

NFPA®

1858

**Standard on
Selection, Care, and
Maintenance of Life Safety
Rope and Equipment for
Emergency Services**

2018



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NFPA® 1858

Standard on

Selection, Care, and Maintenance of Life Safety Rope and Equipment for Emergency Services

2018 Edition

This edition of NFPA 1858, *Standard on Selection, Care, and Maintenance of Life Safety Rope and Equipment for Emergency Services*, was prepared by the Technical Committee on Special Operations Protective Clothing and Equipment and released by the Technical Correlating Committee on Fire and Emergency Services Protective Clothing and Equipment. It was issued by the Standards Council on November 10, 2017, with an effective date of November 30, 2017.

This edition of NFPA 1858 was approved as an American National Standard on November 30, 2017.

Origin and Development of NFPA 1858

NFPA 1858 is written for organizations that evaluate the risks faced by emergency responders and their particular needs for life safety rope and equipment. It is also written for users of life safety rope and equipment to enable them to inspect, maintain, and care for the life safety rope and equipment they use during rescue and training operations that is compliant with NFPA 1983, *Standard on Life Safety Rope and Equipment for Emergency Services*.

The protection and safety of fire-fighting personnel depend equally on adequate life safety rope and equipment and on the organization's policies, training, and administration of the correct use of life safety rope and equipment in rescue and training situations. To satisfy those portions of the organization's life safety rope and equipment program, this document provides criteria for the selection, care, and maintenance of the life safety rope and equipment.

NFPA 1858 applies to life safety rope, escape rope, fire escape rope, fire escape webbing, escape webbing, throwlines, moderate elongation laid life saving rope, life safety harnesses, belts, auxiliary equipment, litters, and victim extrication devices certified as compliant with NFPA 1983.

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This Committee shall also have primary responsibility for documents on station/work uniform garments that are not of themselves primary protective garments but can be combined with a primary protective garment to serve dual or multiple functions. Additionally, this Committee shall have primary responsibility for documents on the selection, care, and maintenance of special operations protective clothing and equipment by fire and emergency services organizations and personnel.

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Standard on

Selection, Care, and Maintenance of Life Safety Rope and Equipment for Emergency Services

2018 Edition

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Information on referenced publications can be found in Chapter 2 and Annex B.

Chapter 1 Administration

1.1 Scope.

1.1.1 This standard shall specify the minimum selection, care, and maintenance requirements for rope and associated equipment that are compliant with NFPA 1883.

1.1.2 This standard shall also specify minimum selection, care, and maintenance requirements for rope and associated equipment that are compliant with the previous editions of NFPA 1883.

1.1.3 This standard shall not specify selection, care, and maintenance requirements for any accessories that could be

attached to the certified product and are not necessary for the certified product to meet the requirements of this standard.

1.1.4 This standard shall not specify selection, care, and maintenance requirements for any rope or equipment for fall protection or coworker-assisted rescue pertaining to employees of general industry or the construction and demolition industry.

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

1.1.6 This standard shall not be construed as addressing all the safety concerns, if any, associated with the use of this standard by testing or repair facilities.

1.1.7 Nothing herein shall restrict any jurisdiction from exceeding these minimum requirements.

1.2 Purpose.

1.2.1 The purpose of this standard shall be to establish a program for life safety rope and equipment to reduce the risks and hazards associated with the selection, maintenance, improper use of, or damage to life safety rope and equipment.

1.2.2 The purpose of this standard shall also be to establish basic criteria for selection, inspection, cleaning, decontamination, repair, storage, and retirement of rope and associated equipment that are compliant with NFPA 1883.

1.3 Application.

1.3.1 This standard shall apply to life safety rope, escape rope, fire escape rope, fire escape webbing, escape webbing, throwlines, moderate elongation laid life saving rope, life safety harnesses, belts, auxiliary equipment, litters, and victim extrication devices certified as compliant with NFPA 1883.

1.3.2 The requirements of this standard shall not apply to accessories attached to any element of the technical rescue protective ensemble unless specifically addressed herein.

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 because those values are approximate.

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 Publications. National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 1006, *Standard for Technical Rescue Personnel Professional Qualifications*, 2017 edition.

NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, 2018 edition.

NFPA 1670, *Standard on Operations and Training for Technical Search and Rescue Incidents*, 2017 edition.

NFPA 1971, *Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*, 2018 edition.

