

**CHAPTER 139a. SAFETY STANDARDS FOR  
BUNGEE JUMPING**

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**Authority**

The provisions of this Chapter 139a issued under sections 2 and 4(9) of the Amusement Ride Inspection Act (4 P. S. §§ 402 and 404(9)), unless otherwise noted.

**Source**

The provisions of this Chapter 139a adopted August 5, 1994, effective August 6, 1994, 24 Pa.B. 3825, unless otherwise noted.

**GENERAL****§ 139a.1. Scope.**

This chapter prescribes standards relating to the site, design, testing of equipment, management of the operation, operating procedures, emergency provisions and procedures for bungee jumping. In addition, the rules for amusement rides and attractions in Chapter 139 (relating to amusement rides and attractions erected permanently or temporarily at carnivals, fairs and amusement parks) that are consistent with this chapter also apply to bungee jumping.

**§ 139a.2. Definitions.**

The following words and terms, when used in this chapter, have the following meanings unless the context clearly indicates otherwise:

*Act*—The Amusement Ride Inspection Act (4 P. S. §§ 401—418).

*Air bag*—A device which cradles the body using an air release breather system to dissipate the energy due to a fall, thereby allowing the jumper to land without an abrupt stop or bounce.

*Anti-two-blocking device*—A positive acting device which prevents contact between the load block or fall ball and the boom tip.

*Approved operating site*—The area including the preparation area, the jump space, the landing area and the recovery area as reflected on the site plan drawings submitted by the operator under § 139a.21(d) (relating to registration of bungee jumping operations) and as approved by the Department in conjunction with the registration of a bungee jumping operation.

*Binding of cord*—Material used to hold the bungee cord threads in place.

*Bungee catapulting*—The action by which the jumper is held on the ground while the bungee cord is stretched. When the jumper is released, the jumper is propelled upwards.

*Bungee cord* or *cord*—The elastic rope to which the jumper is attached. It expands and contracts and thus produces the bouncing action.

*Bungee jumping*—The action by which a jumper free falls from a height and the descent is limited by attachment to the bungee cord.

*Bungee jumping operation*—An operating site at which bungee jumping is conducted.

*Carabiner*—A shaped metal or alloy device used to connect sections of the jump rigging, equipment or safety gear.

*Controlled load lowering*—A system or device on the power train, other than the load hoist brake, which can regulate the rate of speed at which the hoist mechanism lowers its load.

*Department*—The Department of Agriculture of the Commonwealth.

*Dynamic load*—The load placed on the rigging and attachments by the initial free fall of the jumper and the bouncing movements of the jumper.

*Equipment*—Each component which is utilized in a bungee jumping operation, including power or manually operated devices to raise, lower and hold loads.

*Fence*—A permanent or temporary structure designed and constructed to restrict people, animals and objects from entering the jump area.

*Incident*—An event that does or could result in injury to a person, damage to equipment, or the interruption or stopping of a bungee jumping operation.

*Jump area*—The ground level area of the jump space.

*Jump direction*—The direction in which a jumper jumps upon leaving the platform from the jump point. Jump direction is unaffected by whether the jumper faces forward, backward or sideways as he jumps.

*Jumper*—The person who, while attached to a bungee cord, falls or jumps from a platform or structure.

*Jumper weight*—The weight of the jumper only.

*Jump harness*—An assembly to be worn by a jumper, which is attached to a bungee cord.

*Jump height*—The distance from the jump point to the position on the ground where an object dropped from the jump point would impact, exclusive of an air bag or other impediment.

*Jump master*—A person who has the responsibility for the bungee jumping operation and who takes a jumper through the final stages to the actual jump or release.

*Jump point*—The location on the platform from which the jumper leaves the platform.

*Jump space*—A cylinder-shaped volume, the center line of which extends downward from the jump point along the line of the jump height a distance equal to or greater than the maximum system length, plus an additional length of at least 30 feet of safety space to the highest point of the air bag (with respect to jumps over land) or to the water surface (with respect to jumps over water), and extending laterally in all directions from the line of the jump height

a distance equal to at least 50% of the maximum system length, plus an additional safety space of at least 20% of the maximum system length.

*Jump weight*—The weight of the jumper and the jump harness.

*Landing area*—The surface area on which the jumper is landed. If a lifting device moves the jumper so that landing occurs away from the jump area, the area covered by the movement of the lifting device shall be considered part of the landing area.

*Live boom*—A boom in which lowering is controlled by a brake without aid from other lowering retarding devices.

*Loaded length*—The length of the bungee cord when extended to its fullest designed length.

*Lowering system*—Manual or mechanical equipment capable of lowering a jumper to the designated landing area.

*Maximum system length*—The maximum extended length of a bungee cord system, including static line length.

*Mechanically powered lowering system*—A system which utilizes a machine, rather than a human or other power source, to lower the jumper to the landing area.

*Mobile platform*—An apparatus attached to a lifting device used to lift a jumper to jumping position, and from which the jumper then falls or jumps.

*Permanent platform*—The apparatus attached to a structure from which a jumper falls or jumps.

*Platform or jump platform*—A mobile or permanent platform.

*Preparation area*—The area where the jumper is registered, weighed, marked with his weight, notified of potential risks and otherwise prepared for jumping. The preparation area shall be separate from the jump area.

