.

8.7.10.4  The device shall be attached to the test machine at the load-bearing connecting point, in accordance with the manufacturer's instructions for use.

8.7.10.5  For all tests, the device shall be accompanied by all equipment required for use as described by the manufacturer's instructions for use.

8.7.10.6  Only the requirements specified in 8.7.6.1 shall be reported.

8.7.11  Specific Requirements for Testing End-to-End Straps.

8.7.11.1  Only Procedure B shall be conducted on end-to-end straps.

8.7.11.2  Testing shall be conducted using 13 mm ± 1 mm (1⁄2 in. ± 1⁄8 in.) pins, bolts, or shackles. The test fixture shall be designed such that the strap is free to locate itself on the test pins when the force is applied.

8.7.11.3  A test pin cross section shall be permitted to be other than round. Any cross section necessary to prevent test pin failure or any design to prevent test pin rotation shall be permitted, as long as the contact point between the test pin and strap attachment point has the specified radius, material type, hardness, and surface roughness as per ASTM F 1956, Standard Specification for Rescue Carabiners, Section 5.2.1.

8.7.11.4  The test fixture shall be designed to prevent the test pins from rotating such that the strap is free to locate itself on the test pins when force is applied.

8.7.11.5  Where the strap is adjustable in length, the strap shall be tested in the shortest length that places the adjustment device free of any interference of the test fixture.

8.7.11.6  Technical use and general end-to-end and load-releasing straps shall be individually tested in the end-to-end configuration.

8.7.11.7  Where the strap is adjustable in length, the slippage of the adjustment device shall be measured and reported upon completion of the test.

8.7.12  Specific Requirements for Testing Multiple Configuration Straps.
8.7.12.1
Only Procedure B shall be conducted on multiple configuration straps.

8.7.12.2
Testing shall be conducted using 13 mm ± 1 mm (1/2 in. ± 1/8 in.) pins, bolts, or shackles. The test fixture shall be designed such that the strap is free to locate itself on the test pins when the force is applied.

8.7.12.3
Test pin cross section shall be permitted to be other than round. Any cross section necessary to prevent test pin failure or any design to prevent test pin rotation shall be permitted as long as the contact point between the test pin and strap attachment point has the specified radius, material type, hardness, and surface roughness as per ASTM F 1956, Standard Specification for Rescue Carabiners, Section 5.2.1.

8.7.12.4
The test fixture shall be designed to prevent the test pins from rotating such that the strap is free to locate itself on the test pins when force is applied.

8.7.12.5
Where the strap is adjustable in length, the strap shall be tested in the shortest length that places the adjustment device free of any interference of the test fixture.

8.7.12.6
Technical use and general use multiple configuration straps shall be individually tested in the basket (U) configuration, the end-to-end configuration, and the choker configuration.

8.7.12.7
For technical use and general use multiple configuration straps, all configuration values shall be reported on the product label. Only the basket (U) configuration value shall be utilized to determine pass/fail.

8.7.13
Specific Requirements for Escape Anchor Devices.

8.7.13.1
Only Procedure B shall be conducted on escape anchor devices.

8.7.13.2
Escape anchor devices with a single point of contact shall be supported to prevent twisting when loaded in such a way that the load is applied in the weakest configuration. The support shall not prevent the device from deforming under load or from releasing from the structure due to deformation or breaking.

8.7.13.3
Escape anchor devices that use two or more points of contact shall have the load applied in the weakest configuration when used in accordance with the manufacturer's instructions.

8.7.13.4
The escape anchor device shall fail the Procedure B test if the device breaks or deforms such that it releases from the supporting structure.

8.7.13.5
Only the requirements specified in 8.7.6.1 shall be reported.

8.8
Corrosion Resistance Test.

8.8.1
Application.

This test shall apply to all metal hardware and hardware that includes metal parts.

8.8.2
Samples.

8.8.2.1
Samples for conditioning shall be metal hardware or hardware that includes metal parts.

8.8.2.2
Samples shall be conditioned as specified in 8.1.2.

8.8.3
Specimens.

8.8.3.1
Specimens shall be metal hardware or hardware that includes metal parts.

8.8.3.2
Five specimens of each hardware type shall be tested.

8.8.4
Procedure.

8.8.4.1
Specimens shall be tested in accordance with ASTM B 117, Standard Practice for Operating Salt Spray (Fog) Apparatus. Salt spray shall be 5 percent saline solution, and test exposure shall be for 50 hours.
Immediately following the test exposure and prior to examination, specimens shall be rinsed under warm, running tap water and dried with compressed air.

Specimens shall then be examined visually by the unaided eye to determine pass/fail.

The functionality of each specimen shall be evaluated.

The presence of corrosion and the functionality of each specimen shall be reported.

One or more hardware specimens failing this test shall constitute failing performance for the hardware type.

This test shall apply to throwline.

Samples for conditioning shall be at least 1 m (1 yd) in length.

Samples shall be conditioned as specified in 8.1.2.

Specimens shall be 1 m (1 yd) in length.

A minimum of three specimens shall be tested.

The ends of the specimen shall be heat-sealed.

Specimens shall be completely immersed in a sufficiently sized vessel of fresh water at a temperature of 21°C ± 3°C (70°F ± 5°F) for a period of 24 hours ±1/0 hour.

The throwline shall then be allowed, over a maximum of 1 minute, to float to the surface.

Observation of each specimen’s ability to float within 1 minute shall be reported.

The entire length of the throwline shall float to constitute passing performance.

This test method shall apply to permanently attached product labels and identification tapes, excluding metal stamped or engraved labels.

Specific requirements for testing rope and throwline identification tapes shall be specified in 8.10.7.

Specific requirements for testing all other labels shall be specified in 8.10.8.

Samples for conditioning shall be individual labels or, in the case of rope or throwline, at least 1 m (1 yd) in length.

Samples shall be conditioned as specified in 8.1.2.

Specimens shall be individual labels or, in the case of rope or throwline, 1 m (1 yd) in length.
A minimum of four of each type of label shall be tested.

Where labels have “write-in” information, two additional specimens shall be tested that include those areas with sample information written in.

### Procedures

#### Abrasion Durability Test

Product label specimens shall be subjected to abrasion in accordance with ASTM D 4966, *Standard Test Method for Abrasion Resistance of Textile Fabrics,* with the following modifications:

1. The standard abrasive fabric and the felt-backing fabric shall be soaked for 24 hours or agitated in distilled water so that they are thoroughly wet.
2. The standard abrasive fabric shall be rewetted after each set of cycles by applying 20 ml (0.68 oz) of distilled water from a squeeze bottle by squirting on the center of the abrasive pad.
3. At least two specimens shall be subjected to 10 dry cycles, 160 revolutions, of the test apparatus.
4. At least two specimens shall be subjected to 5 wet cycles, 80 revolutions, of the test apparatus.
5. At least one dry and one wet test specimen shall be edge specimens.
6. Where labels include “write-in” information at least one sample shall be tested in the dry condition and one specimen shall be tested in the wet condition.

#### Laundering Durability Test

Specimens shall be subjected to five cycles of laundering using Machine Cycle 1 and Wash Temperature V of AATCC 135, *Dimensional Changes in Automatic Home Laundering of Woven and Knit Fabrics*.

A 1.8 kg ± 0.1 kg (4.0 lb ± 1/4 lb) load shall be used. A laundry bag shall not be used.

Specimens shall be examined for legibility to the unaided eye by a person with 20/20 vision or vision corrected to 20/20 at a nominal distance of 305 mm (12 in.) in a well-illuminated area.

Specimens shall be examined to determine if the label remained in place.

The legibility for each specimen shall be recorded and reported as acceptable or unacceptable.

For rope and throwline, the ability of the label to remain in place shall be reported.

One or more label specimens failing this test shall constitute failing performance.

All rope and throwline inserted identification tapes shall be tested only for laundering durability as specified in 8.10.4.2.

All harness and belt product labels shall be tested only for abrasion durability as specified in 8.10.4.1.

Descent control devices shall be tested in accordance with ISO 22159, *Personal equipment for protection against falls — Descending Devices,* Section 5.5.

#### Report

The legibility for each specimen shall be recorded and reported as acceptable or unacceptable.

The ability of the label to remain in place shall be reported.

One or more label specimens failing this test shall constitute failing performance.

All rope and throwline inserted identification tapes shall be tested only for laundering durability as specified in 8.10.4.2.

All harness and belt product labels shall be tested only for abrasion durability as specified in 8.10.4.1.

Descent control devices shall be tested in accordance with ISO 22159, *Personal equipment for protection against falls — Descending Devices,* Section 5.5.
8.11.2.1 Samples for conditioning shall be whole items.
8.11.2.2 Samples shall be conditioned as specified in 8.1.2.
8.11.2.3 Samples shall be new and in unused condition and shall conform in all respects to the manufacturer's specifications for the model being tested.

8.11.3 Specimens.
8.11.3.1 Specimens shall be whole items.
8.11.3.2 Three specimens shall be tested.

8.11.4 Procedure.
8.11.4.1 Testing shall be conducted using both the smallest and largest diameter life safety rope specified by the descent control device manufacturer for testing.
8.11.4.2 The rope used for testing shall meet the static rope requirements of Cordage Institute Standard CI 1801, Low Stretch and Static Kernmantle Life Safety Rope.
8.11.4.3 The descent control device shall be attached to the rope according to the manufacturer's instructions.
8.11.4.4 One end of the rope shall be anchored on to a tensile testing machine and the descent control device with passive brake deployed shall be anchored to the other end of the rope. A force shall be applied to the device at the normal attachment point at a rate of 25 mm/min ± 5 mm/min (1 in./min ± 1/4 in./min).
8.11.4.4.1 The force for escape and technical use descent control devices shall be 1.35 kN (300 lbf) and for general use descent control devices shall be 2.7 kN (600 lbf).
8.11.4.5 The specified deformation force shall be held for 30 seconds ± 1/0 second, and then the tension shall be completely released over a maximum of 1 minute.
8.11.4.5.1 Any slippage of the descent control device on the rope shall then be measured.

8.11.5 Report.
The slip of the descent device at the specified load shall be reported.

8.11.6 Interpretation.
One or more specimens failing this test shall constitute failing performance for the item being tested.

8.12 Litter Strength Test.
8.12.1 Application.
This test shall apply to litters.
8.12.2 Samples.
8.12.2.1 Samples for conditioning shall be whole items.
8.12.2.2 Samples shall be conditioned as specified in 8.1.2.
8.12.2.3 Samples shall be new and in unused condition and shall conform in all respects to the manufacturer's specifications for the model being tested.
8.12.3 Specimens.
8.12.3.1 Specimens shall be whole items.
8.12.3.2 A minimum of two specimens shall be tested in the horizontal position.
8.12.3.3  A minimum of two specimens shall be tested in the vertical position.

8.12.4  Apparatus.
The apparatus shall be as specified in ASTM F 2821, Standard Test Methods for Basket Type Rescue Litters.

8.12.5  Procedure.
Litters shall be tested as specified in ASTM F 2821, Standard Test Methods for Basket Type Rescue Litters, with the modification that both the horizontal litter test and the vertical litter test shall be performed on separate specimens.

8.12.6  Report.
8.12.6.1  The breaking strength of each specimen shall be reported to the nearest 0.1 kN (23 lbf) force.
8.12.6.2  Deformation of the structural element shall be reported to the nearest 0.5 cm (0.2 in.).
8.12.6.3  The lowest observed breaking strength shall be reported as the labeled breaking strength for each vertical and horizontal configuration.

8.12.7  Interpretation.
8.12.7.1  Failure of the device prior to the application of the 11 kN (2473 lbf) test load shall constitute failure of the litter.
8.12.7.2  Deformation of any structural element of more than 5 cm ± 0.5 cm (2 in. ± 0.2 in.) during testing shall constitute failure of the litter.

8.13  Payout Test.
8.13.1  Application.
8.13.1.1  This test shall apply to descent control systems with passive and active braking systems, and escape manufactured systems.

8.13.2  Samples.
8.13.2.1  Samples shall be new and in unused condition and shall conform in all respects to the manufacturer’s specifications for the model to be tested.
8.13.2.2  The rope length available for testing shall be at least 1.5 m (5 ft).
8.13.2.3  The descent control system shall be tested with each type of rope for its intended use.
8.13.2.4  If multiple configurations are possible with the descent control device, it shall be tested in each configuration.

8.13.3  Specimens.
8.13.3.1  Specimens shall be whole items.
8.13.3.2  A total of three specimens shall be tested and each test repeated 5 times.
8.13.4  Procedure.
8.13.4.1  Specimens shall be tested in a servohydraulic or screw-driven load frame with a controlled-displacement rate of 100 mm/sec.
8.13.4.2  For descent control devices with the capability to vary friction with the rope, the device shall be locked open in the configuration the manufacturer recommends for actual use. The manner of locking the device shall not affect the load measurement during payout.
8.13.4.3 - The rope shall be attached to a solid anchorage point and the descent control device attached to the moving crosshead of the load frame. The rope shall enter the descent device directly without creating additional friction throughout the test.

8.13.4.4 - Each test shall require the rope to pass through the descent control device for a minimum of 100 mm (4 in.).

8.13.5 - Report.
The maximum force encountered over the 100 mm (4 in.) payout shall be recorded from each test and the average and standard deviation calculated.

8.13.6 - Interpretation.
8.13.6.1 - Pass/fail performance shall be based on the maximum force required to payout rope through the descent control device.

8.13.6.2 - One or more specimens failing this test shall constitute a failing performance for the given rope type.

8.13.6.3 - If multiple configurations are possible with the descent control device, the pass/fail criteria shall be applied for each configuration.

8.13.6.4 - The compliant configuration shall be listed in the user instructions.

8.14 - Escape Descent Control Device and Systems Drop Test.
This test shall apply to escape descent control devices and escape manufactured systems.

8.14.2 - Samples.
8.14.2.1 - Samples for conditioning shall be whole items.

8.14.2.2 - Samples shall be conditioned as specified in 8.1.2.

8.14.2.3 - Samples shall be new and in unused condition and shall conform in all respects to the manufacturer’s specifications for the model to be tested.

8.14.3 - Specimens.
8.14.3.1 - A minimum of two specimens shall be tested.

8.14.3.2 - One drop shall be conducted for each specimen.

8.14.4 - Procedure.
8.14.4.1 - Testing shall be conducted per ISO 22159, *Personal equipment for protection against falls — Descending devices*, Section 5.6, with the modifications specified in 8.14.4.1.1 through 8.14.4.1.4.

8.14.4.1.1 - A force measurement device as described in ISO 22159, *Personal equipment for protection against falls — Descending devices*, Section 5.1.2, shall be installed between the test mass and the descent control device.

8.14.4.1.2 - The entire test mass, consisting of the falling mass itself, the attachment device(s), and force-measuring device shall weigh 136 kg ± 1 kg (300 lb ± 2.25 lb).

8.14.4.1.3 - On a descent control device, the length of rope between the lowest point of the top anchor and the top entry point of the rope shall be 610 mm -0/+25 mm (24 in. -0/+1 in.).

8.14.4.1.4 - The test mass shall be positioned to allow for a free fall of 153 mm -0/+13 mm (6 in. -0/+1/2 in.).

8.14.4.2 - Following each drop, the device and the rope shall be visually examined for damage and functionality.
8.14.5.1 - The maximum impact force shall be reported to the nearest 0.1 kN.
8.14.5.2 - Any visible damage to the device or rope shall be reported.
8.14.5.3 - Functionality of the device shall be reported.

8.14.6 - Interpretation.
8.14.6.1 - A recorded impact force in excess of 8.0 kN shall constitute failing performance.
8.14.6.2 - Visible damage to device or rope shall constitute failing performance.
8.14.6.3 - Failure of the device to function shall constitute failing performance.
8.14.6.4 - One or more specimens failing the test shall constitute failing performance.

8.15 - Elevated Temperature Rope Test.
8.15.1 - Application.
8.15.1.1 - This test shall apply to fire escape rope and fire escape webbing.

8.15.2 - Samples.
Samples shall be new and in unused condition and shall conform in all respects to the manufacturer's specifications for the model to be tested.

8.15.3 - Specimens.
8.15.3.1 - Specimens shall be whole items.
8.15.3.2 - A total of five specimens shall be tested.

8.15.4 - Procedure.
8.15.4.1 - Specimens shall be tested in a manner that allows a constant load to be applied to the rope throughout the duration of the test after stabilization. One end of the rope shall be attached to a load cell, while the other shall be attached to an apparatus that allows constant load application.
8.15.4.2 - Rope specimens shall be introduced into the high temperature furnace at the given set point ±5°C and the load stabilized within 5 seconds of introduction.
8.15.4.3 - A thermocouple shall be attached to the rope at the location of the maximum temperature of the furnace (i.e., middle for horizontal furnace, top for vertical furnace). The exposure time begins when the thermocouple reading increases by 10 percent from room temperature and ends when the load cell reading drops to 0 upon failure of the rope.

8.15.5 - Report.
The time to failure shall be recorded from each test and the average and standard deviation calculated.

8.15.6 - Interpretation.
8.15.6.1 - Pass/fail performance shall be based on the average time to failure.
8.15.6.2 - One or more specimens failing this test shall constitute a failing performance for the given rope type.

8.16 - Flame Resistance Test.
8.16.1 - Application.
8.16.1.1 - This test method shall apply to flame-resistant life safety harness and belt webbing and materials.

8.16.2 - Modifications to this test method for testing webbing shall be as specified in 8.16.8.
8.16.2 - Samples.
Samples shall consist of a 75 mm × 300 mm (3 in. × 12 in.) rectangle with the long dimension parallel to either the warp or filling, the wale or course, or the machine or cross-machine direction of the material.

8.16.3 - Specimens.
All specimens to be tested shall be conditioned as specified in 8.1.2.

8.16.4 - Apparatus.
The test apparatus specified in ASTM D 6413, Standard Test Method for Flame Resistance of Textiles (Vertical Test), shall be used.

8.16.5 - Procedure.
8.16.5.1 - Flame-resistance testing shall be performed in accordance with ASTM D 6413, Standard Test Method for Flame Resistance of Textiles (Vertical Test).

8.16.5.2 - Each specimen shall be examined for evidence of melting or dripping.

8.16.6 - Report.
8.16.6.1 - Afterflame time and char length shall be recorded and reported for each specimen. The average afterflame time and char length for each material tested shall be calculated, reported, and recorded. The afterflame time shall be recorded and reported to the nearest 0.2 second and the char length to the nearest 3 mm (\(\frac{1}{8}\) in.).

8.16.6.2 - Observations of melting or dripping for each specimen shall be recorded and reported.

8.16.7 - Interpretation.
Pass or fail performance shall be based on any observed melting or dripping, the average afterflame time, and the average char length.

8.16.8 - Specific Requirements for Testing Fire Escape Webbing.
8.16.8.1 - Five specimens of the webbing material shall be tested.

8.16.8.2 - Webbing shall be at least 305 mm (12 in.) in length by the widest width of the webbing.

8.16.8.3 - Testing shall be performed in only one direction.

8.16.8.4 - Testing shall be performed as specified in 8.16.2 through 8.16.7.

8.17.1 - Application.

8.17.1.1 - This test method shall apply to flame resistant life safety harness and belt webbing, materials, labels, and hardware.

8.17.1.2 - Modifications to this test method for testing webbing shall be as specified in 8.16.8.

8.17.2 - Samples.
All samples shall be conditioned as specified in 8.1.2.

8.17.3 - Specimens.

8.17.3.1 - Heat resistance testing shall be conducted on a minimum of three specimens for each item.

8.17.4 - Apparatus.
The test oven shall be as specified in ISO 17493, Clothing and equipment for protection against heat — Test method for convective heat resistance using a hot air circulating oven. Testing shall be carried out at a temperature of 260°C ±6/0°C (500°F ±10/0°F).

8.17.5 - Procedure.
8.17.5.1
The specimen shall be suspended by metal hooks at the top and centered in the oven so that the entire specimen is not less than 50 mm (2 in.) from any oven surface or other specimen and air is parallel to the plane of the material.

8.17.5.2
The oven door shall not remain open more than 15 seconds. The air circulation shall be shut off while the door is open and turned on when the door is closed. The total oven recovery time after the door is closed shall not exceed 30 seconds.

8.17.5.3
The specimen mounted as specified, shall be exposed in the test oven for 5 minutes ±0.15/-0 minute. The test exposure time shall begin when the test thermocouple recovers to a temperature of 260°C ±6°/0°C (500°F ±10°/0°F).

8.17.5.4
Immediately after the specified exposure, the specimen shall be removed and examined for evidence of ignition, melting, dripping, or separation.

8.17.6
Report.
Observations of ignition, melting, dripping, or separation shall be recorded and reported for each specimen.

8.17.7
Interpretation.
Where applicable, any evidence of ignition, melting, dripping, or separation on any specimen shall constitute failing performance.

8.17.8
Specific Requirements for Testing Webbing.

8.17.8.1
Samples for conditioning shall include specimens at least 380 mm (15 in.) in length.

8.17.8.2
Testing shall be performed as specified in 8.17.2 through 8.17.7.

8.17.9
Specific Requirements for Testing Label Materials.

8.17.9.1
Where attached to textile material, samples for conditioning shall include specimens attached to the textile layer as used in the harness or belt positioned no closer than 50 mm (2 in.) apart in parallel strips. The textile material shall be at least 1 m (1 yd) square of the textile layer on which the specimens are attached.

8.17.9.2
Where attached to webbing, samples for conditioning shall include specimens attached to the webbing as used in the harness or belt positioned no closer than 50 mm (2 in.) apart. The webbing shall be at least 380 mm (15 in.) in length.

8.17.9.3
Testing shall be performed as specified in 8.17.2 through 8.17.7.

8.17.10
Specific Requirements for Testing Hardware.

8.17.10.1
A minimum of three complete hardware items shall be tested.

8.17.10.2
Observations of hardware condition following heat exposure shall be limited to ignition.

8.17.10.3
Hardware shall be evaluated for functionality within 10 minutes following removal from the oven.

8.17.11
Specific Requirements for Testing Other Materials.

8.17.11.1
Samples for conditioning shall be at least 1 m (1 yd) square of each material.

8.17.11.2
Each specimen shall be 380 mm × 380 mm ± 13 mm (15 in. × 15 in. ± 1/2 in.) and shall be cut from the fabric to be utilized in the construction of the item.

8.17.11.3
Testing shall be performed as specified in 8.17.2 through 8.17.7.

8.18
Thread Heat Resistance Test.
8.18.1 - Application.
This test method shall apply to each type of sewing thread used in the construction of flame-resistant life safety harnesses and belts.

8.18.2 - Samples.
Samples for conditioning shall be lengths of thread 150 mm (6 in.) or greater.

8.18.3 - Specimens.
8.18.3.1 -
A total of three different specimens of each thread type shall be tested.

8.18.3.2 -
All specimens shall be conditioned as specified in 8.1.2 prior to testing.

8.18.4 - Apparatus.
8.18.4.1 -
An electrically heated stage having a circular depression large enough to insert a micro-cover glass shall be used. The stage shall have a variable transformer controlling the rate of heat input into the stage.

8.18.4.2 -
The following equipment shall also be used:

(1) - Armored stem thermometer with a range of 150°C to 300°C accurate to 1°C
(2) - Low-powered magnifying glass
(3) - Two micro-cover glasses
(4) - Spatula, pick needle, or other instrument for applying pressure to the micro-cover glasses
(5) - Soxhlet extraction apparatus

8.18.4.3 -
The following reagents shall be used:

(1) - Chloroform, USP
(2) - U.S. Pharmacopoeia reference standards for melting point or other pure materials for calibrating the apparatus

8.18.5 - Procedure.
8.18.5.1 -
The specimen shall be extracted with chloroform for a minimum of 20 extractions in a Soxhlet extractor and dried. The specimen shall then be cut into lengths of 2 mm (\(\frac{1}{46}\) in.) or less.

8.18.5.2 -
The apparatus shall be calibrated by determining the melting point of a pure material of known melting point. The melting point of the pure material shall be in the range of the melting point of the fiber being tested. The value obtained shall agree within +1°C of the known value.

8.18.5.3 -
If the approximate melting point of the specimen is not known before testing, it shall be determined by a trial run.

8.18.5.4 -
In subsequent determinations immediately following the trial run or initial determination, the stage in each case shall be cooled to approximately 50°C below the expected melting point before the specimen is placed for testing.

8.18.5.5 -
The specimen shall be placed in a small mound on a cover glass and covered with another cover glass. The two cover glasses shall be pressed together gently but firmly, and placed in the circular depression on the stage. The temperature of the stage shall be raised with some rapidity to within 15°C of the expected melting point, and thereafter at a rate of 3°C to 4°C per minute. At this rate of temperature rise, a slight pressure shall be applied on the upper glass cover by pressing with a spatula, pick needle, or other instrument so that the complete fiber is in contact with the cover glass.
The specimen shall be observed with the aid of a magnifying glass, and the melting point taken as the temperature at which flow of the specimen is observed. At the observed melting point, the temperature shall be read to the nearest °C (°F).

8.18.6 ... Report.

8.18.6.1 ... The melting point of the sample unit shall be the average of the results obtained from the specimens tested and shall be recorded and reported to the nearest °C (°F).

8.18.6.2 ... The pass/fail results for each specimen tested shall be recorded and reported.

8.18.7 ... Interpretation.

One or more thread specimens failing this test shall constitute failing performance for the thread type.

### Additional Proposed Changes

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<thead>
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<th>Description</th>
<th>Approved</th>
</tr>
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<td>Chapter 8</td>
<td>Reorg</td>
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<tr>
<td>_NFPA_Reorg_for_2017_Edition.docx</td>
<td></td>
<td></td>
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</table>

### Statement of Problem and Substantiation for Public Input

NFPA 1983 contains an extensive variety of products. The current format can be difficult to navigate and is not easily followed by users and manufacturers. At the TC’s request, the document was reorganized for clarity and ease of use. This input includes the language in TIA 12-1. No new material is contained in this input.

### Submitter Information Verification

**Submitter Full Name:** Beverly Stutts  
**Organization:** UL LLC  
**Street Address:**  
**City:**  
**State:**  
**Zip:**  

**Submittal Date:** Mon Jan 05 14:50:50 EST 2015
8.1 Sample Preparation Procedures.

8.1.1 Application.

8.1.1.1 The sample preparation procedures contained in this section shall apply to each test method in this chapter, as specifically referenced in the sample preparation section of each test method.

8.1.1.2 Only the specific sample preparation procedure or procedures referenced in the sample preparation section of each test method shall be applied to that test method.

8.1.2 Room Temperature Conditioning Procedure.

8.1.2.1 Samples shall be conditioned at a temperature of 21°C ± 3°C (70°F ± 5°F) and a relative humidity of 65 percent ± 5 percent for at least 24 hours.

8.1.2.2 Specimens shall be tested within 5 minutes after removal from conditioning.

8.2 Rope Breaking and Elongation Test.

8.2.1 Application.

8.2.1.1 This test shall apply to life safety rope, moderate elongation laid life saving rope, escape rope, throwline, webbing, and manufacturer-supplied eye termination.

8.2.1.2 Modifications to this test method for testing throwline shall be as specified in 8.2.7.

8.2.1.3 Modifications to this test method for testing manufacturer-supplied eye termination shall be as specified in 8.2.8.

8.2.2 Sample.

8.2.2.1 Samples for conditioning shall be at least 1 m (1 yd) length of rope for each rope model.

8.2.2.2 Samples shall be conditioned as specified in 8.1.2.

8.2.2.3 All samples for each rope model shall be taken from the same production lot.

8.2.3 Specimens.

8.2.3.1 Specimens shall be as specified in Cordage Institute Standard CI 1801, Low Stretch and Static Kernmantle Life Safety Rope.

8.2.3.2 A minimum of five specimens shall be tested.
8.2.4* Procedure. Specimens shall be tested for elongation and minimum breaking strength in accordance with Sections 8 and 9 of Cordage Institute Standard CI 1801, Low Stretch and Static Kernmantle Life Safety Rope.

8.2.5 Report.

8.2.5.1 The rope minimum breaking strength shall be determined by subtracting three standard deviations from the mean result of five samples from the same production lot and shall be reported to the nearest 1 N.

8.2.5.2 The standard deviation shall be calculated using the formula:

\[
s = \sqrt{\frac{n(\sum x^2) - (\sum x)^2}{n(n-1)}}
\]

where:
- \(s\) = standard deviation
- \(n\) = number of samples
- \(x\) = breaking strength

8.2.5.3 The elongation at 10 percent of the minimum breaking strength shall be reported to the nearest 0.1 percent.

8.2.5.4 The elongation at 1.35 kN (300 lbf), 2.7 kN (600 lbf), and 4.4 kN (1000 lbf) shall be reported to the nearest 0.1 percent.

8.2.6 Interpretation.

8.2.6.1 Pass/fail performance shall be based on the standard deviation from the mean breaking strength and the elongation at 10 percent of the minimum breaking strength.

8.2.6.1.1 The values obtained in 8.2.5.4 shall not be used to determine pass/fail.

8.2.6.2 One or more specimens failing this test shall constitute failing performance for the rope type.

8.2.7 Specific Requirements for Testing Throwline.

8.2.7.1 For specimens of throwline, only breaking strength testing shall be conducted.

8.2.7.2 Elongation shall not be evaluated.

8.2.8 Specific Requirements for Testing Manufacturer-Supplied Eye Termination.

8.2.8.1 For specimens of manufacturer-supplied eye terminations, only breaking strength testing shall be conducted.

8.2.8.2 Elongation shall not be evaluated.

8.2.8.3 Eye termination shall be connected to test apparatus with test pin.
Where testing is being conducted on manufacturer-supplied eye termination and the rope or webbing used in the manufacturer-supplied eye termination is certified as a life safety rope with a diameter of less than 12 mm, as escape webbing, as escape rope, or as throwline, then a connector with a cross-sectional 6 mm ± 0.05 mm radii shall be used.