NFPA 1983, *Standard on Life Safety Rope and Equipment for Emergency Services*, 2017 edition.

2.3 Other Publications.

2.3.1 ASTM Publications. ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM F1740, *Standard Guide for Inspection of Nylon, Polyester, or Nylon/Polyester Blend, or Both Kernmantle Rope*, 2012.

2.3.2 Cordage Institute Publications. Cordage Institute, 994 Old Eagle School, Wayne, PA 19087-1866.

CI 1202, *Terminology for Fiber Rope*, 2013.

2.3.3 Other Publications.

Merriam-Webster's Collegiate Dictionary, 11th edition, Merriam-Webster, Inc., Springfield, MA, 2003.

2.4 References for Extracts in Mandatory Sections.

NFPA 1855, *Standard on Selection, Care, and Maintenance of Protective Ensembles for Technical Rescue Incidents*, 2018 edition.

NFPA 1983, *Standard on Life Safety Rope and Equipment for Emergency Services*, 2017 edition.

Chapter 3 Definitions

3.1 General. The definitions contained in this chapter shall apply to the terms used in this standard. Where terms are not defined in this chapter or within another chapter, they shall be defined using their ordinarily accepted meanings within the context in which they are used. *Merriam-Webster's Collegiate Dictionary*, 11th edition, shall be the source for the ordinarily accepted meaning.

3.2 NFPA Official Definitions.

3.2.1* Approved. Acceptable to the authority having jurisdiction.

3.2.2* Authority Having Jurisdiction (AHJ). An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.

3.2.3 Labeled. Equipment or materials to which has been attached a label, symbol, or other identifying mark of an organization that is acceptable to the AHJ and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials, and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

3.2.4* Listed. Equipment, materials, or services included in a list published by an organization that is acceptable to the AHJ and concerned with evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing states that either the equipment, material, or service meets appropriate designated standards or has been tested and found suitable for a specified purpose.

3.2.5 Shall. Indicates a mandatory requirement.

3.2.6 Should. Indicates a recommendation or that which is advised but not required.

3.2.7 Standard. An NFPA Standard, the main text of which contains only mandatory provisions using the word “shall” to indicate requirements and that is in a form generally suitable for mandatory reference by another standard or code or for adoption into law. Nonmandatory provisions are not to be considered a part of the requirements of a standard and shall be located in an appendix, annex, footnote, informational note, or other means as permitted in the NFPA Manuals of Style. When used in a generic sense, such as in the phrase “standards development process” or “standards development activities,” the term “standards” includes all NFPA Standards, including Codes, Standards, Recommended Practices, and Guides.

3.3 General Definitions.

3.3.1 Anchor Point. A secure object to which rope or webbing is connected either directly or with an escape anchor device such that the rope or webbing will support the user's weight.

3.3.2 Ascending Device. See 3.3.14.1.

3.3.3 Attachment Point.

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

3.3.3.2 Positioning Attachment Point. Point on a harness or belt that is used for connection to an anchor system that will support a person's weight for work at height.

3.3.4 Auxiliary Equipment. Equipment items that are load bearing and designed to be utilized with life safety rope and harness, such as ascending devices, carabiners, descent control devices, rope grab devices, and snap links.

3.3.5 Belt. An equipment item configured as a device that fastens around the waist only and designated as a ladder belt or an escape belt.

3.3.5.1 Escape Belt. A compliant equipment item that is intended for use by the wearer only as an emergency self-rescue device.

3.3.6 Carabiner. An auxiliary equipment system item that is a load-bearing connector with a self-closing gate used to join other components of life safety equipment.

3.3.7 Certification Organization. An independent, third-party organization that determines product compliance with the requirements of this standard with a labeling/listing/follow-up program.

3.3.8 Certified. A designation whereby a certification organization has determined that a manufacturer has demonstrated the ability to produce a product that complies with the requirements of this standard, authorizes the manufacturer to use a label on listed products that comply with the requirements of this standard, and establishes a follow-up program conducted by the certification organization as a check on the methods the manufacturer uses to determine compliance with the requirements of this standard.

3.3.9 Compliant. Certified as meeting or exceeding all applicable requirements of this standard.

3.3.10 Contamination/Contaminated. The process by which life safety rope and equipment are exposed to hazardous materials and body fluids.

