**Section 6000.350 Zip Lines**

a) In addition to the definitions in Section 6000.10, the following shall apply to and govern this Section 6000.350:

"Acceptance Inspection" means the final inspection of a zip line performed upon installation completion and before commissioning.

"Anchor System" means a system of anchorages and anchorage connectors that provide a secure termination for a life safety system, personal safety system, belay system, or rope rigging system.

"Anchorage" means the terminating component of a life safety system, personal safety system, belay system, or rope rigging system intended to support any force applied to the system.

"Anchorage Connector" means an interface component coupling any anchor system or system component to an anchorage.

"Automatic Anchorage Connector" means an anchorage connector that is properly engaged by automatic action without manually applied fasteners in the connector.

"Brake" means a device, method or system used to arrest the traverse of the participant.

"Brake System" means a complete system comprised of the primary and emergency brakes.

"Canopy Tour" means a guided aerial exploration or transit of the forest canopy, most commonly by means of a series of zip lines or aerial walkways with platforms.

"Commissioning" means an action by the installer or other competent person of putting a new element or course into service for the owner/operator.

"Competent Person" means a person possessing the skills, knowledge, experience, training and judgment to perform assigned tasks or activities satisfactorily, as determined by a reasonable person.

"Dismount" means the act of disembarking from the zip line and proceeding away from the landing area.

"Fixed Zip Line" means a zip line that is designed to be used at a fixed, single location and not readily moved to a different location.

"Landing Area" means the area provided for arrest and dismount after traversing a zip line.

"Mobile Zip Line" means a zip line that is designed or adapted to be moved from one location to another and is not fixed at a single location.

"Mobile Zip Line Manufacturer" means a company responsible for the design, quality, fabrication and delivery of a mobile zip line.

"Operating System" means the system or systems of processing a patron through the zip line route used on a particular site. This includes registration, preparation, getting to the landing point, methods of attachment, the rigging and lowering system, and the landing recovery method.

"Operation, Maintenance, Inspection and Training Manual" or "Manual" means a document containing the procedures and forms for the operation of the zip line activity and equipment on the site.

"Sag" means the vertical deflection in a horizontal line.

"Service Proven" means an element, ride, device, structure or major modification to an element, ride or device of which:

units have been in service to the public for a minimum of five years; and

units that have been in service without any significant design-related failures or significant design-related safety issues that have not been mitigated.

"Third Party Inspector" means a qualified person not directly employed by the operator of the zip line or parent company, original equipment manufacturer (OEM) or vendor, and not offering other services to the operator of the zip line or parent company who is qualified via ACCT accreditation, NAARSO certification, PRCA accreditation, or another approval that equally qualifies that person to provide zip line inspections.

"Zip Line Brake System" means a system that arrests the participant's traverse along a zip line. Brake systems can be active or passive.

"Zip Line Landing Area" means an area provided for the participant to arrest and dismount after completing a zip line traverse.

"Zip Line Tour" means a guided, aerial exploration or transit of a landscape using a series of zip lines and platforms generally supported by man-made structures.

b) This Section shall govern all zip lines in operation on and after March 27, 2013. However, the Director may grant a permit to an operator of a zip line that was in operation on March 27, 2013 that does not meet all the standards in this Section if the operator can clearly demonstrate a service proven element or that the applicable safety requirements throughout this Part are substantially satisfied so as to ensure the safety of the public.

c) This Section specifies the site, site approval, design, testing of equipment, management of the operation, operating procedures, emergency provisions, and procedures for zip lines from any mechanically operated platforms that carry participants to the top of the structure. All zip lines shall meet the manufacturer's standards and specifications.

d) Site Plan, Equipment Design and Construction

1) All zip line operating system designs shall be reviewed and sealed by a licensed professional engineer and a licensed structural engineer. ANSI, ASTM or other applicable standards shall be used as general guidance. The designer of fixed zip lines and the manufacturer of mobile zip lines are responsible for preparing the report for the owner. The design report shall contain site plans, safety zones, drawings and specifications of equipment, platform, rigging system, and safety equipment. The report shall be submitted to the Department before the commissioning of fixed zip lines and the operation of mobile zip lines and shall be maintained on the site where the zip line is operating. The design evaluation included in the report shall consider the following:

A) Static and dynamic loads on anchors and components.