Where testing is being conducted on manufacturer-supplied eye termination and the rope used in the manufacturer-supplied eye termination is certified as a life safety rope with diameter of 12 mm or greater, then a connector with a cross-sectional 8 mm ± 0.05 mm radii shall be used.

### 8.3 Static Test.

#### 8.3.1 Application.

8.3.1.1 This test shall apply to ladder belts, escape belts, and Class II and Class III life safety harnesses, and Class II and Class III victim extrication devices.

8.3.1.2 Each model of a belt or a life safety harness shall be tested in accordance with Table 8.3.1.2, as appropriate for the product.

<table>
<thead>
<tr>
<th>Test</th>
<th>Class II</th>
<th>Class III</th>
<th>Ladder Belt</th>
<th>Victim Escape Belt</th>
<th>Class II Extrication Device</th>
<th>Class III Extrication Device</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upright</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Head down</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>Horizontal</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
</tr>
</tbody>
</table>

8.3.1.3 Modifications to this test method for testing Class II harness shall be as specified in §8.3.8.

8.3.1.4 Modifications to this test method for testing Class III harness shall be as specified in §8.3.9.

8.3.1.5 Modifications to this test method for testing ladder belts shall be as specified in §8.3.10.

8.3.1.6 Modifications to this test method for testing escape belts shall be as specified in §8.3.11.

8.3.1.7 Modifications to this test method for testing positioning attachments shall be as specified in §8.3.12.

8.3.1.8 Modifications to this test method for testing Class II victim extrication devices shall be as specified in §8.3.13.

8.3.1.9 Modifications to this test method for testing Class III victim extrication devices shall be as specified in §8.3.14.

#### 8.3.2 Samples.
8.3.2.1 Samples for conditioning shall be whole items.

8.3.2.2 Samples shall be conditioned as specified in 8.1.2.

8.3.2.3 Samples shall be new and in unused condition and shall conform in all respects to the manufacturer's specifications for the model being tested.

8.3.3 Specimens.

8.3.3.1 Specimens shall be whole items.

8.3.3.2* A minimum of three specimens shall be tested for each test.

8.3.4 Apparatus. The rigid test torso specified in Figure 1 of ASTM F 1772, Standard Specification for Climbing Harnesses, shall be used with the following modifications, as shown in Figure 8.3.4:

(1) The legs shall be 310 mm ± 30 mm (12 in. ± 1 in.) in length.

(2) The distance between the inner thighs at the crotch shall be 50 mm ± 5 mm (2 in. ± ¼ in.).

****INSERT FIGURE HERE****

FIGURE 8.3.4 Outline of the Test Torso.

8.3.4.1 The test torso shall weigh 136 kg ± 1 kg (300 lb ± 2 ¼ lb).

8.3.4.2 The test torso with the sample harness attached shall be identified as the test mass.

8.3.5 Procedure.

8.3.5.1 The specimen shall be donned on the rigid test torso as specified in the manufacturer’s user instructions.

8.3.5.2 The test mass shall be attached to the test machine at the load-bearing attachment point, in accordance with the manufacturer's instruction for use, with a suitable locking carabiner.

8.3.5.3 The test mass shall be properly positioned by pre-loading up to 800 N (181 lbf) with the test torso in the required position.

8.3.5.4 Under the load specified in 8.3.5.3, the load-bearing attachment point(s) shall be placed approximately symmetrically about the vertical axis of the test torso as shown in Figure 8.3.5.4.

****INSERT FIGURE HERE****

FIGURE 8.3.5.4 Test Torso Orientations for Harness Test and Belt Test.

8.3.5.5 For the upright position, the test torso shall be oriented in an upright position. For the head-down position, the test torso shall be oriented in a head-down position. For the horizontal position, the test torso shall be oriented in a horizontal position supported by the neck and buttocks rings.
8.3.5.5.1 For the upright position, the force shall be applied to the buttocks ring, increasing to the specified load for the type of device over a period of 2 minutes \(+15/\)−0 seconds.

8.3.5.5.2 For the head-down position, the force shall be applied to the neck ring, increasing to the specified load for the type of device over a period of 2 minutes \(+15/\)−0 seconds.

8.3.5.5.3 For the horizontal position, the force shall be applied to the neck and buttocks rings in the plane of symmetry of the test torso and normal to its axis as shown in Figure 8.3.5.4, increasing to the specified load for the type of device over a period of 2 minutes \(+15/\)−0 seconds.

8.3.5.6 The specified load for the type of device being tested shall be held for 1 minute \(+15/\)−0 seconds and then tension shall be completely released over a maximum of 1 minute.

8.3.5.7 The specified load for the type of device being tested shall be reapplied immediately and held for 5 minutes \(+15/\)−0 seconds before release.

8.3.5.8 The sample shall be evaluated at the conclusion of each static test series.

8.3.6 Report.

8.3.6.1 For each position tested, any release from the test torso shall be reported.

8.3.6.2 For each position tested, the amount of slip of any buckles and adjustment devices shall be reported.

8.3.6.3 For each position tested, any visible signs of damage that would affect the function of the harness shall be reported.

8.3.6.4 Any methods of tie-off of webbing ends shall be reported.

8.3.7 Interpretation.

8.3.7.1 Any release from the test torso shall constitute failing performance.

8.3.7.2 The amount of slip of any buckles and adjustment devices shall be used to determine pass/fail.

8.3.7.3 A harness shall be considered to be damaged to the point of failing this test if any condition that compromises the safety of the user such as but not limited to any load-bearing material being torn or damaged or where a buckle becomes nonfunctional.

8.3.8 Specific Requirements for Testing Class II Harness.

8.3.8.1 Class II harness shall be tested in the upright position, as specified in Table 8.3.1.2.

8.3.8.2* The load applied for the upright position shall be 16 kN (3597 lbf).

8.3.9 Specific Requirements for Testing Class III Harness.

8.3.9.1 Class III harness shall first be tested in the upright position, followed by the head-down position, as specified in Table 8.3.1.2.
8.3.9.2* The load applied for the upright position shall be 16 kN (3597 lbf), and the load applied for the head-down position shall be 10 kN (2248 lbf).

8.3.9.3 Where sample Class III life safety harness include shoulder attachment points, such shoulder attachment points shall be tested only as specified in 8.3.5.5.1 for the upright position as a pair using an appropriate spreader device.

8.3.10 Specific Requirements for Testing Ladder Belts.

8.3.10.1 Ladder belts shall first be tested in the upright position, followed by the horizontal position as specified in Table 8.3.1.2.

8.3.10.2* The load applied for the upright position shall be 13 kN (2923 lbf) and the load applied for the horizontal position shall be 10 kN (2248 lbf).

8.3.11 Specific Requirements for Testing Escape Belts.

8.3.11.1 Escape belts shall first be tested in the upright position, as specified in Table 8.3.1.2.

8.3.11.2* The load applied for the upright position shall be 13 kN (2923 lbf).

8.3.12 Specific Requirements for Testing Positioning Attachments.

8.3.12.1 Where used on ladder belts, side D-rings and attachment points designated by the manufacturer for use as positioning attachments only shall be tested as positioning attachments and shall be tested as specified in 8.3.5.5.1 for the upright position and 8.3.5.5.3 for the horizontal position.

8.3.12.1.1 The load applied for the upright position shall be 13 kN (2923 lbf) and the load applied for the horizontal position shall be 10 kN (2248 lbf).

8.3.12.2 Where used on escape belts and harnesses, side D-rings and attachment points designated by the manufacturer for use as positioning attachments only shall be tested as positioning attachments and shall be tested as specified in 8.3.5.5.1 for the upright position.

8.3.12.2.1 The load applied for the upright position shall be 13 kN (2923 lbf).

8.3.13 Specific Requirements for Testing Class II Victim Extrication Devices.

8.3.13.1 Class II victim extrication devices shall be tested in the upright position as specified in Table 8.3.1.2.

8.3.13.2* The load applied for the upright position shall be 16 kN (3597 lbf).

8.3.14 Specific Requirements for Testing Class III Victim Extrication Devices.

8.3.14.1 Class III victim extrication devices shall be tested in the upright position, followed by the head-down position, then followed by the horizontal position as specified in Table 8.3.1.2.

8.3.14.2* The load applied for the upright position shall be 16 kN (3597 lbf), and the load applied for the head-down and horizontal positions shall be 10 kN (2248 lbf).

8.4 Drop Test.
8.4.1 Application.

8.4.1.1 This test shall apply to life safety harness and escape belts.

8.4.1.2 Each model of escape belts or life safety harness shall be tested in accordance with Table 8.4.1.2 as appropriate for the type of belt and class of harness.

<table>
<thead>
<tr>
<th>Test</th>
<th>Class II</th>
<th>Class III</th>
<th>Ladder Belt</th>
<th>Escape Belt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drop</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
</tr>
</tbody>
</table>

8.4.1.3 Modifications to this test method for testing escape belts shall be as specified in 8.4.8.

8.4.1.4 Modifications to this test method for testing life safety harness shall be as specified in 8.4.9.

8.4.2 Samples.

8.4.2.1 Samples for conditioning shall be whole items.

8.4.2.2 Samples shall be conditioned as specified in 8.1.2.

8.4.2.3 Samples shall be new and in unused condition and shall conform in all respects to the manufacturer's specifications for the model to be tested.

8.4.3 Specimens.

8.4.3.1 Specimens shall be whole items.

8.4.3.2* A total of three specimens shall be tested for each test.

8.4.4 Apparatus.

8.4.4.1 The rigid test torso specified in Figure 1 of ASTM F 1772, Standard Specification for Climbing Harnesses, shall be used with the following modifications, as shown in Figure 8.3.4:

1. The legs shall be 310 mm ± 30 mm (12 in. ± 1 in.) in length.
2. The distance between the inner thighs at the crotch shall be 50 mm ± 5 mm (2 in. ± ¼ in.).

8.4.4.1.1 The test torso shall weigh 136 kg ± 1 kg (300 lb ± 2¼ lb).

8.4.4.1.2 The test torso with the sample harness attached shall be identified as the test mass.

8.4.4.2 A drop tower shall be used and shall have an anchorage point that shall not have a deflection greater than 1 mm (0.04 in.) when a force of 10 kN (2250 lbf) is applied.

8.4.4.3 A test lanyard shall be used to connect the load-bearing attachment point(s) to the test mass and shall be fabricated from Type 302 stainless steel, 7 × 19 aircraft cable construction in accordance with MIL-W-83420D, Military Specification: General Specification for Flexible Wire Rope for Aircraft Control.
8.4.4.3.1 The test lanyard shall be 9.5 mm (3/8 in.) in diameter and 1.2 m ± 13 mm (47 in. ± 1/2 in.) in length measured from bearing point to bearing point between snap hooks when the lanyard is under tension of 50 N (11 lbf).

8.4.4.3.2 The lanyard shall be equipped with a snap hook at each end.

8.4.4.3.3 The lanyard shall be connected to the load-bearing attachment point(s) of the test mass.

8.4.4.3.4 The lanyard ends shall be finished with swaged eyes in such a manner as to prevent slippage of the eyes and snap hooks that would change the length of the test lanyard.

8.4.5 Procedure.

8.4.5.1 The specimen shall be donned on the rigid test torso as specified in the manufacturer’s user instructions, and the test torso shall be connected to the drop tower anchorage point.

8.4.5.2 One end of the test lanyard shall be attached to a load-bearing attachment point, and the other end shall be attached to the anchorage.

8.4.5.3 The attachment point of the sample on the test mass shall be raised to and released from a point no more than 305 mm (12 in.) horizontally from the anchorage.

8.4.5.4 The attachment point of the sample on the test mass shall be in a position that will allow it to fall freely a distance of 1 m (39 in.) to a free-hanging position without interference or obstruction or striking the floor, ground, or any other object during the test.

8.4.6 Report. For each sample tested during the drop test series, the result of each drop test shall be individually reported for each anchorage point.

8.4.6.1 Any methods of tie-off of webbing ends shall be reported.

8.4.7 Interpretation. A specimen shall be considered to have failed the test if, during any one of the required drops for any sample, the test mass impacts the ground.

8.4.8 Specific Requirements for Testing Escape Belts.

8.4.8.1 Each model of belt shall be tested according to Table 8.4.1.2 for the appropriate belt type.

8.4.8.2 A minimum of two drop tests shall be conducted for each specimen.

8.4.8.2.1 The first drop test shall be conducted for each load-bearing attachment point with the test mass in a head-up position.

8.4.8.2.2 The second drop test shall be conducted for each load-bearing attachment point with the test mass in a head-down position.

8.4.8.2.3 A minimum of 5 minutes shall pass between consecutive drops.

8.4.9 Specific Requirements for Testing Life Safety Harness.
8.4.9.1 Each model of harness shall be tested according to Table 8.4.1.2 for the appropriate class harness.

8.4.9.2 A minimum of two drop tests shall be conducted for each specimen.

8.4.9.2.1 The first drop test shall be conducted for each load-bearing attachment point with the test mass in a head-up position.

8.4.9.2.2 The second drop test shall first be conducted for each load-bearing attachment point with the test mass in a head-down position.

8.4.9.2.3 A minimum of 5 minutes shall pass between consecutive drops.

8.5 Carabiner and Snap-Link Tensile Test.

8.5.1 Application. This test method shall apply to all carabiners and snap links.

8.5.2 Samples.

8.5.2.1 Samples for conditioning shall be whole items.

8.5.2.2 Samples shall be conditioned as specified in 8.1.2.

8.5.2.3 Samples shall be new and in unused condition and shall conform in all respects to the manufacturer's specification for the model being tested.

8.5.2.4 Samples shall be taken from the same production lot for each model tested.

8.5.3 Specimens.

8.5.3.1 Specimens shall be whole items.

8.5.3.2 A total of five specimens shall be tested for each performance requirement.

8.5.3.3 A separate specimen shall be used for each test.

8.5.4 Procedure. Test methods shall be conducted per ASTM F 1956, Standard Specification for Rescue Carabiners.

8.5.5 Report.

8.5.5.1 The breaking strength of each specimen shall be reported to the 0.1 kN (23 lb) of force.

8.5.5.2 An average breaking strength shall be calculated for each position tested.

8.5.5.3 The carabiner minimum breaking strength shall be determined by subtracting three standard deviations from the mean results of five samples from the same production lot and shall be reported to the nearest 0.1 kN (23 lbf). The minimum breaking strength shall be provided on the product label as specified in Section 5.1, Product Label Requirements.

8.5.5.4 The standard deviation shall be calculated using the formula in 8.2.5.2.

8.5.6 Interpretation.
8.5.6.1* Pass/fail performance shall be based on the minimum breaking strength for each of the positions tested.

8.5.6.2 Failure in any position constitutes failure for the carabiner or snap link.

8.6 Manner of Function Tensile Test.

8.6.1 Application.

8.6.1.1 This test shall apply to ascending devices, rope grab devices, descent control devices, and belay devices.

8.6.1.2 Modifications to this test method for testing ascending devices and rope grab devices shall be as specified in 8.6.7.

8.6.1.3 Modifications to this test method for testing descent control devices shall be as specified in 8.6.8.

8.6.1.4 Modifications to this test method for testing belay devices shall be as specified in 8.6.4.5.

8.6.2 Samples.

8.6.2.1 Samples for conditioning shall be whole items.

8.6.2.2 Samples shall be conditioned as specified in 8.1.2.

8.6.2.3 Samples shall be new and in unused condition and shall conform in all respects to the manufacturer's specifications for the model to be tested.

8.6.3 Specimens.

8.6.3.1 Specimens shall be whole items.

8.6.3.2 A total of five specimens shall be tested.

8.6.3.3 Each specimen shall be tested to both Procedure A and Procedure B.

8.6.4 Procedure.

8.6.4.1 Testing shall be conducted in the “manner of function” for the item being tested.

8.6.4.2 Testing shall be conducted using both the smallest and largest diameter life safety rope specified by the device manufacturer for testing.

8.6.4.2.1 Testing shall be conducted using a rope with the same NFPA designation as the device being tested, unless such rope is outside of the range of ropes that the manufacturer specifies for the safe and critical function of the device.

8.6.4.2.2 The rope used for testing shall meet the static rope requirements of Cordage Institute Standard CI 1801, Low Stretch and Static Kernmantle Life Safety Rope.

8.6.4.2.3 The device shall be attached to the rope according to the manufacturer's instructions.

8.6.4.3 Procedure A.
8.6.4.3.1 One end of the rope shall be anchored on to a tensile testing machine and the device shall be anchored to the other end of the rope. The specified deformation force shall be applied to the device at the normal attachment point at a rate of 25 mm/min ± 5 mm/min (1 in./min ± ¼ in./min).

8.6.4.3.2 The specified deformation force shall be held for 30 seconds +1/-0 second, and then the tension shall be completely released over a maximum of 1 minute.

8.6.4.3.3 The device shall then be inspected for damage to the device or to the rope used for testing.

8.6.4.4 Procedure B.

8.6.4.4.1 Using the same item and test set up as in Procedure A, the load shall then be reapplied to the device until the breaking point of the device.

8.6.4.4.2 The force shall be applied at a rate of 25 mm/min ± 5 mm/min (1 in./min ± ¼ in./min).

8.6.4.4.3* In the case of items that are designed to slip under high load, the rope shall be knotted or the device otherwise blocked to prevent slippage once the device has held at least 5 kN (1124 lbf) for technical use items and 9 kN (2023 lbf) for general use items.

8.6.4.5 Procedure C.

8.6.4.5.1 The belay device shall be tested for function according to ASTM F 2436, Standard Test Method for Measuring the Performance of Synthetic Rope Rescue Belay Systems Using a Drop Test, as modified for this standard.

8.6.4.5.2 A rope that is 300 cm ± 0.5 cm shall be used between the bowline test–block contact and the most distal point of the gripping portion of the belay assembly.

8.6.4.5.3 A drop height of 60 cm ± 0.5 cm main shall be used.

8.6.4.5.4 The test mass for a technical use belay device shall be 136 kg (300 lb).

8.6.4.5.5 The test mass for a general use belay device shall be 200 kg (617 lb).

8.6.4.5.6 The parameters specified in 8.6.4.5.6.1 and 8.6.4.5.6.2 shall be evaluated to determine pass/fail.

8.6.4.5.6.1 Maximum extension of the belay system shall be no more than 1 m ± 5 cm.

8.6.4.5.6.2* The device shall be able to release the load in a controlled manner.

8.6.5 Report.

8.6.5.1 The condition of the item and the rope shall be recorded after the deformation load has been applied.

8.6.5.2 The minimum breaking strength shall be determined by subtracting three standard deviations from the mean results of samples from the same production lot and shall be reported
to the nearest 1.0 kN (230 lbf). The minimum breaking strength shall be provided on the product label as specified in Section 5.1, Product Label Requirements.

8.6.5.3 The standard deviation shall be calculated using the formula in 8.2.5.2.

8.6.5.3.1 Where the minimum breaking strength exceeds 111 kN (25,000 lbf) without failure, the average breaking strength shall be reported as >111 kN (>25,000 lbf). The product label required in 5.1.6.9 shall also indicate the minimum breaking strength as >111 kN (>25,000 lbf).

8.6.5.4 For Procedure C, the device shall be reported as technical use or general use.

8.6.5.4.1 The extension of the belay system shall be recorded.

8.6.5.4.2 Any damage to the rope, the belay device, or system components shall be recorded.

8.6.6 Interpretation. One or more specimens failing this test shall constitute failing performance for the item being tested.

8.6.6.1 Failure of the rope at a load less than the specified rope minimum breaking strength shall constitute failing performance.

8.6.7 Specific Requirements for Testing Ascent Devices, and Rope Grab Devices, and Escape Manufactured Systems.

8.6.7.1* Technical use ascent devices, and rope grab devices, and escape manufactured systems shall be tested at a load of 5 kN (1124 lbf) for Procedure A.

8.6.7.2 General use ascending devices and rope grab devices shall be tested at a load of 11 kN (2500 lbf) for Procedure A.

8.6.8 Specific Requirements for Testing Descent Control Devices.

8.6.8.1 Escape and technical use descent control devices shall be tested at a load of 5 kN (1124 lbf) for Procedure A.

8.6.8.2 The device shall be attached to the rope according to the manufacturer's instructions in the locked-off mode of attachment.

8.6.8.3 General use descent control devices shall be tested at a load of 11 kN (2500 lbf) for Procedure A.

8.7 Breaking Strength Test.

8.7.1 Application.

8.7.1.1 This test shall apply to portable anchor devices, escape systems, other auxiliary equipment, manufactured systems, end-to-end straps, pick-off straps, anchor straps, multiple configuration straps, and escape anchors devices, pulleys, and other auxiliary equipment.

8.7.1.2 Specific requirements for testing portable anchors shall be as specified in 8.7.8.

8.7.1.3 Specific requirements for testing pulleys shall be as specified in 8.7.9.
Specific requirements for testing auxiliary equipment systems, system components, escape systems, and manufactured systems shall be as specified in 8.7.10.

Specific requirements for testing end-to-end straps shall be as specified in 8.7.11.

Specific requirements for testing escape anchor devices shall be as specified in 8.7.13.

Specific requirements for testing multiple configuration straps shall be as specified in 8.7.12.

**8.7.2 Samples.**

Samples for conditioning shall be whole items or systems.

Samples shall be conditioned as specified in 8.1.2.

Samples shall be new and in unused condition and shall conform in all respects to the manufacturer's specifications for the model being tested.

**8.7.3 Specimens.**

Specimens shall be whole items or systems.

A total of five specimens shall be tested.

**8.7.4 Procedure A.**

The device shall be positioned as required for the type of device being tested in the lowest strength configuration of the device as specified by the manufacturer.

A force shall be applied to the device, increasing to the load specified at a rate of 25 mm/min ± 5 mm/min (1 in./min ± ¼ in./min).

The force shall be held for 30 seconds, ± 1.0 second, and then the tension shall be completely released over a maximum of 1 minute.

The force shall be reapplied immediately and shall be increased to the same maximum force as previously exerted and held for 1 minute +15/−0 seconds before release.

At the conclusion of Procedure A, the specimen device shall be inspected for deformation.

**8.7.5 Procedure B.**

Using a new specimen and the test set up as in Procedure A, the load shall be reapplied to the lowest strength configuration of the device as specified by the manufacturer until the breaking point of the device.

The force shall be applied at a rate of 25 mm/min ± 5 mm/min (1 in./min ± ¼ in./min).

During testing, where the rope breaks before the device and that breaking strength exceeds the designated use rating required for escape, technical use, or general use, then pins shall be permitted to be used to determine minimum breaking strength.
8.7.6 Report.

8.7.6.1 The minimum breaking strength shall be determined by subtracting three standard deviations from the mean results of five samples from the same production lot and shall be reported to the nearest 0.1 kN (23 lbf). The minimum breaking strength shall be provided on the product label as specified in Section 5.1.

8.7.6.2 The standard deviation shall be calculated using the formula in 8.2.5.2.

8.7.6.3 The deflection of the load-bearing members from their original position shall be recorded.

8.7.6.4 The functionality of adjustment and moving parts shall be recorded.

8.7.6.5 Where applicable, the movement of all base contact points from their original positions shall be recorded.

8.7.6.6 Any condition that would cause the safety of the user to be compromised shall be recorded.

8.7.6.7 Any fracture of the load-bearing members, collapse, or other condition that would cause the user to be dropped shall be reported.

8.7.6.8* The configuration of the attachment of the device to the testing machine shall be recorded and reported.

8.7.7 Interpretation. One or more specimens failing this test shall constitute failing performance for the item being tested.

8.7.8 Specific Requirements for Testing Portable Anchors.

8.7.8.1 Two specimens shall be tested.

8.7.8.2 Where there are multiple load-bearing attachment points, Procedure A and Procedure B shall be repeated for each combination of load-bearing attachment points specified in the manufacturer's instructions.

8.7.8.3 The device shall be attached to the test machine at the load-bearing attachment point, in accordance with the manufacturer's instructions for use, with a suitable locking carabiner.

8.7.8.4 Before testing, the device shall be positioned with all surface contact points securely seated on a flat, unfinished concrete surface in the manner described by the manufacturer's instructions.

8.7.8.5* Where portable anchor devices are designed to be affixed to a base that is not part of the device, the manufacturer shall provide a test base that most closely resembles the structural element to which the device is designed to be affixed.

8.7.8.5.1 The test base shall be completely stable and shall be permitted to be bolted down to prevent movement during the test.
8.7.8.6 The portable anchor device shall be accompanied by all adjuncts required for use as described by the manufacturer's instructions for use.

8.7.8.6.1 Devices shall not be bolted to, tied off, or affixed to the test base in any way unless required to be by the manufacturer for normal use.

8.7.8.6.2 All adjuncts designed by the manufacturer to be used in conjunction with the device, including but not limited to ropes, chains, webbing, rope grabs, and bolts, shall be in place during the test.

8.7.8.7 For Procedure B, each point of contact with the test surface shall be marked in some manner to allow the ability to assess movement of the base during the test.

8.7.8.7.1 For Procedure B, the force specified in 7.6.4.3 for technical use and 7.6.4.4 for general use shall be applied and held for 2 minutes +15/−0 seconds, using the lower of the actual to pass/fail.

8.7.8.8 The test load used for Procedure A shall be 5 kN (1124 lbf) for technical use portable anchors and 13 kN (2923 lbf) for general use portable anchors.

8.7.8.9 For the report, breaking strength shall be the strength specified in 7.6.4.3 for technical use and 7.6.4.4 for general use.

8.7.9 Specific Requirements for Testing Pulleys.

8.7.9.1 Pulleys shall be tested using a wire rope with a diameter equal to or less than the maximum size of rope specified for the pulley and of sufficient strength. The wire rope shall include a swaged loop that fits the pulley being tested.

8.7.9.2 Tension shall be applied between the wire rope loop and a 12.5 mm (½ in.) pin through the pulley carabiner hole as specified in Figure 8.7.9.2 until failure.

****INSERT FIGURE HERE****

FIGURE 8.7.9.2 Pulley Tensile Test.

8.7.9.3 Fixture design and device placement in fixture shall not allow the fixture to interfere with the pulley during the test.

8.7.9.4 Pulleys with two or more sheaves shall have a single rope looped around all sheaves and the load applied to each loop.

8.7.9.5 Pulleys that include a becket at the bottom of the pulley shall have the becket tested by applying a load longitudinally between the carabiner hole and the becket.

8.7.9.6 The test load used for Procedure A shall be 5 kN (1124 lbf) for technical use pulleys and 22 kN (4946 lbf) for general use pulleys.

8.7.10 Specific Requirements for Auxiliary Equipment Systems, System Components, and Manufactured Systems.
8.7.10.1 Only Procedure B shall be conducted on auxiliary equipment systems, system components, and manufactured systems.

8.7.10.2 Auxiliary equipment and manufactured systems shall be tested using a rope with a diameter of the smallest and largest size specified by the auxiliary equipment manufacturer.

8.7.10.3 Where there are multiple load-bearing attachment points, Procedure B shall be repeated for each combination of load-bearing attachment points specified in the manufacturer's instructions.

8.7.10.4 The device shall be attached to the test machine at the load-bearing connecting point, in accordance with the manufacturer's instructions for use.

8.7.10.5 For all tests, the device shall be accompanied by all equipment required for use as described by the manufacturer's instructions for use.

8.7.10.6 Only the requirements specified in 8.7.6.1 shall be reported.

8.7.11 Specific Requirements for Testing End-to-End Straps.

8.7.11.1 Only Procedure B shall be conducted on end-to-end straps.

8.7.11.2* Testing shall be conducted using 13 mm ± 1 mm (½ in. ± ¼ in.) pins, bolts, or shackles. The test fixture shall be designed such that the strap is free to locate itself on the test pins when the force is applied.

8.7.11.3 A test pin cross section shall be permitted to be other than round. Any cross section necessary to prevent test pin failure or any design to prevent test pin rotation shall be permitted, as long as the contact point between the test pin and strap attachment point has the specified radius, material type, hardness, and surface roughness as per ASTM F 1956, Standard Specification for Rescue Carabiners, Section 5.2.1.

8.7.11.4 The test fixture shall be designed to prevent the test pins from rotating such that the strap is free to locate itself on the test pins when force is applied.

8.7.11.5 Where the strap is adjustable in length, the strap shall be tested in the shortest length that places the adjustment device free of any interference of the test fixture.

8.7.11.6 Technical use and general end-to-end and load-releasing straps shall be individually tested in the end-to-end configuration.

8.7.11.7 Where the strap is adjustable in length, the slippage of the adjustment device shall be measured and reported upon completion of the test.

8.7.12 Specific Requirements for Testing Multiple Configuration Straps.

8.7.12.1 Only Procedure B shall be conducted on multiple configuration straps.

8.7.12.2* Testing shall be conducted using 13 mm ± 1 mm (½ in. ± ¼ in.) pins, bolts, or shackles. The test fixture shall be designed such that the strap is free to locate itself on the test pins when the force is applied.
8.7.12.3 Test pin cross section shall be permitted to be other than round. Any cross section necessary to prevent test pin failure or any design to prevent test pin rotation shall be permitted as long as the contact point between the test pin and strap attachment point has the specified radius, material type, hardness, and surface roughness as per ASTM F 1956, Standard Specification for Rescue Carabiners, Section 5.2.1.

8.7.12.4 The test fixture shall be designed to prevent the test pins from rotating such that the strap is free to locate itself on the test pins when force is applied.

8.7.12.5 Where the strap is adjustable in length, the strap shall be tested in the shortest length that places the adjustment device free of any interference of the test fixture.