3.3.11 Corrosion. A condition exhibiting signs of deterioration, including pitting or loss of metal.

3.3.12 Descent Control Device. See 3.3.14.2.

3.3.13 Design Load. See 3.3.30.1.

3.3.14 Device.

3.3.14.1 Ascending Device. Auxiliary equipment that is a type of rope grab; a friction or mechanical device utilized to allow ascending a fixed line.

3.3.14.2 Descent Control Device. An auxiliary equipment item that is a friction or mechanical device used with rope to control descent.

3.3.14.2.1 Escape Descent Control Device. An auxiliary equipment system component that is a friction or mechanical device used with escape rope to control descent.

3.3.14.3 Rope Grab Device. An auxiliary equipment device used to grasp a life safety rope for the purpose of supporting loads; includes ascending devices.

3.3.15 Diameter (Rope). See 3.3.37.1.

3.3.16 Elongation. The increase in length, expressed in a percent of the original gauge length, that occurs in a sample of new rope when tested as specified herein.

3.3.17 Escape. Immediate self-rescue of a single fire or emergency services person from a life-threatening emergency situation, generally above ground, using system components or manufactured systems designed for self-rescue.

3.3.18 Escape Belt. See 3.3.5.1.

3.3.19 Escape Descent Control Device. See 3.3.14.2.1.

3.3.20 Escape Rope. See 3.3.37.2.

3.3.21* Fall Factor. A measure of fall severity calculated by dividing the distance fallen by the length of rope used to arrest the fall.

3.3.22 Follow-Up Program. The sampling, inspections, tests, or other measures conducted by the certification organization on a periodic basis to determine the continued compliance of labeled and listed products that are being produced by the manufacturer to the requirements of this standard.

3.3.23 General Use. One designation of equipment item or manufactured system designed for general-use loads, technical-use loads, and escape based on design loads and performance requirements.

3.3.24* Hand. The feel of flexibility and smoothness of a rope when tying knots or running it through equipment.

3.3.25 Hardware. Nonfabric components of protective clothing or equipment, including but not limited to those made of metal or plastic.

3.3.26 Harness. See 3.3.27.

3.3.27 Life Safety Harness. An equipment item that is an arrangement of materials secured about the body and used to support a person.

3.3.28 Life Safety Rope. See 3.3.37.3.

3.3.29 Line. See 3.3.37.4.

3.3.30 Load.

3.3.30.1* Design Load. The load for which a given piece of equipment or manufactured system was engineered for under normal static conditions.

3.3.31 Manufactured System. Preassembled system sold as a unit by the manufacturer and tested as a complete assembly.

3.3.32 Manufacturer. The entity that directs and controls any of the following: compliant product design, compliant product manufacturing, or compliant product quality assurance; or the entity that assumes liability for the compliant product or provides the warranty for the compliant product.

3.3.33 Manufacturer's Lot.

3.3.34 Melting. Response of a material to heat resulting in evidence of flowing or dripping.

3.3.35 Organization. The entity that provides the direct management and supervision for the emergency services personnel. [1855,2018]

3.3.36 Predeployment Inspection. An inspection performed prior to making the item available for service.

3.3.37 Rope. A compact but flexible, torsionally balanced, continuous structure of fibers produced from strands that are twisted, plaited, or braided together that serves primarily to support a load or transmit a force from the point of origin to the point of application.

3.3.37.1 Diameter. The length of a straight line through the center of the cross section of the rope.

3.3.37.2 Escape Rope. A single-purpose, emergency self-escape (self-rescue) rope; not classified as a life safety rope.

3.3.37.3* Life Safety Rope. Rope dedicated solely for the purpose of supporting people during rescue, fire-fighting, or other emergency operations or during training evolutions.

3.3.37.4 Line. See 3.3.37, Rope or 3.3.48, Webbing.

3.3.37.4.1 Throwline. A floating rope that is intended to be thrown to a person during water rescues or as a tether for rescuers entering the water.

3.3.37.5 Moderate Elongation Laid Life Saving Rope. Rope dedicated solely for the purpose of supporting people during rescue at fire-fighting operations or training evolutions.

3.3.38 Rope Grab Device. See 3.3.14.3.

3.3.39 Routine Inspection. An inspection performed at least prior to using an item.

3.3.40 Sample. An element, item, component, or composite that is conditioned for subsequent testing; an amount of the material, product, or assembly to be tested that is representative of the item as a whole.

