

# Research on Quality Control and Management of Municipal Road Engineering

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**Abstract:** With the rapid development of China's economy, the construction scale of urban municipal infrastructure projects is getting bigger and bigger. This article mainly from the construction preparation stage quality control and management, construction project quality control and management and engineering entity quality control and management of the three stages of the municipal road engineering for the whole discussion.

**Keywords:** Municipal; Road; Engineering; Quality control; Project management

## 1. Introduction

Municipal road engineering is an important part of urban construction work, is to provide the basic engineering services for urban residents and enterprises and institutions of life and production, the quality of road construction, a direct impact on the economic development of the city, therefore, to strengthen the municipal infrastructure road engineering quality formation of each stage of quality control management, is to improve the actual needs of the engineering quality, engineering quality whole process, comprehensive control management is the core content.

## 2. Quality Control and Management of Construction Preparation Stage

### 2.1. Verification of relevant documents

According to the construction unit for municipal infrastructure road engineering quality control registration. To the engineering quality control agencies to submit the information below: planning permits, construction, and supervision of bid winning notice; construction, supervision contract and unit qualification certificate; the construction plan design document review opinions; the approval of road engineering construction drawings and design documents.

### 2.2. To the road construction survey, design, construction, supervision, inspection unit qualification verification

"Building law of the people's Republic of China", the State Council "construction engineering survey design management regulations" and "construction project quality management regulations" on the investigation, design

unit qualification has clear provisions. The task of survey and design of check survey, the type and level of the qualification certificate of the design units and the provisions of the applicable business scope and the proposed construction of the type, size, location, industry characteristics and requirements are consistent with the stipulated in the certificate validity period has expired, the quality inspection conclusion is qualified or not. Inspection survey, design units of the business license, the focus is valid and annual inspection. Examination of the qualification of the main technical personnel involved in the project, focusing on the effectiveness of the registration certificate. The level of the signature right is consistent with the project.

Construction units to focus on the verification of the qualification of the following aspects: Check whether the category and grade of the qualification certificate of the general contracting unit and the applicable scope of business and the type, size, location, industry characteristics and requirements of the proposed project are in conformity with the requirements of the project. Qualification certificate is valid, the annual inspection results are qualified. Check the general contracting unit of the business license, the focus is valid and annual inspection, sub contracting units of the qualifications are in compliance with the relevant provisions of the sub contract scope is consistent with the relevant provisions and contractual agreement. To participate in the project of the project manager and the main technical personnel to carry out the examination of the qualification, focusing on checking the validity of the registration certificate, the level is consistent with the project. The qualification certificate category and grade of supervision units and the applicable scope and the type, size, location, industry characteristics and requirements of the proposed work shall con-

form to the requirements. Qualification certificate is valid, the annual inspection results are qualified. Inspection and supervision units of the business to participate in the project of the general supervision engineer and professional supervision engineer qualification examination, focusing on the effectiveness of its registration certificate, professional and the course of the next phase matching.

### **3. Construction process quality control and management**

#### **3.1. The control and management of the quality behavior of the construction unit**

In accordance with the requirements of relevant laws and regulations of the state, the project will be contracted out to the construction unit holding the business license of the industry and Commerce and the construction quality of the road engineering construction qualification of the corresponding municipal infrastructure. According to the characteristics of municipal infrastructure and road engineering, equipped with the corresponding quality management personnel, according to state regulations, the implementation of engineering supervision system. Must be entrusted with the appropriate qualifications of the units to carry out supervision. And with the supervision of the unit signed a contract supervision, clear responsibilities and obligations of the two parties. The construction unit shall construction, engineering supervision, and other units to provide and municipal infrastructure road engineering construction related design drawings, documents, water and power supply original data, and that the supplied materials are authentic, accurate and complete. The procurement of materials, components and products, equipment and equipment supplied under the contract shall be subject to tender. The quality of materials, components, products and equipment purchased shall be in conformity with the requirements of the laws, regulations and technical standards for the design documents, contracts and national quality management of products. Do not express or imply the construction unit to use or purchase substandard materials, components and products, equipment.