8.7.12.6 Technical use and general use multiple configuration straps shall be individually tested in the basket (U) configuration, the end-to-end configuration, and the choker configuration.

8.7.12.7 For technical use and general use multiple configuration straps, all configuration values shall be reported on the product label. Only the basket (U) configuration value shall be utilized to determine pass/fail.

8.7.13 Specific Requirements for Escape Anchor Devices.

8.7.13.1 Only Procedure B shall be conducted on escape anchor devices.

8.7.13.2 Escape anchor devices with a single point of contact shall be supported to prevent twisting when loaded in such a way that the load is applied in the weakest configuration. The support shall not prevent the device from deforming under load or from releasing from the structure due to deformation or breaking.

8.7.13.3 Escape anchor devices that use two or more points of contact shall have the load applied in the weakest configuration when used in accordance with the manufacturer's instructions.

8.7.13.4 The escape anchor device shall fail the Procedure B test if the device breaks or deforms such that it releases from the supporting structure.

8.7.13.5 Only the requirements specified in 8.7.6.1 shall be reported.

8.8 Corrosion Resistance Test.

8.8.1 Application. This test shall apply to all metal hardware and hardware that includes metal parts.

8.8.2 Samples.

8.8.2.1 Samples for conditioning shall be metal hardware or hardware that includes metal parts.

8.8.2.2 Samples shall be conditioned as specified in 8.1.2.

8.8.3 Specimens.

8.8.3.1 Specimens shall be metal hardware or hardware that includes metal parts.
8.8.3.2 Five specimens of each hardware type shall be tested.

8.8.4 Procedure.

8.8.4.1 Specimens shall be tested in accordance with ASTM B 117, Standard Practice for Operating Salt Spray (Fog) Apparatus. Salt spray shall be 5 percent saline solution, and test exposure shall be for 50 hours.

8.8.4.2 Immediately following the test exposure and prior to examination, specimens shall be rinsed under warm, running tap water and dried with compressed air.

8.8.4.3 Specimens shall then be examined visually by the unaided eye to determine pass/fail.

8.8.4.4 The functionality of each specimen shall be evaluated.

8.8.5 Report. The presence of corrosion and the functionality of each specimen shall be reported.

8.8.6 Interpretation. One or more hardware specimens failing this test shall constitute failing performance for the hardware type.

8.9 Floatability Test.

8.9.1 Application. This test shall apply to throwline.

8.9.2 Samples.

8.9.2.1 Samples for conditioning shall be at least 1 m (1 yd) in length.

8.9.2.2 Samples shall be conditioned as specified in 8.1.2.

8.9.3 Specimens.

8.9.3.1 Specimens shall be 1 m (1 yd) in length.

8.9.3.2 A minimum of three specimens shall be tested.

8.9.3.3 The ends of the specimen shall be heat-sealed.

8.9.4 Procedure.

8.9.4.1 Specimens shall be completely immersed in a sufficiently sized vessel of fresh water at a temperature of 21°C ± 3°C (70°F ± 5°F) for a period of 24 hours +1/−0 hour.

8.9.4.2 The throwline shall then be allowed, over a maximum of 1 minute, to float to the surface.

8.9.5 Report. Observation of each specimen's ability to float within 1 minute shall be reported.

8.9.6 Interpretation. The entire length of the throwline shall float to constitute passing performance.

8.10 Product Label Durability Test.
8.10.1 Application.

8.10.1.1 This test method shall apply to permanently attached product labels and identification tapes, excluding metal stamped or engraved labels.

8.10.1.2 Specific requirements for testing rope and throwline identification tapes shall be specified in 8.10.7.

8.10.1.3 Specific requirements for testing all other labels shall be specified in 8.10.8.

8.10.2 Samples.

8.10.2.1 Samples for conditioning shall be individual labels or, in the case of rope or throwline, at least 1 m (1 yd) in length.

8.10.2.2 Samples shall be conditioned as specified in 8.1.2.

8.10.3 Specimens.

8.10.3.1 Specimens shall be individual labels or, in the case of rope or throwline, 1 m (1 yd) in length.

8.10.3.2 A minimum of four of each type of label shall be tested.

8.10.3.3 Where labels have “write-in” information, two additional specimens shall be tested that include those areas with sample information written in.

8.10.4 Procedures.

8.10.4.1 Abrasion Durability Test.

8.10.4.1.1 Product label specimens shall be subjected to abrasion in accordance with ASTM D 4966, Standard Test Method for Abrasion Resistance of Textile Fabrics, with the following modifications:

(1) The standard abrasive fabric and the felt-backing fabric shall be soaked for 24 hours or agitated in distilled water so that they are thoroughly wet.

(2) The standard abrasive fabric shall be rewetted after each set of cycles by applying 20 ml (0.68 oz) of distilled water from a squeeze bottle by squirting on the center of the abrasive pad.

(3) At least two specimens shall be subjected to 10 dry cycles, 160 revolutions, of the test apparatus.

(4) At least two specimens shall be subjected to 5 wet cycles, 80 revolutions, of the test apparatus.

(5) At least one dry and one wet test specimen shall be edge specimens.

(6) Where labels include “write-in” information at least one sample shall be tested in the dry condition and one specimen shall be tested in the wet condition.
8.10.4.1.2 Specimens shall be examined for legibility to the unaided eye by a person with 20/20 vision or vision corrected to 20/20 at a nominal distance of 305 mm (12 in.) in a well-illuminated area.

8.10.4.2 Laundering Durability Test.

8.10.4.2.1 Specimens shall be subjected to five cycles of laundering using Machine Cycle 1 and Wash Temperature V of AATCC 135, *Dimensional Changes in Automatic Home Laundering of Woven and Knit Fabrics*.

8.10.4.2.2 A 1.8 kg ± 0.1 kg (4.0 lb ± ¼ lb) load shall be used. A laundry bag shall not be used.

8.10.4.2.3 Specimens shall be examined for legibility to the unaided eye by a person with 20/20 vision or vision corrected to 20/20 at a nominal distance of 305 mm (12 in.) in a well-illuminated area.

8.10.4.2.4 Specimens shall be examined to determine if the label remained in place.

8.10.5 Report.

8.10.5.1 The legibility for each specimen shall be recorded and reported as acceptable or unacceptable.

8.10.5.2 For rope, webbing, and throwline, the ability of the label to remain in place shall be reported.

8.10.6 Interpretation. One or more label specimens failing this test shall constitute failing performance.

8.10.7 Specific Requirements for Testing Rope, Webbing, and Throwline Labels. All rope and throwline inserted identification tapes shall be tested only for laundering durability as specified in 8.10.4.2.

8.10.8 Specific Requirements for Testing All Other Labels. All harness and belt product labels shall be tested only for abrasion durability as specified in 8.10.4.1.

8.11 Holding Test.

8.11.1 This test shall apply to descent control devices.

8.11.2 Descent control devices shall be tested in accordance with ISO 22159, Personal equipment for protection against falls — Descending Devices, Section 5.5.

8.11.3 Samples.

8.11.3.1 Samples for conditioning shall be whole items.

8.11.3.2 Samples shall be conditioned as specified in 8.1.2.

8.11.3.3 Samples shall be new and in unused condition and shall conform in all respects to the manufacturer's specifications for the model being tested.

8.11.4 Specimens.
Specimens shall be whole items.

Three specimens shall be tested.

**Procedure.**

Testing shall be conducted using both the smallest and largest diameter life safety rope specified by the descent control device manufacturer for testing.

The rope used for testing shall meet the static rope requirements of Cordage Institute Standard CI 1801, *Low Stretch and Static Kernmantle Life Safety Rope*.

The descent control device shall be attached to the rope according to the manufacturer's instructions.

One end of the rope shall be anchored on to a tensile testing machine and the descent control device with passive brake deployed shall be anchored to the other end of the rope. A force shall be applied to the device at the normal attachment point at a rate of 25 mm/min ± 5 mm/min (1 in./min ± ¼ in./min).

The force for escape and technical use descent control devices shall be 1.35 kN (300 lbf) and for general use descent control devices shall be 2.7 kN (600 lbf).

The specified deformation force shall be held for 30 seconds +1−0 second, and then the tension shall be completely released over a maximum of 1 minute.

Any slippage of the descent control device on the rope shall then be measured.

The slip of the descent device at the specified load shall be reported.

One or more specimens failing this test shall constitute failing performance for the item being tested.

**Litter Strength Test.**

This test shall apply to litters.

Samples for conditioning shall be whole items.

Samples shall be conditioned as specified in 8.1.2.

Samples shall be new and in unused condition and shall conform in all respects to the manufacturer’s specifications for the model being tested.

Specimens shall be whole items.

A minimum of two specimens shall be tested in the horizontal position.
8.12.3.3 A minimum of two specimens shall be tested in the vertical position.

8.12.4 Apparatus. The apparatus shall be as specified in ASTM F 2821, *Standard Test Methods for Basket Type Rescue Litters*.

8.12.5 Procedure. Litters shall be tested as specified in ASTM F 2821, *Standard Test Methods for Basket Type Rescue Litters*, with the modification that both the horizontal litter test and the vertical litter test shall be performed on separate specimens.

8.12.6 Report.

8.12.6.1 The breaking strength of each specimen shall be reported to the nearest 0.1 kN (23 lbf) force.

8.12.6.2 Deformation of the structural element shall be reported to the nearest 0.5 cm (0.2 in.).

8.12.6.3 The lowest observed breaking strength shall be reported as the labeled breaking strength for each vertical and horizontal configuration.

8.12.7 Interpretation.

8.12.7.1 Failure of the device prior to the application of the 11 kN (2473 lbf) test load shall constitute failure of the litter.

8.12.7.2 Deformation of any structural element of more than 5 cm ± 0.5 cm (2 in. ± 0.2 in.) during testing shall constitute failure of the litter.

8.13 Payout Test.

8.13.1 Application.

8.13.1.1 This test shall apply to descent control systems with passive and active braking systems, and escape manufactured systems. (TIA)

8.13.2 Samples.

8.13.2.1 Samples shall be new and in unused condition and shall conform in all respects to the manufacturer’s specifications for the model to be tested.

8.13.2.2 The rope length available for testing shall be at least 1.5 m (5 ft).

8.13.2.3 The descent control system shall be tested with each type of rope for its intended use.

8.13.2.4 If multiple configurations are possible with the descent control device, it shall be tested in each configuration.

8.13.2.5 Samples for conditioning shall be whole items.

8.13.2.6 Samples shall be conditioned as specified in 8.1.2.

8.13.3 Specimens.
8.13.3.1 Specimens shall be whole items.

8.13.3.2 A total of three specimens shall be tested and each test repeated 5 times.

8.13.4 Procedure.

8.13.4.1 Specimens shall be tested in a servohydraulic or screw-driven load frame with a controlled displacement rate of 100 mm/sec.

8.13.4.2 For descent control devices with the capability to vary friction with the rope, the device shall be locked open in the configuration the manufacturer recommends for actual use. The manner of locking the device shall not affect the load measurement during payout.

8.13.4.3 The rope shall be attached to a solid anchorage point and the descent control device attached to the moving crosshead of the load frame. The rope shall enter the descent device directly without creating additional friction throughout the test.

8.13.4.4 Each test shall require the rope to pass through the descent control device for a minimum of 100 mm (4 in.).

8.13.5 Report. The maximum force encountered over the 100 mm (4 in.) payout shall be recorded from each test and the average and standard deviation calculated.

8.13.6 Interpretation.

8.13.6.1 Pass/fail performance shall be based on the maximum force required to payout rope through the descent control device.

8.13.6.2 One or more specimens failing this test shall constitute a failing performance for the given rope type.

8.13.6.3 If multiple configurations are possible with the descent control device, the pass/fail criteria shall be applied for each configuration.

8.13.6.4 The compliant configuration shall be listed in the user instructions.

8.14 Escape Descent Control Device and Systems Drop Test.

8.14.1 Application. This test shall apply to escape descent control devices and escape manufactured systems.

8.14.2 Samples.

8.14.2.1 Samples for conditioning shall be whole items.

8.14.2.2 Samples shall be conditioned as specified in 8.1.2.

8.14.2.3 Samples shall be new and in unused condition and shall conform in all respects to the manufacturer’s specifications for the model to be tested.

8.14.3 Specimens.
8.14.3.1 A minimum of two specimens shall be tested.

8.14.3.2 One drop shall be conducted for each specimen.


8.14.4.1 Testing shall be conducted per ISO 22159, *Personal equipment for protection against falls — Descending devices*, Section 5.6, with the modifications specified in 8.14.4.1.1 through 8.14.4.1.4.

8.14.4.1.1 A force measurement device as described in ISO 22159, *Personal equipment for protection against falls — Descending devices*, Section 5.1.2, shall be installed between the test mass and the descent control device.

8.14.4.1.2 The entire test mass, consisting of the falling mass itself, the attachment device(s), and force-measuring device shall weigh 136 kg ± 1 kg (300 lb ± 2.25 lb).

8.14.4.1.3 On the descent control device, the length of rope or webbing between the lowest point of the top anchor and the top entry point of the rope shall be 610 mm −0/+25 mm (24 in. −0/+1 in.).

8.14.4.1.4 The test mass shall be positioned to allow for a free fall of 153 mm −0/+13 mm (6 in. −0/+½ in.)

8.14.4.2 Following each drop, the device and the rope or webbing shall be visually examined for damage and functionality.


8.14.5.1 The maximum impact force shall be reported to the nearest 0.1 kN.

8.14.5.2 Any visible damage to the device, or rope or webbing shall be reported.

8.14.5.3 Functionality of the device shall be reported.

8.14.6 Interpretation.

8.14.6.1 A recorded impact force in excess of 8.0 kN shall constitute failing performance.

8.14.6.2 Visible damage to device, or rope or webbing shall constitute failing performance.

8.14.6.3 Failure of the device to function shall constitute failing performance.

8.14.6.4 One or more specimens failing the test shall constitute failing performance.

8.15 Elevated Temperature Rope Test.

8.15.1 Application.

8.15.1.1 This test shall apply to fire escape rope and fire escape webbing.
8.15.2 Samples. Samples shall be new and in unused condition and shall conform in all respects to the manufacturer’s specifications for the model to be tested.

8.15.2.1 Samples for conditioning shall be whole items.

8.15.2.2 Samples shall be conditioned as specified in 8.1.2.

8.15.2.3 Samples shall be new and in unused condition and shall conform in all respects to the manufacturer’s specifications for the model to be tested.

8.15.3 Specimens.

8.15.3.1 Specimens shall be whole items.

8.15.3.2 A total of five specimens shall be tested.

8.15.4 Procedure.

8.15.4.1 Specimens shall be tested in a manner that allows a constant load to be applied to the rope throughout the duration of the test after stabilization. One end of the rope shall be attached to a load cell, while the other shall be attached to an apparatus that allows constant load application.

8.15.4.2 Rope specimens shall be introduced into the high temperature furnace at the given set point ±5°C and the load stabilized within 5 seconds of introduction.

8.15.4.3 A thermocouple shall be attached to the rope at the location of the maximum temperature of the furnace (i.e., middle for horizontal furnace, top for vertical furnace). The exposure time shall begin when the thermocouple reading increases by 10 percent from room temperature and ends when the load cell reading drops to 0 upon failure of the rope.

8.15.5 Report. The time to failure shall be recorded from each test and the average and standard deviation calculated.

8.15.6 Interpretation.

8.15.6.1 Pass/fail performance shall be based on the average time to failure.

8.15.6.2 One or more specimens failing this test shall constitute a failing performance for the given rope type.

8.16 Flame Resistance Test.

8.16.1 Application.

8.16.1.1 This test method shall apply to flame-resistant life safety harness and belt webbing and materials.

8.16.1.2 Modifications to this test method for testing webbing shall be as specified in 8.16.8.

8.16.2 Samples. Samples shall consist of a 75 mm × 300 mm (3 in. × 12 in.) rectangle with the long dimension parallel to either the warp or filling, the wale or course, or the machine or cross-machine direction of the material.
8.16.3 Specimens. All specimens to be tested shall be conditioned as specified in 8.1.2.


8.16.5 Procedure.

8.16.5.1 Flame-resistance testing shall be performed in accordance with ASTM D 6413, *Standard Test Method for Flame Resistance of Textiles (Vertical Test)*.

8.16.5.2 Each specimen shall be examined for evidence of melting or dripping.

8.16.6 Report.

8.16.6.1 Afterflame time and char length shall be recorded and reported for each specimen. The average afterflame time and char length for each material tested shall be calculated, reported, and recorded. The afterflame time shall be recorded and reported to the nearest 0.2 second and the char length to the nearest 3 mm (\(\frac{1}{8}\) in.).

8.16.6.2 Observations of melting or dripping for each specimen shall be recorded and reported.

8.16.7 Interpretation. Pass or fail performance shall be based on any observed melting or dripping, the average afterflame time, and the average char length.

8.16.8 Specific Requirements for Testing Fire Escape Webbing.

8.16.8.1 Five specimens of the webbing material shall be tested.

8.16.8.2 Webbing shall be at least 305 mm (12 in.) in length by the widest width of the webbing.

8.16.8.3 Testing shall be performed in only one direction.

8.16.8.4 Testing shall be performed as specified in 8.16.2 through 8.16.7.

8.17 Heat Resistance Test.

8.17.1 Application.

8.17.1.1 This test method shall apply to flame-resistant life safety harness and belt webbing, materials, labels, and hardware.

8.17.1.2 Modifications to this test method for testing webbing shall be as specified in 8.16.8.

8.17.2 Samples. All samples shall be conditioned as specified in 8.1.2.

8.17.3 Specimens.

8.17.3.1 Heat resistance testing shall be conducted on a minimum of three specimens for each item.

8.17.4 Apparatus. The test oven shall be as specified in ISO 17493, *Clothing and equipment for protection against heat — Test method for convective heat resistance using a hot air
circulating oven. Testing shall be carried out at a temperature of 260°C +6/−0°C (500°F +10/−0°F).

8.17.5 Procedure.

8.17.5.1 The specimen shall be suspended by metal hooks at the top and centered in the oven so that the entire specimen is not less than 50 mm (2 in.) from any oven surface or other specimen and air is parallel to the plane of the material.

8.17.5.2 The oven door shall not remain open more than 15 seconds. The air circulation shall be shut off while the door is open and turned on when the door is closed. The total oven recovery time after the door is closed shall not exceed 30 seconds.

8.17.5.3 The specimen mounted as specified, shall be exposed in the test oven for 5 minutes +0.15/−0 minute. The test exposure time shall begin when the test thermocouple recovers to a temperature of 260°C +6°/−0°C (500°F, +10°/−0°F).

8.17.5.4 Immediately after the specified exposure, the specimen shall be removed and examined for evidence of ignition, melting, dripping, or separation.

8.17.6 Report. Observations of ignition, melting, dripping, or separation shall be recorded and reported for each specimen.

8.17.7 Interpretation. Where applicable, any evidence of ignition, melting, dripping, or separation on any specimen shall constitute failing performance.

8.17.8 Specific Requirements for Testing Webbing.

8.17.8.1 Samples for conditioning shall include specimens at least 380 mm (15 in.) in length.

8.17.8.2 Testing shall be performed as specified in 8.17.2 through 8.17.7.

8.17.9 Specific Requirements for Testing Label Materials.

8.17.9.1 Where attached to textile material, samples for conditioning shall include specimens attached to the textile layer as used in the harness or belt positioned no closer than 50 mm (2 in.) apart in parallel strips. The textile material shall be at least 1 m (1 yd) square of the textile layer on which the specimens are attached.

8.17.9.2 Where attached to webbing, samples for conditioning shall include specimens attached to the webbing as used in the harness or belt positioned no closer than 50 mm (2 in.) apart. The webbing shall be at least 380 mm (15 in.) in length.

8.17.9.3 Testing shall be performed as specified in 8.17.2 through 8.17.7.

8.17.10 Specific Requirements for Testing Hardware.

8.17.10.1 A minimum of three complete hardware items shall be tested.

8.17.10.2 Observations of hardware condition following heat exposure shall be limited to ignition.
8.17.10.3 Hardware shall be evaluated for functionality within 10 minutes following removal from the oven.

8.17.10.4 Testing shall be performed as specified in 8.17.2 through 8.17.7.

8.17.11 Specific Requirements for Testing Other Materials.

8.17.11.1 Samples for conditioning shall be at least 1 m (1 yd) square of each material.

8.17.11.2 Each specimen shall be 380 mm × 380 mm ± 13 mm (15 in. × 15 in. ± ½ in.) and shall be cut from the fabric to be utilized in the construction of the item.

8.17.11.3 Testing shall be performed as specified in 8.17.2 through 8.17.7.

8.18 Thread Heat Resistance Test.

8.18.1 Application. This test method shall apply to each type of sewing thread used in the construction of flame-resistant life safety harnesses and belts.

8.18.2 Samples. Samples for conditioning shall be lengths of thread 150 mm (6 in.) or greater.

8.18.3 Specimens.

8.18.3.1 A total of three different specimens of each thread type shall be tested.

8.18.3.2 All specimens shall be conditioned as specified in 8.1.2 prior to testing.

8.18.4 Apparatus.

8.18.4.1 An electrically heated stage having a circular depression large enough to insert a micro-cover glass shall be used. The stage shall have a variable transformer controlling the rate of heat input into the stage.

8.18.4.2 The following equipment shall also be used:

   (1) Armored stem thermometer with a range of 150°C to 300°C accurate to 1°C

   (2) Low-powered magnifying glass

   (3) Two micro-cover glasses

   (4) Spatula, pick needle, or other instrument for applying pressure to the micro-cover glasses

   (5) Soxhlet extraction apparatus

8.18.4.3 The following reagents shall be used:

   (1) Chloroform, USP

   (2) U.S. Pharmacopoeia reference standards for melting point or other pure materials for calibrating the apparatus

8.18.5 Procedure.
8.18.5.1 The specimen shall be extracted with chloroform for a minimum of 20 extractions in a Soxhlet extractor and dried. The specimen shall then be cut into lengths of 2 mm (1/16 in.) or less.

8.18.5.2 The apparatus shall be calibrated by determining the melting point of a pure material of known melting point. The melting point of the pure material shall be in the range of the melting point of the fiber being tested. The value obtained shall agree within +1°C of the known value.

8.18.5.3 If the approximate melting point of the specimen is not known before testing, it shall be determined by a trial run.

8.18.5.4 In subsequent determinations immediately following the trial run or initial determination, the stage in each case shall be cooled to approximately 50°C below the expected melting point before the specimen is placed for testing.

8.18.5.5 The specimen shall be placed in a small mound on a cover glass and covered with another cover glass. The two cover glasses shall be pressed together gently but firmly, and placed in the circular depression on the stage. The temperature of the stage shall be raised with some rapidity to within 15°C of the expected melting point, and thereafter at a rate of 3°C to 4°C per minute. At this rate of temperature rise, a slight pressure shall be applied on the upper glass cover by pressing with a spatula, pick needle, or other instrument so that the complete fiber is in contact with the cover glass.

8.18.5.6 The specimen shall be observed with the aid of a magnifying glass, and the melting point taken as the temperature at which flow of the specimen is observed. At the observed melting point, the temperature shall be read to the nearest °C (°F).

8.18.6 Report.

8.18.6.1 The melting point of the sample unit shall be the average of the results obtained from the specimens tested and shall be recorded and reported to the nearest °C (°F).

8.18.6.2 The pass/fail results for each specimen tested shall be recorded and reported.

8.18.7 Interpretation. One or more thread specimens failing this test shall constitute failing performance for the thread type.

Annex A  Explanatory Material

Annex A is not a part of the requirements of this NFPA document but is included for informational purposes only. This annex contains explanatory material, numbered to correspond with the applicable text paragraphs.

A.1.1.6 This standard includes requirements for fall prevention rope and equipment for emergency services during rescue, fire fighting, and other emergency operations, or during...
training. It does not include requirements for fall protection for employees working at height in general industry or the construction and demolition industry.

A.1.2.1 Rescue operations are hazardous activities. It is the responsibility of the fire department to obtain expert instruction and to take adequate safety precautions based upon manufacturers’ recommendations. Training should include use techniques and maintenance procedures — including properties of life safety rope, escape rope, water rescue throwline, life safety harnesses, belts, manufacturer-supplied eye terminations, moderate elongation laid life safety rope, belay devices, and auxiliary equipment — and deployment techniques of this equipment.

A.1.3.4 Fall factors (as illustrated in Figure A.1.3.4) are calculated by dividing the distance the person attached to the rope will fall by the length of the rope between the person and the rope anchor or belay. Thus, a 305 mm (1 ft) fall on a 150 mm (½ ft) rope would be a fall factor of 2.0; a 305 mm (1 ft) fall on a 305 mm (1 ft) rope would be a 1.0 fall factor; a 305 mm (1 ft) fall on a 1.12 m (4 ft) rope would be a 0.25 fall factor; and a 305 mm (1 ft) fall on a 12.2 m (40 ft) rope would be a 0.025 fall factor. Note as well that a 7.6 m (25 ft) fall on a 30.5 m (100 ft) rope is also a 0.25 fall factor. This formula assumes the fall takes place in free air without rope drag across building edges or through intermediate equipment.

When fall factors of greater than 0.25 are anticipated, such as are possible in lead climbing, dynamic ropes specifically designed for climbing should be considered. Only ropes certified to an appropriate climbing rope standard (i.e., UIAA, CE, etc.) are appropriate for this use. Dynamic climbing ropes should be stored, maintained, inspected, and use-logged in a manner similar to that required for static/low-stretch rope. Such operations are outside the scope of this document. A fall factor of 0.25 is the maximum considered for NFPA 1983.

Recent testing indicates that the formula for calculating fall factors may not translate perfectly from dynamic ropes to the more static design ropes used for fire service operations.

****INSERT FIGURE HERE****

FIGURE A.1.3.4 Fall Factor.

A.3.2.1 Approved. The National Fire Protection Association does not approve, inspect, or certify any installations, procedures, equipment, or materials; nor does it approve or evaluate testing laboratories. In determining the acceptability of installations, procedures, equipment, or materials, the authority having jurisdiction may base acceptance on compliance with NFPA or other appropriate standards. In the absence of such standards, said authority may require evidence of proper installation, procedure, or use. The authority having jurisdiction may also refer to the listings or labeling practices of an organization that is concerned with product evaluations and is thus in a position to determine compliance with appropriate standards for the current production of listed items.

A.3.2.2 Authority Having Jurisdiction (AHJ). The phrase “authority having jurisdiction,” or its acronym AHJ, is used in NFPA documents in a broad manner, since jurisdictions and approval agencies vary, as do their responsibilities. Where public safety is primary, the authority having jurisdiction may be a federal, state, local, or other regional department or individual such as a fire chief; fire marshal; chief of a fire prevention bureau, labor department, or health
department; building official; electrical inspector; or others having statutory authority. For insurance purposes, an insurance inspection department, rating bureau, or other insurance company representative may be the authority having jurisdiction. In many circumstances, the property owner or his or her designated agent assumes the role of the authority having jurisdiction; at government installations, the commanding officer or departmental official may be the authority having jurisdiction.

A.3.2.4 Listed. The means for identifying listed equipment may vary for each organization concerned with product evaluation; some organizations do not recognize equipment as listed unless it is also labeled. The authority having jurisdiction should utilize the system employed by the listing organization to identify a listed product.

A.3.3.3.1 Load-Bearing Attachment Point. Load bearing attachment points are D-rings, loops, or other connection points on a life safety harness and escape belts that are designated for use as the connection point to suspend the full weight of the wearer and equipment such as when ascending or descending rope and for fall arrest when the wearer may fall and shock load the connection point. These attachment points are designed to withstand the forces generated in a fall arrest situation.

A.3.3.3.2 Positioning Attachment Point. Positioning attachment points are D-rings, loops, or other connection points on a life safety harness or belt that are designated for use solely to support the wearer's weight when connected to an anchor system. Attachment to positioning points can expose the wearer to a fall such as when using a strap connected to side D-rings when connected to a pole or tower. In other situations such as working on rappel, a fall can be much less likely. These attachment points are typically not designed to withstand the forces generated in a fall arrest situation, but can be designed for a much lower-impact fall. If the situation requires the use of fall arrest equipment, the anchor system should be attached to the main attachment point. Manufacturers should clearly identify and the user should be familiar with any attachment points that are only rated as positioning points.

A.3.3.7.1 Escape Belt. The intended use of the escape belt is to provide emergency escape capability to a fire fighter from an immediate life-threatening emergency above the ground floor of a structure. Escape belts do not have leg loops to prevent the belt from rising up the torso of the user. The fire fighter using an escape belt should always be able to maintain foot contact with the surface of the structure during descent or use a life safety harness.

A.3.3.18.2 Ascending Device. Ascend devices for ascending a fixed line are often also referred to as ascenders. These devices are considered part of the larger family group of rope grab devices. Ascenders are most often used in technical use ascent systems although most rope grabs including general use ones can also be used as an ascender.

A.3.3.18.5 Escape Anchor Device. A carabiner that does not connect to the structure but aids in tying an escape line to the structure is not considered an escape anchor device. The escape anchor device section applies to components intended to be attached to the end of an escape line and used to quickly attach the rope to a suitable anchor. It is not intended to apply to a snap-link or carabiner used with or attached to an escape line.

A.3.3.35 General Use. Rescue personnel may elect to use either technical or general use labeled equipment based on anticipated loads and acceptable safety margins as established by the
authority having jurisdiction (AHJ). This choice should be based on the levels of operational capability of the organization. The AHJ should compile and evaluate information on the comparative advantages and disadvantages of the rope and equipment under consideration. For example, an organization at the operational level performing simple rescues might require the higher margin of safety offered by general use equipment. The highly trained or specialized organization performing the more complicated rescue might benefit from the lighter weight of technical use equipment, but due to their level of training can maintain an acceptable level of safety and efficiency for the specified operation.