*Qualified inspector*—A person certified by the Department who, by education, training or experience is knowledgeable with regard to amusement ride operating manuals and the psychological effects each ride has upon a passenger. The person shall also be experienced in the erection and dismantling of amusement rides and shall be familiar with the specific equipment used by that particular operator.

*Recovery area*—An area next to the landing area, where the jumper may recover from the jump before exiting the bungee jump operation site.

*Rigging system*—The bungee cord plus any combination of components that connect the jumper through the bungee cord to an attachment point on the structure, lifting device or permanent platform.

*Rigging system attachment point*—A device on the structure, lifting device or permanent platform to which the rigging system is connected.

*Safety belt*—An assembly to be worn by all persons on a mobile or permanent platform designed to be attached to an anchor point by a safety line and to prevent persons from falling.

*Safety hook*—A hook with a latch to prevent rigging or loads from accidentally slipping off the hook.

*Safety line*—A line used to connect a safety harness or belt to an anchor point.

*Sandbagging*—The practice of loading excess weight to a jumper intending to release the excess weight at the bottom of the jump, thus gaining extra momentum on the rebound.

*Site operating manual*—The document containing the procedures and forms for the operation of bungee jumping activities and equipment.

*Site operator or operator*—A person who owns or operates a bungee jumping operation.

*Structure*—A permanent or temporary tower or similar erection used for bungee jumping.

*Tandem jumping*—The practice of two or more people harnessed together while jumping or falling simultaneously from the same jump platform.

*Two-block damage prevention feature*—A system which deactivates the hoisting action of a crane before damage occurs in the event of contact between the load block or fall ball and the boom tip.

*Unloaded length*—The length of the bungee cord lying on a horizontal flat surface without load or stress applied.

## OPERATIONS

### § 139a.21. Registration of bungee jumping operations.

- (a) Each bungee jump shall be considered a new amusement ride.
- (b) The owner of the bungee jumping operation may not commence bungee jumping activities until the operation has been registered with the Department.
- (c) An application for registration of a bungee jumping operation shall be submitted to the Department at least 30 days prior to the proposed date of operation.
- (d) An application for registration shall include the following:
  - (1) A site operating manual.
  - (2) An equipment design and construction report.
  - (3) Site plan drawings depicting the preparation area, the jump space, the landing area, the recovery area and other features to be included in the approved operating site.
  - (4) Specifications of equipment and structures.
  - (5) Depictions of the location and type of air bag, pool or body of water, its height or depth and its minimum impact surface.
- (e) To obtain registration, bungee jumping operation shall be in compliance with §§ 139.4 and 139.5 (relating to registration; and insurance).
- (f) If the Department is unfamiliar with the components or combination of components to be used in a particular bungee jumping operation, or if the appli-

cant for registration has not previously submitted a registered engineer's report in the context of a request for a variance to operate under section 9 of the act (4 P. S. § 409) the Department may require a registered engineer's report certifying that:

- (1) The design and construction of the equipment and structure meets the following conditions:
  - (i) Conforms to recognized engineering practices, procedures, standards and specifications.
  - (ii) Complies with the most current version of the American Society for Testing and Materials (ASTM) Committee F-24 Standards on Amusement Rides and Devices.
  - (iii) Is suitable for use in a bungee jumping operation.
- (2) The structure, equipment, access ways, operating areas and intended method of operation comply with this chapter and Chapter 139 (relating to amusement rides and attractions erected permanently or temporarily at carnivals, fairs and amusement parks).
- (g) Registration under this section shall be valid for the calendar year in which it is issued. Once a bungee jumping operation is registered, it may be moved to different sites without having to be re-registered.

#### **Cross References**

This section cited in 7 Pa. Code § 139a.2 (relating to definitions); and 7 Pa. Code § 139a.22 (relating to jump space and jump area).

#### **§ 139a.22. Jump space and jump area.**

- (a) Prior to the opening of a bungee jumping operation, the site operator shall train site personnel to be familiar with the boundaries of the jump space and the jump area.
- (b) Objects or persons other than a jumper and the jumper's equipment may not be in the jump space at any time during jumping operations.
- (c) Objects or persons, other than air bags and similar safety devices and site personnel, may not be in the jump area at any time during jumping operations.
- (d) The jump space and jump area may not be decreased below those dimensions and distances set forth in the site plan drawings submitted under § 139a.21(d) (relating to registration of bungee jumping operations) and approved by the Department.

#### **§ 139a.23. Permanent platforms.**

- (a) A permanent platform shall be capable of supporting, without failure, at least five times the rated workload capacity or maximum intended load of the platform. If the jump equipment is attached to the platform as distinct from the structure, the dynamic load factor shall be added to the rated workload capacity or maximum intended load.

(b) When the platform is not an integral part of the structure, the attachment devices and the part of the structure to which they are attached shall be able to support, without failure, at least five times the total load.

(c) A permanent platform shall have a slip resistant floor surface.

(d) A permanent platform shall have anchor points for safety harnesses, designed and placed to best suit the movements of anyone on the platform.

(e) A permanent platform shall be fitted with a permanent enclosure to contain the jumper during the time he is fitted with a jump harness, briefed by the jump master and otherwise prepared to jump.

