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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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**Section steel for the track of medium and low speed maglev
transit**

中低速磁浮交通轨排型钢

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Table of Contents

4	Model and Specification Representation Method
4.1	Model Designation Method
4.2	Specification Representation Method
6	Manufacturing process
6.1	Smelting Method
7	Technical Requirements
7.1	Dimensions, shape, weight and permissible deviations
7.1.1	Dimensions and Representation Methods
7.1.2	Allowable deviations in cross-sectional dimensions
7.1.3	Length and Permissible Deviation
7.1.5	Twist
7.1.6	Weight and Permissible Deviations
7.2	Grade and Chemical Composition
8	Test Methods
8.1	Inspection Items
8.2	Sampling Site
9	Inspection Rules
10	Packaging, labeling, and quality certificate

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1. Structure and Drafting Rules of Standardization Documents". Drafting. Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed by the China Iron and Steel Association. This document is under the jurisdiction of the National Steel Standardization Technical Committee (SAC/TC183). This document was drafted by: Shandong Iron & Steel Co., Ltd., Metallurgical Industry Information and Standardization Research Institute, National University of Defense Technology, and China Railway Baoqiao Group. Limited Liability Company. The main drafters of this document are. Huo Xiwei, Zhang Pei, Xu Haochi, Li Jie, Ji Jinli, Wang Yujie, Yuan Shujun, Liu Baoshi, Liu Bo, and Zhang Ning. Medium and low speed maglev transportation track steel

1.Scope This document specifies the model and specification designation method, ordering details, manufacturing process, technical requirements, and inspection procedures for the steel sections used in medium- and low-speed maglev transportation tracks. The test rules and packaging, marking and quality certificate describe the corresponding test methods. This document applies to the steel profiles for medium- and low-speed maglev train tracks, including F-shaped steel for guide rails (hereinafter referred to as "F-shaped steel") and H-shaped steel for sleepers. (hereinafter referred to as "H-beams"), F-beams and H-beams (hereinafter collectively referred to as "section steels").

4.1 Model Designation Method

4.1.1 The model of F-shaped steel is composed of the letter F in "F-shaped steel" and the total width (b) value of F-shaped steel x the height (h) value of the outer plate.

4.1.2 The model of H-beam is composed of the letter H in "H-beam" and the height (H) value x width (B) value of the H-beam.

4.2 Specification Representation Method

4.2.1 The specifications of F-shaped steel are determined by the combination of "F" and the following values. total width (b) x outer plate height (h) x distance from outer edge of plate (b2) x inner plate height (h1). express.

4.2.2 The specifications of H-beams are represented by "H" and the values of height (H) x width (B) x web thickness (t1) x flange thickness (t2).

5.Order details Contracts for orders placed in accordance with this document shall include at least the following technical contents.

- a) Product Name;
- b) This document number;
- d) Model and specifications;
- e) Delivery length;
- f) Weight and quantity;
- g) Special requirements.

6.1 Smelting Method

6.1.1 Steel is smelted in an oxygen converter or an electric arc furnace.

6.1.2 F-shaped steel shall undergo ladle refining and vacuum degassing treatment.

6.2 Delivery Status The steel sections are delivered in hot-rolled condition.

7.1.1 Dimensions and Representation Methods

7.1.1.1 The cross-sectional diagram of F-shaped steel is shown in Figure 1, and the cross-sectional diagram of H-shaped steel is shown in Figure 2.

7.1.1.3 The nominal dimensions, cross-sectional area, theoretical weight, and cross-sectional characteristic parameters of H-beams shall conform to the provisions of Table 3.

7.1.2 Allowable deviations in cross-sectional dimensions

7.1.2.1 The allowable deviation of the cross-sectional dimensions of F-shaped steel shall conform to the provisions of Table 4.

7.1.3 Length and Permissible Deviation

7.1.3.1 F-shaped steel shall be delivered in fixed lengths, which shall be specified in the contract, with a permissible deviation of 500 mm.

7.1.3.2 H-beams shall be delivered in multiple lengths, the length of which shall be specified in the contract, with a permissible length deviation of 500 mm. Short lengths are permitted. The length of the ruler should not be less than 3000mm, and the quantity of shorter rulers delivered should not exceed 10% of the total weight of the batch.

7.1.4 Curvature The curvature of the steel section shall not exceed 1 mm per meter, and the total curvature shall not exceed 1 per mille of the total length.

7.1.5 Twist

7.1.5.1 The torsion of the F-shaped steel should not exceed 3mm/total length. See Figure 3 for a schematic diagram of the torsion measurement. Place the F-shaped steel plate downwards on the testing platform. On the platform, a feeler gauge is used to measure the gap between the raised end face of the electrode plate at the end of the steel profile and the testing platform. If the supplier can guarantee this, inspection is not required.

7.1.5.2 H-beams should not have obvious torsion.

7.1.6 Weight and Permissible Deviations

7.1.6.1 The structural steel shall be delivered according to its theoretical weight, and the density of the steel shall be calculated as

7.85 g/cm³. Alternatively, this may be agreed upon by both the supplier and the buyer and specified in the contract. Delivery will be made based on actual weight.

7.1.6.2 The allowable deviation in weight of each section (batch) of steel should not exceed $\pm 4\%$.

7.1.6.3 The allowable deviation Δm of the steel section weight shall be calculated according to formula (1).

7.2 Grade and Chemical Composition

7.2.1 The steel grade and chemical composition (smelting composition) shall conform to the provisions of GB/T 700, GB/T 1591, or GB/T 4171. According to... If the buyer requests, other grades and chemical compositions may also be supplied upon negotiation between the supplier and the buyer.

7.2.2 The hydrogen content of molten steel for F-type steel should not exceed $2.0 \times 10^{-4}\%$. If the supplier can guarantee this, no inspection is required.

7.2.3 The permissible deviation of the chemical composition of finished steel products shall comply with the provisions of GB/T 222.

7.3 Processing and Mechanical Properties The mechanical properties of the structural steel shall conform to the requirements of GB/T 700, GB/T 1591, or GB/T 4171. These shall be agreed upon by both the supplier and the buyer, and stipulated in the contract. As noted in the document, other mechanical and technological performance indicators may also be supplied.

7.4 Saturation magnetic flux density According to the buyer's requirements, the saturation magnetic flux density of F-shaped steel should not be less than 1.4T.

7.5 Surface Quality The surface quality requirements of structural steel and the cleaning and welding repair of surface defects shall comply with the provisions of GB/T 11263.

8.1 Inspection Items

8.1.1 The inspection items, sampling quantity, sampling method and test method for each batch of steel shall comply with the provisions of Table 6.

8.1.2 The saturation magnetic flux density of F-shaped steel is only tested as a type test, i.e., only when there are significant changes in raw materials, production processes, or when new products are produced. Inspection. The inspection methods shall comply with the provisions of GB/T 13012.

8.2 Sampling Site

8.2.1 The sampling location for tensile, bending, and impact tests of F-shaped steel is point A in Figure

4. Tensile specimens can also be taken from point B, and bending specimens from point C. Take the impact test specimen from point D.

8.2.2 The sampling locations for tensile, bending and impact tests of H-beams shall comply