A.3.3.44.1 Design Load. The design load used in developing the minimum performance requirement of a component to this standard is applicable only when the forces are applied to the component in a direct, linear fashion. The loads placed on a component through rigging and creation of a system can be increased due to the vectors used in the rigging. Loads can be amplified substantially when forces are applied in differing directions. Users should develop processes to identify loads placed on each component when creating systems and to determine whether or not they are acceptable. For example, a rope used in a highline system as the main line could be loaded (tensioned) with more than 10 times the actual load being carried across on the highline system depending on the angles involved in the rigging of the highline system.

A.3.3.44.2 Impact Load. For the purposes of this document, fall factors greater than 0.25 generate unacceptable impact loads.

A.3.3.44.3 Proof Load. The applied proof load is usually well above the allowable service load, but low enough so as not to damage the product being tested.

A.3.3.47.2 Multiple Configuration Load Straps. These can be, but are not limited to, anchor straps and rigging straps.

A.3.3.51 Manufacturer-Supplied Eye Termination. For example, sewn or swaged eyes provided in the end of a rope or line by the manufacturer of a compliant rope component or system.

A.3.3.58 Portable Anchor. Examples include but are not limited to davits, A-frames, tripods, quadpods, and cantilever devices.

A.3.3.60 Product Label. This product label is not a certification organization's label, symbol, or identifying mark; however, the certification organization's label, symbol, or identifying mark can be attached to it or be part of it.

A.3.3.64.1 Block Creel Construction. Unavoidable knots could be present in individual fibers as received from the fiber producer.

A.3.3.71 Standard Deviation. In this standard, standard deviation is calculated using the formulas in 8.2.5.2.

A.3.3.72 Technical Use. Rescue personnel can elect to use either technical or general use labeled equipment based on anticipated loads and acceptable safety margins as established by the authority having jurisdiction (AHJ). This choice should be based on the levels of operational capability of the organization. The AHJ should compile and evaluate information on the comparative advantages and disadvantages of the rope and equipment under consideration. For
example, an organization at the operational level performing simple rescues might require the higher margin of safety offered by general use equipment. The highly trained or specialized organization performing the more complicated rescue might benefit from the lighter weight of technical use equipment, but due to their level of training can maintain an acceptable level of safety and efficiency for the specified operation.

A.4.1.7 From time to time the NFPA has received complaints that certain items of fire and emergency services protective clothing or protective equipment could be carrying labels falsely identifying them as compliant with an NFPA standard. The requirement for placing the certification organization's mark on or next to the product label is to help ensure that the purchaser can readily determine compliance of the respective product through independent third-party certification.

NFPA advises those purchasing life safety rope or equipment to be aware that for life safety rope or equipment items to meet the requirements of NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services, they must be certified by an independent third-party certification organization. In addition, the item must carry the label, symbol, or other identifying mark of that certification organization.

A life safety rope or equipment item that does not bear the mark of an independent third-party certification organization is NOT COMPLIANT with NFPA 1983, even if the product label states that the item is compliant!

For further information about certification and product labeling, see Chapters 4 and 5 of NFPA 1983. Also, the definitions for certification/certified, labeled, and listed in Chapter 3 of this standard should be reviewed.

Third-party certification is an important means of ensuring the quality of emergency services protective clothing and equipment. To be certain that an item is properly certified, labeled, and listed, NFPA recommends that prospective purchasers require appropriate evidence of certification for the specific product and model from the manufacturer before purchasing. Prospective purchasers should also contact the certification organizations and request copies of the certification organization's “list” of products certified to the appropriate NFPA standard. This “listing” is a requirement of third-party certification by this standard and is a service performed by the certification organization.

All NFPA standards on fire and emergency services protective clothing and equipment require that the item be certified by an independent third-party certification organization and, as with NFPA 1983, all items of fire and emergency services protective clothing and equipment must carry the label, symbol, or other identifying mark of that certification organization.

Any item of protective clothing or protective equipment covered by an NFPA standard that does not bear the mark of an independent third-party certification organization is NOT COMPLIANT with the appropriate NFPA standard, even if the product label states that the item is compliant!

A.4.2.1 The certification organization should have sufficient breadth of interest and activity so that the loss or award of a specific business contract would not be a determining factor in the financial well-being of the agency.
A.4.2.5 The contractual provisions covering certification programs should contain clauses advising the manufacturer that if requirements change, the product should be brought into compliance with the new requirements by a stated effective date through a compliance review program involving all currently listed products.

Without these clauses, certifiers would not be able to move quickly to protect their name, marks, or reputation. A product safety certification program would be deficient without these contractual provisions and the administrative means to back them up.

A.4.2.6 Investigative procedures are important elements of an effective and meaningful product safety certification program. A preliminary review should be carried out on products submitted to the agency before any major testing is undertaken.

A.4.2.7.1 For further information and guidance on recall programs, see 21 CFR 7, Subpart C.

A.4.2.9 Such inspections should include, in most instances, witnessing of production tests. With certain products, the certification organization inspectors should select samples from the production line and submit them to the main laboratory for countercheck testing. With other products, it could be desirable to purchase samples in the open market for test purposes.

A.4.5.4 For example, this situation exists when the product is wholly manufactured and assembled by another entity, or entities, for a separate entity that puts their own name and label on the product, frequently called “private labeling,” and markets and sells the product as their product.

A.4.5.5 Subcontractors should be considered to be, but not be limited to, a person or persons, or a company, firm, corporation, partnership, or other organization having an agreement with or under contract with the compliant product manufacturer to supply or assemble the compliant product or portions of the compliant product.

A.4.6.1 ISO 27, Guidelines for corrective action to be taken by a certification body in the event of misuse of its mark of conformity, is a component of accreditation of certification organizations specified in 4.1.4 and 4.2.3 of this standard. Those paragraphs contain a mandatory reference to ISO 65, General requirements for bodies operating product certification systems, in which ISO 27 is referenced.

A.4.6.2 By definition, a hazard might involve a condition that can be imminently dangerous to the end user. With this thought in mind, the investigation should be started immediately and completed in as timely a manner as is appropriate considering the particulars of the hazard being investigated.

A.4.6.11 The determination of the appropriate corrective action for the certification organization to initiate should take into consideration the severity of the product hazard and its potential consequences to the safety and health of end users. The scope of testing and evaluation should consider, among other things, testing to the requirements of the standard to which the product was listed as compliant, the age of the product, the type of use and conditions to which the compliant product has been exposed, care and maintenance that has been provided, the use of expertise on technical matters outside the certification organization's area of competence, and product hazards caused by circumstances not anticipated by the requirements of the applicable standard. As a guideline for determining which is more appropriate, a safety alert or a product
recall, the following product hazard characteristics, based on 42 CFR 84, Subpart E, §84.41, are provided.

(1) **Critical:** A product hazard that judgment and experience indicate is likely to result in a condition immediately hazardous to life or health (IHLH) for individuals using or depending on the compliant product. If an IHLH condition occurs, the user will sustain, or will be likely to sustain, an injury of a severity that could result in loss of life, significant bodily injury, or loss of bodily function, either immediately or at some point in the future.

(2) **Major A:** A product hazard other than Critical that is likely to result in failure to the degree that the compliant product does not provide any protection or reduces protection, and is not detectable to the user. The phrase “reduces protection” means the failure of specific protective design(s) or feature(s) that results in degradation of protection in advance of reasonable life expectancy to the point that continued use of the product is likely to cause physical harm to the user, or where continued degradation could lead to IHLH conditions.

(3) **Major B:** A product hazard other than Critical or Major A that is likely to result in reduced protection and is detectable to the user. The phrase “reduces protection” means the failure of specific protective design(s) or feature(s) that results in degradation of protection in advance of reasonable life expectancy to the point that continued use of the product is likely to cause physical harm to the user, or where continued degradation could lead to IHLH conditions.

(4) **Minor:** A product hazard other than Critical, Major A, or Major B that is not likely to materially reduce the usability of the compliant product for its intended purpose, or a product hazard that is a departure from the established applicable standard and has little bearing on the effective use or operation of the compliant product for its intended purpose.

Where the facts are conclusive, based on characteristics of the hazard classified as indicated previously, the certification organization should consider initiating the following corrective actions with the authorized and responsible parties:

(1) Critical product hazard characteristics: product recall

(2) Major A product hazard characteristics: product recall or safety alert, depending on the nature of the specific product hazard

(3) Major B product hazard characteristics: safety alert or no action, depending on the nature of the specific product hazard

(4) Minor product hazard characteristic: no action

**A.4.6.13** Reports, proposals, and proposed TIAs should be addressed to the technical committee that is responsible for the applicable standard and be sent in care of Standards Administration, NFPA 1 Batterymarch Park, Quincy, MA 02169-7471.

**A.5.1.1.8** When life safety rope is purchased, the AHJ should ensure that the product label(s) with the information as specified in 5.1.1 and 5.2 is attached and remains with the rope until placed in service. When the product label is removed from the rope, the label should be retained in the AHJ's permanent rope records.
It is very important that the information on the product label(s) and the information required in Section 5.2.1 and 5.1.2 to be supplied by the manufacturer reach the persons who will actually be using the rope. It is useless for the supply personnel or equipment officer to remove the product label and other pertinent information and simply retain them in the rope record file. The persons who potentially will be using the rope need to be provided with all the information available. Copies of the product label(s) and other pertinent information should be maintained with the rope wherever the rope is in service awaiting use so that the potential users can consult the information.

Where life safety or escape line is purchased in long lengths and then cut by the end user agency to make several life safety ropes or escape lines, the product label(s) should be photocopied or otherwise reproduced and attached to each life safety rope when it is sent into service. The end user(s) (in a fire department it probably would be a fire company) should keep the copy of the product label(s) and any other pertinent information for reference and have the product label and other information readily available so that they can be reviewed by all potential users whenever necessary.

Ropes can be damaged in use by high stresses, impact loading situations, abrasion, kinking, heat, and exposure to chemicals and other products.

Ropes should be inspected by a qualified person before and after every operation and carefully stored between each use. Records should provide a history of each rope and should call for regular inspection and replacement as necessary. Any rope that fails to pass inspection or has been impact-loaded should be destroyed immediately.

It is recommended that departments establish an inspection program and shelf-life criteria for their ropes based on the conditions and environments encountered in their respective operations.

The destruction of rope means that it should be removed from service and altered in such a manner that it could not mistakenly be used as a life safety rope. This could include disposal or removal of the label and cutting the rope into short lengths to be used for utility purposes.

A.5.1.1.13 Information could be added to the tape that applies to a particular rope, such as date of manufacture or any pertinent information useful to the purchaser.

A.5.2.1.1 When escape line is purchased, the purchaser or the AHJ should ensure that a product label with the information as specified in Section 5.2.1 and 5.2.2 is attached and remains with the rope until placed in service. This label should be retained either in the AHJ’s rope records or with the user of the rope for reference.

Escape line is intended only for emergency self-rescue situations and cannot be used for other rope rescue situations. Escape rope is designed for one emergency use only and should be destroyed after use.

Escape line is intended to be carried by a fire fighter or other emergency services personnel so that it will be available in unanticipated situations from which self-rescue using the rope is the only option. Therefore, the escape line should be carefully stored and periodically inspected by a qualified person to ensure status and condition of the rope. During inspection, if there is any
doubt as to the suitability of the escape line for use, it should be destroyed immediately and replaced.

A.5.3.1.1 See A.5.2.1.1.
A.5.4.1.1 See A.5.2.1.1.
A.5.5.1.1 See A.5.2.1.1.

A.5.1.2.2 Information useful to the purchaser that applies to a particular rope could be added to the tape.

A.5.1.2.9 See A.5.1.1.8.

A.5.1.2.12 Information useful to the purchaser that applies to a particular rope could be added to the tape.

A.5.1.3.12 See A.5.1.1.8.

A.5.1.6.1 For calculating the “fit height,” it will be assumed the wearer has a 1015 mm (40 in.) chest.

A.5.1.6.8 See A.5.1.1.8.

A.5.1.9.3 See A.5.1.1.8.

A.5.1.10.3 See A.5.1.1.8.

A.5.1.12.1 See A.5.1.2.1. A.5.2.1.1.
A.5.1.12.2 See A.5.1.2.2 A.5.2.1.2.
A.5.1.12.9 See A.5.1.1.8.
A.5.1.12.12 See A.5.1.2.12 A.5.2.1.12.

A.5.2.1.4 To avoid possible damage, and possible reduction and loss of strength of the life safety rope or harness, the manufacturer should be contacted prior to disinfecting or cleaning by a method not prescribed in the maintenance procedures and retirement criteria.

Generic inspection information for some types of life safety ropes can be found in ASTM F 1740, Guide for Inspection of Nylon, Polyester and/or Nylon/Polyester Blend Kernmantle Rope.

A.5.2.5.7 Users should be aware that auxiliary equipment is tested with specific rope(s). Where auxiliary equipment is used with other than the test rope(s), characteristics and rope/hardware interactions can be significantly different, which might include rope failure and reduced minimum breaking strengths. Users should test all components and ropes for compatibility in a controlled environment prior to using in a rescue situation.

A.5.16.2.5 See A.14.2.5.
A.5.21.2.5 See A.21.2.5.

A.6.1.1 If a finish is applied to rope fiber during production, it should not interfere with safe usage of the rope due to excessive slipperiness; this characteristic should be evaluated by the purchasing organization before the rope is purchased.

A.6.3.2–A.6.9.2 The purchaser should ensure that proper sizes are available to accommodate on-duty personnel.

A.6.3.3–A.6.9.3 Many life safety harness and system components that meet the requirements of this standard might not interface effectively with all systems of use and all types of life safety rope. Evaluation should be done before purchase to ensure compatibility.

Load-bearing textile materials should have strength, aging, ultraviolet resistance, abrasion resistance, and heat and cold resistance characteristics equivalent or superior to polyamides.

A.6.3.4–A.6.9.4 Alternative methods for finishing and securing webbing ends can be hardware capping, tucking and sewing, and coating the webbing ends with an air-drying solvent base sealant.

A.6.3.5 A.6.9.5 To aid the visual inspection of thread, it is recommended that the manufacturer use a thread that is of contrasting color to the webbing.

A.6.4.2–A.6.10.2 See A.6.3.2 A.6.9.2.

A.6.4.3–A.6.10.3 See A.6.3.3 A.6.9.3.

A.6.4.4–A.6.10.4 See A.6.3.4 A.6.9.4.

A.6.4.5–A.6.10.5 See A.6.3.5 A.6.9.5.

A.6.5.5–A.6.15.5 Locking designs can include screw and spring collars that are designed to prevent gates from opening accidently during use.

A.6.5.7–6.12.6 Alternative methods for finishing and securing webbing ends can be hardware capping, tucking and sewing, and coating the webbing ends with an air-drying solvent base sealant.


A.6.5.8–A.6.12.7 See A.6.3.5 A.6.9.5.

A.6.13.7 See 6.9.5.

A.6.22.7 See 6.9.5.

A.6.25.7 See 6.9.5.

A.6.6.1 See A.6.1.1.
A.6.10.1 See A.6.1.1.

A.6.11 Examples of flexible lifelines include but are not limited to rope, webbing, and cables. A connector from the system to the user does not include the harness or belt. An escape anchor is an example of an anchor point. Each component must meet the performance requirements given for that type component given in this standard, even if it does not meet the design requirements.


A.6.15 Even properly stored rope can lose strength over a period of time. Life safety ropes should be stored in a manner to avoid degradation from the environment. Examples of potentially damaging environmental factors include but are not limited to sunlight, fluorescent light, heat, exhaust fumes, battery acid, and fumes.

Any rope can be severely damaged and can fail when cut by a sharp edge or when subjected to abrasion over rough surfaces. Rope should be protected from such hazards with appropriate abrasion protection. Many constructions of rope that meet the requirements of this standard could pose difficulties with knotting or splicing easily or interfacing effectively with all systems of use and all types of life safety harness and associated equipment. Evaluation should be done by the fire department before purchase to ensure compatibility. Rope end terminations such as knots and splices should be made in accordance with the manufacturer's instructions.

A.7.1 Rope elongation is related to the amount of energy a rope can safely absorb when used to arrest a fall. For all ropes, especially when impact loading with a fall factor greater than 0.25, manufacturers should be consulted to ensure that rope with appropriate elongation and energy absorption is selected for each application.

A.7.1.1 See A.7.1.1.

A.7.1.2 See A.7.1.2.

A.7.1.3 Table A.7.1.3 shows comparisons of rope diameters to circumference in both millimeters and inches.

<table>
<thead>
<tr>
<th>Diameter in Decimal (mm) Nearest 0.5 mm</th>
<th>Diameter in Decimal (in.)</th>
<th>Diameter in Fraction (in.) Nearest 1/64</th>
<th>Equivalent Circumference (in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.5</td>
<td>0.295</td>
<td>19/64</td>
<td>0.93</td>
</tr>
<tr>
<td>8.0</td>
<td>0.313</td>
<td>5/16</td>
<td>0.98</td>
</tr>
<tr>
<td>8.5</td>
<td>0.335</td>
<td>11/32</td>
<td>1.05</td>
</tr>
<tr>
<td>9.0</td>
<td>0.354</td>
<td>23/64</td>
<td>1.11</td>
</tr>
</tbody>
</table>

Table A.7.1.3  Comparison of Rope Diameter/Circumference
When selecting the size of rope to purchase, a systems approach should be considered. Evaluation should be done while wearing gloves with the selected ascender and descender auxiliary equipment before purchase to ensure the rope size works.

A.7.1.4 See A.7.1.3.

A.7.1.5 The thermal requirement is intended to limit melting of rope, harness, and certain other system components due to friction caused by activities such as rappelling. The thermal requirement is NOT intended to qualify these items for use during fire-fighting operations or other operations where high temperature exposures are encountered.

Many life safety ropes have thermoplastic materials as all or part of their construction because of the material’s excellent stretch and resilient properties. However, thermoplastic materials are not highly resistant to elevated temperatures and can lose strength at temperatures common during fire-fighting operations. If life safety rope is carried by fire fighters during fire-fighting operations, it should be shielded or protected from flame or high temperature exposures. Repeat exposures of the life safety rope to flame or high temperatures can cause degradation of the rope over time and could result in failure during use. Exposure of the life safety rope to flame or high temperatures during use can cause melting of thermoplastic materials of the rope and result in failure.

A.7.2 See A.7.1.

A.7.2.1 See A.7.1.1.
A.7.2.2 See A.7.1.3.

A.7.2.3 The thermal requirement is intended to limit melting of rope, harness, and certain other system components due to friction caused by activities such as rappelling. The thermal requirement is NOT intended to qualify these items for use during fire-fighting operations or other operations where high temperature exposures are encountered.

Many escape lines have thermoplastic materials as all or part of their construction because of the material's excellent stretch and resilient properties. However, thermoplastic materials are not highly resistant to elevated temperatures and can lose strength at temperatures common during fire-fighting operations. If escape line is carried by fire fighters during fire-fighting operations, it should be shielded or protected from flame or high temperature exposures and falling hot debris. The rope can be carried in the pocket of the protective coat or inside a thermally protective pouch or storage bag. Repeat exposures of the escape line to flame or high temperatures can cause degradation of the rope over time and could result in failure during use. Exposure of the escape line to flame or high temperatures during use can cause melting of thermoplastic materials of the rope and result in failure.

A.7.3.2–A.7.6.2 See A.7.1.3.

A.7.4.5 A.7.9.5 The thermal requirement is intended to limit melting of rope, harness, and certain other system components due to friction caused by activities such as rappelling. The thermal requirement is not intended to qualify these items for use during fire-fighting operations or other operations where high temperature exposures are encountered.

Many life safety harnesses have thermoplastic materials as all or part of their construction because of the material's excellent strength and resilient properties. However, thermoplastic materials are not highly resistant to elevated temperatures and can lose strength at temperatures common during fire-fighting operations. If life safety harness is carried or used by fire fighters during fire-fighting operations, it should be shielded or protected from flame or high-temperature exposures. Repeat exposures of the life safety harness to flame or high temperatures can cause degradation of the harness over time and could result in failure during use. Exposure of the life safety harness to flame or high temperatures during use can cause melting of thermoplastic materials of the harness and result in failure.

A.7.5.8.7 A.7.12.5 The thermal requirement is intended to limit melting of rope, harness, and certain other system components due to friction caused by activities such as rappelling. The thermal requirement is not intended to qualify these items for use during fire-fighting operations or other operations where high-temperature exposures are encountered.

Many auxiliary equipment software items have thermoplastic materials as all or part of the construction because of the materials' excellent strength and resilient properties. However, thermoplastic materials are not highly resistant to elevated temperatures and can lose strength at temperatures common during fire-fighting operations. If auxiliary equipment software items are carried by fire fighters during fire-fighting operations, they should be shielded or protected from flame or high-temperature exposures. Repeat exposures of the auxiliary equipment software to flame or high-temperatures can cause degradation of the item(s) over time and could result in failure during use. Exposure of the auxiliary equipment software to flame or high temperatures during use can cause melting of thermoplastic materials of the item(s) and result in failure.
A.7.13.5 See A.7.12.5

A.7.22.4 See A.7.12.5

A.7.5.9.4 A.7.22.4 See A.7.5.8.7 A.7.12.5

A.7.10.6 The thermal requirement is intended to limit melting of rope, harness, and certain other system components due to friction caused by activities such as rappelling. The thermal requirement is not intended to qualify these items for use during fire-fighting operations or other operations where high temperature exposures are encountered.

Many belts have thermoplastic materials as all or part of the construction because of the materials' excellent strength and resilient properties. However, thermoplastic materials are not highly resistant to elevated temperatures and can lose strength at temperatures common during fire-fighting operations. If belts are carried or used by firefighters during fire-fighting operations, they should be shielded or protected from flame or high temperature exposures. Repeat exposures of belts to flame or high temperatures can cause degradation of the belt over time and could result in failure during use. Exposure of the belt to flame or high temperatures during use can cause melting of thermoplastic materials of the belt and result in failure.

A.8.2.4 NFPA 1983 does not preclude a variety of rope construction as long as the construction types meet the performance requirements of the standard. The title of CI 1801, Low Stretch and Static Kernmantle Life Safety Rope, indicates a particular type of rope construction; however, the elongation and breaking strength test methods contained in CI 1801 can be utilized for other types of rope construction.

The reference is not intended to limit the rope construction to the construction type mentioned in the title of CI 1801 or to any other single type of rope construction. The reference is only intended to refer to the testing methods for elongation and breaking strength specified in Sections 8 and 9 of CI 1801 for evaluating any rope construction type for compliance with NFPA 1983.

A.8.3.3.2 The intent is to test three samples of each model per test. At the manufacturer's discretion, a new, unused sample from one test series can be used for one or more of the other test series. For example, a sample used in harness test 8.3 can be used to conduct harness test 8.4, or a new unused sample can be used.

A.8.3.8.2 The 16 kN (3597 lbf) test value selected for this static test, which employs a rigid test torso, equates to having a dynamic force exerted on the body greatly exceeding that which is considered reasonable to survive.
A.8.3.9.2  The 16 kN (3597 lbf) test value selected for this static test, which employs a rigid test torso, equates to having a dynamic force exerted on the body greatly exceeding that which is considered reasonable to survive. The force selected for the head-down position is less than that selected for the upright position test because, in realistic emergency operations, a person falling headfirst will impact the harness with less force in the head-down position, and then be inverted and arrested, thus producing the maximum force in the upright position.

A.8.3.10.2  A lesser force is used in this test than in the rescue harness test due to the personal protective application of belts. The indicated test force of 13 kN (2923 lbf) is compliant with the requirements for escape rope.

A.8.3.11.2  See A.8.3.10.2.

A.8.3.13.2  See A.8.3.8.2.

A.8.3.14.2  See A.8.3.8.2.

A.8.4.3.2  See A.8.3.3.2.

A.8.5.6.1  The pin dimensions are specified within the referenced ASTM test method (F 1956).

A.8.6.4.4.3  Testing is specific to the rope/device interaction and does not impact or diminish the requirements of Section 7.2. This test is independent of the test outlined in Section 7.2.

A.8.6.4.5.6.2  To be compliant with the standard, a belay device that is also intended to function as a descent control device for braking a load either before or after arresting a fall should meet the standard’s requirements for a descent control device.

A.8.6.7.1  Testing is specific to the rope/device interaction and does not impact or diminish the requirements of Section 7.2. This test is independent of the test outlined in Section 7.2.

A.8.7.4.1  In most cases, the portable anchor device will be weakest at its greatest (or highest) extension. However, many devices have multiple ways they can be used. Different rigging configurations could be stronger or weaker than others. It is intended that the testing be done in the configuration specified in the manufacturer's instructions to the user that would yield the lowest strength results. For example, anchor slings can be rigged in a basket, end-to-end, or choker configuration. Each configuration will likely yield different results. The minimum breaking strength reported is for the weakest configuration allowed by the manufacturer's instructions.

A.8.7.5.1  See A.8.7.4.1.

A.8.7.6.8  Test pins are used to simulate the function of carabiners to connect various products together. The radius of the test pin, where it contacts the product being tested, should match a common size carabiner used in the fire service. The pin does not have to be round as it could be necessary to have a stronger pin than is available in round stock. Regardless, the face of the pin in contact with the product being tested should have the radius referenced in the test procedure. Wire rope can be used to simulate the function of rope as it applies to the function of the device. The diameter of the wire rope should be as close as possible to the largest diameter of rope with which the device is designed to work.
A.8.7.8.5 For example, portable anchors designed to be attached to flanged rims of vessel openings would require a test base to simulate the flanged portal to which the device is designed to be affixed.

A.8.7.11.2 AISI SAE Type 01 tool steel is commonly purchased as 01 Drill Rod.

A.8.7.12.2 AISI SAE Type 01 tool steel is commonly purchased as 01 Drill Rod.

A.8.11.6 The 16 kN (3597 lbf) test value selected for this static test, which employs a rigid test torso, equates to having a dynamic force exerted on the body greatly exceeding that which is considered reasonable to survive.

Annex B  Informational References

B.1  Referenced Publications.

The documents or portions thereof listed in this annex are referenced within the informational sections of this standard and are not part of the requirements of this document unless also listed in Chapter 2 for other reasons.

B.1.1  NFPA Publications (Reserved)

B.1.2  Other Publications.

B.1.2.1  ASTM Publications. ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.


ASTM F 1740, Guide for Inspection of Nylon, Polyester and/or Nylon/Polyester Blend Kernmantle Rope, 1996.


B.1.2.2  Cordage Institute Publications. The Cordage Institute, 994 Old Eagle School Road, Suite 1019, Wayne, PA 19087-1866.

CI 1801, Low Stretch and Static Kernmantle Life Safety Rope, 1998.

B.1.2.3  ISO Publications. International Standards Organization, 1 rue de Varembé, Case Postal 56, CH-1211 Geneve 20, Switzerland.

ISO Guide 27, Guidelines for corrective action to be taken by a certification body in the event of misuse of its mark of conformity, 1983.

ISO Guide 65, General requirements for bodies operating product certification systems, 1996.

Title 21, Code of Federal Regulations, Subpart C.
Title 42, Code of Federal Regulations, Part 84.

B.2 Informational References (Reserved)

B.3 References for Extracts in Informational Sections (Reserved)
8.6 Manner of Function Tensile Test.

8.6.1 Application.
8.6.1.1 This test shall apply to ascending devices, rope grab devices, descent control devices, and belay devices.
8.6.1.2 Modifications to this test method for testing ascending devices and rope grab devices shall be as specified in 8.6.7.
8.6.1.3 Modifications to this test method for testing descent control devices shall be as specified in 8.6.8.
8.6.1.4 Modifications to this test method for testing belay devices shall be as specified in 8.6.4.5. 9

8.6.2 Samples.
8.6.2.1 Samples for conditioning shall be whole items.
8.6.2.2 Samples shall be conditioned as specified in 8.1.2.
8.6.2.3 Samples shall be new and in unused condition and shall conform in all respects to the manufacturer's specifications for the model to be tested.

8.6.3 Specimens.
8.6.3.1 Specimens shall be whole items.
8.6.3.2 A total of five specimens shall be tested.
8.6.3.3 Each specimen shall be tested to both Procedure A and Procedure B.

8.6.4 Procedure.
8.6.4.1 Testing shall be conducted in the “manner of function” for the item being tested.
8.6.4.2 Testing shall be conducted using both the smallest and largest diameter life safety rope specified by the device manufacturer for testing.
8.6.4.2.1 Testing shall be conducted using a rope with the same NFPA designation as the device being tested, unless such rope is outside of the range of ropes that the manufacturer specifies for the safe and critical function of the device.
8.6.4.2.2 The rope used for testing shall meet the static rope requirements of Cordage Institute Standard Cl 1801, Low Stretch and Static Kernmantle Life Safety Rope.
8.6.4.2.3 The device shall be attached to the rope according to the manufacturer's instructions.
8.6.4.3 Procedure A.
8.6.4.3.1 One end of the rope shall be anchored on to a tensile testing machine and the device shall be anchored to the other end of the rope. The specified deformation force shall be applied to the device at the normal attachment point at a rate of 25 mm/min ± 5 mm/min (1 in./min ± ¼ in./min).
8.6.4.3.2 The specified deformation force shall be held for 30 seconds ± 1/-0 second, and then the tension shall be completely released over a maximum of 1 minute.
8.6.4.3.3
The device shall then be inspected for damage to the device or to the rope used for testing.

8.6.4.4 Procedure B.

8.6.4.4.1
Using the same item and test setup as in Procedure A, the load shall then be re-applied to the device until the breaking point of the device.