(f) The jumper shall be fitted with a jump harness, briefed by the jump master and otherwise prepared to jump at a place other than the jump point.

(g) There shall be a gate across the jump point which shall remain closed when a jumper is not present. The gate shall open to the inside of the platform and shall have a safety lock or restraining device to prevent accidental opening.

(h) The top end of the bungee cords on the permanent platform shall be securely attached to the rigging bar or to the rigging before each jumper is prepared for jumping.

(i) There shall be a plate or permanent marking on each permanent platform indicating the maximum capacity of the platform and the rated workload capacity or maximum intended load.

(j) Permanent platforms may not be used in winds in excess of 25 miles per hour, electric storms or other adverse weather conditions which could affect the safety of individuals. The jump master shall cease jumping operations in wind speeds of less than 25 miles per hour if the wind speed affects the safe operation of the permanent platform or the recovery area.

#### **§ 139a.24. Mobile platforms.**

(a) A mobile platform and suspension system shall be certified by a licensed professional engineer competent in structural design as being in conformity with this chapter.

(b) A mobile platform used for lifting site personnel or jumpers shall be designed to meet the following criteria and specifications:

(1) The suspension system shall be designed to minimize tipping of the platform due to movement of the individuals occupying the platform.

(2) The mobile platform shall be capable of supporting, without failure, its own weight and at least five times its maximum intended load.

(3) The mobile platform shall be equipped with a guardrail system and shall be enclosed from the toe board to mid-rail.

(4) A grab rail shall be installed inside the entire perimeter of the mobile platform.

(5) The mobile platform shall be designed and maintained with an access gate that opens to the inside of the platform and shall have a safety lock or restraining device to prevent accidental opening.

- (6) The mobile platform shall have anchor points for safety harnesses or safety belts for all persons carried on the platform. The anchor points shall be designed and placed to best suit the movements of anyone on the platform.
- (7) The mobile platform shall be free of rough or exposed edges.
- (8) The mobile platform shall have a slip resistant floor surface.
- (9) Welding of the mobile platform and its components shall be performed by a qualified welder familiar with the weld grades, types and materials specified in the platform design.
- (10) The mobile platform shall be conspicuously posted with a plate or other permanent marking which indicates the weight of the platform and its rated load capacity or maximum intended load.
- (c) When a wire rope bridle is used to connect the mobile platform to the load line, each bridle leg shall be connected to a master link or shackle in such a manner to ensure that the load is evenly divided among the bridle legs.
- (d) Hooks on overhaul ball assemblies, lower load blocks or other attachment assemblies shall be of a type that can be closed and locked.
- (e) Wire rope, shackles, rings, master links and other rigging hardware shall be capable of supporting, without failure, at least five times the maximum intended load applied or transmitted to that component.
- (f) The eyes in wire rope shall be fabricated with thimbles.
- (g) At each new set-up, and at least annually, prior to hoisting individuals in the mobile platform, the mobile platform, rigging and hook block shall be proof tested to 125% of the mobile platform's rated capacity by holding it in a suspended position for 5 minutes with the test load suitably distributed on the mobile platform. The proof test shall be conducted by site personnel or other persons designated by the site operator. After proof testing, deficiencies revealed by inspection by a qualified inspector shall be corrected and another proof test shall be conducted. A modification to mobile platform or rigging shall require retesting of the mobile platform.
- (h) A trial lift with the unoccupied mobile platform loaded at least to the anticipated lift weight shall be made from ground level, or another location where individuals will enter the platform, to each location at which the mobile platform is to be hoisted and positioned. This trial lift shall be performed immediately prior to placing individuals on the platform. The operator shall determine that all systems, controls and safety devices are activated and functioning properly; that no interferences exist; and that the configurations necessary to reach the jump locations will allow the operator to remain under the 50% limit of the hoist's rated capacity. After a trial lift, and just prior to hoisting individuals, the mobile platform shall be hoisted a few inches and inspected to ensure that it is secure and properly balanced. An individual may not be hoisted unless the following conditions are determined to exist:
- (1) Hoist ropes shall be free of kinks.
  - (2) Multiple part lines may not be twisted around each other.



- (3) The primary attachment shall be centered over the platform.
- (4) The hoisting system shall be inspected if the load rope is slack to ensure all ropes are properly seated on drums and in sheaves.
- (i) The rigging system may not be attached directly to the mobile platform. The rigging system shall be attached to the lifting system by at least two rigging system attachment points, and shall pass through or around the mobile platform in such a manner as to avoid damage to the rigging system.
- (j) The persons on the mobile platform shall wear a safety harness or safety belt.
- (k) The mobile platform shall be limited to a capacity of four persons.
- (l) Individuals shall keep all parts of their bodies inside the mobile platform during raising and lowering to avoid pinch points. Individuals may not stand on the top rail, midrail or toe board of the mobile platform.
- (m) A mobile platform may not be used in winds in excess of 25 miles per hour, electric storms or other adverse weather conditions which could affect the safety of individuals. The jump master shall cease jumping operations in wind speeds of less than 25 miles per hour if the wind speed affects the safe operation of the mobile platform or the recovery area.
- (n) Nothing shall be added to the mobile platform to affect its stability in the wind.
- (o) If the mobile platform is accidentally lowered onto the cords, the cords shall be inspected before jumping is continued.
- (p) The jump direction shall be perpendicular to the boom, as viewed from above.