B) Fatigue limits or absolute component replacement intervals.

C) Fatigue limits for structures.

D) Protection against metallic corrosion and wood rot.

E) Clearances and hazard analysis, including consideration of the effects of heavy crosswinds, rain, fog and other conditions resulting in impaired visibility, maneuverability, loss of traction or grip, and reduced braking capability.

F) Platform, walkway, ladder and associated foundation size and load ratings, including factors of safety.

G) Anchor and foundation analysis for mobile zip lines shall consider the load path through the anchor attachment point and identify loading through all components, including an identified fixed foundation. Vehicle frames or underframes can be used as fixed foundations, providing a verifiable load analysis is submitted. Alternate qualification, consisting of a statement by the vehicle manufacturer confirming the anchor attachment point and loadings are suitable for the vehicle, is acceptable.

2) An inspection by a third-party inspector shall be conducted each time a major component is modified. Scheduled component replacements in accordance with manufacturer or designer maintenance procedures do not constitute a design modification.

3) Fixed zip lines shall be inspected by a third-party inspector annually. Results and the report shall be made available to the Department.

4) Differences between the design as detailed in the engineer's report and evaluation and the implemented installation by a competent person shall be reconciled. Appropriate explanations of the differences, which may include modified drawings, procedures, analyses and additional calculations shall be appended to the original design report or engineering evaluation as applicable. Owner's manuals shall be updated to reflect the engineer's or manufacturer's acceptance of the modifications.

5) A fixed zip line site commissioning plan, including an acceptance test procedure and report, shall be incorporated in the engineer's report. Commissioning and testing shall be conducted by a competent person

6) Mobile zip line site set-up, pre-start inspection, and test procedures shall be clearly documented and followed by a competent person.

7) The Department shall maintain the confidentiality of the engineer's report as authorized by Section 7(1)(g) of the Freedom of Information Act.

e) General Compliance Criteria

1) Equipment

A) Zip lines shall be comprised of flexible steel wire rope. Zip lines shall have no exposed wires/strands within reach of the participants that may result in injury. Wire rope used as zip lines shall not be spliced.

B) When a portion of the zip line or landing area is not visible from the zip departure point, a departure procedure shall be utilized to ensure a clear unobstructed run.

C) There shall be adequate clear space above, below and around the zip line to ensure the participant will not strike or contact any permanent or transient obstruction, object or person.

D) Rescue ropes, equipment appropriate to applicable rescue loads, rescue plans, and personnel trained to retrieve a participant from anywhere within zip line spans shall be present during use.

E) Carabiners and snap-hooks shall comply with the gate strength and other applicable requirements of ANSI/ASSP Z359.1 (2007) for the manufacturer's estimated life cycle of the product. Carabiners and snap-hooks shall be auto-closing and auto-locking and require at least two deliberate consecutive actions to open.

F) Lanyards shall comply with the strength requirements of ANSI/ASSP Z359.1 (2007) for manufacturers estimated life cycle of the product. Lanyards should carry the marking of the manufacturer and the safe working load or breaking strength.

G) Items carried by participants, including backpacks and carryalls, hair, and clothing that may become entangled in safety equipment or component parts shall be secured properly.

H) Pulleys and trolleys shall be of the double wheel type construction per the design specification to eliminate derailing during operation.

I) All parts and components shall be purchased from the manufacturer or shall only be manufacturer-approved replacement parts.

2) Zip Line Arrival Point, Protection and Braking

A) Zip line courses shall have appropriate safety devices, such as impact-absorbing materials, ground cover, load limiters and landing mats or landing nets, installed per the manufacturer's design specifications at the zip line arrival point. Descriptions and operating characteristics of the safety devices shall be included in the design drawings.

