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

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Hot-rolled H section steel for bridge steel structure

桥梁钢结构用热轧H型钢

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Table of Contents

Foreword	3
1 Scope	4
2 Normative References	4
3 Terms and Definitions	6
4 Method for Designation of Grades	7
5 Order Contents	7
6 Manufacturing Process	8
7 Technical Requirements	8
8 Test Methods	22
9 Inspection Rules	23
10 Packaging, Marking and Quality Certificate	23
Appendix A (Informative) Reference Service Environments for Bridge Sites Where Atmospheric Corrosion Resisting Steel May Be Used Without Painting	24
Appendix B (Informative) Comparison Table of Related Standard Grades	25
References	26

1 Scope

This document specifies the method for designation of grades, order contents, manufacturing process, technical requirements, inspection rules, packaging, marking and quality certificate for hot-rolled H section steel for bridge steel structure, and describes the corresponding test methods.

This document is applicable to the hot-rolled H section steel for bridge steel structure (hereinafter referred to as the "section steel") with a nominal flange thickness not exceeding 80 mm. Hot-rolled section steels such as angles, channels, and I-beams for bridge steel structure shall refer to this document.

2 Normative References

GB/T 222

GB/T 223.5

GB/T 223.11

GB/T 223.14

GB/T 223.19

GB/T 223.23

GB/T 223.26

GB/T 223.37

GB/T 223.40

GB/T 223.59

GB/T 223.63

GB/T 223.78

GB/T 223.81

GB/T 223.82

GB/T 223.84

GB/T 223.85

GB/T 223.86

GB/T 228.1

GB/T 229

GB/T 232

GB/T 2101

GB/T 2975

GB/T 4336

GB/T 8170

GB/T 20066

GB/T 20123

GB/T 20124

GB/T 20125

GB/T 41749

3 Terms and Definitions

The following terms and definitions are applicable to this document.

3.1 As-rolled

The condition of steel that has not undergone any special rolling and/or heat treatment.

3.2 Normalizing Rolling

A rolling process in which the final deformation is performed within a specific temperature range, resulting in the steel attaining a normalized condition-such that the specified mechanical property values are achieved even after subsequent normalizing.

NOTE. In some publications, "normalizing rolling" is also referred to as "controlled rolling".

3.3 Thermomechanical Rolling

A rolling process in which the final deformation of the steel is performed within a specific temperature range, thereby ensuring that the steel acquires properties that cannot be achieved solely through heat treatment.

NOTE 1. Thermomechanical rolling includes processes involving accelerated cooling-with or without tempering; tempering includes self-tempering but excludes direct quenching, as well as quenching followed by tempering.

NOTE 2. It is also referred to as the thermomechanical control process (TMCP); in some publications, it is also referred to as "controlled rolling".

3.4 Atmospheric Corrosion Resisting Steel

Steel to which specific amounts of alloying elements-such as Cr, Ni, Cu, Mo, etc.-have been added to form a dense rust layer on the surface of the metal matrix, thereby enhancing its resistance to atmospheric corrosion.

NOTE 1. The atmospheric corrosion resisting steel is also known as weathering steel; its designation code is NH.

NOTE 2. The reference service environments for bridge sites where atmospheric corrosion resisting steel may be used without painting are provided in Appendix A.

4 Method for Designation of Grades

4.1 The steel grade designation consists of four parts. the capital letter "Q" (representing the initial letter of the Pinyin spelling for "Qu"-meaning "yield strength"); the specified minimum lower yield strength value; the lowercase letter "q" (representing the initial letter of the Pinyin spelling for "Qiao"-meaning "bridge"); and the quality grade symbol (C, D, or E).

NOTE 1. The combination of "Q" + specified minimum lower yield strength value + "q" is collectively referred to as the "steel grade". Example 1. Q345qD. Where.

Q -- Represents the capitalized initial letter of the Pinyin spelling for "Qu"-meaning "yield strength";

345 -- Specified minimum lower yield strength value, in megapascals (MPa);

q -- The lowercase initial letter of the Pinyin spelling for "Qiao"-meaning "bridge", denoting steel for bridge construction; D -- Quality grade D.

For bridge steel possessing weathering resistance properties, the designation "NH" (weathering-resistant) shall be appended to the specified grade.

NOTE 2. The combination of "Q" + specified minimum lower yield strength value + "q" + "NH" is collectively referred to as the steel grade. Example 2.Q345qDNH.

NH -- The initial letters of the Pinyin spelling for "Naihou"-meaning "weathering-resistant".

4.2 When the demander requires guaranteed through-thickness characteristics, a symbol

representing the through-thickness (Z-direction) characteristic level shall be appended to the specified grade; for example. Q345qDZ25.

5 Order Contents

Contracts for orders placed in accordance with this document shall include, at a minimum, the following details.

- a) Product name;
- b) Number of this document;
- c) Grade and quality grade;
- d) Specification;
- e) Delivery length;
- f) Weight and quantity;
- g) Delivery condition;
- h) Other special requirements put forward by the demander, such as. special specification requirements, special surface quality requirements, etc.

6.1 Smelting Method

The steel shall be smelted in an oxygen converter or electric arc furnace and shall undergo secondary refining treatments, such as vacuum degassing.