**§ 139a.25. Lowering system.**

- (a) The system for lowering the jumper to the landing area shall be operated under the direction of the jump operator, jump master or crane operator. It shall be a mechanically powered lowering system not capable of free-fall.
- (b) There shall be an alternative method for jumper recovery if the main lowering system fails. An alternative method for jumper recovery shall be of a type that site personnel, rather than the jumper, control the actual lowering of the jumper to the ground.
- (c) The alternative method shall be specified in the site emergency plan, as described at § 139a.71 (relating to emergency provisions and procedures), and approved by the Department.

**§ 139a.26. Cranes.**

- (a) A crane shall have certification of inspection by a testing firm accredited by the United States Department of Labor. This certification shall be done at each location prior to operation and shall be redone on at least an annual basis. Recertification is also required whenever the crane is used for material lifting—as

opposed to bungee jumping—purposes. Certification shall be complete prior to the inspection required by § 139.7 (relating to inspection).

(b) A crane used to elevate mobile platforms for bungee jumping shall be equipped with boom angle indicators, boom extension indicators and drum rotation indicators.

(c) The crane shall be equipped with a swing lock mechanism to limit the rotation of the crane to the operational limits of the bungee jump.

(d) The crane shall be equipped with operational stabilizer bars or cables which stabilize the mobile platform during the jump to ensure a consistent jump space.

(e) A positive acting device shall be used which prevents contact between the load block or overhaul ball and the boom tip (anti-two-blocking device), or a system shall be used which deactivates the hoisting action before damage occurs in the event of a two-blocking situation (two block damage prevent feature).

(f) The total weight of the loaded platform, the related rigging and the dynamic load may not exceed 50% of the rated capacity for the radius and configuration of the crane—for example, a rated load of 3,000 pounds becomes 1,500 pounds.

(g) A crane shall be level, on firm footing and the outriggers fully extended and blocked in an acceptable manner.

(h) The load line hoist drum shall have a system or device on the power train, other than the load hoist brake, which regulates the lowering rate of speed of the hoist mechanism—controlled load lowering. Free fall is prohibited.

(i) Live boom equipment may not be used.

(j) Load lines shall be capable of supporting, without failure, at least seven times the maximum intended load, except that if rotation resistant rope is used, the lines shall be capable of supporting without failure, at least ten times the maximum intended load.

(k) Load and boom hoist drum brakes, swing brakes and locking devices such as pawls or dogs shall be engaged when the occupied personnel platform is in a stationary working position.

(l) A daily log book for operator inspections and repairs shall be kept on site.

(m) The main boom is to be fully extended at all times.

(n) A crane that uses a jib with cable supported back stays shall have positive stops to prevent the jib from moving more than 5° above the straight line of the jib and boom or detaching from its mount point. The use of cable type belly slings does not constitute compliance with this subsection.

(o) The lifting and supporting shall be made under controlled conditions and under the direction of an appointed signal person.

(p) The crane shall be operated by a person who has been adequately trained in its operation in accordance with the training recommendations of the crane manufacturer. In the absence of these recommendations, the Department may

require other documentary or demonstrative evidence, or both, of a person's proficiency in operating the crane.

(q) Communications shall be maintained between the crane operator, the signal person and the person being lifted.

(r) The crane operator shall remain at the controls when the mobile platform is occupied.

(s) Movement of the mobile platform shall be done in a slow, controlled, continuous manner with no sudden movements of the crane or mobile platform.

(t) A crane may not travel while a person is on a mobile platform attached to that crane.

**§ 139a.27. Bungee cord specifications.**

(a) The site operator shall insure that the bungee cords used at the bungee jumping facility are designed and tested to perform within the prescribed limits of stretch and load as stated in this section. The cord shall be made from natural or synthetic rubber or blends thereof. The material used in the construction of the cord shall be of a type that the extended length is consistent each time the same load is applied.

(b) The maximum G-force allowable on a jumper using waist and chest harness is 4 1/2 G's. The maximum G-force allowable on a jumper using an ankle harness is 3 1/2 G's.

(c) The site operator shall insure that the minimum factor of safety (FS) for any cord configuration attached to a jumper is at least five. This means that the maximum dynamic load possible for a jumper to exert on a bungee cord configuration may not be greater than 20% of the cord configuration's minimum breaking strength.

$$FS = \frac{\text{Minimum break strength}}{\text{Maximum dynamic load for a jumper}} = \text{five}$$

(d) A site operator shall insure that the design, manufacturing and testing of the bungee cords used at the operator's bungee jumping operation meet the following specifications:

(1) In a single cord system, the binding shall hold the cord threads in the designed positions. The binding shall have the same characteristics as the cord itself. In a multiple cord system, the cord shall be bound together in a manner to prevent potential jumper entanglement. The bindings may not damage or effect the performance of the cords.

(2) The bungee cords shall be designed and tested to perform within the prescribed limits of the maximum G force and factor of safety as stated.