8.6.4.4.2
The force shall be applied at a rate of 25 mm/min ± 5 mm/min (1 in./min ± ¼ in./min).

8.6.4.4.*
In the case of items that are designed to slip under high load, the rope shall be knotted or the device otherwise blocked to prevent slippage. Once the device has held at least 5 kN (1124 lbf) for technical use items and 9 kN (2023 lbf) for general use items.

8.6.4.5 Procedure C.

8.6.4.5.1
The belay device shall be tested for function according to ASTM F 2436, *Standard Test Method for Measuring the Performance of Synthetic Rope Rescue Belay Systems Using a Drop Test*, as modified for this standard.

8.6.4.5.2
A rope that is 300 cm ± 0.5 cm shall be used between the bowline test–block contact and the most distal point of the gripping portion of the belay assembly.

8.6.4.5.3 (NEW)
The attachment point of the sample on the test mass shall be raised to and released from a point no more than 305mm (12 in.) horizontally from the anchorage.

8.6.4.5.3
A drop height of 60 cm ± 0.5 cm main. shall be used.

8.6.4.5.4
The test mass for a technical use belay device shall be 136 kg (300 lb).

8.6.4.5.5
The test mass for a general use belay device shall be 200 kg (617 lb).

8.6.4.5.6
The parameters specified in 8.6.4.5.6.1 and 8.6.4.5.6.2 shall be evaluated to determine pass/fail.

8.6.4.5.6.1
Maximum extension of the belay system shall be no more than 1 m ± 5 cm.

8.6.4.5.6.2*
The device shall be able to release the load in a controlled manner.

8.6.5 Report.

8.6.5.1
The condition of the item and the rope shall be recorded after the deformation load has been applied.

8.6.5.2
The minimum breaking strength shall be determined by subtracting three standard deviations from the mean results of samples from the same production lot and shall be reported to the nearest 1.0 kN (230 lbf). The minimum breaking strength shall be provided on the product label as specified in Section 5.1, Product Label Requirements.

8.6.5.3
The standard deviation shall be calculated using the formula in 8.2.5.2.

8.6.5.3.1
Where the minimum breaking strength exceeds 111 kN (25,000 lbf) without failure, the average breaking strength shall be reported as >111 kN (>25,000 lbf). The product label required in 5.1.6.9 shall also indicate the minimum breaking strength as >111 kN (>25,000 lbf).

8.6.5.4
For Procedure C, the device shall be reported as technical use or general use.

8.6.5.4.1
The extension of the belay system shall be recorded.
8.6.5.4.2
Any damage to the rope, the belay device, or system components shall be recorded.
8.6.6 Interpretation.
One or more specimens failing this test shall constitute failing performance for the item being tested.
8.6.6.1
Failure of the rope at a load less than the specified rope minimum breaking strength shall constitute failing performance.
8.6.7 Specific Requirements for Testing Ascent Devices, Rope Grab Devices, and Escape Manufactured Systems.
8.6.7.1*
Technical use ascent devices, rope grab devices, and escape manufactured systems shall be tested at a load of 5 kN (1124 lbf) for Procedure A.
8.6.7.2
General use ascending devices and rope grab devices shall be tested at a load of 11 kN (2500 lbf) for Procedure A.
8.6.8 Specific Requirements for Testing Descent Control Devices.
8.6.8.1
Escape and technical use descent control devices shall be tested at a load of 5 kN (1124 lbf) for Procedure A.
8.6.8.2
The device shall be attached to the rope according to the manufacturer’s instructions in the locked-off mode of attachment.
8.6.8.3
General use descent control devices shall be tested at a load of 11 kN (2500 lbf) for Procedure A.
8.6.9.
When testing belay devices for Procedure B, new untested samples shall be used.

Statement of Problem and Substantiation for Public Input

1. Adds specific requirements for belay devices specifying that new samples are to be used for Proc. B because Proc. A is not required.
2. The holding forces specified in Proc. B are not necessary because this is a requirement of Proc. A which is required to be performed prior to Proc. B on the same samples.
3. The 12 in horizontal distance is consistent with all other drop tests in this standard and ANSI/ASSE Z359.
4. Editorial change removing the word "main" from 8.6.4.5.3.

Submitter Information Verification

Submitter Full Name: Steven Corrado  
Organization: UL LLC
Street Address:
City:  
State:  
Zip:  
Submittal Date: Tue Dec 09 13:50:07 EST 2014
Public Input No. 49-NFPA 1983-2014 [ Sections 8.7.11.2, 8.7.11.3 ]

Sections 8.7.11.2, 8.7.11.3

8.7.11.2*
Testing shall be conducted using 13 mm ± 1 mm (½ in. ± ¼ in.) pins, bolts, or shackles. The test fixture shall be designed such that the strap is free to locate itself on the test pins when the force is applied.

8.7.11.3
A test pin cross section shall be permitted to be other than round. Any cross section necessary to prevent test pin failure or any design to prevent test pin rotation shall be permitted, as long as the contact point between the test pin and strap attachment point has the specified radius, material type, hardness, and surface roughness as per ASTM F 1956, Standard Specification for Rescue Carabiners, Section 5.6.2.1.

Statement of Problem and Substantiation for Public Input

1. The second sentence currently in 8.7.11.2 is also stated in 8.7.11.4 and therefore not needed here.
2. Correction to section number referenced from ASTM F 1956.

Submitter Information Verification

Submitter Full Name: Beverly Stutts
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Thu Dec 11 16:27:51 EST 2014
8.7.11.6
Technical use and general use load-releasing straps shall be individually tested in the end-to-end configuration.

Statement of Problem and Substantiation for Public Input
Correction to strap type designation.

Submitter Information Verification
Submitter Full Name: Beverly Stutts
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Thu Dec 11 16:33:24 EST 2014
Sections 8.7.12.2, 8.7.12.3

8.7.12.2*
Testing shall be conducted using 13 mm ± 1 mm (½ in. ± ¼ in.) pins, bolts, or shackles. The test fixture shall be designed such that the strap is free to locate itself on the test pins when the force is applied.

8.7.12.3
Test pin cross section shall be permitted to be other than round. Any cross section necessary to prevent test pin failure or any design to prevent test pin rotation shall be permitted as long as the contact point between the test pin and strap attachment point has the specified radius, material type, hardness, and surface roughness as per ASTM F 1956, Standard Specification for Rescue Carabiners, Section 5.6.2.1.

Statement of Problem and Substantiation for Public Input

1. The second sentence currently in 8.7.12.2 is also stated in 8.7.12.4 and therefore not needed here.
2. Correction to section number referenced from ASTM F 1956.

Submitter Information Verification

Submitter Full Name: Beverly Stutts
Organization: UL LLC
Street Address: 
City: 
State: 
Zip: 
Submittal Date: Thu Dec 11 16:32:07 EST 2014
Public Input No. 57-NFPA 1983-2015 [ Section No. 8.7.13.2 ]

8.7.13.2
Escape anchor devices with a single point of contact shall be supported to prevent twisting when loaded in such a way that the load is applied in the weakest configuration when used in accordance with the manufacturer's instructions. The support shall not prevent the device from deforming under load or from releasing from the structure due to deformation or breaking.

Statement of Problem and Substantiation for Public Input
Clarifies that the specimen is to be tested in weakest configuration as specified by the manufacturer. Makes language consistent with 8.7.13.3.

Submitter Information Verification

Submitter Full Name: Beverly Stutts
Organization: UL LLC
Street Address: 
City: 
State: 
Zip: 
Submittal Date: Mon Jan 05 14:18:56 EST 2015
8.9.4 Procedure.

8.9.4.1 Specimens shall be completely immersed in a sufficiently sized vessel of fresh water at a temperature of 21°C ± 3°C (70°F ± 5°F) for a period of 24 hours ± 1/0 hour.

8.9.4.2 The throwline shall then be allowed, over a maximum of 1 minute, to float to the surface. Depth of container should be defined. Test results could, and presumably would, vary depending on depth of water. Test is not repeatable as written.

Statement of Problem and Substantiation for Public Input

Test becomes repeatable

Submitter Information Verification

Submitter Full Name: TRAVIS SHIPMAN
Organization: STERLING ROPE
Street Address: 
City: 
State: 
Zip: 
Submittal Date: Fri Dec 19 14:00:20 EST 2014
8.9.4.1 Specimens shall be completely immersed in a vessel of fresh water at a temperature of 21°C ± 3°C (70°F ± 5°F) for a period of 24 hours ± 1/-0 hour.

Statement of Problem and Substantiation for Public Input

Minimum depth of submersion is not currently specified. A depth should be required to ensure consistency of testing.

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Tue Dec 09 14:23:55 EST 2014
Public Input No. 8-NFPA 1983-2013 [Section No. 8.13.1.1]

8.13.1.1
This test shall apply to descent control systems with passive and active braking systems, and escape manufactured systems.

Additional Proposed Changes

<table>
<thead>
<tr>
<th>File Name</th>
<th>Description Approved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposed_TIA_1983_.docx</td>
<td>Balloted TIA</td>
</tr>
</tbody>
</table>

Statement of Problem and Substantiation for Public Input

Note: This Public Input originates from Tentative Interim Amendment 1983-12-1 (TIA 1076) issued by the Standards Council on October 30, 2012.

1. Table 4.4.1 - The table is missing recertification for Moderate Elongation Life Saving Rope and includes several duplications and terminology errors.
2. 5.1.5.12 - The terminology in 5.1.5.12 is not consistent with the document. The terms “rigging and anchor” straps have been replaced with “multiple configuration and end to end” straps. The current required statement is incorrect for end to end straps in that they are not required to be tested in a U or choker configuration.
3. 5.2.10.6 - This added text is a requirement for other products covered by NFPA 1983 and provides users with valuable information on maintaining records for this life saving equipment.
4. 7.4.6.1 and 7.5.6.1 - The term “and hardware” was inadvertently added to these paragraphs. Additionally, the char length requirement does not apply to hardware items, and there are no specific requirements for the testing of hardware items in the test method. The requirement as written in the current edition is inappropriate for hardware items, would be impossible to determine and could inhibit product certification.
5. 7.5.7.10, 7.6.3.9, and 8.13.1.1 - Requirement 7.5.7.10 is redundant in that a manufactured system that includes an escape descent device would be classified as an Escape System – and therefore must meet all of the requirements of NFPA 1983 Section 7.11. Additionally, the requirement is incorrectly worded in that there is no torso used in the conduct of the test - thus the statement “shall not release the test torso” has no relevance.
6. Requirement 7.6.3.9 applies to all escape descent control devices (those that are sold separately – not as part of a system). As the test is to be conducted with “each type of rope for its intended use” (NFPA 1983, Section 8.13.2.3) it follows that all escape descent control devices may have to be tested with all escape ropes – or the device would be limited to the type of rope with which it was tested. This would present an undue hardship on the manufacturers, and contribute to confusion on the part of the users in determining what ropes are suitable with each device.
7. Requirement 8.13.1.1 is changed so the application of the test method is consistent with the performance requirements.
8. 7.6.3.12 - This performance requirement mandates the minimum breaking strength for these particular devices and is therefore a critical safety issue.
9. 7.11.6, 7.11.6.2, and 7.11.6.3 (New) - The change in 7.11.6 adds the requirement of thread heat resistance to fire escape systems.
10. The change in 7.11.6.2 corrects the terminology from “escape anchors” to “fire escape system” as section 7.11.6 contains the requirements for fire escape systems and this requirement applies to the system not just the anchor.
11. The addition of 7.11.6.3 adds the thread heat resistance test to threads used in the construction of fire escape systems. This was inadvertently omitted in the 2012 edition. Testing of thread in a fire escape system evaluates a critical safety property of the fire escape system. Using a thread that will not withstand heat can cause the system to fail under high heat conditions.
12. 7.15.1 and 7.15.2 - These requirements are currently located in NFPA 1983-2012 Section 8.6.4.5.6. As these parameters are utilized to determine pass/fail of the device they should be relocated to the Performance Requirements. Additionally, this is a manner of function requirement – not a breaking strength requirement. It is impossible to determine breaking strength without failure of the device or rope.
13. 7.17, 7.6.3.1.1 and 7.11.7 (New) - This added text is part of the requirements that apply to escape descent control devices and escape systems. As such, this language should appear with the group of performance requirements for descent control devices (Section 7.6.3) and escape systems (Section 7.11). Having this requirement separate and distinct from the other performance requirements for these devices/systems can lead to
confusion and the possibility of neglect of the remainder of the requirements.

10. and 11. 8.15.5 and 8.15.6.1 - This change resolves a conflict with the requirements in 7.10.3 and 7.12.5.

Emergency Nature: This TIA seeks to correct errors and omissions that were overlooked during the Fall 2011 revision cycle process of NFPA 1983. Additionally, some parts of this TIA intend to offer to the public a benefit that would lessen a known hazard, and correct circumstances in which the standard could adversely affect impact on a product or method that was inadvertently overlooked in the total revision process.

Submitter Information Verification

Submitter Full Name: TC on FAE-SCE
Organization: TC on Special Operations Protective Clothing and Equipment
Street Address:
City:
State:
Zip:
Submittal Date: Mon Sep 09 09:40:50 EDT 2013
1. Revise Table 4.4.1 to read as follows:

<table>
<thead>
<tr>
<th>Product</th>
<th>Test</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>All component product</td>
<td>Corrosion testing</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>Life safety rope</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Water rescue Throwlines</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Water rescue Throwlines</td>
<td>Floatability</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety harness</td>
<td>Static</td>
<td>Alternating years with drop test</td>
</tr>
<tr>
<td>Life safety harness</td>
<td>Drop</td>
<td>Alternating years with static test</td>
</tr>
<tr>
<td>Life safety harness</td>
<td>Static</td>
<td>Alternating years with drop test</td>
</tr>
<tr>
<td>Belt</td>
<td>Static</td>
<td>Alternating years with static test</td>
</tr>
<tr>
<td>Belt</td>
<td>Drop</td>
<td>Alternating years with static test</td>
</tr>
<tr>
<td>Auxiliary equipment Carabiners and snap link</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment Rope grab devices</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment Descent control devices – auto stop</td>
<td>Passive brake Holding</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment Descent control devices – non-auto stop</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment Portable anchor</td>
<td>All</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>Auxiliary equipment Pulley</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment Pick-off, anchor and rigging Multiple configuration and end to end straps</td>
<td>Breaking Strength</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment Manufactured systems</td>
<td>All</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing</td>
<td>Perimeter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Moderate elongation laid life saving rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Moderate elongation laid life saving rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape rope</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape webbing</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Victim extrication devices</td>
<td>Static</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Litters</td>
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<td>Initial only</td>
</tr>
<tr>
<td>---------</td>
<td>-------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Load-bearing textiles used in victim extrication devices</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in victim extrication devices</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Webbing components</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread components</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in belts with optional flame resistance</td>
<td>Flame resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in life safety harnesses with optional flame resistance</td>
<td>Flame resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in life safety harnesses with optional flame resistance</td>
<td>Flame resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in life safety harnesses with optional flame resistance</td>
<td>Flame resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Hardware used in belts with optional flame resistance</td>
<td>Heat Resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in belts with optional flame resistance</td>
<td>Thread heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in belts with optional flame resistance</td>
<td>Thread heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in life safety harnesses with optional flame resistance</td>
<td>Thread heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Hardware used in life safety harnesses with optional flame resistance</td>
<td>Thread heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in life safety harnesses with optional flame resistance</td>
<td>Thread melting</td>
<td>Every year</td>
</tr>
</tbody>
</table>

2. Revise 5.1.5.12 to read as follows:

5.1.5.12 In addition to the compliance specified in 5.1.5.9, rigging and anchor multiple configuration and end to end straps shall include the following additional statement on the product label:

For multiple configuration straps:

"MINIMUM BREAKING STRENGTH AND RATING ARE DETERMINED USING A BASKET (U) CONFIGURATION. IN ADDITION, THIS STRAP HAS A MINIMUM BREAKING STRENGTH OF: ___ kN IN A CHOKER CONFIGURATION ___ kN WHEN PULLED END TO END."

For end to end straps:

"MINIMUM BREAKING STRENGTH OF ___ kN WHEN PULLED END TO END"

3. Add a new paragraph 5.2.10.6 as follows:
5.2.10.6 The manufacturer of moderate elongation laid life saving ropes that are certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of moderate elongation laid life saving rope and a list of items that the records need to contain.

4. Revise 7.4.6.1 and 7.5.6.1 to read as follows:

7.4.6.1 Where harnesses are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

7.5.6.1 Where belts are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

5. Delete paragraph 7.5.7.10 and 7.6.3.9 and renumber subsequent paragraphs; revise paragraph 8.13.1.1 as follows:

7.5.7.10 Where the manufactured system incorporates an escape descent control device that incorporates a passive or active breaking feature that creates friction between the device and the rope, the system shall be tested for maximum payout force as specified in Section 8.13, Payout Test, shall not release the test torso, and shall not exceed 90 N (20 lb).

7.6.3.9 Where the escape descent control device incorporates a passive or active breaking feature that creates friction between the device and the rope, the maximum force required to pay a specific type of rope through the descent control device shall be tested as specified in Section 8.13, Payout Test, and shall not exceed 90 N (20 lb).

8.13.1.1 This test shall apply to descent control systems with passive and active braking systems, and escape manufactured systems.

6. Add a new paragraph 7.6.3.12 as follows:

7.6.3.12 Technical use descent control devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure B, and shall have a minimum breaking strength of at least 13.5 kN (3034 lbf).

7. Revise 7.11.6, 7.11.6.2 and add new 7.11.6.3 to read as follows:

7.11.6 Where an escape system is designated as a fire escape system, additional tests as specified in 7.11.6.1, and 7.11.6.2, and 7.11.6.3 shall be conducted.

7.11.6.2 Where fire escape system anchors are represented as being flame resistant, materials, labels, and hardware shall be tested individually for heat resistance as specified in Section 8.17, Heat Resistance Test, and shall not melt, drip, separate, or ignite; hardware items shall remain functional.

7.11.6.3 Sewing thread utilized in the construction of fire escape systems shall be tested for heat resistance as specified in Section 8.18, Thread Heat Resistance Test, and shall not melt at or below a temperature of 260ºC (500ºF).

8. Revise paragraph 7.15.1 and 7.15.2 as follows:

7.15.1 Technical use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

7.15.2 General-use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m, and with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

9. Delete Section 7.17, and add new paragraphs 7.6.3.11 and 7.11.7 as follows:

7.17 Escape Descent Control Device Performance Requirements. Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or device, and shall remain functional.

7.6.3.11 Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.
7.11.7 Escape systems shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.

10. Revise 8.15.5 to read as follows:

8.15.5 Report. The time to failure shall be recorded from each test and the average and standard deviation calculated.

11. Delete 8.15.6.1 as follows:

8.15.6.1 Pass/fail performance shall be based on the average time to failure.

Submitter’s Substantiation:
1. Table 4.4.1 - The table is missing recertification for Moderate Elongation Life Saving Rope and includes several duplications and terminology errors.
2. 5.1.5.12 - The terminology in 5.1.5.12 is not consistent with the document. The terms “rigging and anchor” straps have been replaced with “multiple configuration and end to end” straps. The current required statement is incorrect for end to end straps in that they are not required to be tested in a U or choker configuration.
3. 5.2.10.6 - This added text is a requirement for other products covered by NFPA 1983 and provides users with valuable information on maintaining records for this life saving equipment.
4. 7.4.6.1 and 7.5.6.1 - The term “and hardware” was inadvertently added to these paragraphs. Additionally, the char length requirement does not apply to hardware items, and there are no specific requirements for the testing of hardware items in the test method. The requirement as written in the current edition is inappropriate for hardware items, would be impossible to determine and could inhibit product certification.
5. 7.5.7.10, 7.6.3.9, and 8.13.1.1 - Requirement 7.5.7.10 is redundant in that a manufactured system that includes an escape descent device would be classified as an Escape System – and therefore must meet all of the requirements of NFPA 1983 Section 7.11.
Additionally, the requirement is incorrectly worded in that there is no torso used in the conduct of the test - thus the statement “shall not release the test torso” has no relevance.
Requirement 7.6.3.9 applies to all escape descent control devices (those that are sold separately – not as part of a system). As the test is to be conducted with “each type of rope for its intended use” (NFPA 1983, Section 8.13.2.3) it follows that all escape descent control devices may have to be tested with all escape ropes – or the device would be limited to the type of rope with which it was tested. This would present an undue hardship on the manufacturers, and contribute to confusion on the part of the users in determining what ropes are suitable with each device.
Requirement 8.13.1.1 is changed so the application of the test method is consistent with the performance requirements.
6. 7.6.3.12 - This performance requirement mandates the minimum breaking strength for these particular devices and is therefore a critical safety issue.
7. 7.11.6, 7.11.6.2, and 7.11.6.3 (New) - The change in 7.11.6 adds the requirement of thread heat resistance to fire escape systems.
The change in 7.11.6.2 corrects the terminology from “escape anchors” to “fire escape system” as section 7.11.6 contains the requirements for fire escape systems and this requirement applies to the system not just the anchor.
The addition of 7.11.6.3 adds the thread heat resistance test to threads used in the construction of fire escape systems. This was inadvertently omitted in the 2012 edition. Testing of thread in a fire escape system evaluates a critical safety property of the fire escape system. Using a thread that will not withstand heat can cause the system to fail under high heat conditions.
8. 7.15.1 and 7.15.2 - These requirements are currently located in NFPA 1983-2012 Section 8.6.4.5.6. As these parameters are utilized to determine pass/fail of the device they should be relocated to the Performance Requirements. Additionally, this is a manner of function requirement – not a breaking strength requirement. It is impossible to determine breaking strength without failure of the device or rope.
9. 7.17, 7.6.3.1.1 and 7.11.7 (New) - This added text is part of the requirements that apply to escape descent control devices and escape systems. As such, this language should appear with the group of performance requirements for descent control devices (Section 7.6.3) and escape systems (Section 7.11). Having this requirement separate and distinct from the other performance requirements for these devices/systems can lead to confusion and the possibility of neglect of the remainder of the requirements. 10. and 11. 8.15.5 and 8.15.6.1 -This change resolves a conflict with the requirements in 7.10.3 and 7.12.5.

Emergency Nature: This TIA seeks to correct errors and omissions that were overlooked during the Fall 2011 revision cycle process of NFPA 1983. Additionally, some parts of this TIA intend to offer to the public a benefit that would lessen a known hazard, and correct circumstances in which the standard could adversely affect impact on a product or method that was inadvertently overlooked in the total revision process.
8.13.4 Procedure.

8.13.4.1 Specimens shall be tested in a servohydraulic or screw-driven load frame with a controlled displacement rate of 100 mm/sec.

8.13.4.2 For descent control devices with the capability to vary friction with the rope, the device shall be locked open in the configuration the manufacturer recommends for actual use. The manner of locking the device shall not affect the load measurement during payout.

8.13.4.3 The rope shall be attached to a solid anchorage point, and the descent control device attached to the moving crosshead of the load frame. The rope shall be configured per the manufacturer's instructions. The rope shall enter the descent device directly without creating additional friction throughout the test.

8.13.4.4 Each test shall require the rope to pass through the descent control device for a minimum of 100 mm (4 in.).

Statement of Problem and Substantiation for Public Input

1. The specific device driver is not relevant as long as all other parameters are achieved.
2. The language is 8.13.4.3 is too restrictive from a testing point of view. Whether the device is fixed or the rope is fixed has no bearing on the functionality and the properties being evaluated. The proposed language will allow for test setup flexibility while ensuring that the device is tested per its intended use.

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Tue Dec 09 14:39:09 EST 2014
8.13.6.4

The compliant configuration shall be listed in the user instructions.

Statement of Problem and Substantiation for Public Input

This is a User Instruction requirement and should not be in the Test Method.

Related Public Inputs for This Document

<table>
<thead>
<tr>
<th>Related Input</th>
<th>Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Input No. 48-NFPA 1983-2014 [New Section after 5.2.5.8]</td>
<td></td>
</tr>
</tbody>
</table>

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Street Address: 
City: 
State: 
Zip: 
Submittal Date: Tue Dec 09 14:53:22 EST 2014
8.14.4.2 Following each drop, the device and the rope or webbing, shall be visually examined for damage and functionality while the weight is still attached. Functionality shall be determined by the lowering of the test weight in a controlled manner.

Statement of Problem and Substantiation for Public Input

1. Added webbing.
2. Clarified that the weight is to be attached during the performance observation.
3. Added details as to what "functionality" is to consist of.

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Street Address: 
City: 
State: 
Zip: 
Submittal Date: Tue Dec 09 14:28:13 EST 2014
8.14.5.2
Any visible damage to the device or rope/webbing shall be reported.

Statement of Problem and Substantiation for Public Input

Added webbing as it is allowed on these devices.

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Street Address: 
City: 
State: 
Zip: 
Submittal Date: Tue Dec 09 14:33:13 EST 2014
8.14.6.2
Visible damage to device or rope/webbing shall constitute failing performance.

Statement of Problem and Substantiation for Public Input

Added webbing as it is allowed on these devices.

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Tue Dec 09 14:34:30 EST 2014
8.15 Elevated Temperature Rope Test.

8.15.1 Application.

8.15.1.1 This test shall apply to fire escape rope and fire escape webbing.

8.15.2 Samples.

8.15.2.1 Samples for conditioning shall be whole items.

A.8.15.2.1 Ropes with and without tracers should be considered as different models because of the possible effect of tracers during testing.

8.15.2.2 Samples shall be conditioned as specified in 8.1.2.

8.15.2.3 Samples shall be new and in unused condition and shall conform in all respects to the manufacturer's specifications for the model to be tested.

8.15.3 Specimens.

8.15.3.1 Specimens shall be whole items.

8.15.3.2 A total of five specimens shall be tested.

A8.15.4.1 When performing this test, consideration should be given to the following:

1. Horizontal or vertical furnace orientation. Experience has shown that the orientation of the furnace can have an effect on the results. Vertical configurations can be sensitive to chimney effects and can cause oxygen rich environments, and temperature fluctuations if not controlled.

2. Furnace tube diameter. The furnace diameter can also have an effect on the airflow of the furnace and larger diameters can also contribute to a significant chimney effect.

3. Furnace temperature mapping. Good laboratory practice should dictate that the furnace temperatures be verified at the position of the rope specimen. This can be accomplished with calibration thermocouples. Furnace temperature controls and output displays may not be representative of the temperature at the position of the specimen.

8.15.4 Procedure.

8.15.4.1 Specimens shall be tested in a manner that allows a constant load to be applied to the rope throughout the duration of the test after stabilization. One end of the rope shall be attached to a load or load cell, while the other shall be attached to an apparatus that allows constant load application.

8.15.4.2 Rope specimens shall be introduced into the high temperature furnace at the given set point ±5°C, 10, -0°C and the load stabilized within 5 seconds of introduction.

8.15.4.3 A thermocouple shall be attached to the rope at the location of the maximum temperature of the furnace (i.e., middle for horizontal furnace, top for vertical furnace). The exposure time begins when the specimen is under load and the thermocouple reading increases by 10 percent from room temperature and... The exposure time ends when the load cell reading drops to 0 upon failure of the rope or rope can no longer support the load.

8.15.5 Report.

The time to failure shall be recorded for each test and the average and standard deviation calculated.

8.15.6 Interpretation.
8.15.6.1—
Pass/fail performance shall be based on the average time to failure.

8.15.6.2—
One or more specimens failing this test shall constitute a failing performance for the given rope type.

Statement of Problem and Substantiation for Public Input

1. Various editorial changes were made to make language consistent with other test methods in this document.
2. Samples were reduced from 5 to 3 because the pass/fail is based on the load holding for a specific period of time, and not a numerical calculation or output.
3. Annex items were added to increase consistency of testing at various facilities, and to give items of consideration to minimize known variables.
4. An annex item was added so that tracers can be treated with consistency.
5. Allowance was given so the test can be conducted with a dead weight or a tensile test machine.
6. The temperature tolerance was adjusted such that the minimum allowable test temperature matched the performance requirement.

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Street Address: 
City: 
State: 
Zip: 
Submittal Date: Mon Jan 05 13:14:53 EST 2015
Public Input No. 52-NFPA 1983-2014 [ Section No. 8.15.4 ]

8.15.4 Procedure.
8.15.4.1 Specimens shall be tested in a manner that allows a constant load to be applied to the rope throughout the duration of the test after stabilization. One end of the rope shall be attached to a load cell, while the other shall be attached to an apparatus that allows constant load application.
8.15.4.2 Rope specimens shall be introduced into the high temperature furnace at the given set point ±5°C and the load stabilized within 5 seconds of introduction.
8.15.4.3 A thermocouple shall be attached to the rope at the location of the maximum temperature of the furnace (i.e., middle for horizontal furnace, top for vertical furnace). The exposure time begins when the thermocouple reading increases by 10 percent from room temperature and ends when the load cell reading drops to 0 upon failure of the rope.

The procedure as written does not include the details required to insure consistent testing across all qualified test facilities. Since the implementation of the standard, the results of the elevated temperature testing at 600°C, have been wildly inconsistent for products that have not changed. These products have been produced with materials and processes that have not changed, and materials that have not illustrated significant variation in annual third party test results. We believe that allowing the option of either vertical or horizontal furnace configurations has introduced this unacceptable variation in test results. For this reason we would encourage that only the most consistent and repeatable testing method (i.e. furnace configuration) be allowed, and that the method be clearly defined within the standard. We would also encourage that specifics be given to insure that all parameters of the test method are met by all qualified labs for every test. We believe specific instruction should be given for stabilizing the load, insuring that the exposure time begins at 10% increase in temperature, and insuring that the temperature does not vary outside the range of the requirement. In addition we would encourage that the furnace used for testing should meet a strict specification defined within the standard.

