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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 31258-2024

Replacing GB/T 31258-2014

Specification of zip line

滑索通用技术条件

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Table of Contents

1 Scope

This document specifies the technical requirements, inspection, testing and test, accompanying documents, marking, packaging, transportation and storage of large-scale amusement facility zip line.

This document is applicable to the design, manufacture, installation, modification, repair, test, inspection and testing of zip lines that carry no more than 4 people on single manned equipment.

2 Normative References

GB/T 191

GB 5725

GB 8408-2018

GB/T 8918

GB/T 9075

GB/T 9969

GB/T 13384

GB/T 20050-2020

GB/T 20306-2017

GB/T 26722

3 Terms and Definitions

The terms and definitions defined in GB/T 20306-2017, and the following are applicable to this document.

3.1 Strop

An amusement ride where passengers use tools, for example, pulleys, to slide along a wire rope relying on gravity or other traction.

3.2 Load bearing rope

A steel wire rope with two fixed ends, supported by a fixed wire rope metal structure, and carry the weight of the pulley, manned equipment and passengers.

3.3 Waiting zone

A preparation area where passengers put on their riding gear and read passenger instructions before riding the zip line.

3.4 Unpowered zip line

Instead of relying on the power system for traction (except for the recovery device), the strop relies on the conversion of potential energy into kinetic energy and moves along the load bearing rope.

3.6 Strided distance

The horizontal distance between the support points of the load bearing ropes at the upper and lower stations.

3.7 String incidence

The acute angle between the string of the load bearing rope or the traction rope and the horizontal plane.

[source. GB/T 20306-2017, 4.9.15, modified]

3.8 Length

The straight-line distance between the support points of the load bearing ropes at the upper and lower stations.

4.1 Basic Design Requirements

4.1.1 The zip line shall satisfy the provisions of GB 8408-2018.The design shall be correctly calculated, have a reasonable structure and be able to ensure the safety of passengers. The main technical parameters are length, running speed, height difference of the load bearing rope, number of passengers carried by each track, and number of zip line tracks, etc.

4.1.5 Zip line routes and sites shall not be built in miliary restricted areas, power line protected areas, mountain vents, or areas where avalanches, landslides, collapses, caves, storms, tsunamis, floods and fires, etc. may threaten the safety of zipline operation.

4.1.7 When designing the zip line, in accordance with the fixing method listed in Table 8 of GB 8408-2018, the end fixing efficiency shall be considered, and the safety factor of each component shall satisfy the following requirements.

4.1.8 The tower shall be designed in accordance with the provisions of GB 50017.

4.1.9 The zip line shall have rescue plane and rescue equipment for any foreseeable situation, and it shall be equipped with effective rescue equipment that can reach any position where the pulley may stagnate.

4.1.10 When designing zip lines, wind load effects should be considered. Wind load is divided into load under normal operating conditions and load under extreme operating conditions. The design of the zip lines shall be based on the maximum operating wind speed of 15 m/s to calculate the wind load under normal operating conditions. In the stationary state (extreme operating conditions), it shall be able to withstand the wind load provided by local meteorological data. The value and calculation method of wind load shall comply with the provisions of GB 50009.

4.2 Steel Wire Ropes

4.2.1 The steel wire ropes shall comply with the relevant provisions of GB/T 8918 or GB/T 26722 The load bearing rope shall adopt line contact or surface contact, steel core, galvanized or stainless-steel wire ropes, and the diameter shall not be less than 12 mm. The traction ropes shall adopt line contact, fiber core steel wire ropes, and the diameter shall not be less than 6 mm. The twisting direction shall be adapted to the actual operating conditions.

4.2.5 The load bearing ropes and traction ropes shall have tension adjustment devices and adjustment position marks. The fixed ends of the load bearing ropes at the departure and arrival stations shall take effective anti-loosening measures and set up secondary protection.

4.2.10 The replaced steel wire ropes shall be of the same type and specification as the originally installed steel wire ropes. The properties of the replaced steel wire ropes shall not be lower than those of the original steel wire ropes.

4.2.11 During use, the surface of the steel wire ropes shall be inspected at least monthly, so as to find damage to the steel wire ropes in a timely manner. The broken wires and wear of the steel wire ropes shall comply with the relevant requirements of Table 15 in GB 8408-2018, and there shall be no serious corrosion.

4.3 Taxiing Equipment

4.3.1 The taxiing equipment consists of pulleys and manned equipment. The common types of taxiing equipment are shown in Figure 4.The manned equipment includes passenger restraint devices, hanging webbings, lock buckles and passenger cabins, etc. The hanging part shall be provided with secondary protection.

5.1 Instruments and Equipment

The inspection instruments and tools shall comply with the requirements of Appendix A in GB/T 20050-2020.

5.2 Test Data

Inspection and test data of the zip lines shall be retained.

5.4 Inspection, Testing and Test Methods

See Table 1 for specific inspection, testing and test methods.

6.1.1 Before product delivery, at least the following accompanying documents shall be included,

and should be placed in the control cabinet packaging box or the main unit packaging box.

6.2 Packaging, Transportation and Storage

6.2.1 The packaging of zip line products and components shall comply with the relevant provisions of GB/T 191 and GB/T 13384.

6.2.2 During disassembly and transportation, the joints of the disassembled components should

have clear corresponding permanent markings and numbers.

6.2.3 The exposed machining surface of ferrous metals shall be subjected to anti-rust treatment. .....