(3) A load verses elongation curve resulting from the test in paragraph (2) shall be used to calculate the maximum G force and factor of safety of the corresponding lot of bungee cords tested. These test results shall be readily available to the Department upon request.

(4) The end connections shall have a minimum safety factor of five times maximum dynamic load for that bungee cord configuration. End connections shall be of size and shape to allow easy attachment to the jumper harnesses and to the rigging. On multiple cord systems, each cord shall meet its own independent end connection. On multiple cord systems, end attachment points shall be bound together in a protective sheath that allows the individual ends to move with respect to each other.

(e) A site operator shall insure that bungee cord manufacturers perform conclusive minimum break strength testing on a representative section of all manufactured bungee cords. The bungee cord samples shall have been constructed using the manufacturer's standard methods which includes bungee cord loop end connections that meet the specifications in subsection (d)(4). The tests shall be performed or supervised by an independent certified testing authority or an independent licensed professional engineer. The testing authority shall determine the ultimate tensile strength of each test specimen and use the lowest failure value recorded as the ultimate tensile strength value for the corresponding lot of bungee cords tested. The ultimate tensile strength is reached when the applied load reaches a maximum before failure. Test results shall be readily available to the Department upon request.

#### **§ 139a.28. Jump harness and hardware.**

(a) The harnesses, webbing, bindings, ropes and hardware shall meet or exceed the standards as set by Union International Alpinism Association (UIAA) or, the requirements of American National Standards Institute (ANSI) A10.14-1975. If the standards conflict, the standard creating a higher degree of safety shall apply.

(b) A jumper shall be secured to the bungee cord at two separate points on the jumper's body. The only acceptable jump harness systems shall be one of the following:

- (1) A full body harness with two different and separate attachment points.
- (2) A waist harness used with a shoulder harness.
- (3) An ankle harness system with a safety line to a waist harness or a full body harness.

(c) Harnesses shall be available to fit the range of patron sizes accepted for jumping.

(d) A harness shall be specifically designed and manufactured for mountaineering or bungee jumping.

(e) The load supporting slings or webbing shall be flat tubular mountaineering webbing or its equivalent. Minimum breaking strength shall be 6,000 pounds. Slings or webbings shall be formed by sewing, or properly tied with a "water knot" with taped ends.

(f) Carabiners shall be the steel screw gate type with a minimum breaking strength of 6,000 pounds. The carabiners shall be designed and constructed using the standards for mountaineering gear.

(g) The ropes, pulleys and shackles used to raise, lower or hold the jumper shall have a minimum breaking strength of 6,000 pounds. The pulleys shall be compatible with the rope.

(h) The rigging system shall be attached to at least two rigging system attachment points. Each rigging system attachment point shall meet or exceed the following:

(1) Each rigging system attachment point shall have a safety factor of five and shall be capable of bearing a weight of at least 8,000 pounds.

(2) If a rigging system attachment point is made of wire rope, it shall have swagged ends with the thimble eyes.

(3) If a rigging system attachment point is made of "webbing," it shall be manufactured by a company that manufactures the devices for crane and rigging companies.

#### **§ 139a.29. Testing and inspection.**

(a) A site operator shall follow the inspection and testing recommendations of the manufacturers of the component parts of the equipment. When those recommendations conflict with the testing and inspection provisions of this chapter, the provisions affording the higher degree of safety shall be followed.

(b) The jump rigging, harness, lowering system and safety gear shall be regularly inspected and tested as set forth in the site operating manual. Inspections, findings and corrective action shall be recorded in the site log.

(c) Hardware subject to abnormal loadings, impacts against hard surfaces or having surface damage, shall be replaced immediately.

(d) The ropes, webbing and bindings shall be inspected visually and by feel for signs of wear, fraying or damage in accordance with the site operating manual.

(e) The cord ends shall be inspected every day for wear, slippage or other abnormalities, unless the manufacturer specifies more frequent inspections.

#### **§ 139a.30. Replacement of rigging and equipment.**

(a) Replacement equipment for the following shall always be available on the approved operating site:

- (1) Bungee cords.
- (2) The rigging ropes.
- (3) Binding, ankle strapping for jumpers.
- (4) Jump harness.
- (5) Life line and clips.

(b) Items of equipment, rigging or personal protective equipment found to be substandard shall be replaced immediately.

(c) Jumping shall cease immediately when a sub-standard item cannot be replaced.

(d) Replacement equipment shall be stored in a secure area to prevent tampering or vandalism, or both.

(e) The site operator shall obtain from the bungee cord manufacturer a written verification of the maximum number of jumps for which a particular cord may be used. The operator shall keep this verification at the approved operating site. The operator shall also keep a current, written record of each bungee cord used at the site—by its permanent identification number—and the number of jumps, by date, for which each bungee cord has been used. The operator shall provide the manufacturer's verification and actual use record to the Department upon request.

(f) Bungee cords shall be retired and cut into lengths of not more than 2 meters—78.75 inches—when the cords exhibit deterioration or damage, do not react according to specifications or have been used in the maximum number of jumps as specified by the cord manufacturer under subsection (e). The end attachment points subject to wear shall be retired when the cord is retired.

**§ 139a.31. Identification of equipment, rigging, bungee cord and safety equipment.**

(a) Each bungee cord shall have its own permanent identification number.