Statement of Problem and Substantiation for Public Input

Due to high variation in test data to-date, round-robin testing should be conducted at different laboratories with different furnaces to validate the test procedure and to identify if furnace geometry and orientation impacts heat transfer rates to the rope. This would reduce the amount of variation in results and insure the test is repeatable across all testing facilities.

If we cannot successfully decrease test variation to an acceptable level by increasing clarity in the test procedure, we should change how the products are evaluated for high temperature performance.

Submitter Information Verification

Submitter Full Name: TRAVIS SHIPMAN
Organization: STERLING ROPE
Street Address:
City:
State:
Zip:
Submittal Date: Fri Dec 19 13:41:17 EST 2014

Due to high variation in test data to-date, round-robin testing should be conducted at different laboratories with different furnaces to validate the test procedure and to identify if furnace geometry and orientation impacts heat transfer rates to the rope. This would reduce the amount of variation in results and insure the test is repeatable across all testing facilities.

If we cannot successfully decrease test variation to an acceptable level by increasing clarity in the test procedure, we should change how the products are evaluated for high temperature performance.

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Submitter Full Name: TRAVIS SHIPMAN
Organization: STERLING ROPE
Street Address:
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Submittal Date: Fri Dec 19 13:41:17 EST 2014
8.15.5 Report.
The time to failure shall be recorded from each test and the average and standard deviation calculated.

Additional Proposed Changes

<table>
<thead>
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<td>Proposed_TIA_1983_.docx</td>
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Statement of Problem and Substantiation for Public Input

Note: This Public Input originates from Tentative Interim Amendment 1983-12-1 (TIA 1076) issued by the Standards Council on October 30, 2012.

1. Table 4.4.1 - The table is missing recertification for Moderate Elongation Life Saving Rope and includes several duplications and terminology errors.
2. 5.1.5.12 - The terminology in 5.1.5.12 is not consistent with the document. The terms “rigging and anchor” straps have been replaced with “multiple configuration and end to end” straps. The current required statement is incorrect for end to end straps in that they are not required to be tested in a U or choker configuration.
3. 5.2.10.6 - This added text is a requirement for other products covered by NFPA 1983 and provides users with valuable information on maintaining records for this life saving equipment.
4. 7.4.6.1 and 7.5.6.1 - The term “and hardware” was inadvertently added to these paragraphs. Additionally, the char length requirement does not apply to hardware items, and there are no specific requirements for the testing of hardware items in the test method. The requirement as written in the current edition is inappropriate for hardware items, would be impossible to determine and could inhibit product certification.
5. 7.5.7.10, 7.6.3.9, and 8.13.1.1 - Requirement 7.5.7.10 is redundant in that a manufactured system that includes an escape descent device would be classified as an Escape System – and therefore must meet all of the requirements of NFPA 1983 Section 7.11. Additionally, the requirement is incorrectly worded in that there is no torso used in the conduct of the test - thus the statement “shall not release the test torso” has no relevance.
   Requirement 7.6.3.9 applies to all escape descent control devices (those that are sold separately – not as part of a system). As the test is to be conducted with “each type of rope for its intended use” (NFPA 1983, Section 8.13.2.3) it follows that all escape descent control devices may have to be tested with all escape ropes – or the device would be limited to the type of rope with which it was tested. This would present an undue hardship on the manufacturers, and contribute to confusion on the part of the users in determining what ropes are suitable with each device.
   Requirement 8.13.1.1 is changed so the application of the test method is consistent with the performance requirements.
6. 7.6.3.12 - This performance requirement mandates the minimum breaking strength for these particular devices and is therefore a critical safety issue.
7. 7.11.6, 7.11.6.2, and 7.11.6.3 (New) - The change in 7.11.6 adds the requirement of thread heat resistance to fire escape systems.
   The change in 7.11.6.2 corrects the terminology from “escape anchors” to “fire escape system” as section 7.11.6 contains the requirements for fire escape systems and this requirement applies to the system not just the anchor.
   The addition of 7.11.6.3 adds the thread heat resistance test to threads used in the construction of fire escape systems.
   This was inadvertently omitted in the 2012 edition. Testing of thread in a fire escape system evaluates a critical safety property of the fire escape system. Using a thread that will not withstand heat can cause the system to fail under high heat conditions.
8. 7.15.1 and 7.15.2 - These requirements are currently located in NFPA 1983-2012 Section 8.6.4.5.6. As these parameters are utilized to determine pass/fail of the device they should be relocated to the Performance Requirements. Additionally, this is a manner of function requirement – not a breaking strength requirement. It is impossible to determine breaking strength without failure of the device or rope.
9. 7.17, 7.6.3.1.1 and 7.11.7 (New) - This added text is part of the requirements that apply to escape descent control devices and escape systems. As such, this language should appear with the group of performance requirements for descent control devices (Section 7.6.3) and escape systems (Section 7.11). Having this requirement separate and distinct from the other performance requirements for these devices/systems can lead to confusion and the possibility of neglect of the remainder of the requirements.
10. and 11. 8.15.5 and 8.15.6.1 - This change resolves a conflict with the requirements in 7.10.3 and 7.12.5.

Emergency Nature: This TIA seeks to correct errors and omissions that were overlooked during the Fall 2011 revision cycle process of NFPA 1983. Additionally, some parts of this TIA intend to offer to the public a benefit that would lessen a known hazard, and correct circumstances in which the standard could adversely affect impact on a product or method that was inadvertently overlooked in the total revision process.

Submitter Information Verification

Submitter Full Name: TC on FAE-SCE
Organization: TC on Special Operations Protective Clothing and Equipment
Street Address:
City:
State:
Zip:

Submittal Date: Mon Sep 09 09:57:06 EDT 2013
1. Revise Table 4.4.1 to read as follows:

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<thead>
<tr>
<th>Product</th>
<th>Test</th>
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<tr>
<td>All component product Corrosion testing</td>
<td>Initial cert only</td>
<td></td>
</tr>
<tr>
<td>All component product Product label durability testing</td>
<td>Initial cert only</td>
<td></td>
</tr>
<tr>
<td>Life safety rope Rope breaking and elongation</td>
<td>Every year</td>
<td></td>
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<tr>
<td>Escape rope Rope breaking and elongation</td>
<td>Every year</td>
<td></td>
</tr>
<tr>
<td>Water rescue Throwlines Rope breaking and elongation</td>
<td>Every year</td>
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<tr>
<td>Water rescue Throwlines Floatability</td>
<td>Every year</td>
<td></td>
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<td>Life safety harness Static</td>
<td>Alternating years with drop test</td>
<td></td>
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<tr>
<td>Life safety harness Drop</td>
<td>Alternating years with static test</td>
<td></td>
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<tr>
<td>Belt Static</td>
<td>Alternating years with drop test</td>
<td></td>
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<tr>
<td>Belt Drop</td>
<td>Alternating years with static test</td>
<td></td>
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<tr>
<td>Auxiliary equipment Carabiners and snap link</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment Rope grab devices</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment system Descent control devices – auto stop</td>
<td>Passive brake holding</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment system Descent control devices – non-auto stop</td>
<td>Manner of function</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment Portable anchor and rigging</td>
<td>Multiple configuration and end to end straps</td>
<td>Breaking Strength Every year</td>
</tr>
<tr>
<td>Auxiliary equipment Pulley</td>
<td>All</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment Manufactured systems</td>
<td>All</td>
<td>Every year</td>
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<tr>
<td>Fire escape rope Diameter, rope breaking, and elongation</td>
<td>Every year</td>
<td></td>
</tr>
<tr>
<td>Fire escape rope Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
<td></td>
</tr>
<tr>
<td>Escape rope Diameter, rope breaking, and elongation</td>
<td>Every year</td>
<td></td>
</tr>
<tr>
<td>Escape rope Elevated rope temperature test</td>
<td>Every year</td>
<td></td>
</tr>
<tr>
<td>Escape rope Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
<td></td>
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<tr>
<td>Escape webbing Perimeter, rope breaking, and elongation</td>
<td>Every year</td>
<td></td>
</tr>
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<td>Fire escape webbing Elevated rope temperature test</td>
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<td>Fire escape webbing Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
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<tr>
<td>Fire escape webbing Diameter, rope breaking, and elongation</td>
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<td>Fire escape webbing Melting and crystallization temperatures by thermal analysis</td>
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<tr>
<td>Moderate elongation laid life saving rope Diameter, rope breaking, and elongation</td>
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<tr>
<td>Moderate elongation laid life saving rope Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
<td></td>
</tr>
<tr>
<td>Fire escape webbing Elevated rope temperature test</td>
<td>Every year</td>
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<td>Escape webbing fibers Melting and crystallization temperatures by thermal analysis</td>
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<td></td>
</tr>
<tr>
<td>Victim extrication devices Static</td>
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<tr>
<td>Load-bearing textiles used in victim extrication devices</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Webbing components</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Hardware used in belts with optional flame resistance</td>
<td>Heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in life safety harnesses with optional flame resistance</td>
<td>Flame resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Hardware used in life safety harnesses with optional flame resistance</td>
<td>Heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in life safety harnesses with optional flame resistance</td>
<td>Thread heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Manufacturer-supplied eye termination</td>
<td>Thread melting</td>
<td>Every year</td>
</tr>
</tbody>
</table>

2. Revise 5.1.5.12 to read as follows:

5.1.5.12 In addition to the compliance specified in 5.1.5.9, rigging and anchor multiple configuration and end to end straps shall include the following additional statement on the product label:

For multiple configuration straps:

“MINIMUM BREAKING STRENGTH AND RATING ARE DETERMINED USING A BASKET (U) CONFIGURATION. IN ADDITION, THIS STRAP HAS A MINIMUM BREAKING STRENGTH OF: ___ kN IN A CHOKER CONFIGURATION ___ kN WHEN PULLED END TO END.”

For end to end straps:

“MINIMUM BREAKING STRENGTH OF ___ kN WHEN PULLED END TO END”

3. Add a new paragraph 5.2.10.6 as follows:
5.2.10.6 The manufacturer of moderate elongation laid life saving ropes that are certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of moderate elongation laid life saving rope and a list of items that the records need to contain.

4. Revise 7.4.6.1 and 7.5.6.1 to read as follows:

7.4.6.1 Where harnesses are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

7.5.6.1 Where belts are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

5. Delete paragraph 7.5.7.10 and 7.6.3.9 and renumber subsequent paragraphs; revise paragraph 8.13.1.1 as follows:

7.5.7.10 Where the manufactured system incorporates an escape descent control device that incorporates a passive or active breaking feature that creates friction between the device and the rope, the system shall be tested for maximum payout force as specified in Section 8.13, Payout Test, shall not release the test torso, and shall not exceed 90 N (20 lb).

7.6.3.9 Where the escape descent control device incorporates a passive or active breaking feature that creates friction between the device and the rope, the maximum force required to pay a specific type of rope through the descent control device shall be tested as specified in Section 8.13, Payout Test, and shall not exceed 90 N (20 lb).

8.13.1.1 This test shall apply to descent control systems with passive and active braking systems, and escape manufactured systems.

6. Add a new paragraph 7.6.3.12 as follows:

7.6.3.12 Technical use descent control devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure B, and shall have a minimum breaking strength of at least 13.5 kN (3034 lbf).

7. Revise 7.11.6, 7.11.6.2 and add new 7.11.6.3 to read as follows:

7.11.6 Where an escape system is designated as a fire escape system, additional tests as specified in 7.11.6.1, and 7.11.6.2, and 7.11.6.3 shall be conducted.

7.11.6.2 Where fire escape system anchors are represented as being flame resistant, materials, labels, and hardware shall be tested individually for heat resistance as specified in Section 8.17, Heat Resistance Test, and shall not melt, drip, separate, or ignite; hardware items shall remain functional.

7.11.6.3 Sewing thread utilized in the construction of fire escape systems shall be tested for heat resistance as specified in Section 8.18, Thread Heat Resistance Test, and shall not melt at or below a temperature of 260ºC (500ºF).

8. Revise paragraph 7.15.1 and 7.15.2 as follows:

7.15.1 Technical use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

7.15.2 General-use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m, and with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

9. Delete Section 7.17, and add new paragraphs 7.6.3.11 and 7.11.7 as follows:

7.17 Escape Descent Control Device Performance Requirements. Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or device, and shall remain functional.

7.6.3.11 Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.
7.11.7 Escape systems shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.

10. Revise 8.15.5 to read as follows:

8.15.5 Report. The time to failure shall be recorded from each test and the average and standard deviation calculated.

11. Delete 8.15.6.1 as follows:

8.15.6.1 Pass/fail performance shall be based on the average time to failure.

Submitter’s Substantiation:
1. Table 4.4.1 - The table is missing recertification for Moderate Elongation Life Saving Rope and includes several duplications and terminology errors.
2. 5.1.5.12 - The terminology in 5.1.5.12 is not consistent with the document. The terms “rigging and anchor” straps have been replaced with “multiple configuration and end to end” straps. The current required statement is incorrect for end to end straps in that they are not required to be tested in a U or choker configuration.
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4. 7.4.6.1 and 7.5.6.1 - The term “and hardware” was inadvertently added to these paragraphs. Additionally, the char length requirement does not apply to hardware items, and there are no specific requirements for the testing of hardware items in the test method. The requirement as written in the current edition is inappropriate for hardware items, would be impossible to determine and could inhibit product certification.
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10. 7.11.6, 7.11.6.2, and 7.11.6.3 (New) - The change in 7.11.6 adds the requirement of thread heat resistance to fire escape systems.

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Public Input No. 15-NFPA 1983-2013 [Section No. 8.15.6.1]

8.15.6.1 Pass/fail performance shall be based on the average time to failure.

Additional Proposed Changes

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<tbody>
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<td>TC on FAE-SCE</td>
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<tr>
<td><strong>Organization</strong></td>
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<tr>
<td><strong>Zip</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Submittal Date</strong></td>
<td>Mon Sep 09 09:58:08 EDT 2013</td>
</tr>
</tbody>
</table>
1. Revise Table 4.4.1 to read as follows:

<table>
<thead>
<tr>
<th>Product</th>
<th>Test</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>All component product</td>
<td>Corrosion testing</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>All component product</td>
<td>Product label durability testing</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>Life safety rope</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Water rescue Throwlines</td>
<td>Rope breaking and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Water rescue Throwlines</td>
<td>Floatability</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety harness</td>
<td>Static</td>
<td>Alternating years with drop test</td>
</tr>
<tr>
<td>Life safety harness</td>
<td>Drop</td>
<td>Alternating years with static test</td>
</tr>
<tr>
<td>Belt</td>
<td>Static</td>
<td>Alternating years with drop test</td>
</tr>
<tr>
<td>Belt</td>
<td>Drop</td>
<td>Alternating years with static test</td>
</tr>
<tr>
<td>Auxiliary equipment Carabiners and snap link</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment Rope grab devices</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment system Descent control devices – auto stop</td>
<td>Passive brake holding</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment system Descent control devices – auto stop</td>
<td>Manner of function</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment system Descent control devices – non-auto stop</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment Portable anchor</td>
<td>All</td>
<td>Initial cert only</td>
</tr>
<tr>
<td>Auxiliary equipment Pulley</td>
<td>All</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Auxiliary equipment pick-off, anchor and rigging Multiple configuration and end to end straps</td>
<td>Breaking Strength</td>
<td>Every year</td>
</tr>
<tr>
<td>Auxiliary equipment Manufactured systems</td>
<td>All</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape Systems</td>
<td>All</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Life safety rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope</td>
<td>Diameter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape rope</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape rope fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing</td>
<td>Perimeter, rope breaking, and elongation</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape webbing</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Fire escape webbing</td>
<td>Elevated rope temperature test</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Victim extrication devices</td>
<td>Static</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Litters</td>
<td>Litter strength test – vertical</td>
<td>Initial only</td>
</tr>
<tr>
<td>---------</td>
<td>---------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Load-bearing textiles used in victim extraction devices</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in victim extraction devices</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Webbing components</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread components</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Escape webbing fibers</td>
<td>Melting and crystallization temperatures by thermal analysis</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in belts with optional flame resistance</td>
<td>Flame resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in life safety harnesses with optional flame resistance</td>
<td>Flame resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Hardware used in belts with optional flame resistance</td>
<td>Heat Resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in belts with optional flame resistance</td>
<td>Thread heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in life safety harnesses with optional flame resistance</td>
<td>Flame resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Load-bearing textiles used in life safety harnesses with optional flame resistance</td>
<td>Heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Hardware used in life safety harnesses with optional flame resistance</td>
<td>Heat Resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Thread used in life safety harnesses with optional flame resistance</td>
<td>Thread heat resistance</td>
<td>Every year</td>
</tr>
<tr>
<td>Manufacturer-supplied eye termination</td>
<td>Breaking strength</td>
<td>Every year</td>
</tr>
<tr>
<td>Manufacturer-supplied eye termination</td>
<td>Thread melting</td>
<td>Every year</td>
</tr>
</tbody>
</table>

2. Revise 5.1.5.12 to read as follows:

5.1.5.12 In addition to the compliance specified in 5.1.5.9, rigging and anchor multiple configuration and end to end straps shall include the following additional statement on the product label:

For multiple configuration straps:

“MINIMUM BREAKING STRENGTH AND RATING ARE DETERMINED USING A BASKET (U) CONFIGURATION. IN ADDITION, THIS STRAP HAS A MINIMUM BREAKING STRENGTH OF: ___ kN IN A CHOKER CONFIGURATION ___ kN WHEN PULLED END TO END.”

For end to end straps:

“MINIMUM BREAKING STRENGTH OF ___ kN WHEN PULLED END TO END”

3. Add a new paragraph 5.2.10.6 as follows:
5.2.10.6 The manufacturer of moderate elongation laid life saving ropes that are certified as being compliant with this standard shall furnish the purchaser with a sample of suggested records to be maintained by the purchaser or user of moderate elongation laid life saving rope and a list of items that the records need to contain.

4. Revise 7.4.6.1 and 7.5.6.1 to read as follows:

7.4.6.1 Where harnesses are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

7.5.6.1 Where belts are represented as being flame-resistant, materials and hardware shall be tested individually for flame resistance as specified in Section 8.16, Flame Resistance Test, and shall have an average char length of not more than 100 mm (4 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip.

5. Delete paragraph 7.5.7.10 and 7.6.3.9 and renumber subsequent paragraphs; revise paragraph 8.13.1.1 as follows:

7.5.7.10 Where the manufactured system incorporates an escape descent control device that incorporates a passive or active braking feature that creates friction between the device and the rope, the system shall be tested for maximum payout force as specified in Section 8.13, Payout Test, shall not release the test torso, and shall not exceed 90 N (20 lb).

7.6.3.9 Where the escape descent control device incorporates a passive or active braking feature that creates friction between the device and the rope, the maximum force required to pay a specific type of rope through the descent control device shall be tested as specified in Section 8.13, Payout Test, and shall not exceed 90 N (20 lb).

8.13.1.1 This test shall apply to descent control systems with passive and active braking systems, and escape manufactured systems.

6. Add a new paragraph 7.6.3.12 as follows:

7.6.3.12 Technical use descent control devices shall be tested for deformation as specified in Section 8.6, Manner of Function Tensile Test, Procedure B, and shall have a minimum breaking strength of at least 13.5 kN (3034 lbf).

7. Revise 7.11.6, 7.11.6.2 and add new 7.11.6.3 to read as follows:

7.11.6 Where an escape system is designated as a fire escape system, additional tests as specified in 7.11.6.1, and 7.11.6.2, and 7.11.6.3 shall be conducted.

7.11.6.2 Where fire escape system anchors are represented as being flame resistant, materials, labels, and hardware shall be tested individually for heat resistance as specified in Section 8.17, Heat Resistance Test, and shall not melt, drip, separate, or ignite; hardware items shall remain functional.

7.11.6.3 Sewing thread utilized in the construction of fire escape systems shall be tested for heat resistance as specified in Section 8.18, Thread Heat Resistance Test, and shall not melt at or below a temperature of 260ºC (500ºF).

8. Revise paragraph 7.15.1 and 7.15.2 as follows:

7.15.1 Technical use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

7.15.2 General-use belay devices shall be tested for breaking strength manner of function as specified in Section 8.6, Manner of Function Tensile Test, Procedure C, without failure of the device or failure of the rope, with a belay system extension of less than 1 m, and with an impact force of less than 15 kN (3372 lbf), and shall release the load in a controlled manner.

9. Delete Section 7.17, and add new paragraphs 7.6.3.11 and 7.11.7 as follows:

7.17 Escape Descent Control Device Performance Requirements. Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or device, and shall remain functional.

7.6.3.11 Escape descent control devices shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.
**7.11.7** Escape systems shall be tested for maximum impact force as specified in Section 8.14, Escape Descent Control Device and Systems Drop Test, and shall have the maximum impact force not exceed 8 kN (1798.5 lbf), shall not damage the rope or webbing or device, and shall remain functional.

10. Revise 8.15.5 to read as follows:

**8.15.5 Report.** The time to failure shall be recorded from each test and the average and standard deviation calculated.

11. Delete 8.15.6.1 as follows:

**8.15.6.1** Pass/fail performance shall be based on the average time to failure.

**Submitter’s Substantiation:**

1. Table 4.4.1 - The table is missing recertification for Moderate Elongation Life Saving Rope and includes several duplications and terminology errors.

2. 5.1.5.12 - The terminology in 5.1.5.12 is not consistent with the document. The terms “rigging and anchor” straps have been replaced with “multiple configuration and end to end” straps. The current required statement is incorrect for end to end straps in that they are not required to be tested in a U or choker configuration.

3. 5.2.10.6 - This added text is a requirement for other products covered by NFPA 1983 and provides users with valuable information on maintaining records for this life saving equipment.

4. 7.4.6.1 and 7.5.6.1 - The term “and hardware” was inadvertently added to these paragraphs. Additionally, the char length requirement does not apply to hardware items, and there are no specific requirements for the testing of hardware items in the test method. The requirement as written in the current edition is inappropriate for hardware items, would be impossible to determine and could inhibit product certification.

5. 7.5.7.10, 7.6.3.9, and 8.13.1.1 - Requirement 7.5.7.10 is redundant in that a manufactured system that includes an escape descent device would be classified as an Escape System – and therefore must meet all of the requirements of NFPA 1983 Section 7.11. Additionally, the requirement is incorrectly worded in that there is no torso used in the conduct of the test - thus the statement “shall not release the test torso” has no relevance.

   Requirement 7.6.3.9 applies to all escape descent control devices (those that are sold separately – not as part of a system). As the test is to be conducted with “each type of rope for its intended use” (NFPA 1983, Section 8.13.2.3) it follows that all escape descent control devices may have to be tested with all escape ropes – or the device would be limited to the type of rope with which it was tested. This would present an undue hardship on the manufacturers, and contribute to confusion on the part of the users in determining what ropes are suitable with each device.

   Requirement 8.13.1.1 is changed so the application of the test method is consistent with the performance requirements.

6. 7.6.3.12 - This performance requirement mandates the minimum breaking strength for these particular devices and is therefore a critical safety issue.

7. 7.11.6, 7.11.6.2, and 7.11.6.3 (New) - The change in 7.11.6 adds the requirement of thread heat resistance to fire escape systems. The change in 7.11.6.2 corrects the terminology from “escape anchors” to “fire escape system” as section 7.11.6 contains the requirements for fire escape systems and this requirement applies to the system not just the anchor.

   The addition of 7.11.6.3 adds the thread heat resistance test to threads used in the construction of fire escape systems. This was inadvertently omitted in the 2012 edition. Testing of thread in a fire escape system evaluates a critical safety property of the fire escape system. Using a thread that will not withstand heat can cause the system to fail under high heat conditions.

8. 7.15.1 and 7.15.2 - These requirements are currently located in NFPA 1983-2012 Section 8.6.4.5.6. As these parameters are utilized to determine pass/fail of the device they should be relocated to the Performance Requirements. Additionally, this is a manner of function requirement – not a breaking strength requirement. It is impossible to determine breaking strength without failure of the device or rope.

9. 7.17, 7.6.3.1.1 and 7.11.7 (New) - This added text is part of the requirements that apply to escape descent control devices and escape systems. As such, this language should appear with the group of performance requirements for descent control devices (Section 7.6.3) and escape systems (Section 7.11). Having this requirement separate and distinct from the other performance requirements for these devices/systems can lead to confusion and the possibility of neglect of the remainder of the requirements. 10. and 11. 8.15.5 and 8.15.6.1 -This change resolves a conflict with the requirements in 7.10.3 and 7.12.5.

**Emergency Nature:** This TIA seeks to correct errors and omissions that were overlooked during the Fall 2011 revision cycle process of NFPA 1983. Additionally, some parts of this TIA intend to offer to the public a benefit that would lessen a known hazard, and correct circumstances in which the standard could adversely affect impact on a product or method that was inadvertently overlooked in the total revision process.
Annex A - Explanatory Material

Annex A is not a part of the requirements of this NFPA document but is included for informational purposes only. This annex contains explanatory material, numbered to correspond with the applicable text paragraphs.

A.1.1.6 —
This standard includes requirements for fall prevention rope and equipment for emergency services during rescue, fire fighting, and other emergency operations, or during training. It does not include requirements for fall protection for employees working at height in general industry or the construction and demolition industry.

A.1.2.1 —
Rescue operations are hazardous activities. It is the responsibility of the fire department to obtain expert instruction and to take adequate safety precautions based upon manufacturers' recommendations. Training should include use techniques and maintenance procedures — including properties of life safety rope, escape rope, water rescue throwline, life safety harnesses, belts, manufacturer-supplied eye terminations, moderate elongation laid life safety rope, belay devices, and auxiliary equipment — and deployment techniques of this equipment.
A.1.3.4  

Fall factors (as illustrated in Figure A.1.3.4) are calculated by dividing the distance the person attached to the rope will fall by the length of the rope between the person and the rope anchor or belay. Thus, a 305 mm (1 ft) fall on a 150 mm (1/2 ft) rope would be a fall factor of 2.0; a 305 mm (1 ft) fall on a 305 mm (1 ft) rope would be a 1.0 fall factor; a 305 mm (1 ft) fall on a 1.12 m (4 ft) rope would be a 0.25 fall factor; and a 305 mm (1 ft) fall on a 12.2 m (40 ft) rope would be a 0.025 fall factor. Note as well that a 7.6 m (25 ft) fall on a 30.5 m (100 ft) rope is also a 0.25 fall factor. This formula assumes the fall takes place in free air without rope drag across building edges or through intermediate equipment.

When fall factors of greater than 0.25 are anticipated, such as are possible in lead climbing, dynamic ropes specifically designed for climbing should be considered. Only ropes certified to an appropriate climbing rope standard (i.e., UIAA, CE, etc.) are appropriate for this use. Dynamic climbing ropes should be stored, maintained, inspected, and use logged in a manner similar to that required for static/low-stretch rope. Such operations are outside the scope of this document. A fall factor of 0.25 is the maximum considered for NFPA 1983.

Recent testing indicates that the formula for calculating fall factors may not translate perfectly from dynamic ropes to the more static design ropes used for fire service operations.

Figure A.1.3.4 Fall Factor.
A.3.2.1 – Approved.

The National Fire Protection Association does not approve, inspect, or certify any installations, procedures, equipment, or materials; nor does it approve or evaluate testing laboratories. In determining the acceptability of installations, procedures, equipment, or materials, the authority having jurisdiction may base acceptance on compliance with NFPA or other appropriate standards. In the absence of such standards, said authority may require evidence of proper installation, procedure, or use. The authority having jurisdiction may also refer to the listings or labeling practices of an organization that is concerned with product evaluations and is thus in a position to determine compliance with appropriate standards for the current production of listed items.

A.3.2.2 – Authority Having Jurisdiction (AHJ).

The phrase “authority having jurisdiction,” or its acronym AHJ, is used in NFPA documents in a broad manner, since jurisdictions and approval agencies vary, as do their responsibilities. Where public safety is primary, the authority having jurisdiction may be a federal, state, local, or other regional department or individual such as a fire chief, fire marshal, chief of a fire prevention bureau, labor department, or health department; building official; electrical inspector; or others having statutory authority. For insurance purposes, an insurance inspection department, rating bureau, or other insurance company representative may be the authority having jurisdiction. In many circumstances, the property owner or his or her designated agent assumes the role of the authority having jurisdiction; at government installations, the commanding officer or departmental official may be the authority having jurisdiction.

A.3.2.4 – Listed.

The means for identifying listed equipment may vary for each organization concerned with product evaluation; some organizations do not recognize equipment as listed unless it is also labeled. The authority having jurisdiction should utilize the system employed by the listing organization to identify a listed product.

A.3.3.3.1 – Load-Bearing Attachment Point.

Load-bearing attachment points are D-rings, loops, or other connection points on a life safety harness and escape belts that are designated for use as the connection point to suspend the full weight of the wearer and equipment such as when ascending or descending rope and for fall arrest when the wearer may fall and shock load the connection point. These attachment points are designed to withstand the forces generated in a fall arrest situation.

A.3.3.3.2 – Positioning Attachment Point.

Positioning attachment points are D-rings, loops, or other connection points on a life safety harness or belt that are designated for use solely to support the wearer’s weight when connected to an anchor system. Attachment to positioning points can expose the wearer to a fall such as when using a strap connected to side D-rings when connected to a pole or tower. In other situations such as working on rappel, a fall can be much less likely. These attachment points are typically not designed to withstand the forces generated in a fall arrest situation, but can be designed for a much lower-impact fall. If the situation requires the use of fall arrest equipment, the anchor system should be attached to the main attachment point. Manufacturers should clearly identify and the user should be familiar with any attachment points that are only rated as positioning points.

A.3.3.7.1 – Escape Belt.

