



## Technical code for building monolithic moving engineering of China

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## Summary

As an effective, economical technique to reserve valuable existing building in city rebuilding, the building monolithic moving technique develops rapidly in recent twenty years in China. In 2007, the first code, Technical Code for Building Monolithic Moving Engineering, was issued in Jiangsu Province, China. In this paper, the background of compiling the Code is introduced, and the main contents of the Code that include general, design, construction, real-time monitoring, special moving engineering, and quality checking standard are recited in brief.

**Keywords:** Code; monolithic movement; existing building; engineering; design; construction.

## 1. Introduction

Building monolithic moving technique is a technique for moving a building from original location to a new planning location. In the activities of city re-planning, application of the building moving technique showed many more advantages than breaking-and-rebuilding, such as: low cost, short construction time, saving building material, reducing building waste, and most of the users need not move their house. In recent twenty years, the building moving technique was developed rapidly with the increasing requirement in China. In 2007, the Technical Code for Building Monolithic Moving Engineering was finished. This paper recited the background and main contents of the Code briefly.

## 2. Moving Principle and Key Sub-techniques

There are several differences on building moving engineering between China and developed countries. The moving technique in China is applicable for buildings of reinforced concrete structure or masonry structure.

The building monolithic moving technique has six key sub-techniques: underpinning technique, technique of moving track, moving control technique synchronously, cutting structure technique, linking structure technique and real-time monitor technique.

## 3. Backgrounds

In recent twenty years, hundreds of building moving projects had finished in China, but up to 2006, there isn't a special criterion for instructing design and construction of monolithic moving engineering. In 2007, Technical Code for Building Monolithic Moving Engineering (DGJ32/J57-2007) was published in Jiangsu Province, China.



## **4. Main contents of the Code**

### **4.1 Catalogue of the Code**

The Code includes eight chapters.

### **4.2 General**

The application scope of Technical Code for Building Monolithic Moving Engineering is defined in this section.

### **4.3 Design**

Design methods and constitutions of four sub-techniques are specified. They are underpinning, moving track and foundation treatment, moving system, and linking with new foundation.

#### **4.3.1 Underpinning structure design**

Underpinning structure concludes wall underpinning structure, column underpinning node and horizontal underpinning frame. Constitutions and design formulas of two sorts of wall underpinning structure and two sorts of column underpinning structure were provided.

#### **4.3.2 Moving track foundation design**

Moving track is composed of track foundation and track plate paving on the foundation. Five styles of moving track are provided in the code.

The carrying load and deformation of moving track foundation should be checked very carefully in design. In single-direction moving engineering, internal force analysis can be put up according calculating sketch of single-supporting beam or continuous beam.

#### **4.3.3 Moving system design**

Moving system includes four parts: track plate, moving support, power equipments, and power support. Track plate usually uses steel plate or profiled bar, which is paved on track foundation for reducing friction resistance.

The most important parameter in moving system design is minimum moving power. The formula of moving power in design was put forward.

#### **4.3.4 Design for Constitution of linking with new foundation**

Two methods for linking reinforced concrete column of top structure with new foundation are put forward in Technical code for building monolithic moving engineering: broadening foundation plate and setting sliding earthquake-isolation support.

### **4.4 Construction**

Contents on construction of building monolithic moving engineering in Code consists of three parts: preparation for construction, key techniques of construction and construction checking standard.

#### **4.4.1 Preparation for construction**

#### **4.4.2 Key techniques**

The key points of construction of every sub-techniques were told in the Code.

#### **4.4.3 Real-time monitoring and construction standard of checking and accepting**

The Code specifies the limit-values of monitoring parameters as standard of checking and accepting of projects.

### **4.5 Special or complex moving technique**

In this section, some special technique measures on moving engineering with complex moving direction or special structure construction were advised in the Code.