(b) The form of identification may not damage or detract from the integrity of the material.

(c) The identification shall be clearly visible to the operators during daily operations.

(d) The identification of each piece of equipment shall be recorded in the site operating manual.

**§ 139a.32. Landing recovery area and jump area.**

(a) A jump over land requires the use of an air bag certified by the manufacturer to be capable of absorbing a falling body from the height of the jump point.

(b) The following requirements apply where the jump space is over land.

(1) The minimum impact surface area of the air bag shall be as follows:

<i>Jump Height:</i>	<i>Minimum Impact Surface Area:</i>
70—100 feet	500 square feet (20 × 25)
100—150 feet	800 square feet (23 × 35)
150—200 feet	1000 square feet (25 × 40)

(2) The air bag shall be in position before jumper preparation commences on the platform.

(3) Upon completion of a jump, the jumper shall be lowered into a landing area.

- (4) The landing area shall be free of spectators at all times.
  - (5) The jump space shall be free of equipment or staff when a jumper is being prepared on the jump platform and until the jumper lands in the landing area.
  - (6) A place for the jumper to sit and recover shall be provided close to, but outside the landing area.
- (c) The following requirements apply where the jump area contains a body of water and that body of water is intended for use in lieu of an air bag:
- (1) The size of the body of water shall meet the requirements for the minimum impact surface area set forth in subsection (b)(1).
  - (2) The minimum water depth of the minimum impact surface area shall be 10 feet.
  - (3) A recovery vessel shall be positioned to recover jumpers.
  - (4) The recovery vessel shall be equipped with Coast Guard approved life jackets and rescue equipment. The vessel operators shall wear required life jackets.
  - (5) The jump area shall be free of other vessels, floating or submerged objects, the public and spectators. When the recovery vessel is in open waters, it shall be defined by the deployment of buoys. A sign of appropriate size which reads "BUNGEE JUMPING—KEEP CLEAR" shall be displayed.
- (d) The following requirements apply where the jump area is contained within a constructed swimming pool complex or a pool of water specially constructed for bungee jumping and that pool of water is intended for use in lieu of an air bag:
- (1) The pool size shall meet the requirements for the minimum impact surface area set forth in subsection (b)(1).
  - (2) The minimum water depth shall be 10 feet.
  - (3) Rescue equipment shall be available.
  - (4) Only the operators and participants of the bungee jump shall be within the jump area and landing area.
- (e) The jump area and the landing area shall be enclosed by a fence of adequate height and design to prevent persons other than operators and jumpers from entering either.

**§ 139a.33. Site requirements.**

- (a) Adequate storage shall be provided to protect equipment from physical, chemical and ultra-violet ray damage. The storage area shall be secured against unauthorized entry.
- (b) There shall be a public address system in operation during the hours of business. There shall be a radio communication link on the permanent platform sites between the platform and the landing/recovery area or vessel.
- (c) The staff shall be easily identifiable.

(d) Instructions to jumpers shall be placed at the entrance to the approved operating site.

(e) There shall be a means of communication to local emergency services within 200 feet of the approved operating site.

(f) An operator shall allow jumps only under the direct control of a jump master.

(g) Adjustments for the weight of each jumper shall be made by the jump master's selection of bungee cord or length of webbing or rope attached to the bungee cord, or both.

(h) A sign shall be erected listing medical restrictions and age requirements for jumpers. The sign shall be clearly visible.

(i) Staff shall be briefed for each day's operations. This shall include assignment of the designated jump master where more than one jump master is on site.

(j) A registration form shall be completed for each jumper. The form shall include the following information:

- (1) The name, address, city, state, zip code and telephone number.
- (2) Medical factors and exclusions.
- (3) Age and weight.

(k) Each jumper shall be briefed by a jump master on the jumping, landing, lowering and recovery procedures.

(l) Adequate lighting shall be provided at a site that operates at any time during the period 1/2 hour prior to sunset until 1/2 hour after sunrise. The lighting system shall be capable of at least lighting the jump platform, the jump space and the landing area.

#### **§ 139a.34. Jumper restrictions.**

(a) The minimum age for jumping is 16 years. An operator may establish a higher minimum age which it deems appropriate. The operator shall secure the consent of a parent or guardian for a jumper under 18 years of age. The parent or guardian shall be at least 18 years old and shall sign an authorization stating that he is the jumper's parent or guardian and is consenting to the bungee jump. In addition, the parent or guardian shall be present at the approved operating site during the jump. The authorization shall be executed at the approved operating site in the presence of the bungee staff. The authorization shall be permanently retained by the owner with the daily log.

(b) The operator shall inform each jumper that there are medical conditions which could be adversely affected by bungee jumping, and that the jumper should consult with his physician prior to jumping if he has any questions regarding the medical risks which bungee jumping may pose to the jumper.

(c) If the operator believes that a person represents a danger to himself or others, the operator may not permit that person to jump.

(d) The operator may not allow a person in a visibly intoxicated state to jump.



**PERSONNEL REQUIREMENTS****§ 139a.51. Qualifications of jump master.**

(a) An individual shall apply to the Department for jump master certification, and shall receive the certification prior to performing the duties of a jump master. The exception to this requirement is set forth in subsection (c).