The intended use of the escape belt is to provide emergency escape capability to a firefighter from an immediate life-threatening emergency above the ground floor of a structure. Escape belts do not have leg loops to prevent the belt from rising up the torso of the user. The firefighter using an escape belt should always be able to maintain foot contact with the surface of the structure during descent or use a life safety harness.

A.3.3.18.2 – Ascending Device.

Ascent devices for ascending a fixed line are often also referred to as ascenders. These devices are considered part of the larger family group of rope grab devices. Ascenders are most often used in technical use ascent systems although most rope grabs including general use ones can also be used as an ascender.

A.3.3.18.5 – Escape Anchor Device.

A carabiner that does not connect to the structure but aids in tying an escape line to the structure is not considered an escape anchor device. The escape anchor device section applies to components intended to be attached to the end of an escape line and used to quickly attach the rope to a suitable anchor. It is not intended to apply to a snap-link or carabiner used with or attached to an escape line.
A.3.3.35 - General Use.

Rescue personnel may elect to use either technical or general use labeled equipment based on anticipated loads and acceptable safety margins as established by the authority having jurisdiction (AHJ). This choice should be based on the levels of operational capability of the organization. The AHJ should compile and evaluate information on the comparative advantages and disadvantages of the rope and equipment under consideration. For example, an organization at the operational level performing simple rescues might require the higher margin of safety offered by general use equipment. The highly trained or specialized organization performing the more complicated rescue might benefit from the lighter weight of technical use equipment, but due to their level of training can maintain an acceptable level of safety and efficiency for the specified operation.

A.3.3.44.1 - Design Load.

The design load used in developing the minimum performance requirement of a component to this standard is applicable only when the forces are applied to the component in a direct, linear fashion. The loads placed on a component through rigging and creation of a system can be increased due to the vectors used in the rigging. Loads can be amplified substantially when forces are applied in differing directions. Users should develop processes to identify loads placed on each component when creating systems and to determine whether or not they are acceptable. For example, a rope used in a highline system as the main line could be loaded (tensioned) with more than 10 times the actual load being carried across on the highline system depending on the angles involved in the rigging of the highline system.

A.3.3.44.2 - Impact Load.

For the purposes of this document, fall factors greater than 0.25 generate unacceptable impact loads.

A.3.3.44.3 - Proof Load.

The applied proof load is usually well above the allowable service load, but low enough so as not to damage the product being tested.

A.3.3.47.2 - Multiple Configuration Load Straps.

These can be, but are not limited to, anchor straps and rigging straps.

A.3.3.51 - Manufacturer-Supplied Eye Termination.

For example, sewn or swaged eyes provided in the end of a rope or line by the manufacturer of a compliant rope component or system.

A.3.3.58 - Portable Anchor.

Examples include but are not limited to davits, A-frames, tripods, quadpods, and cantilever devices.

A.3.3.60 - Product Label.

This product label is not a certification organization's label, symbol, or identifying mark; however, the certification organization's label, symbol, or identifying mark can be attached to it or be part of it.

A.3.3.64.1 - Block Creel Construction.

Unavoidable knots could be present in individual fibers as received from the fiber producer.

A.3.3.71 - Standard Deviation.

In this standard, standard deviation is calculated using the formulas in 8.2.5.2.

A.3.3.72 - Technical Use.

Rescue personnel may elect to use either technical or general use labeled equipment based on anticipated loads and acceptable safety margins as established by the authority having jurisdiction (AHJ). This choice should be based on the levels of operational capability of the organization. The AHJ should compile and evaluate information on the comparative advantages and disadvantages of the rope and equipment under consideration. For example, an organization at the operational level performing simple rescues might require the higher margin of safety offered by general use equipment. The highly trained or specialized organization performing the more complicated rescue might benefit from the lighter weight of technical use equipment, but due to their level of training can maintain an acceptable level of safety and efficiency for the specified operation.
A.4.1.7 —

From time to time the NFPA has received complaints that certain items of fire and emergency services protective clothing or protective equipment could be carrying labels falsely identifying them as compliant with an NFPA standard. The requirement for placing the certification organization's mark on or next to the product label is to help ensure that the purchaser can readily determine compliance of the respective product through independent third-party certification.

NFPA advises those purchasing life safety rope or equipment to be aware that for life safety rope or equipment items to meet the requirements of NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services, they must be certified by an independent third-party certification organization. In addition, the item must carry the label, symbol, or other identifying mark of that certification organization.

A life safety rope or equipment item that does not bear the mark of an independent third-party certification organization is NOT COMPLIANT with NFPA 1983, even if the product label states that the item is compliant!

For further information about certification and product labeling, see Chapters 4 and 5 of NFPA 1983. Also, the definitions for certification/certified, labeled, and listed in Chapter 3 of this standard should be reviewed.

Third-party certification is an important means of ensuring the quality of emergency services protective clothing and equipment. To be certain that an item is properly certified, labeled, and listed, NFPA recommends that prospective purchasers require appropriate evidence of certification for the specific product and model from the manufacturer before purchasing. Prospective purchasers should also contact the certification organizations and request copies of the certification organization's "list" of products certified to the appropriate NFPA standard. This "listing" is a requirement of third-party certification by this standard and is a service performed by the certification organization.

All NFPA standards on fire and emergency services protective clothing and equipment require that the item be certified by an independent third-party certification organization and, as with NFPA 1983, all items of fire and emergency services protective clothing and equipment must carry the label, symbol, or other identifying mark of that certification organization.

Any item of protective clothing or protective equipment covered by an NFPA standard that does not bear the mark of an independent third-party certification organization is NOT COMPLIANT with the appropriate NFPA standard, even if the product label states that the item is compliant!

A.4.2.1 —

The certification organization should have sufficient breadth of interest and activity so that the loss or award of a specific business contract would not be a determining factor in the financial well-being of the agency.

A.4.2.5 —

The contractual provisions covering certification programs should contain clauses advising the manufacturer that if requirements change, the product should be brought into compliance with the new requirements by a stated effective date through a compliance review program involving all currently listed products.

Without these clauses, certifiers would not be able to move quickly to protect their name, marks, or reputation. A product safety certification program would be deficient without these contractual provisions and the administrative means to back them up.

A.4.2.6 —

Investigative procedures are important elements of an effective and meaningful product safety certification program. A preliminary review should be carried out on products submitted to the agency before any major testing is undertaken.

A.4.2.7.1 —

For further information and guidance on recall programs, see 21 CFR 7, Subpart C.

A.4.2.9 —

Such inspections should include, in most instances, witnessing of production tests. With certain products, the certification organization inspectors should select samples from the production line and submit them to the main laboratory for countercheck testing. With other products, it could be desirable to purchase samples in the open market for test purposes.

A.4.5.4 —

For example, this situation exists when the product is wholly manufactured and assembled by another entity, or entities, for a separate entity that puts their own name and label on the product, frequently called "private labeling," and markets and sells the product as their product.
A.4.5.5
Subcontractors should be considered to be, but not be limited to, a person or persons, or a company, firm, corporation, partnership, or other organization having an agreement with or under contract with the compliant product manufacturer to supply or assemble the compliant product or portions of the compliant product.

A.4.6.1
ISO 27, Guidelines for corrective action to be taken by a certification body in the event of misuse of its mark of conformity, is a component of accreditation of certification organizations specified in 4.1.4. and 4.2.3. of this standard. Those paragraphs contain a mandatory reference to ISO 65., General requirements for bodies operating product certification systems, in which ISO 27 is referenced.

A.4.6.2
By definition, a hazard might involve a condition that can be imminently dangerous to the end-user. With this thought in mind, the investigation should be started immediately and completed in as timely a manner as is appropriate considering the particulars of the hazard being investigated.

A.4.6.11
The determination of the appropriate corrective action for the certification organization to initiate should take into consideration the severity of the product hazard and its potential consequences to the safety and health of end-users. The scope of testing and evaluation should consider, among other things, testing to the requirements of the standard to which the product was listed as compliant, the age of the product, the type of use and conditions to which the compliant product has been exposed, care and maintenance that has been provided, the use of expertise on technical matters outside the certification organization’s area of competence, and product hazards caused by circumstances not anticipated by the requirements of the applicable standard. As a guideline for determining which is more appropriate, a safety alert or a product recall, the following product hazard characteristics, based on 42 CFR 84, Subpart E., §84.41, are provided.

(1) - Critical: A product hazard that judgment and experience indicate is likely to result in a condition immediately hazardous to life or health (IHLH) for individuals using or depending on the compliant product. If an IHLH condition occurs, the user will sustain, or will be likely to sustain, an injury of a severity that could result in loss of life, significant bodily injury, or loss of bodily function, either immediately or at some point in the future.

(2) - Major A: A product hazard other than Critical that is likely to result in failure to the degree that the compliant product does not provide any protection or reduces protection, and is not detectable to the user. The phrase “reduces protection” means the failure of specific protective design(s) or feature(s) that results in degradation of protection in advance of reasonable life expectancy to the point that continued use of the product is likely to cause physical harm to the user, or where continued degradation could lead to IHLH conditions.

(3) - Major B: A product hazard other than Critical or Major A that is likely to result in reduced protection and is detectable to the user. The phrase “reduces protection” means the failure of specific protective design(s) or feature(s) that results in degradation of protection in advance of reasonable life expectancy to the point that continued use of the product is likely to cause physical harm to the user, or where continued degradation could lead to IHLH conditions.

(4) - Minor: A product hazard other than Critical, Major A, or Major B that is not likely to materially reduce the usability of the compliant product for its intended purpose, or a product hazard that is a departure from the established applicable standard and has little bearing on the effective use or operation of the compliant product for its intended purpose.

Where the facts are conclusive, based on characteristics of the hazard classified as indicated previously, the certification organization should consider initiating the following corrective actions with the authorized and responsible parties:

(1) - Critical product hazard characteristics: product recall
(2) - Major A product hazard characteristics: product recall or safety alert, depending on the nature of the specific product hazard
(3) - Major B product hazard characteristics: safety alert or no action, depending on the nature of the specific product hazard
(4) - Minor product hazard characteristic: no action
A.4.6.13 —
Reports, proposals, and proposed TIAs should be addressed to the technical committee that is responsible for the applicable standard and be sent in care of Standards Administration, NFPA 1 Batterymarch Park, Quincy, MA 02169-7471.

A.5.1.1.8 —
When life safety rope is purchased, the AHJ should ensure that the product label(s) with the information as specified in 5.1.1 and 5.2.1 is attached and remains with the rope until placed in service. When the product label is removed from the rope, the label should be retained in the AHJ’s permanent rope records.

It is very important that the information on the product label(s) and the information required in 5.2.1 to be supplied by the manufacturer reach the persons who will actually be using the rope. It is useless for the supply personnel or equipment officer to remove the product label and other pertinent information and simply retain them in the rope record file. The persons who potentially will be using the rope need to be provided with all the information available. Copies of the product label(s) and other pertinent information should be maintained with the rope wherever the rope is in service awaiting use so that the potential users can consult the information.

Where life safety or escape line is purchased in long lengths and then cut by the end-user agency to make several life safety ropes or escape lines, the product label(s) should be photocopied or otherwise reproduced and attached to each life safety rope when it is sent into service. The end user(s) (in a fire department it probably would be a fire company) should keep the copy of the product label(s) and any other pertinent information for reference and have the product label and other information readily available so that they can be reviewed by all potential users whenever necessary.

Ropes can be damaged in use by high stresses, impact loading situations, abrasion, kinking, heat, and exposure to chemicals and other products.

Ropes should be inspected by a qualified person before and after every operation and carefully stored between each use. Records should provide a history of each rope and should call for regular inspection and replacement as necessary. Any rope that fails to pass inspection or has been impact-loaded should be destroyed immediately.

It is recommended that departments establish an inspection program and shelf-life criteria for their ropes based on the conditions and environments encountered in their respective operations.

The destruction of rope means that it should be removed from service and altered in such a manner that it could not mistakenly be used as a life safety rope. This could include disposal or removal of the label and cutting the rope into short lengths to be used for utility purposes.

A.5.1.1.13 —
Information could be added to the tape that applies to a particular rope, such as date of manufacture or any pertinent information useful to the purchaser.

A.5.1.2.1 —
When escape line is purchased, the purchaser or the AHJ should ensure that a product label with the information as specified in 5.1.1 and 5.2.1 is attached and remains with the rope until placed in service. This label should be retained either in the AHJ’s rope records or with the user of the rope for reference.

Escape line is intended only for emergency self-rescue situations and cannot be used for other rope rescue situations. Escape rope is designed for one emergency use only and should be destroyed after use.

Escape line is intended to be carried by a fire fighter or other emergency services personnel so that it will be available in unanticipated situations from which self-rescue using the rope is the only option. Therefore, the escape line should be carefully stored and periodically inspected by a qualified person to ensure status and condition of the rope. During inspection, if there is any doubt as to the suitability of the escape line for use, it should be destroyed immediately and replaced.

A.5.1.2.2 —
Information useful to the purchaser that applies to a particular rope could be added to the tape.

A.5.1.2.9 —
See A.5.1.1.8.

A.5.1.2.12 —
Information useful to the purchaser that applies to a particular rope could be added to the tape.

A.5.1.3.12 —
For calculating the “fit height,” it will be assumed the wearer has a 1015 mm (40 in.) chest.
Throwlines that are provided to the potential user in water rescue throwbags should include proper instructions for use of the throwbag in accordance with ASTM F 1730, Guide for Throwing a Water Rescue Throwbag.

See A.5.1.1.8.

See A.5.1.1.8.

See A.5.1.1.8.

See A.5.1.1.8.

See A.5.1.1.8.

See A.5.1.1.8.

See A.5.1.1.8.

See A.5.1.1.8.

See A.5.1.1.8.

See A.5.1.1.8.

See A.5.1.1.8.

To avoid possible damage, and possible reduction and loss of strength of the life safety rope or harness, the manufacturer should be contacted prior to disinfecting or cleaning by a method not prescribed in the maintenance procedures and retirement criteria.

Generic inspection information for some types of life safety ropes can be found in ASTM F 1740, Guide for Inspection of Nylon, Polyester and/or Nylon/Polyester Blend Kernmantle Rope.

Users should be aware that auxiliary equipment is tested with specific rope(s). Where auxiliary equipment is used with other than the test rope(s), characteristics and rope/hardware interactions can be significantly different, which might include rope failure and reduced minimum breaking strengths. Users should test all components and ropes for compatibility in a controlled environment prior to using in a rescue situation.

If a finish is applied to rope fiber during production, it should not interfere with safe usage of the rope due to excessive slipperiness; this characteristic should be evaluated by the purchasing organization before the rope is purchased.

The purchaser should ensure that proper sizes are available to accommodate on-duty personnel.

Many life safety harness and system components that meet the requirements of this standard might not interface effectively with all systems of use and all types of life safety rope. Evaluation should be done before purchase to ensure compatibility.

Load-bearing textile materials should have strength, aging, ultraviolet resistance, abrasion resistance, and heat and cold resistance characteristics equivalent or superior to polyamides.

Alternative methods for finishing and securing webbing ends can be hardware capping, tucking and sewing, and coating the webbing ends with an air-drying solvent base sealant.

To aid the visual inspection of thread, it is recommended that the manufacturer use a thread that is of contrasting color to the webbing.

See A.6.3.2.

See A.6.3.3.

See A.6.3.4.

See A.6.3.4.
A.6.4.5 See A.6.3.5.
A.6.5.5 Locking designs can include screw and spring collars that are designed to prevent gates from opening accidentally during use.
A.6.5.7 Alternative methods for finishing and securing webbing ends can be hardware capping, tucking and sewing, and coating the webbing ends with an air-drying solvent base sealtant.
A.6.5.8 See A.6.3.5.

A.6.6.1 See A.6.1.1.
A.6.10.1 See A.6.1.1.

A.7.1 Even properly stored rope can lose strength over a period of time. Life safety ropes should be stored in a manner to avoid degradation from the environment. Examples of potentially damaging environmental factors include but are not limited to sunlight, fluorescent light, heat, exhaust fumes, battery acid, and fumes.

Any rope can be severely damaged and can fail when cut by a sharp edge or when subjected to abrasion over rough surfaces. Rope should be protected from such hazards with appropriate abrasion protection. Many constructions of rope that meet the requirements of this standard could pose difficulties with knotting or splicing easily or interfacing effectively with all systems of use and all types of life safety harness and associated equipment. Evaluation should be done by the fire department before purchase to ensure compatibility. Rope end terminations such as knots and splices should be made in accordance with the manufacturer's instructions.

A.7.1.1 Rope elongation is related to the amount of energy a rope can safely absorb when used to arrest a fall. For all ropes, especially when impact loading with a fall factor greater than 0.25, manufacturers should be consulted to ensure that rope with appropriate elongation and energy absorption is selected for each application.

A.7.1.2 See A.7.1.1.
A.7.1.3 Table A.7.1.3 shows comparisons of rope diameters to circumference in both millimeters and inches.

<table>
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</table>

When selecting the size of rope to purchase, a systems approach should be considered. Evaluation should be done while wearing gloves with the selected ascender and descender auxiliary equipment before purchase to ensure the rope size works.

A.7.1.4 See A.7.1.3.
A.7.1.5
The thermal requirement is intended to limit melting of rope, harness, and certain other system components due to friction caused by activities such as rappelling. The thermal requirement is NOT intended to qualify these items for use during fire-fighting operations or other operations where high temperature exposures are encountered.

Many life safety ropes have thermoplastic materials as all or part of their construction because of the material's excellent stretch and resilient properties. However, thermoplastic materials are not highly resistant to elevated temperatures and can lose strength at temperatures common during fire-fighting operations. If life safety rope is carried by fire fighters during fire-fighting operations, it should be shielded or protected from flame or high temperature exposures. Repeat exposures of the life safety rope to flame or high temperatures can cause degradation of the rope over time and could result in failure during use. Exposure of the life safety rope to flame or high temperatures during use can cause melting of thermoplastic materials of the rope and result in failure.

A.7.2
See A.7.1.

A.7.2.1
See A.7.1.1.

A.7.2.2
See A.7.1.3.

A.7.2.3
The thermal requirement is intended to limit melting of rope, harness, and certain other system components due to friction caused by activities such as rappelling. The thermal requirement is NOT intended to qualify these items for use during fire-fighting operations or other operations where high temperature exposures are encountered.

Many escape lines have thermoplastic materials as all or part of their construction because of the material's excellent stretch and resilient properties. However, thermoplastic materials are not highly resistant to elevated temperatures and can lose strength at temperatures common during fire-fighting operations. If escape line is carried by fire fighters during fire-fighting operations, it should be shielded or protected from flame or high temperature exposures and falling hot debris. The rope can be carried in the pocket of the protective coat or inside a thermally protective pouch or storage bag. Repeat exposures of the escape line to flame or high temperatures can cause degradation of the rope over time and could result in failure during use. Exposure of the escape line to flame or high temperatures during use can cause melting of thermoplastic materials of the rope and result in failure.

A.7.3.2
See A.7.1.3.

A.7.4.5
The thermal requirement is intended to limit melting of rope, harness, and certain other system components due to friction caused by activities such as rappelling. The thermal requirement is not intended to qualify these items for use during fire-fighting operations or other operations where high temperature exposures are encountered.

Many life safety harnesses have thermoplastic materials as all or part of their construction because of the material's excellent strength and resilient properties. However, thermoplastic materials are not highly resistant to elevated temperatures and can lose strength at temperatures common during fire-fighting operations. If life safety harness is carried or used by fire fighters during fire-fighting operations, it should be shielded or protected from flame or high temperature exposures. Repeat exposures of the life safety harness to flame or high temperatures can cause degradation of the harness over time and could result in failure during use. Exposure of the life safety harness to flame or high temperatures during use can cause melting of thermoplastic materials of the harness and result in failure.
A.7.5.8.7
The thermal requirement is intended to limit melting of rope, harness, and certain other system components due to friction caused by activities such as rappelling. The thermal requirement is not intended to qualify these items for use during fire-fighting operations or other operations where high-temperature exposures are encountered.

Many auxiliary equipment software items have thermoplastic materials as all or part of the construction because of the materials' excellent strength and resilient properties. However, thermoplastic materials are not highly resistant to elevated temperatures and can lose strength at temperatures common during fire-fighting operations. If auxiliary equipment software items are carried by fire fighters during fire-fighting operations, they should be shielded or protected from flame or high-temperature exposures. Repeat exposures of the auxiliary equipment software to flame or high-temperatures can cause degradation of the item(s) over time and could result in failure during use. Exposure of the auxiliary equipment software to flame or high temperatures during use can cause melting of thermoplastic materials of the item(s) and result in failure.

See A.7.5.8.7
A.7.5.10
The thermal requirement is intended to limit melting of rope, harness, and certain other system components due to friction caused by activities such as rappelling. The thermal requirement is not intended to qualify these items for use during fire-fighting operations or other operations where high-temperature exposures are encountered.

Many belts have thermoplastic materials as all or part of the construction because of the materials' excellent strength and resilient properties. However, thermoplastic materials are not highly resistant to elevated temperatures and can lose strength at temperatures common during fire-fighting operations. If belts are carried or used by fire fighters during fire-fighting operations, they should be shielded or protected from flame or high temperature exposures. Repeat exposures of belts to flame or high temperatures can cause degradation of the belt over time and could result in failure during use. Exposure of the belt to flame or high temperatures during use can cause melting of thermoplastic materials of the belt and result in failure.

See A.7.12
A.7.12.1
See A.7.1.1
A.7.12.2
See A.7.1.3
A.7.12.3
See A.7.2.3
A.7.14.3
See A.7.1.5

See A.7.1.
NFPA 1983 does not preclude a variety of rope construction as long as the construction types meet the performance requirements of the standard. The title of CI 1801, *Low Stretch and Static Kernmantle Life Safety Rope*, indicates a particular type of rope construction; however, the elongation and breaking strength test methods contained in CI 1801 can be utilized for other types of rope construction.

The reference is not intended to limit the rope construction to the construction type mentioned in the title of CI 1801 or to any other single type of rope construction. The reference is only intended to refer to the testing methods for elongation and breaking strength specified in Sections 8 and 9 of CI 1801 for evaluating any rope construction type for compliance with NFPA 1983.

The intent is to test three samples of each model per test. At the manufacturer’s discretion, a new, unused sample from one test series can be used for one or more of the other test series. For example, a sample used in harness test 8.3 can be used to conduct harness test 8.4, or a new unused sample can be used.

The 16 kN (3597 lbf) test value selected for this static test, which employs a rigid test torso, equates to having a dynamic force exerted on the body greatly exceeding that which is considered reasonable to survive.

The 16 kN (3597 lbf) test value selected for this static test, which employs a rigid test torso, equates to having a dynamic force exerted on the body greatly exceeding that which is considered reasonable to survive. The force selected for the head-down position is less than that selected for the upright position test because, in realistic emergency operations, a person falling headfirst will impact the harness with less force in the head-down position, and then be inverted and arrested, thus producing the maximum force in the upright position.

A lesser force is used in this test than in the rescue harness test due to the personal protective application of belts. The indicated test force of 13 kN (2923 lbf) is compliant with the requirements for escape rope.

The pin dimensions are specified within the referenced ASTM test method (F 1956).

Testing is specific to the rope/device interaction and does not impact or diminish the requirements of Section 7.2. This test is independent of the test outlined in Section 7.2.

To be compliant with the standard, a belay device that is also intended to function as a descent control device for braking a load either before or after arresting a fall should meet the standard’s requirements for a descent control device.

Testing is specific to the rope/device interaction and does not impact or diminish the requirements of Section 7.2. This test is independent of the test outlined in Section 7.2.

In most cases, the portable anchor device will be weakest at its greatest (or highest) extension. However, many devices have multiple ways they can be used. Different rigging configurations could be stronger or weaker than others. It is intended that the testing be done in the configuration specified in the manufacturer’s instructions to the user that would yield the lowest strength results. For example, anchor slings can be rigged in a basket, end-to-end, or choker configuration. Each configuration will likely yield different results. The minimum breaking strength reported is for the weakest configuration allowed by the manufacturer’s instructions.
A.8.7.5.1
See A.8.7.4.1.

A.8.7.6.8
Test pins are used to simulate the function of carabiners to connect various products together. The radius of the test pin, where it contacts the product being tested, should match a common size carabiner used in the fire service. The pin does not have to be round as it could be necessary to have a stronger pin than is available in round stock. Regardless, the face of the pin in contact with the product being tested should have the radius referenced in the test procedure. Wire rope can be used to simulate the function of rope as it applies to the function of the device. The diameter of the wire rope should be as close as possible to the largest diameter of rope with which the device is designed to work.

A.8.7.8.5
For example, portable anchors designed to be attached to flanged rims of vessel openings would require a test base to simulate the flanged portal to which the device is designed to be affixed.

A.8.7.11.2
AISI SAE Type 01 tool steel is commonly purchased as 01 Drill Rod.

A.8.7.12.2
AISI SAE Type 01 tool steel is commonly purchased as 01 Drill Rod.

A.8.11.6
The 16 kN (3597 lbf) test value selected for this static test, which employs a rigid test torso, equates to having a dynamic force exerted on the body greatly exceeding that which is considered reasonable to survive.

Additional Proposed Changes

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Statement of Problem and Substantiation for Public Input

NFPA 1983 contains an extensive variety of products. The current format can be difficult to navigate and is not easily followed by users and manufacturers. At the TC’s request, the document was reorganized for clarity and ease of use. This input includes the language in TIA 12-1. No new material is contained in this input.

Submitter Information Verification

Submitter Full Name: Beverly Stutts
Organization: UL LLC
Street Address: 
City: 
State: 
Zip: 
Submittal Date: Mon Jan 05 14:52:34 EST 2015
Annex A is not a part of the requirements of this NFPA document but is included for informational purposes only. This annex contains explanatory material, numbered to correspond with the applicable text paragraphs.

A.1.1.6 This standard includes requirements for fall prevention rope and equipment for emergency services during rescue, fire fighting, and other emergency operations, or during training. It does not include requirements for fall protection for employees working at height in general industry or the construction and demolition industry.

A.1.2.1 Rescue operations are hazardous activities. It is the responsibility of the fire department to obtain expert instruction and to take adequate safety precautions based upon manufacturers' recommendations. Training should include use techniques and maintenance procedures — including properties of life safety rope, escape rope, water rescue throwline, life safety harnesses, belts, manufacturer-supplied eye terminations, moderate elongation laid life safety rope, belay devices, and auxiliary equipment — and deployment techniques of this equipment.

A.1.3.4 Fall factors (as illustrated in Figure A.1.3.4) are calculated by dividing the distance the person attached to the rope will fall by the length of the rope between the person and the rope anchor or belay. Thus, a 305 mm (1 ft) fall on a 150 mm (½ ft) rope would be a fall factor of 2.0; a 305 mm (1 ft) fall on a 305 mm (1 ft) rope would be a 1.0 fall factor; a 305 mm (1 ft) fall on a 1.12 m (4 ft) rope would be a 0.25 fall factor; and a 305 mm (1 ft) fall on a 12.2 m (40 ft) rope would be a 0.025 fall factor. Note as well that a 7.6 m (25 ft) fall on a 30.5 m (100 ft) rope is also a 0.25 fall factor. This formula assumes the fall takes place in free air without rope drag across building edges or through intermediate equipment.

When fall factors of greater than 0.25 are anticipated, such as are possible in lead climbing, dynamic ropes specifically designed for climbing should be considered. Only ropes certified to an appropriate climbing rope standard (i.e., UIAA, CE, etc.) are appropriate for this use. Dynamic climbing ropes should be stored, maintained, inspected, and use-logged in a manner similar to that required for static/low-stretch rope. Such operations are outside the scope of this document. A fall factor of 0.25 is the maximum considered for NFPA 1983.

Recent testing indicates that the formula for calculating fall factors may not translate perfectly from dynamic ropes to the more static design ropes used for fire service operations.

****INSERT FIGURE HERE****

FIGURE A.1.3.4  Fall Factor.

A.3.2.1 Approved. The National Fire Protection Association does not approve, inspect, or certify any installations, procedures, equipment, or materials; nor does it approve or evaluate testing laboratories. In determining the acceptability of installations, procedures, equipment, or
materials, the authority having jurisdiction may base acceptance on compliance with NFPA or other appropriate standards. In the absence of such standards, said authority may require evidence of proper installation, procedure, or use. The authority having jurisdiction may also refer to the listings or labeling practices of an organization that is concerned with product evaluations and is thus in a position to determine compliance with appropriate standards for the current production of listed items.

A.3.2.2 Authority Having Jurisdiction (AHJ). The phrase “authority having jurisdiction,” or its acronym AHJ, is used in NFPA documents in a broad manner, since jurisdictions and approval agencies vary, as do their responsibilities. Where public safety is primary, the authority having jurisdiction may be a federal, state, local, or other regional department or individual such as a fire chief; fire marshal; chief of a fire prevention bureau, labor department, or health department; building official; electrical inspector; or others having statutory authority. For insurance purposes, an insurance inspection department, rating bureau, or other insurance company representative may be the authority having jurisdiction. In many circumstances, the property owner or his or her designated agent assumes the role of the authority having jurisdiction; at government installations, the commanding officer or departmental official may be the authority having jurisdiction.

A.3.2.4 Listed. The means for identifying listed equipment may vary for each organization concerned with product evaluation; some organizations do not recognize equipment as listed unless it is also labeled. The authority having jurisdiction should utilize the system employed by the listing organization to identify a listed product.

A.3.3.3.1 Load-Bearing Attachment Point. Load bearing attachment points are D-rings, loops, or other connection points on a life safety harness and escape belts that are designated for use as the connection point to suspend the full weight of the wearer and equipment such as when ascending or descending rope and for fall arrest when the wearer may fall and shock load the connection point. These attachment points are designed to withstand the forces generated in a fall arrest situation.