3.3.41 Snap Link. An auxiliary equipment system component that is a self-closing, gated, load-bearing connector.

3.3.42 Software. A type of auxiliary equipment that includes, but is not limited to, anchor straps, pick-off straps, and rigging slings. [1983, 2017]

3.3.43 Soiled/Soiling. The accumulation of materials that are not considered hazardous materials, body fluids, or CBRN terrorism agents but that could degrade the performance of the life safety rope and equipment.

3.3.44 Technical Use. Designation of an equipment item or manufactured system designed for light-use loads and escape based on design loads and performance requirements.

3.3.45 Thorough Inspection. An in-depth inspection performed at intervals.

3.3.46 Throwline. See 3.3.37.4.1.

3.3.47 Waist. The area above the hips and below the xiphoid process.

3.3.48 Webbing. Woven material in the form of a long strip; can be of flat or tubular weave.

Chapter 4 Program

4.1 General.

4.1.1 The organization shall develop and implement a program for the selection, care, and maintenance of life safety rope and equipment used by the members of the organization in the performance of their assigned functions.

4.1.2 This program shall have the goal of providing life safety rope and equipment that are suitable and appropriate for the intended use; maintaining life safety rope and equipment in a safe, usable condition to provide the intended protection to the user; removing from use such life safety rope and equipment that, because their condition, could cause or contribute to user injury, illness, or death; and reconditioning, repairing, or retiring such life safety rope and equipment.

4.1.3 Where this program for the selection, care, and maintenance of life safety rope and equipment is part of an organization's overall program on protective clothing and protective equipment, the portion of the organization's overall program that affects life safety rope and equipment shall be in accordance with Section 4.2.

4.2 Program Organization for Life Safety Rope and Equipment.

4.2.1 The organization's program specified in Section 4.1 shall incorporate at least the requirements in Chapters 4 through 10 of this standard.

4.2.2 The organization shall develop written standard operating procedures (SOPs) that shall identify and define the various parts of the program, specified in Table 4.2.2, and the various roles and responsibilities of the organization and of the members in the program parts.

4.2.3 The organization shall develop specific criteria for removal of life safety rope and equipment from service, in accordance with Chapter 10. The criteria for retirement shall include but not be limited to issues that are specific to the life safety rope and equipment being used by the organization, the manufacturers' instructions, and the experience of the organization.

Table 4.2.2 Required Program Parts for Life Safety Rope and Equipment

Program Part	Chapter/Section of NFPA 1858
Records	Section 4.3
Selection	Chapter 5
Inspection	Chapter 6
Cleaning and decontamination	Chapter 7
Repair	Chapter 8
Storage	Chapter 9
Retirement and disposition	Chapter 10

4.3 Records.

4.3.1 The organization shall compile and maintain records on its life safety rope and equipment.

4.3.2* At least the following records shall be kept for each life safety rope and equipment item:

- (1) Equipment identification
- (2) Date of purchase
- (3) Date placed in service
- (4) Manufacturer and model number
- (5) Month and year of manufacture
- (6) Dates of use, including how used, weather conditions, potential damage, and other circumstances relating to use
- (7) Dates of cleaning and inspection
- (8) Removal from service and date of return

4.4 Manufacturer's Instructions.

4.4.1 When issuing new life safety rope and equipment, the organization shall provide users with the instructions provided by the manufacturer on the care, use, and maintenance of the life safety rope and equipment, including any warnings provided by the manufacturer.

4.4.2 Where the manufacturer's instructions regarding the care or maintenance of the life safety rope and equipment differ from a specific requirement(s) in this standard, the manufacturer's instructions shall be followed for that requirement(s).

4.4.3 The organization shall retain and make accessible to end users for reference purposes a copy of the manufacturers' instructions regarding the care, use, and maintenance of the life safety rope and equipment.

4.5 Product Failure.

4.5.1 The organization shall report all life safety rope and equipment health and safety concerns if caused by a known or suspected product failure to the manufacturer and the certification organization.

4.5.2 The organization shall notify the manufacturer and the certification organization in writing.

4.5.3 The organization shall request written acknowledgment from the manufacturer and certification organization within 30 days.

Chapter 5 Selection

5.1 Selection and Purchase.

5.1.1* Prior to starting the selection process for life safety rope and equipment, the organization shall evaluate and determine the level at which the organization shall train and respond to meet the requirements established by the AHJ.

