



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

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**Technical Standards for Testing, Appraisal and Reinforcement
of Building Metal Sheet Enclosure System**

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1 General

1.0.1 This standard is formulated in order to achieve technical reliability, safety and applicability, economical rationality, and quality assurance during the inspection, appraisal, reinforcement and transformation of building metal plate enclosure systems.

1.0.2 This standard applies to the detection, identification, reinforcement and renovation of new or existing building metal plate enclosure systems.

1.0.3 The detection, identification, reinforcement and transformation of building metal plate

enclosure systems shall not only comply with this standard, but also comply with the current relevant national standards.

2.1.1 metal building envelope system

The prefabricated enclosure with the corresponding functions of the building is formed by using the pressed metal plate or the metal surface sandwich panel as the main plate of the roof, wall and other systems, connected by supporting components, combined with waterproof, thermal insulation, heat insulation, steam insulation and other structures. protection system.

2.1.2 profiled metal sheet

Sheet metal is rolled, cold-bent, or bent to form a shaped sheet metal with a continuous wave or other shaped cross-section.

2.1.3 Appraisal of reliability

A series of activities such as investigation, detection, analysis, checking and evaluation of the safety and usability of building metal plate enclosure systems.

2.1.4 target working life

Identify the expected useful life of building sheet metal envelope systems.

2.1.5 assessment assessment

According to the results of inspection, testing and analysis, the safety and usability of the building metal plate enclosure system are evaluated in accordance with the specified standards and methods.

2.1.6 Assessment items items of assessment

A program for assessing the reliability of building sheet metal envelope systems and their components.

2.1.7 Appraisal unit

According to the structural characteristics of the certified building metal plate enclosure system, the enclosure system is divided into one or several sections that can be independently identified, and each section is an identification unit.

2.1.8 component component

The components of the metal plate enclosure system can be divided into components, connections, etc.

2.1.9 Component members

A single component that bears various functions in the containment system, or refers to a certain component of the system. Including sheet metal, purlins, wall beams, etc.

2.1.10 connect connect

A system that uses special brackets, self-tapping screws, rivets, nails, bolts, welding, occlusion, etc. to combine components together.

2.1.11 Attached facilities

Maintenance access, ladders, fall prevention facilities, snow protection facilities, lightning protection facilities, photovoltaic systems, decoration systems, etc. for building metal plate enclosure systems.

2.1.12 Strengthening of metal building envelope system

Measures such as reinforcement and partial replacement are adopted to improve the reliability of the building metal plate enclosure system, so that it has corresponding safety and usability.

2.1.13 Renovation of metal building envelope system

Renovate or replace the original enclosure system to meet the functional requirements of the transformation.

2.2.1 Main symbols of structural performance and action effect

M-the design value of the maximum bending moment borne by a section;

M_u - the design value of the bending capacity of the section;

M_x, M_y --the sum of the design value of bending moment before strengthening and the design value of bending moment after strengthening around the x-axis and y-axis of the centroid of the reinforced section, respectively;

W_e --effective section modulus;

φ_{bx} --the overall stability coefficient of the beam;

η --reinforcement strength correction factor;

η_m --correction coefficient of strengthening strength of bending members;

γ_0 --structural importance coefficient, whose value is consistent with the main structure.

2.2.2 Identification Rating

au, bu, cu, du-the safety level of the component or its inspection items;

Au, Bu, Cu, Du-the safety level of the identification unit or a part of it;

as, bs, cs-serviceability level of the component or its inspection items;

As, Bs, Cs-the usability grade of the identification unit or a part thereof;

a, b, c, d - the reliability level of the component;

A, B, C, D-the reliability level of the identification unit.

3.1 General provisions

3.1.1 When one of the following conditions exists in the building metal plate enclosure system, reliability appraisal shall be carried out.

1 When there are quality defects or corrosion, leakage, damage, deformation, etc. that affect safety;

2 When the designed service life is reached and intended to continue to be used;

3 When the conditions of use or the change of the use environment are unfavorable to safety;

4 When a comprehensive overhaul is required;

5 When you intend to continue to use it after suffering a disaster or accident;

6. When routine maintenance checks find potential safety hazards;

7 When making modifications or alterations.

3.1.2 When one of the following conditions exists in the building metal plate enclosure system, special appraisal should be carried out.

1 When there are special requirements for maintenance and reconstruction;

2 When there is local damage affecting its normal use;

3 When there is doubt about the integrity and durability of the metal plate or when it needs to be dealt with;

4 When the supporting structural members, connections, etc. are subject to general corrosion, damage or other problems;

5 When there is vibration effect;

6 When long-term monitoring is required.

3.1.3 If the building metal plate enclosure system is identified as not meeting the