A.3.3.3.2 Positioning Attachment Point. Positioning attachment points are D-rings, loops, or other connection points on a life safety harness or belt that are designated for use solely to support the wearer's weight when connected to an anchor system. Attachment to positioning points can expose the wearer to a fall such as when using a strap connected to side D-rings when connected to a pole or tower. In other situations such as working on rappel, a fall can be much less likely. These attachment points are typically not designed to withstand the forces generated in a fall arrest situation, but can be designed for a much lower-impact fall. If the situation requires the use of fall arrest equipment, the anchor system should be attached to the main attachment point. Manufacturers should clearly identify and the user should be familiar with any attachment points that are only rated as positioning points.

A.3.3.7.1 Escape Belt. The intended use of the escape belt is to provide emergency escape capability to a fire fighter from an immediate life-threatening emergency above the ground floor of a structure. Escape belts do not have leg loops to prevent the belt from rising up the torso of the user. The fire fighter using an escape belt should always be able to maintain foot contact with the surface of the structure during descent or use a life safety harness.
A.3.3.18.2 **Ascending Device.** Ascent devices for ascending a fixed line are often also referred to as ascenders. These devices are considered part of the larger family group of rope grab devices. Ascenders are most often used in technical use ascent systems although most rope grabs including general use ones can also be used as an ascender.

A.3.3.18.5 **Escape Anchor Device.** A carabiner that does not connect to the structure but aids in tying an escape line to the structure is not considered an escape anchor device. The escape anchor device section applies to components intended to be attached to the end of an escape line and used to quickly attach the rope to a suitable anchor. It is not intended to apply to a snap-link or carabiner used with or attached to an escape line.

A.3.3.35 **General Use.** Rescue personnel may elect to use either technical or general use labeled equipment based on anticipated loads and acceptable safety margins as established by the authority having jurisdiction (AHJ). This choice should be based on the levels of operational capability of the organization. The AHJ should compile and evaluate information on the comparative advantages and disadvantages of the rope and equipment under consideration. For example, an organization at the operational level performing simple rescues might require the higher margin of safety offered by general use equipment. The highly trained or specialized organization performing the more complicated rescue might benefit from the lighter weight of technical use equipment, but due to their level of training can maintain an acceptable level of safety and efficiency for the specified operation.

A.3.3.44.1 **Design Load.** The design load used in developing the minimum performance requirement of a component to this standard is applicable only when the forces are applied to the component in a direct, linear fashion. The loads placed on a component through rigging and creation of a system can be increased due to the vectors used in the rigging. Loads can be amplified substantially when forces are applied in differing directions. Users should develop processes to identify loads placed on each component when creating systems and to determine whether or not they are acceptable. For example, a rope used in a highline system as the main line could be loaded (tensioned) with more than 10 times the actual load being carried across on the highline system depending on the angles involved in the rigging of the highline system.

A.3.3.44.2 **Impact Load.** For the purposes of this document, fall factors greater than 0.25 generate unacceptable impact loads.

A.3.3.44.3 **Proof Load.** The applied proof load is usually well above the allowable service load, but low enough so as not to damage the product being tested.

A.3.3.47.2 **Multiple Configuration Load Straps.** These can be, but are not limited to, anchor straps and rigging straps.

A.3.3.51 **Manufacturer-Supplied Eye Termination.** For example, sewn or swaged eyes provided in the end of a rope or line by the manufacturer of a compliant rope component or system.

A.3.3.58 **Portable Anchor.** Examples include but are not limited to davits, A-frames, tripods, quadpods, and cantilever devices.
A.3.3.60  **Product Label.** This product label is not a certification organization's label, symbol, or identifying mark; however, the certification organization's label, symbol, or identifying mark can be attached to it or be part of it.

A.3.3.64.1  **Block Creel Construction.** Unavoidable knots could be present in individual fibers as received from the fiber producer.

A.3.3.71  **Standard Deviation.** In this standard, standard deviation is calculated using the formulas in 8.2.5.2.

A.3.3.72  **Technical Use.** Rescue personnel can elect to use either technical or general use labeled equipment based on anticipated loads and acceptable safety margins as established by the authority having jurisdiction (AHJ). This choice should be based on the levels of operational capability of the organization. The AHJ should compile and evaluate information on the comparative advantages and disadvantages of the rope and equipment under consideration. For example, an organization at the operational level performing simple rescues might require the higher margin of safety offered by general use equipment. The highly trained or specialized organization performing the more complicated rescue might benefit from the lighter weight of technical use equipment, but due to their level of training can maintain an acceptable level of safety and efficiency for the specified operation.

A.4.1.7  From time to time the NFPA has received complaints that certain items of fire and emergency services protective clothing or protective equipment could be carrying labels falsely identifying them as compliant with an NFPA standard. The requirement for placing the certification organization's mark on or next to the product label is to help ensure that the purchaser can readily determine compliance of the respective product through independent third-party certification.

NFPA advises those purchasing life safety rope or equipment to be aware that for life safety rope or equipment items to meet the requirements of NFPA 1983, *Standard on Life Safety Rope and Equipment for Emergency Services*, they must be certified by an independent third-party certification organization. In addition, the item must carry the label, symbol, or other identifying mark of that certification organization.

A life safety rope or equipment item that does not bear the mark of an independent third-party certification organization is NOT COMPLIANT with NFPA 1983, even if the product label states that the item is compliant!

For further information about certification and product labeling, see Chapters 4 and 5 of NFPA 1983. Also, the definitions for *certification/certified, labeled, and listed* in Chapter 3 of this standard should be reviewed.

Third-party certification is an important means of ensuring the quality of emergency services protective clothing and equipment. To be certain that an item is properly certified, labeled, and listed, NFPA recommends that prospective purchasers require appropriate evidence of certification for the specific product and model from the manufacturer before purchasing. Prospective purchasers should also contact the certification organizations and request copies of the certification organization's “list” of products certified to the appropriate NFPA standard. This
“listing” is a requirement of third-party certification by this standard and is a service performed by the certification organization.

All NFPA standards on fire and emergency services protective clothing and equipment require that the item be certified by an independent third-party certification organization and, as with NFPA 1983, all items of fire and emergency services protective clothing and equipment must carry the label, symbol, or other identifying mark of that certification organization.

Any item of protective clothing or protective equipment covered by an NFPA standard that does not bear the mark of an independent third-party certification organization is NOT COMPLIANT with the appropriate NFPA standard, even if the product label states that the item is compliant!

A.4.2.1 The certification organization should have sufficient breadth of interest and activity so that the loss or award of a specific business contract would not be a determining factor in the financial well-being of the agency.

A.4.2.5 The contractual provisions covering certification programs should contain clauses advising the manufacturer that if requirements change, the product should be brought into compliance with the new requirements by a stated effective date through a compliance review program involving all currently listed products.

Without these clauses, certifiers would not be able to move quickly to protect their name, marks, or reputation. A product safety certification program would be deficient without these contractual provisions and the administrative means to back them up.

A.4.2.6 Investigative procedures are important elements of an effective and meaningful product safety certification program. A preliminary review should be carried out on products submitted to the agency before any major testing is undertaken.

A.4.2.7.1 For further information and guidance on recall programs, see 21 CFR 7, Subpart C.

A.4.2.9 Such inspections should include, in most instances, witnessing of production tests. With certain products, the certification organization inspectors should select samples from the production line and submit them to the main laboratory for countercheck testing. With other products, it could be desirable to purchase samples in the open market for test purposes.

A.4.5.4 For example, this situation exists when the product is wholly manufactured and assembled by another entity, or entities, for a separate entity that puts their own name and label on the product, frequently called “private labeling,” and markets and sells the product as their product.

A.4.5.5 Subcontractors should be considered to be, but not be limited to, a person or persons, or a company, firm, corporation, partnership, or other organization having an agreement with or under contract with the compliant product manufacturer to supply or assemble the compliant product or portions of the compliant product.

A.4.6.1 ISO 27, Guidelines for corrective action to be taken by a certification body in the event of misuse of its mark of conformity, is a component of accreditation of certification organizations specified in 4.1.4 and 4.2.3 of this standard. Those paragraphs contain a mandatory reference to
ISO 65, *General requirements for bodies operating product certification systems*, in which ISO 27 is referenced.

**A.4.6.2** By definition, a hazard might involve a condition that can be imminently dangerous to the end user. With this thought in mind, the investigation should be started immediately and completed in as timely a manner as is appropriate considering the particulars of the hazard being investigated.

**A.4.6.11** The determination of the appropriate corrective action for the certification organization to initiate should take into consideration the severity of the product hazard and its potential consequences to the safety and health of end users. The scope of testing and evaluation should consider, among other things, testing to the requirements of the standard to which the product was listed as compliant, the age of the product, the type of use and conditions to which the compliant product has been exposed, care and maintenance that has been provided, the use of expertise on technical matters outside the certification organization's area of competence, and product hazards caused by circumstances not anticipated by the requirements of the applicable standard. As a guideline for determining which is more appropriate, a safety alert or a product recall, the following product hazard characteristics, based on 42 CFR 84, Subpart E, §84.41, are provided.

1. **Critical**: A product hazard that judgment and experience indicate is likely to result in a condition immediately hazardous to life or health (IHLH) for individuals using or depending on the compliant product. If an IHLH condition occurs, the user will sustain, or will be likely to sustain, an injury of a severity that could result in loss of life, significant bodily injury, or loss of bodily function, either immediately or at some point in the future.

2. **Major A**: A product hazard other than Critical that is likely to result in failure to the degree that the compliant product does not provide any protection or reduces protection, and is not detectable to the user. The phrase “reduces protection” means the failure of specific protective design(s) or feature(s) that results in degradation of protection in advance of reasonable life expectancy to the point that continued use of the product is likely to cause physical harm to the user, or where continued degradation could lead to IHLH conditions.

3. **Major B**: A product hazard other than Critical or Major A that is likely to result in reduced protection and is detectable to the user. The phrase “reduces protection” means the failure of specific protective design(s) or feature(s) that results in degradation of protection in advance of reasonable life expectancy to the point that continued use of the product is likely to cause physical harm to the user, or where continued degradation could lead to IHLH conditions.

4. **Minor**: A product hazard other than Critical, Major A, or Major B that is not likely to materially reduce the usability of the compliant product for its intended purpose, or a product hazard that is a departure from the established applicable standard and has little bearing on the effective use or operation of the compliant product for its intended purpose.

Where the facts are conclusive, based on characteristics of the hazard classified as indicated previously, the certification organization should consider initiating the following corrective actions with the authorized and responsible parties:
(1) Critical product hazard characteristics: product recall

(2) Major A product hazard characteristics: product recall or safety alert, depending on the nature of the specific product hazard

(3) Major B product hazard characteristics: safety alert or no action, depending on the nature of the specific product hazard

(4) Minor product hazard characteristic: no action

**A.4.6.13** Reports, proposals, and proposed TIAs should be addressed to the technical committee that is responsible for the applicable standard and be sent in care of Standards Administration, NFPA 1 Batterymarch Park, Quincy, MA 02169-7471.

**A.5.1.1.8** When life safety rope is purchased, the AHJ should ensure that the product label(s) with the information as specified in 5.1.1 and 5.2-5.1.2 is attached and remains with the rope until placed in service. When the product label is removed from the rope, the label should be retained in the AHJ's permanent rope records.

It is very important that the information on the product label(s) and the information required in 5.2-5.1.2 to be supplied by the manufacturer reach the persons who will actually be using the rope. It is useless for the supply personnel or equipment officer to remove the product label and other pertinent information and simply retain them in the rope record file. The persons who potentially will be using the rope need to be provided with all the information available. Copies of the product label(s) and other pertinent information should be maintained with the rope wherever the rope is in service awaiting use so that the potential users can consult the information.

Where life safety or escape line is purchased in long lengths and then cut by the end user agency to make several life safety ropes or escape lines, the product label(s) should be photocopied or otherwise reproduced and attached to each life safety rope when it is sent into service. The end user(s) (in a fire department it probably would be a fire company) should keep the copy of the product label(s) and any other pertinent information for reference and have the product label and other information readily available so that they can be reviewed by all potential users whenever necessary.

Ropes can be damaged in use by high stresses, impact loading situations, abrasion, kinking, heat, and exposure to chemicals and other products.

Ropes should be inspected by a qualified person before and after every operation and carefully stored between each use. Records should provide a history of each rope and should call for regular inspection and replacement as necessary. Any rope that fails to pass inspection or has been impact-loaded should be destroyed immediately.

It is recommended that departments establish an inspection program and shelf-life criteria for their ropes based on the conditions and environments encountered in their respective operations.

The destruction of rope means that it should be removed from service and altered in such a manner that it could not mistakenly be used as a life safety rope. This could include disposal or removal of the label and cutting the rope into short lengths to be used for utility purposes.
A.5.1.1.13 Information could be added to the tape that applies to a particular rope, such as date of manufacture or any pertinent information useful to the purchaser.

A.5.1.2.1 A.5.2.1.1 When escape line is purchased, the purchaser or the AHJ should ensure that a product label with the information as specified in 5.1.2-5.2.1 and 5.2.2 is attached and remains with the rope until placed in service. This label should be retained either in the AHJ’s rope records or with the user of the rope for reference.

Escape line is intended only for emergency self-rescue situations and cannot be used for other rope rescue situations. Escape rope is designed for one emergency use only and should be destroyed after use.

Escape line is intended to be carried by a fire fighter or other emergency services personnel so that it will be available in unanticipated situations from which self-rescue using the rope is the only option. Therefore, the escape line should be carefully stored and periodically inspected by a qualified person to ensure status and condition of the rope. During inspection, if there is any doubt as to the suitability of the escape line for use, it should be destroyed immediately and replaced.

A.5.3.1.1 See A.5.2.1.1.

A.5.4.1.1 See A.5.2.1.1.

A.5.5.1.1 See A.5.2.1.1.

A.5.1.2.2 A.5.2.1.2 Information useful to the purchaser that applies to a particular rope could be added to the tape.

A.5.1.2.9 A.5.2.1.9 See A.5.1.1.8.

A.5.1.12.2 A.5.2.1.12 Information useful to the purchaser that applies to a particular rope could be added to the tape.

A.5.1.3.12 A.5.9.1.2 For calculating the “fit height,” it will be assumed the wearer has a 1015 mm (40 in.) chest.

A.5.1.6.1 A.5.6.1.1 Throwlines that are provided to the potential user in water rescue throwbags should include proper instructions for use of the throwbag in accordance with ASTM F 1730, Guide for Throwing a Water Rescue Throwbag.

A.5.1.6.8 A.5.6.1.8 See A.5.1.1.8.

A.5.1.9.3 A.5.3.1.3 See A.5.1.1.8.

A.5.1.10.3 A.5.5.1.3 See A.5.1.1.8.

A.5.1.12.1 A.5.4.1.1 See A.5.1.2.1 A.5.2.1.1.

A.5.1.12.2 A.5.4.1.2 See A.5.1.2.2 A.5.2.1.2.

A.5.1.12.9 A.5.4.1.9 See A.5.1.1.8.
To avoid possible damage, and possible reduction and loss of strength of the life safety rope or harness, the manufacturer should be contacted prior to disinfecting or cleaning by a method not prescribed in the maintenance procedures and retirement criteria.

Generic inspection information for some types of life safety ropes can be found in ASTM F1740, *Guide for Inspection of Nylon, Polyester and/or Nylon/Polyester Blend Kernmantle Rope*.

Users should be aware that auxiliary equipment is tested with specific rope(s). Where auxiliary equipment is used with other than the test rope(s), characteristics and rope/hardware interactions can be significantly different, which might include rope failure and reduced minimum breaking strengths. Users should test all components and ropes for compatibility in a controlled environment prior to using in a rescue situation.

The purchaser should ensure that proper sizes are available to accommodate on-duty personnel.

Many life safety harness and system components that meet the requirements of this standard might not interface effectively with all systems of use and all types of life safety rope. Evaluation should be done before purchase to ensure compatibility.

Load-bearing textile materials should have strength, aging, ultraviolet resistance, abrasion resistance, and heat and cold resistance characteristics equivalent or superior to polyamides.

Alternative methods for finishing and securing webbing ends can be hardware capping, tucking and sewing, and coating the webbing ends with an air-drying solvent base sealant.

To aid the visual inspection of thread, it is recommended that the manufacturer use a thread that is of contrasting color to the webbing.

Locking designs can include screw and spring collars that are designed to prevent gates from opening accidentally during use.
A.6.5.7—6.12.6 Alternative methods for finishing and securing webbing ends can be hardware capping, tucking and sewing, and coating the webbing ends with an air-drying solvent base sealant.

A.6.5.8—A.6.12.7 See A.6.3.5—A.6.9.5.
A.6.13.7 See 6.9.5.
A.6.22.7 See 6.9.5.
A.6.25.7 See 6.9.5.

A.6.6.1 See A.6.1.1.

A.6.10.1 A.6.5.1 See A.6.1.1.

A.6.11 A.6.23 Examples of flexible lifelines include but are not limited to rope, webbing, and cables. A connector from the system to the user does not include the harness or belt. An escape anchor is an example of an anchor point. Each component must meet the performance requirements given for that type component given in this standard, even if it does not meet the design requirements.


A.7.1 Even properly stored rope can lose strength over a period of time. Life safety ropes should be stored in a manner to avoid degradation from the environment. Examples of potentially damaging environmental factors include but are not limited to sunlight, fluorescent light, heat, exhaust fumes, battery acid, and fumes.

Any rope can be severely damaged and can fail when cut by a sharp edge or when subjected to abrasion over rough surfaces. Rope should be protected from such hazards with appropriate abrasion protection. Many constructions of rope that meet the requirements of this standard could pose difficulties with knotting or splicing easily or interfacing effectively with all systems of use and all types of life safety harness and associated equipment. Evaluation should be done by the fire department before purchase to ensure compatibility. Rope end terminations such as knots and splices should be made in accordance with the manufacturer's instructions.

A.7.1.1 Rope elongation is related to the amount of energy a rope can safely absorb when used to arrest a fall. For all ropes, especially when impact loading with a fall factor greater than 0.25, manufacturers should be consulted to ensure that rope with appropriate elongation and energy absorption is selected for each application.
A.7.1.2  See A.7.1.1.

A.7.1.3  Table A.7.1.3 shows comparisons of rope diameters to circumference in both millimeters and inches.

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<th>Diameter in Fraction (in.) Nearest 1/64</th>
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When selecting the size of rope to purchase, a systems approach should be considered. Evaluation should be done while wearing gloves with the selected ascender and descender auxiliary equipment before purchase to ensure the rope size works.

A.7.1.4  See A.7.1.3.
The thermal requirement is intended to limit melting of rope, harness, and certain other system components due to friction caused by activities such as rappelling. The thermal requirement is NOT intended to qualify these items for use during fire-fighting operations or other operations where high temperature exposures are encountered.

Many life safety ropes have thermoplastic materials as all or part of their construction because of the material's excellent stretch and resilient properties. However, thermoplastic materials are not highly resistant to elevated temperatures and can lose strength at temperatures common during fire-fighting operations. If life safety rope is carried by fire fighters during fire-fighting operations, it should be shielded or protected from flame or high temperature exposures. Repeat exposures of the life safety rope to flame or high temperatures can cause degradation of the rope over time and could result in failure during use. Exposure of the life safety rope to flame or high temperatures during use can cause melting of thermoplastic materials of the rope and result in failure.

See A.7.1.

See A.7.1.1.

See A.7.1.3.

The thermal requirement is intended to limit melting of rope, harness, and certain other system components due to friction caused by activities such as rappelling. The thermal requirement is NOT intended to qualify these items for use during fire-fighting operations or other operations where high temperature exposures are encountered.

Many escape lines have thermoplastic materials as all or part of their construction because of the material's excellent stretch and resilient properties. However, thermoplastic materials are not highly resistant to elevated temperatures and can lose strength at temperatures common during fire-fighting operations. If escape line is carried by fire fighters during fire-fighting operations, it should be shielded or protected from flame or high temperature exposures and falling hot debris. The rope can be carried in the pocket of the protective coat or inside a thermally protective pouch or storage bag. Repeat exposures of the escape line to flame or high temperatures can cause degradation of the rope over time and could result in failure during use. Exposure of the escape line to flame or high temperatures during use can cause melting of thermoplastic materials of the rope and result in failure.

See A.7.1.3.

The thermal requirement is intended to limit melting of rope, harness, and certain other system components due to friction caused by activities such as rappelling. The thermal requirement is not intended to qualify these items for use during fire-fighting operations or other operations where high temperature exposures are encountered.

Many life safety harnesses have thermoplastic materials as all or part of their construction because of the material's excellent strength and resilient properties. However, thermoplastic materials are not highly resistant to elevated temperatures and can lose strength at temperatures common during fire-fighting operations. If life safety harness is carried or used by fire fighters during fire-fighting operations, it should be shielded or protected from flame or high-temperature exposures. Repeat exposures of the life safety harness to flame or high temperatures can cause
degradation of the harness over time and could result in failure during use. Exposure of the life safety harness to flame or high temperatures during use can cause melting of thermoplastic materials of the harness and result in failure.

**A.7.5.8.7 A.7.12.5** The thermal requirement is intended to limit melting of rope, harness, and certain other system components due to friction caused by activities such as rappelling. The thermal requirement is not intended to qualify these items for use during fire-fighting operations or other operations where high-temperature exposures are encountered.

Many auxiliary equipment software items have thermoplastic materials as all or part of the construction because of the materials' excellent strength and resilient properties. However, thermoplastic materials are not highly resistant to elevated temperatures and can lose strength at temperatures common during fire-fighting operations. If auxiliary equipment software items are carried by fire fighters during fire-fighting operations, they should be shielded or protected from flame or high-temperature exposures. Repeat exposures of the auxiliary equipment software to flame or high-temperatures can cause degradation of the item(s) over time and could result in failure during use. Exposure of the auxiliary equipment software to flame or high temperatures during use can cause melting of thermoplastic materials of the item(s) and result in failure.

**A.7.13.5** See A.7.12.5

**A.7.22.4** See A.7.12.5

**A.7.5.9.4 A.7.22.4** See A.7.5.8.7 A.7.12.5

**A.7.10** A.7.10.6** The thermal requirement is intended to limit melting of rope, harness, and certain other system components due to friction caused by activities such as rappelling. The thermal requirement is not intended to qualify these items for use during fire-fighting operations or other operations where high temperature exposures are encountered.

Many belts have thermoplastic materials as all or part of the construction because of the materials' excellent strength and resilient properties. However, thermoplastic materials are not highly resistant to elevated temperatures and can lose strength at temperatures common during fire-fighting operations. If belts are carried or used by fire fighters during fire-fighting operations, they should be shielded or protected from flame or high temperature exposures. Repeat exposures of belts to flame or high temperatures can cause degradation of the belt over time and could result in failure during use. Exposure of the belt to flame or high temperatures during use can cause melting of thermoplastic materials of the belt and result in failure.

**A.7.12 A.7.4** See A.7.1.

**A.7.12.4 A.7.4.1** See A.7.1.1.

**A.7.12.2 A.7.4.2** See A.7.1.3.

**A.7.12.3 A.7.4.3** See A.7.2.3.

**A.7.14.3 A.7.7.3** See A.7.1.5.

**A.8.2.4** NFPA 1983 does not preclude a variety of rope construction as long as the construction types meet the performance requirements of the standard. The title of CI 1801, *Low Stretch and
*Static Kernmantle Life Safety Rope*, indicates a particular type of rope construction; however, the elongation and breaking strength test methods contained in CI 1801 can be utilized for other types of rope construction.

The reference is not intended to limit the rope construction to the construction type mentioned in the title of CI 1801 or to any other single type of rope construction. The reference is only intended to refer to the testing methods for elongation and breaking strength specified in Sections 8 and 9 of CI 1801 for evaluating any rope construction type for compliance with NFPA 1983.

**A.8.3.3.2** The intent is to test three samples of each model per test. At the manufacturer's discretion, a new, unused sample from one test series can be used for one or more of the other test series. For example, a sample used in harness test 8.3 can be used to conduct harness test 8.4, or a new unused sample can be used.

**A.8.3.8.2** The 16 kN (3597 lbf) test value selected for this static test, which employs a rigid test torso, equates to having a dynamic force exerted on the body greatly exceeding that which is considered reasonable to survive.

**A.8.3.9.2** The 16 kN (3597 lbf) test value selected for this static test, which employs a rigid test torso, equates to having a dynamic force exerted on the body greatly exceeding that which is considered reasonable to survive. The force selected for the head-down position is less than that selected for the upright position test because, in realistic emergency operations, a person falling headfirst will impact the harness with less force in the head-down position, and then be inverted and arrested, thus producing the maximum force in the upright position.

**A.8.3.10.2** A lesser force is used in this test than in the rescue harness test due to the personal protective application of belts. The indicated test force of 13 kN (2923 lbf) is compliant with the requirements for escape rope.

**A.8.3.11.2** See A.8.3.10.2.

**A.8.3.13.2** See A.8.3.8.2.

**A.8.3.14.2** See A.8.3.8.2.

**A.8.4.3.2** See A.8.3.3.2.

**A.8.5.6.1** The pin dimensions are specified within the referenced ASTM test method (F 1956).

**A.8.6.4.4.3** Testing is specific to the rope/device interaction and does not impact or diminish the requirements of Section 7.2. This test is independent of the test outlined in Section 7.2.

**A.8.6.5.6.2** To be compliant with the standard, a belay device that is also intended to function as a descent control device for braking a load either before or after arresting a fall should meet the standard 's requirements for a descent control device.

**A.8.6.7.1** Testing is specific to the rope/device interaction and does not impact or diminish the requirements of Section 7.2. This test is independent of the test outlined in Section 7.2.

**A.8.7.4.1** In most cases, the portable anchor device will be weakest at its greatest (or highest) extension. However, many devices have multiple ways they can be used. Different rigging
configurations could be stronger or weaker than others. It is intended that the testing be done in the configuration specified in the manufacturer's instructions to the user that would yield the lowest strength results. For example, anchor slings can be rigged in a basket, end-to-end, or choker configuration. Each configuration will likely yield different results. The minimum breaking strength reported is for the weakest configuration allowed by the manufacturer's instructions.

A.8.7.5.1  See A.8.7.4.1.

A.8.7.6.8  Test pins are used to simulate the function of carabiners to connect various products together. The radius of the test pin, where it contacts the product being tested, should match a common size carabiner used in the fire service. The pin does not have to be round as it could be necessary to have a stronger pin than is available in round stock. Regardless, the face of the pin in contact with the product being tested should have the radius referenced in the test procedure. Wire rope can be used to simulate the function of rope as it applies to the function of the device. The diameter of the wire rope should be as close as possible to the largest diameter of rope with which the device is designed to work.

A.8.7.8.5  For example, portable anchors designed to be attached to flanged rims of vessel openings would require a test base to simulate the flanged portal to which the device is designed to be affixed.

A.8.7.11.2  AISI SAE Type 01 tool steel is commonly purchased as 01 Drill Rod.

A.8.7.12.2  AISI SAE Type 01 tool steel is commonly purchased as 01 Drill Rod.

A.8.11.6  The 16 kN (3597 lbf) test value selected for this static test, which employs a rigid test torso, equates to having a dynamic force exerted on the body greatly exceeding that which is considered reasonable to survive.

Annex B  Informational References

B.1  Referenced Publications.

The documents or portions thereof listed in this annex are referenced within the informational sections of this standard and are not part of the requirements of this document unless also listed in Chapter 2 for other reasons.

B.1.1  NFPA Publications (Reserved)

B.1.2  Other Publications.

B.1.2.1  ASTM Publications. ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM F 1740, Guide for Inspection of Nylon, Polyester and/or Nylon/Polyester Blend Kernmantle Rope, 1996.


**B.1.2.2 Cordage Institute Publications.** The Cordage Institute, 994 Old Eagle School Road, Suite 1019, Wayne, PA 19087-1866.

CI 1801, Low Stretch and Static Kernmantle Life Safety Rope, 1998.

**B.1.2.3 ISO Publications.** International Standards Organization, 1 rue de Varembé, Case Postal 56, CH-1211 Geneve 20, Switzerland.

ISO Guide 27, Guidelines for corrective action to be taken by a certification body in the event of misuse of its mark of conformity, 1983.

ISO Guide 65, General requirements for bodies operating product certification systems, 1996.


Title 21, Code of Federal Regulations, Subpart C.

Title 42, Code of Federal Regulations, Part 84.

**B.2 Informational References (Reserved)**

**B.3 References for Extracts in Informational Sections (Reserved)**
A.3.3.3.1 Load-Bearing Attachment Point.
Load bearing attachment points are D-rings, loops, or other connection points on a life safety harness, victim extrication device, and escape belt that are designated for use as the connection point to suspend the full weight of the wearer and equipment such as when ascending or descending rope and for fall arrest when the wearer may fall and shock load the connection point. These attachment points are designed to withstand the forces generated in a fall arrest situation.

Statement of Problem and Substantiation for Public Input

Adds victim extrication device to appendix item to correlate with the definition.

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B.1.2  Other Publications.

B.1.2.1  ASTM Publications.
ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.

B.1.2.2  Cordage Institute Publications.
The Cordage Institute, 994 Old Eagle School Road, Suite 1019, Wayne, PA 19087-1866.

B.1.2.3  ISO/IEC Publications.
International Standards Organization, 1 rue de Varembé, Case Postal 56, CH-1211 Geneve 20, Switzerland.
ISO Guide 27, Guidelines for corrective action to be taken by a certification body in the event of misuse of its mark of conformity, 1983.

B.1.2.4  U.S. Government Publications.
Title 21, Code of Federal Regulations, Subpart C.
Title 42, Code of Federal Regulations, Part 84.

Statement of Problem and Substantiation for Public Input

Referenced current editions.

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