

UDC
P

GB

NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA

GB 50017-2017

Standard for design of steel structures

钢结构设计标准

Issued on: December 12, 2017

Implemented on: July 01, 2018

**Issued by: Ministry of Housing and Urban-Rural Development of PRC;
General Administration of Quality Supervision Inspection and
Quarantine of PRC.**

NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA

Standard for design of steel structures

Main drafting department: Ministry of Housing and Urban-Rural Development
of PRC

Approving department: Ministry of Housing and Urban-Rural Development of
PRC

Date of implementation: July 1, 2018

2017 Beijing

**Announcement of Ministry of Housing and Urban-Rural
Development
No.1771**

**Announcement of the Ministry of Housing and Urban-Rural
Development on the Issuance of the National Standard
“Standard for design of steel structures”**

It hereby approves the “Standard for design of steel structures” as a national standard, it is numbered as GB 50017 -2017 and will be implemented from July 1, 2018. Among them, clauses 4.3.2, 4.4.1, 4.4.3, 4.4.4, 4.4.5, 4.4.6 and 18.3.3 are mandatory provisions and must be strictly implemented. The original “Code for design of steel structures” GB 50017-2003 was abolished at the same time. This standard is published on the website of the Ministry of Housing and Urban-Rural Development (www.mohurd.gov.cn), it is published by the China Building Industry Press under the organization by the Institute of Standards and Ratings of our Ministry.

**Ministry of Housing and Urban-Rural Development of the PRC
December 12, 2017**

Table of Contents

Foreword	8
1 General provisions	13
2 Terms and symbols	14
2.1 Terms.....	14
2.2 Symbols.....	18
3 General requirements	24
3.1 General requirements.....	24
3.2 Structural systems	27
3.3 Actions	28
3.4 Requirements of deformation for structures and members	30
3.5 Classification of sections.....	30
4 Material	33
4.1 Structural steel designations and standards	33
4.2 Connections and fasteners materials and standards.....	33
4.3 Selection of materials	35
4.4 Design strength and parameters	37
5 Structural analysis and stability design	47
5.1 General requirements.....	47
5.2 Initial imperfections.	49
5.3 First-order elastic analysis and design.....	52
5.4 Second-order P-Δ elastic analysis and design	52
5.5 Direct analysis method of design.....	53
6 Flexural members	57
6.1 Shear and flexural strength	57
6.2 Flexural-torsional stability of beams	60
6.3 Plate stability.....	63
6.4 Design of beams considering post-buckling strength of webs.....	71
6.5 Strengthening of openings.....	75

6.6 Detailing.....	76
7 Axially loaded members	78
7.1 Strength calculation of cross-sections.....	78
7.2 Stability calculation of members under axial compression	79
7.3 Local stability and post-buckling strength of solid-web members under axial compression	93
7.4 Effective length and allowable slenderness ratio of members under axial compression	97
7.5 Bracing of members under axial compression.....	103
7.6 Special cases of trusses and tower members	105
8 Members under combined axial force and bending.....	108
8.1 Strength calculations of cross-sections.....	108
8.2 Stability calculation of members	111
8.3 Effective length of frame columns.....	118
8.4 Local stability and post-buckling strength of beam-columns	125
8.5 Truss members subjected to second-order moments.....	128
9 Stiffened steel shear walls	130
9.1 General requirements.....	130
9.2 Design of stiffened steel shear walls	130
9.3 Detailing.....	133
10 Plastic design and provisions for design using moment redistribution.....	135
10.1 General requirements.	135
10.2 Provisions for design using moment redistribution.....	136
10.3 Calculation of member strength and stability	137
10.4 Slenderness limitations and detailing.....	138
11 Connections	141
11.1 General requirements.....	141
11.2 Calculation of welded connections	143
11.3 Detailing requirements of welded connections	148
11.4 Calculation of fasteners.....	153