5.1.2 The organization shall refer to its risk and hazard assessment of the response area to determine the types of incidents requiring life safety rope and equipment that could be encountered, including but not limited to the following:

- (1)* Type of technical rescue incidents likely to occur in the response area
- (2) Type of technical rescue incidents to which the organization plans to respond
- (3) Frequency of each of these types of incidents
- (4) Level of operational capability that the organization intends to maintain for each type of technical rescue incident — awareness, operational, technician — in accordance with NFPA 1670
- (5) Maximizing response capabilities through cooperation with other response organizations, departments, or agencies
- (6)* The organization's established acceptable safety factors for technical rescue operations
- (7)* Geographic location and conditions

5.1.3* The organization shall refer to its risk and hazard assessment of the response area to determine the organization's protocols for an emergency escape from an elevated location in accordance with NFPA 1500.

5.1.4* The organization shall ensure that elements under consideration are certified as being compliant with the current edition of NFPA 1983, where applicable.

5.1.5 Based on the levels of operational capability established by the AHJ, the organization shall compile and evaluate information on the comparative advantages and disadvantages of the life safety rope and equipment under consideration.

5.1.6 The organization shall ensure that the life safety rope and equipment under consideration interface properly with other personal protective items in use within the organization.

5.1.7 Where a field evaluation of life safety rope and equipment is conducted, the organization shall establish criteria to ensure a systematic method of comparing products in a manner related to their intended use and assessing the products' performance relative to the organization's expectations.

5.1.8 Where the organization develops purchase specifications, the following criteria, as a minimum, shall be included:

- (1) Purchase specifications shall require that the life safety rope and equipment to be purchased shall be compliant with the current edition of NFPA 1983.
- (2) Where the organization selects criteria that exceed the minimum requirements of the current edition of NFPA 1983, such criteria shall be stipulated in the purchase specifications.
- (3) Purchase specifications shall require that manufacturers' bids include substantiation of certification for each product and model stated in the bid.

- (4) Where applicable, the purchase specifications shall define the process for determining proper compatibility with the organization's other NFPA 1983-compliant life safety rope and equipment components.
- (5) The organization shall compare each bid submittal against purchase specifications.

5.1.9 Prior to placing life safety rope and equipment in service, the organization shall designate an individual to inspect purchased life safety rope and equipment to determine that the products meet the organization's specifications and were not damaged during shipment. The organization shall also verify the quantity and sizes of the life safety rope and equipment received.

5.1.10 The organization shall examine information supplied with the products, such as instructions, warranties, and technical data.

5.1.11 Before placing new equipment into service, the organization shall determine that all components are compatible and will function as intended with the technical rescue systems and escape systems on which the organization's personnel are trained in accordance with NFPA 1006.

5.1.12 Procedures shall be established for returning unsatisfactory products or products that do not meet the organization's specifications.

5.2 Life Safety Rope. The organization's purchase specifications shall consider its needs for performance or features in excess of the minimum requirements of NFPA 1983, such as those given in 5.2.1 through 5.2.12.

5.2.1* Specific performance or specific features shall be selected based upon the intended application of the rope being purchased. If the organization has multiple intended applications for life safety rope, the purchase of multiple ropes shall be considered that best fit those applications.

5.2.2* Type of fiber, including but not limited to nylon, polyester, or para-aramid, shall be considered.

5.2.3* Construction, including but not limited to kernmantle, double braid, single braid, or laid, shall be considered in accordance with CI 1202, *Terminology for Fiber Rope*.

5.2.4* Elongation, including but not limited to low stretch or static, shall be considered.

5.2.5* The required minimum breaking strength (MBS) to provide a sufficient safety factor for the intended application(s) shall be specified to ensure adequate strength.

5.2.6* The diameter shall be considered to ensure compatibility with the other components used in the system and the ability to grip the rope.

5.2.7* The total weight to be carried shall be considered as it is determined by length, diameter, and material of the rope.

5.2.8* The hand shall be considered for ease of tying knots, smoothness running through gear, and abrasion resistance.

5.2.9* The rope color shall be considered for the ability to be seen or camouflaged, as well as the ability for one rope to be distinguished from another when rigged side by side.

5.2.10* The length shall be considered, including but not limited to lengths sufficient to rig the longest anticipated site

with additional rope length for anchoring, mechanical advantage systems, or other rigging needs.

5.2.11* The heat resistance shall be considered, including but not limited to melting point, critical temperature, and friction.

5.2.12* For construction that includes a sheath, the sheath shall be considered, including but not limited to the number of yarns, braid pattern, thickness, and tightness as they apply to the hand; the abrasion resistance; and the amount of sheath slippage.

