

JGJ

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

JGJ 276-2012

Technical code for safety of lifting in construction

建筑施工起重吊装工程安全技术规范

(English Translation)

Issued on: January 11, 2012

Implemented on: June 1, 2012

**Issued by: Ministry of Housing and Urban-Rural Development of the
People's Republic of China Foreword**

Table of Contents

Foreword	4
1 General Provisions	7
2 Terms and Symbols	8
2.1 Terms	8
2.2 Symbols	9
3 Basic Requirements	11
4 Hoisting Machinery and Rigging Equipment	14
4.1 Hoisting machinery	14
4.2 Rope	16
4.3 Sling	17
4.4 Hoisting and lifting equipment	19
4.5 Anchor	25
5 Lifting of Concrete Structure	28
5.1 General Requirements	28
5.2 Lifting of Single-Factory Building	30
5.3 Hoisting of Multi-Layer Frame Structure	32
5.4 Lifting of Wallboard Structure	33
6 Lifting of Steel Structure	35
6.1 General Requirements	35
6.2 Lifting of Steel Structure Plant	35
6.3 Lifting of High-Rise Steel Structure	36
6.4 Lifting of Light Steel Structure and Portal-Rigid Frame	37
7 Installing of Net Rack	38
7.1 General Requirements	38
7.2 Installing with High Bulk Method	39
7.3 Installing with Subsection and Block	40
7.4 Installing with Aerial Sliding Method	40
7.5 Whole Hanging Method	41
7.6 Installing with Whole Hanging and Lift-Up Method	42
Appendix A Selection Rules of Sling Tension	44
Appendix B Calculation of Horizontal Hanging Beam	46
Appendix D Structure Parameters of Anchor and Stress Calculation	51

Explanation of Wording in This Code	66
List of Quoted Standards	67

1 General Provisions

1.0.1

This Code is formulated in order to implement the safety production policy and ensure the safety of crane lifting operations in architecture engineering.

1.0.2

This Code applies to crane lifting operations in construction of architecture engineering.

1.0.3

The crane lifting operations during construction of architecture engineering shall not only comply with this Code, but also comply with the relevant current national standards.

3.0.1 Before crane lifting operations, a special construction plan for the lifting operations

must be prepared, and safety technical measures must be explained; during the operation, no changes may be made without the approval of the technical person in charge.

3.0.2 Special operation personnels such as crane operators, lifting signal workers, and rigging

workers must hold special operation qualification certificates to work. Non-crane drivers are strictly prohibited from driving or operating cranes.

3.0.3 Before crane lifting operations, the used machinery, pulleys, hoist auxiliaries and ground

anchors shall be inspected and must meet safety requirements.

3.0.4 Lifting personnels must wear non-slip shoes and safety helmets, and safety belts shall be worn when working at heights. They shall be fastened reliably and can be low-hanging.

3.0.5 The access road for lifting equipment shall be smooth and the bearing capacity shall meet the equipment access requirements. Obvious signs shall be set up around the lifting operation area; and non-operators are strictly prohibited from entering. It is not suitable to work at night.

When it is necessary to work at night, there shall be sufficient lighting.

3.0.6 The upper end of the climbing ladder shall be fixed, the hanging basket and

temporary workbench used at high altitude shall be firmly fixed; and a protective railing of no less than

1.2m shall be installed. The scaffolding boards of the hanging basket and workbench shall be flat and fastened; and probe boards are strictly prohibited. When lifting the operating platform, it is strictly prohibited to allow people to stand on the platform. When the components are hoisted, all personnel are not allowed to stand under the hoisted objects and shall maintain a certain safe distance.

3.0.7 The specifications of slings, snap rings, rope buckles, etc. used for tightening shall be determined based on calculations. Before hoisting, the crane steel rope, connecting parts and hoist auxiliaries shall be inspected.

3.0.8 When hoisting roof trusses and beams at high altitude and using oblique hanging to tighten lifting columns, anti-sway ropes shall be tightened at both ends of the components; and the operator shall control the balance and stability of the components.

3.0.9 The lifting points of components shall comply with design provisions. For special-shaped components or when there are no design provisions, calculations shall be made to ensure that the components are hoisted smoothly.

3.0.10 The materials of bolts, steel wedges, wooden wedges, steel pads and skids used for installation shall meet with the design requirements and relevant provisions of current national standards.

3.0.11 When hoisting large or heavy components or using new lifting techniques, a test lifting shall be carried out first; and only after confirming that there are no problems can the lifting be officially carried out.

3.0.12 Lifting operations shall be stopped in bad weather such as heavy rain, fog, heavy snow, and strong breeze and above. When carrying out lifting operations after rain or snow, the ice and snow shall be cleared away in time and anti-slip and anti-leakage measures shall be taken.

Test lifting first and confirm that the brakes are sensitive and reliable before proceeding with the operation.

3.0.13 The hoisted components shall be ensured to be directly under the top of the crane boom.

It is strictly prohibited to use diagonal pulling or diagonal lifting. It is strictly prohibited to lift components buried in the ground or bonded to the ground.

3.0.14 When the crane operates close to or travels under overhead transmission lines, the safety distance from the overhead transmission lines shall comply with the current industry standard

JGJ 46 Technical Specification for Temporary Electrical Safety of Construction Sites and

other relevant standards.

3.0.15 When dual-machine lifting is used, cranes of the same type or with similar performance should be selected. The load distribution shall be reasonable; and the load of a single machine shall not exceed 80% of the rated lifting capacity. The two machines shall work in coordination, and the hoisting speed shall be smooth and slow.

3.0.16 During the hoisting process, before the crane travels, rotates, tilts the boom, lifts and lowers the hook, etc., the crane driver shall sound the signal. It should perform only one action at a time; and wait until the previous action is completed before proceeding to the next action.

3.0.17 When starting to hoist, the component shall be lifted 200mm~300mm above the ground and then paused to check the stability of the crane, the reliability of the braking device, the balance of the component and the firmness of the tightening, etc.; and only after confirming that everything is correct, can hoisting be continued. The lifted components must not remain in the air for a long time. It is strictly prohibited to overload and lift heavy components and equipment with unknown weight.

3.0.18 It is strictly prohibited to walk or stand on the lifted components; do not use cranes to carry people; and do not stack or hang scattered objects on the components. It is strictly prohibited to work or walk under the lifted components or within the rotation range of the crane arm. When hoisting, the speed shall be constant and no sudden braking is allowed. The movement shall be smooth during rotation, and no reverse movement shall be made before the rotation fails to stop stably.

3.0.19 When operations are suspended, temporary holding or fixation measures must be taken for the parts of the lifting operation that have not formed a stable system.

4.1 Hoisting machinery

4.1.1

All hoisting machinery that is newly purchased, overhauled, renovated, newly-installed, newly-used, or out of service for a period exceeding the prescribed time shall undergo technical inspection in accordance with relevant provisions and be used only after passing the inspection.

4.1.2

When the crane starts operating in each shift, it shall be tested for lifting first, and the operation can only be carried out after confirming that the brake is sensitive and reliable. It is not allowed to leave the post without permission and maintain the locomotive during operation.