

481—463.4(88A) Design requirements.**463.4(1) Platform.** A platform shall:

- a. Be capable of supporting at least five times the rated 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 is added to the rated capacity or maximum intended load;
- b. Be attached with devices and to a part of the structure that is able to support at least five times the weight of the platform plus the rated capacity or maximum intended load;
- c. Have a slip-resistant floor surface;
- d. Have safety harness anchor points that are designed and located to facilitate ease of movement on the platform;
- e. Have a permanent enclosure, separate from the jump point, to contain the jumper during preparations such as fitting the jumper with a jump harness;
- f. Be equipped with a gate across the jump point. The gate will open to the inside of the platform and will have a safety lock or restraining device to prevent accidental opening;
- g. Be permanently marked with the maximum capacity of the platform and the rated capacity or maximum intended load; and
- h. Be configured to ensure that a jumper will not come into contact with the supporting structure or tower during the jump.

463.4(2) Lowering system.

- a. The system for lowering the jumper to the landing area will be capable of supporting at least five times the rated capacity or maximum intended load of the system. The lowering system will be mechanically powered and will not be capable of free fall.
- b. There will be, under the control of site personnel and described in the site emergency plan, an alternative method for jumper recovery.

463.4(3) Bungee cord specifications.

- a. The bungee cords will be designed and tested to perform within the prescribed limits of stretch and load as stated in this subrule. The cord will be made from natural or synthetic rubber or rubber blend. The extended length of the cord will be consistent each time the same load is applied.
- b. The G-force on a jumper using a waist and chest harness will not exceed 4.5. The G-force on a jumper using an ankle harness will not exceed 3.5.
- c. The cord configuration's minimum breaking strength divided by the maximum dynamic load possible for a jumper will be equal to or greater than 5.
- d. The design, manufacturing and testing of the bungee cords will meet the following specifications:
 - (1) In a single-cord system, the binding will hold the cord threads in the designed positions. The binding will have the same characteristics as the cord itself. In a multiple-cord system, the cords will be bound together in a manner that prevents potential entanglement of the jumper. The binding will not damage or affect the performance of the cords.
 - (2) A load-versus-elongation curve will be used to calculate the maximum G-force and factor of safety of the lot of bungee cords tested. These test results will be readily available to the director upon request.
 - (3) The end connections will have a minimum safety factor of five times the maximum dynamic load for the bungee cord configuration. End connections will be of a size and shape to allow easy attachment to the jumper harnesses and to the rigging. On multiple-cord systems, each cord will meet its own independent end connection. On multiple-cord systems, end attachment points will be bound together in a protective sheath that allows the individual ends to move with respect to each other.
 - (4) The operator will ensure that the manufacturer of a bungee cord performs conclusive minimum break strength testing on a representative sample of all manufactured bungee cords. Construction of bungee cord samples will be consistent with the manufacturer's standard methods, including bungee cord loop end connections that meet the specifications in this rule. The tests will be performed or supervised by an independent certified testing authority or an independent licensed professional engineer. The testing authority will 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. The ultimate

tensile strength is reached when the applied load reaches a maximum before failure. Test results will be readily available to the director upon request.

463.4(4) *Jump harness and hardware.*

a. The harnesses, webbing, bindings, ropes and hardware will be capable of supporting at least five times the rated capacity or maximum intended load.

b. A jumper will be secured to the bungee cord at two separate points on the jumper's body. The jump harness system will 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 will be available to fit the range of patron sizes accepted for jumping.

d. Harnesses will be specifically designed and manufactured for mountaineering or bungee jumping.

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

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

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

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

(1) Each rigging system attachment point will have a safety factor of 5 and will 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 will have swaged ends with thimble eyes.

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

463.4(5) *Landing area, 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 protecting a body falling from the height of the jump point.

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

Jump Height	Minimum Impact Surface Area
0 - 99 feet	20 feet by 25 feet
100 - 149 feet	23 feet by 35 feet
150 - 200 feet	25 feet by 40 feet

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

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

(4) The landing area will be free of spectators at all times.

(5) The jump space will be free of equipment and people 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 will be provided close to but outside the landing area.

b. The following requirements apply where a body of water is used instead of an air bag:

(1) The size of the body of water will meet the requirements for the minimum impact surface area set forth in this subrule for air bags.

(2) The minimum water depth of the minimum impact surface area will be 10 feet.

(3) A vessel with at least two staff members will be positioned nearby to recover jumpers. The recovery vessel's crew will wear U.S. Coast Guard-approved life jackets. The recovery vessel will be equipped with U.S. Coast Guard-approved life jackets for jumpers and with rescue equipment.

(4) The jump area will be free of other vessels, floating or submerged objects, the public, and spectators. When the landing area is in open waters, it will be defined by the deployment of buoys. Signs of appropriate size stating “BUNGEE JUMPING—KEEP CLEAR” will be displayed.

c. The following requirements apply where a pool of water is used instead of an air bag:

(1) The pool size will meet the requirements for the minimum impact surface area set forth in this subrule for air bags.

(2) The minimum water depth will be 10 feet.

(3) Rescue equipment will be available.

(4) Only the operators and participants of the bungee jump will be within the landing area.

(5) The landing area will be enclosed by a fence of adequate height and design to prevent persons other than operators and jumpers from entering.

(6) The pool will conform to any applicable requirements enforced by the department of public health.

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