(b) A jump master shall be at least 18 years of age.

(c) Until November 4, 1994, the Department may issue jump master certification to an individual who performed the duties of a jump master as set forth in § 139a.52 (relating to duties of jump master) without actually having first received jump master certification from the Department, if that individual submits an application verifying that the following conditions have been met:

(1) The jump master duties were performed at a bungee jump operation which has been issued a variance to operate under section 9 of the act (4 P. S. § 409).

(2) The applicant performed the duties of a jump master for at least 250 incident-free hours at that site.

(3) The applicant performed the duties of a jump master with respect to at least 1,250 incident-free jumps at that site.

(d) The Department may issue jump master certification to an individual who submits an application verifying that the applicant has acted as a jump assistant under the supervision of a jump master with respect to at least 250 incident-free hours and at least 1,250 incident-free jumps at a bungee jump operation.

(e) The Department may require additional documentation of an applicant's experience and qualifications in considering whether to grant jump master certification.

(f) The Department may revoke, suspend or deny jump master certification if a jump master intentionally provides the Department with false or misleading information, causes or negligently allows an incident to occur, fails to perform the duties of a jump master as set forth at § 139a.52, or violates another provision of this chapter or an applicable provision of Chapter 139 (relating to amusement rides and attractions erected permanently or temporarily at carnivals, fairs and amusement parks) in an intentional, reckless or negligent manner.

**§ 139a.52. Duties of jump master.**

(a) Each bungee jump operation which utilizes a mobile platform and a crane shall have at least two jump masters present at all times that jumping is being conducted. At a bungee jump operation, at least two staff members, at least one of whom shall be a jump master, shall escort the jumper from the preparation area to the jump point. Other types of bungee jump operations shall have at least one jump master present at all times that jumping is being conducted.

(b) The jump master shall have a thorough knowledge of the bungee site, its equipment, operating manual and procedures and staff.

(c) A jump master shall be responsible for the following:

- (1) Selecting the appropriate bungee cord and adjusting the rigging for each jump.
- (2) Taking the jumper through the final stages until the jumper jumps or falls from the platform.
- (3) Being present at the jump point during each jump.
- (4) Training of other bungee jump operation staff.
- (5) Ensuring that the number of jumps being conducted at a site, or other circumstances, do not prohibit the bungee jump operation staff from carrying out the procedures and duties for each job as set out in the site operating manual.

#### **Cross References**

This section cited in 7 Pa. Code § 139a.51 (relating to qualifications of jump master).

### **§ 139a.53. Jump assistant.**

The owner or jump master shall designate at least one individual to act as a jump assistant at the bungee jump operation site. The jump assistant's duties include the following:

- (1) Assisting the jump master to prepare the jumper.
- (2) Assisting in attaching the jumper to the harness and rigging.
- (3) Carrying out check procedures.
- (4) Operating the lowering system.
- (5) Assisting in controlling the public.

### **§ 139a.54. Landing/recovery assistant.**

The owner or jump master shall designate at least one individual to act as a landing/recovery assistant at each landing area. The landing/recovery assistant's duties include the following:

- (1) Assisting the jumper to the landing pad.
- (2) Assisting the jumper to the recovery area.
- (3) Overseeing the recovery of the jumper.
- (4) Assisting in controlling the public.

### **§ 139a.55. Registration assistant.**

The owner or jump master shall designate at least one individual to act as a registration assistant at each bungee jump operation site. The registration assistant's duties include all of the following:

- (1) Registering the jumper.
- (2) Providing required notices and warnings to potential jumpers.
- (3) Weighing and marking of weight on the jumper.
- (4) Controlling the movement of the jumper to jump platform.
- (5) Assisting in controlling the public.

**§ 139a.56. Minimum staff requirements.**

(a) Each bungee jump operation which utilizes a mobile platform and a crane shall have at least five staff members present at all times that jumping is being conducted. These staff members shall consist of at least the following:

- (1) Two jump masters.
- (2) One jump assistant.
- (3) One landing/recovery assistant.
- (4) One registration assistant.

(b) A bungee jump operation other than the type described in subsection (a) shall have at least four staff members present at all times that jumping is being conducted. These staff members shall consist of at least the following:

- (1) One jump master.
- (2) One jump assistant.
- (3) One landing/recovery assistant.
- (4) One registration assistant.

**§ 139a.57. Site operating manual.**

(a) Each member of the operating staff shall have a thorough knowledge of the site operating manual.

(b) Noncompliance with the criteria contained in the site operating manual may result in suspension or cancellation of the registration and authority to operate.

(c) The site operating manual shall describe the system of operation to be used and shall address the following elements:

- (1) A site plan showing the approved operating site, together with the components in place, including fencing, site furniture, the preparation area, the jump space, the jump area, the jump direction, the landing area and the recovery area.
- (2) A site plan showing a profile of the site defining the jump platform and its supporting structure, the maximum system length of the bungee cord, the jump space and the jump area.
- (3) A complete description of the components in the rigging system which shall include manufacturers specification or a laboratory test certificate of each component.
- (4) A complete description of the operator, jumper and passenger safety equipment.
- (5) A complete description of the rescue equipment.
- (6) A complete job description of the personnel employed on the site with the minimum qualifications of each person and complete detail of work periods required.
- (7) A complete description of emergency procedures to be taken in all possible scenarios which may occur.