5.3 Escape and Fire Escape Rope. In the purchase specifications, the organization shall consider its needs for performance or features in excess of the minimum requirements of NFPA 1983 such as the following.

5.3.1* The organization shall consider the following performance factors when making the evaluations. Escape rope, fire escape rope, and equipment are available as individual NFPA 1983-compliant components or NFPA 1983-compliant escape systems. It is the responsibility of the organization to ensure that components, manufactured systems, and any other associated personal protective equipment (PPE) are compatible.

- (1)* Selection of fire escape rope if the anticipated environment will expose the rope to elevated temperatures.
- (2)* Type of termination at the anchor end of the rope.
- (3)* Compatibility with the descent control device.
- (4)* Ability to control the descent with the type of gloves worn.
- (5)* Ability of the escape rope or escape system to absorb energy in a fall.
- (6) Whether the AHJ has determined that the body belay or similar method is to be used as the escape or bail-out method of the organization. If the AHJ determines that the body belay or similar method is to be used as the escape or bail-out method of the organization, it is important to recognize the wide range of user gripping abilities, user fatigue, and environmental conditions presented by using this technique. Organizations should evaluate these factors and study the effectiveness of the body belay technique in their organization and the operational risk factors.

5.3.2 The organization shall consider the manner of use in the escape rope, such as the following:

- (1)* The structures in the organization's response area in order to determine the appropriate length of rope
- (2)* The location that the escape rope will be worn or carried and its effect on user's ability to deploy the escape rope
- (3) The effect of deployment hazards, such as edge abrasion and sharp edges from windows and structural components
- (4)* The expected number of descents and service life of the escape rope

5.4* Life Safety Harness. The organization's purchase specifications shall consider its needs for performance or features in excess of the minimum requirements of NFPA 1983, such as those given in 5.4.1 through 5.4.7.

5.4.1* The organization shall select a Class II or Class III harness depending on the type of life safety operations the users will be conducting. In some cases, the organization may require both types.

5.4.2* The organization shall select the attachment point or points appropriate for the intended use of the harness based on type and location.

5.4.3* The organization shall evaluate the harness for comfort and for ease of donning.

5.4.4* The organization shall consider the use of materials in the construction if the harness will be exposed to heat, flame, chemicals, or water.

5.4.5 The organization shall evaluate which accessories to select to maximize the usefulness of the harness, including but not limited to gear loops, pockets, or methods for holding the loose ends of the webbing.

5.4.6* The organization shall evaluate the function of each type of harness selected in the manner that it will be used.

5.4.7 Where a harness is integrated with bunker gear ensemble, it shall not compromise the integrity of the protective garment as outlined in NFPA 1971.

5.5* Ladder Belts and Escape Belts. The organization's purchase specifications shall consider its needs for performance or features in excess of the minimum requirements of NFPA 1983, such as those given in 5.5.1 through 5.5.8.

5.5.1 If the organization selects a belt for fall restraint during ladder operations, the organization shall select a ladder belt.

5.5.2* If the organization selects a belt rather than a harness for fire ground or elevated operations, the organization shall select an escape belt.

5.5.3* The organization shall select the attachment point or points appropriate for the intended use of the belt based on type and location.

5.5.4* The organization shall evaluate belts for comfort and for ease of donning in the intended manner of use.

5.5.5* The organization shall consider the use of materials in the construction if the belt will be exposed to heat, flame, and chemicals.

5.5.6* The organization shall evaluate which accessories to select to maximize the usefulness of the belt.

5.5.7* The organization shall evaluate the function of each type of belt selected in the manner that it will be used.

5.5.8 Where an escape belt is integrated with bunker gear ensemble, it shall not compromise the integrity of the protective garment as outlined in NFPA 1971.

5.6* Carabiners. The organization's purchase specifications shall consider its needs for performance or features in excess of the minimum requirements of NFPA 1983, such as those given in 5.6.1 through 5.6.4.

5.6.1* The organization shall determine the needs of a general use- or a technical use-rated carabiner depending on the performance needs determined by the risk assessment and the organization's needs, training, and capabilities.

5.6.2* The organization shall select the type of gate function that meets the operational needs of the organization.

5.6.3* The organization shall select the carabiner material that meets the operational needs of the organization regarding carabiner strength and exposure to corrosive atmospheres.