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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 18159-2019

Replacing GB/T 18159-2008

Specifications of amusement rides coaster category

滑行车类游乐设施通用技术条件

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Foreword

This Standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This Standard replaces GB/T 18159-2008 “Specifications of Amusement Rides Coaster Category”. Compared with GB/T 18159-2008, in addition to editorial modifications, the main technical changes are as follows:

added the requirements for running speed error;

added the requirements for connection bolt calculation;

modified the requirements for design load value;

added the requirements for column and track deformation;

added the requirements for redundant safety structure of vehicle connector;

added the requirements for gear train shock absorption measures;

added the requirements for vehicle safety envelope;

added the requirements for transmission system impact coefficient;

added the requirements for main connection form;

modified the safety factor of traction wire rope and traction chain;

added the requirements for electrical safety functions and their demand levels;

added the requirements for paint coating;

added column and track deformation testing;

added accompanying documents, marks, packaging, transportation and storage;

modified Annex A of Edition 2008.

This Standard was proposed by and shall be under the jurisdiction of National Technical Committee on ropeway and rides of Standardization Administration of China (SAC/TC 250).

The drafting organizations of this Standard: China Special Equipment Inspection and Research Institute, Zhongshan Jinma Technology Entertainment Equipment Co., Ltd., Hebei Huatong Sili Amusement Equipment Co., Ltd., Beijing Shibaolai Amusement Equipment Co., Ltd., Sunac (Hainan) Cultural Tourism Operation Management Co., Ltd. Beijing Branch, Hebei China Metallurgical Equipment Manufacturing Co., Ltd., Hebei Zhipao Amusement Equipment Manufacturing Co., Ltd., Shandong Huaye Metallurgical Equipment Manufacturing Co., Ltd., Beijing Jialong Jiuhua Amusement Equipment Manufacturing Co., Ltd., Zhuji Jinhou Amusement Equipment Manufacturing Co., Ltd., Guangdong Daxin Amusement Intelligent Technology Co., Ltd.

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Versions of standard substituted by this Standard are:

1 Scope

This Standard specifies general rules, technical requirements, inspection, testing and test requirements, accompanying documents, marks, packaging, transportation and storage for amusement rides coaster category.

This Standard is applicable to amusement rides coaster category.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

3 Terms and definitions

3.1 single train roller coaster series

the amusement rides coaster category designed as that the operating condition is that there is a single train or a group of trains running on the same track

3.2 multi train roller coaster series

the amusement rides coaster category designed as that there are two groups or more groups of single train or trains running on the same track

3.3 splash

the amusement rides coaster category that after the passenger device is lifted, it inertially slides into the water (waterway) along the track, is decelerated by the water resistance, and the passenger device is driven by the water to run along the waterway in the water

3.4 powered U-shape roller coaster series

the amusement rides coaster category that, a roller coaster that is driven by a driving device and inertia to drive a passenger device during operation, its body is equipped with driving device, there is only one trolley on each track to reciprocate back and forth along the track during operation

3.5 wooden roller coaster

the amusement rides coaster category of which the supporting structure is mainly wood material

3.6 launch coaster

the amusement rides coaster category that enables the passenger device to obtain a large initial kinetic energy in a short time through external power driving hydraulic device, flywheel energy storage device and other equipment.

3.7 non-continuous rail roller coaster

3.8 coaster zipline

the amusement rides coaster category that the main passenger restraint device adopts the "suspended bearing" structure, the roller coaster uses pulleys to contact the hard track and uses the height difference to inertially slide down the hard track from a height

3.9 fail-safe

the mode that, after the equipment fails, its control system or mechanical mechanism can maintain a safe state or transfer to a safe state to avoid larger failures or accidents

3.10 wheel set

3.11 single point of failure

the failure of a part, structural connection point or electrical component on the amusement rides will cause the entire equipment to fail or seriously endanger the safety of passengers

4 General rules

4.1 The design, manufacture, installation, modification, repair, test and inspection, marks, packaging, transportation and storage of amusement rides coaster category shall meet the relevant regulations of GB 8408 and the relevant requirements of this Standard.

5 Technical requirements

5.1 Basic requirements

5.2 Machinery and structure

5.2.1 The design of the transmission system shall ensure safe operation. In the event of failure of the system, the vehicle shall be in a safe state. There shall be no obvious skidding when amusement rides coaster category starts. The transmission mechanism shall operate normally. 5.2.2 When the transmission system is designed, the impact coefficient shall be selected according to Table 2 based on the maximum lifting speed. 5.2.3 Pull the traction wire rope and traction chain of roller coaster upwards along the track. After considering the appropriate impact coefficient according to the requirements of 5.1, the ratio of the