- (8) A complete description of standard operating procedures of every person employed in the processing of the jumper.
- (9) A complete description of the procedure for reporting accidents to the Department as required by § 139.11 (relating to accident reporting).
- (10) A complete description of the procedure for reporting an incident to the Department within 72 hours of its occurrence.
- (11) A complete description of equipment inspection procedures and the logging of those inspections.
- (12) A complete description of maintenance procedures.
- (13) A complete description of the method of recording verified qualifications of jump masters employed on the site.

### EMERGENCIES

#### § 139a.71. Emergency provisions and procedures.

- (a) Each approved operating site shall have a written emergency plan. This plan shall be made available to any local emergency service responsible for providing emergency rescue service.
- (b) At least one member of a bungee jump operation staff shall have current first aid certification and complete an annual refresher course from one of the following entities:
  - (1) American Red Cross—Standard First Aid or Advanced First Aid.
  - (2) Another person, agency or organization whose training the Department determines is comparable.
- (c) At sites where the jump is over water, the jump master and at least one landing/recovery assistant shall each be the holder of a current Life Saving Certificate from one of the following entities:
  - (1) American Red Cross—Lifeguard Training or Advanced Lifesaving.
  - (2) YMCA—National YMCA Lifeguard.
  - (3) Boy Scouts of America—BSA, Lifeguard (within the previous 3 years) or BSA, Aquatic Instructor (within the previous 3 years)
  - (4) Ellis and Associates—National Pool and Waterpark Lifeguard Training.
  - (5) Another person, agency or organization whose training the Department determines is comparable.
- (d) Where the site includes moving water or swift water, the site operating manual shall specify the rescue training or qualifications, or both, required for the operators and staff on the site.
- (e) Emergency lighting shall be available in case of power failure at a site that operates at any time during the period 1/2 hour prior to sunset until 1/2 hour after sunrise. The emergency lighting system shall be capable of lighting the jump platform, the jump space and the landing area. The emergency lighting system shall have its own power source.

(f) A backup means of communication shall be available in case of a power failure.

**Cross References**

This section cited in 7 Pa. Code § 139a.25 (relating to lowering system).

**HOT AIR BALLOONS**

**§ 139a.81. Hot air balloons.**

(a) Bungee jumping from hot air balloons shall be conducted in compliance with the applicable provisions of this chapter.

(b) Aircraft shall be registered with the Federal Aviation Administration (FAA) and have a valid air-worthiness certificate. Modifications to the balloon or airframe shall either be consistent with the modifications allowed by the balloon's type certificate or shall be accompanied by a Supplemental Type Certificate (STC). Modifications that are approved by the FAA or designated engineering representative are also acceptable. A pilot shall have a valid commercial pilot's license for lighter than air/free balloon.

(c) A minimum 90,000 cubic foot balloon is to be used.

(d) The burner system shall be dual burner and dual tank system.

(e) The jump rigging shall be attached to the balloon at the "envelope attachment block" located on the stainless steel uprights.

(f) Maximum allowable wind velocity is 10 miles per hour.

(g) There shall be two means of verifying altitude.

(h) A tether system shall be used and shall be a three point system.

(i) The balloon shall be tethered in a manner that is consistent with the manufacturer's recommended tethering procedure. Tetherlines shall have a strength of at least 8,000 pounds.

(j) The anchors for the bungee cords shall pass around the basket so that the basket and the frame are not loaded during the bungee jump. The anchors shall be attached so that they transfer the loads directly to the suspension cables, unless approved otherwise by a designated engineering representative.

(k) The balloon pilot shall have sole discretion to determine those hours near dawn or dusk when bungee jumping from a hot air balloon can be conducted in safety.

**PROHIBITIONS**

**§ 139a.91. Prohibited activities.**

(a) Bungee catapulting is prohibited.

(b) Sandbagging is prohibited.

(c) Tandem jumping is prohibited.

**§ 139a.92. Penalties.**

(a) A person who willfully or repeatedly violates a section of this chapter or Chapter 139 (relating to amusement rides and attractions erected permanently or temporarily at carnivals, fairs and amusement parks) is subject to a civil penalty not to exceed \$2,000 for each violation, or another civil penalty as is subsequently established by the act.

(b) A person who willfully violates a section of this chapter or an applicable provision of Chapter 139, when the violation causes death to a member of the public exposed to the violation, commits a misdemeanor of the third degree and shall, upon conviction, be sentenced to pay a fine not exceeding \$2,500 or to a term of imprisonment not exceeding 6 months, or both. If the conviction is for a violation committed after a first conviction, the offender shall be sentenced to pay a fine not exceeding \$5,000 or to a term of imprisonment not exceeding 1 year, or both.

(c) A person who knowingly makes a false statement, representation or certification in an application, record, report, plan or other document filed or required to be maintained under this chapter, the act or an applicable provision of Chapter 139 commits a misdemeanor of the third degree and shall, upon conviction, be sentenced to pay a fine not exceeding \$2,500 or to a term of imprisonment not exceeding 6 months, or both.

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