B) One or more of the following methods shall be included in the operating system of the zip line course:

i) Impact absorbent ground cover, impact absorber/load limiter, landing mats, nets, water landings, or other protective methods installed in arrival areas to reduce injury potential.

ii) Passive braking systems shall not require any action by the user and shall always be in effect through gravity, engineered, or mechanical means. If gravity braking is designed to result in the participant being removed after arriving at a low point in the zip line, the removal device or equipment shall be rated for the design reach and loads as determined by the design plan. If mobile equipment is used to remove participants at the arrival point, the approach path shall be free of potential hazards. The stability of the vehicle shall be insured through proper selection of the equipment and the approach.

iii) Active braking systems that use a mechanical braking system must also have a secondary braking system or assistance of an operator as a secondary or emergency braking system.

C) Parked vehicles shall only be used as secondary tie-off points for portable zip lines and may be used as primary anchor points when the vehicle meets the weight class and type specified by the manufacturer and engineering requirements of the ride. Additionally, any vehicle used as a primary or secondary anchoring point must be physically prevented from being operated by disabling the electrical system (disconnecting battery) so that the vehicle cannot be started or by other means outlined in the manufacturer's design specifications.

D) The use of a tree as an anchor point for the termination of a zip line or to secure the takeoff platform of a zip line is acceptable. The tree or trees shall be inspected and approved by a certified arborist to ensure good health and stability of the trees. All trees on fixed installations shall receive this assessment no less than annually.

3) Zip Line Takeoff Platform

A) Takeoff platforms shall be designed to prevent the participant from striking any portion of the platform or lower obstacle during the takeoff.

B) Angles of inclination of the landing ramps shall not constitute a tripping hazard for the participant.

C) Where necessary, impact-absorbing material shall be utilized to prevent injury.

D) Unauthorized access to zip line platforms during periods when the ride is shut down or not attended by a qualified operator shall be prevented by suitable means, including barriers. Hazard warning signs shall be conspicuously placed where applicable.

f) Site Operating Manual and Documentation

1) Each site shall have an operating manual for the safe operation of zip line activities on that site. The manual and all amendments shall be on-site and freely available to operator staff and governing bodies.

2) The manual shall include the procedures for complying with this Part.

3) The manual shall include, but not be limited to, the following:

A) A site plan;

B) A description of operating systems and equipment;

C) Job procedures, including training (see Section 6000.120(c)), for each task in the operating system;

D) Job descriptions;

E) Sample of staff qualifications;

F) Staff selection procedures;

G) Maintenance standards and procedures;

H) Testing procedures and recording;

I) Criteria for the periodic replacement of rigging;

J) Criteria for the regular planned inspections of ropes, webbings and bindings;

K) Emergency plan and procedures;

L) Reporting of injuries, damage and incidents;

M) Requirements for maintaining logs, including:

i) Site;

ii) Equipment and rigging; and

iii) Personnel;

N) Records to be kept;

O) Requirements for analysis of records;

P) Inspection procedures, standards and follow-up actions; and

Q) Examples of forms to be used.

g) Emergency Provisions and Procedures

1) Each site shall have an emergency plan.

2) A medium first aid kit and blankets shall be on site.

3) Emergency lighting shall be provided at sites that operate between ½ hour before sunset and ½ hour after sunrise. The emergency lighting system shall illuminate the takeoff platform, the zip line, the zip line course, and the arrival point for participants. The emergency lighting system shall have its own power source.

4) In inclement weather, including but not limited to lightning, rain, hail, snow or high winds, operations shall cease and participants shall not be allowed to ride the zip line or be on or near the platforms or termination points of the ride.

h) If a zip line operating system meets all the equipment and inspection requirements of this Section, the Department will issue an operating permit, subject to the applicant submitting the fees required by Section 6000.50(b) and (c).

i) An owner or operator of a zip line that is permitted under the Act and this Part may disclose or advertise such permit status. Misrepresentation of permit status shall be a violation of the Act. No owner or operator shall advertise any zip line as being otherwise endorsed or approved by the Department, in any advertisement, brochure, commercial, TV or radio show, or newspaper, or in any other public manner.

(Source: Amended at 46 Ill. Reg. 9899, effective May 26, 2022)