#### **3.2. Control and management of the quality behavior of design units**

Design unit is the main road engineering design of municipal infrastructure, the quality of the merits of its quality directly related to the quality of municipal road engineering design. Design units shall implement the national municipal infrastructure road engineering design standards and other relevant engineering construction standards. Design according to the requirements of the contract. meanwhile

Should also be combined with China's national conditions and engineering practice. Actively adopt new tech-

nologies, new products, new materials, new equipment design units must be within the scope of the license to undertake the corresponding design business. Units engaged in road engineering design of municipal infrastructure shall obtain the qualification certificate of the corresponding grade according to law. And contract the road engineering design of municipal infrastructure in the scope of the license. The design unit shall be responsible for the quality of the design documents and drawings prepared by the organization. The design documents shall be in accordance with the relevant state laws, regulations, engineering design standards and contracts. The provisions of the establishment of design technology in charge of the examination system. And by the design unit of the technical person in charge of the review after the signature, stamped with the unit seal.

#### **3.3. The control and management of the quality behavior of construction units**

The quality control and management of municipal infrastructure in construction stage is the key point of quality control and management of engineering project. The units undertaking the construction of municipal infrastructure projects must obtain the qualification of the corresponding qualification grade according to law. And contract the project within the scope of the certificate permission. The construction unit shall be strictly in accordance with national municipal infrastructure road engineering technical standards and the construction drawing design review body authorized by municipal infrastructure road engineering design drawings and files, and construction contract for construction. Shall not arbitrarily change the engineering design and not cut corners, the construction units found municipal infrastructure road engineering design with the mistake, it shall put forward opinions and suggestions to the construction supervision unit or units to. In accordance with the contract by the construction unit responsible for the procurement of municipal engineering materials, components and products, equipment, its performance should be consistent with the requirements of design documents, the quality shall comply with the relevant national product quality management provisions of laws and regulations and technical standards.

### **4. Quality Control and Management of Engineering Construction Entity Quality Control and Management**

#### **4.1. Pile foundation engineering**

Pile foundation, key parts quality acceptance. See if the following information is complete. Technical indicators are standard. Mainly include: (1) pile foundation construction quality acceptance record. (2) pile foundation construction quality inspection report. (3) pile foundation

construction quality inspection record. (4) the test of pile bearing capacity, without a good condition of the equipment. Finally, the top into the project, to always do a good job in the record, with the transfer of the class. Jacking culvert should be carried out in the train when the train passing forbidden gap, jacking.

#### 4.2. Train traffic safety prevention

To reduce the jacking when on the back pressure can be slide and distribution of back beam even together, back to increase the resistance, common practice is to in the skateboard set a certain number of reinforced to withstand the tensile stress, and the reinforced deep back beam welding in anchorage. In order to ensure that the internal friction angle is greater than 30 degrees, the wall back fill should be compacted. In the back of the construction, the masonry must be strictly controlled to ensure the masonry strength; rail pile back rail shall enter into the design depth.

In order to prevent the top line traversing, at the top without overburden in large-span bridges and culverts, the steel industry and trade and the beam line reinforcement, because of jacking culvert top the friction between the surface and the line equipment and the way to prevent except in the beam pad plate, every 3 to 5 beams installed a set down the chain, such as line traversing the chain to be adjusted, also can in front of the jacking, set up a row of plate anchor pile, with wooden support beams to withstand, in field practice, in order to prevent line traversing, also available rail pile will be fixed longitudinal beams.

Skateboarding is the construction of temporary facilities, in order to avoid the bridge and Culvert Jacking Bridge and skateboard sliding, in the slide board construction usually under skid plate set several anti sliding cross-beam, after the completion of the slide board construction to and paving the lubricating layer and isolation layer on the top surface, lubrication layer general use machine oil, paraffin and talcum powder, the isolation layer with plastic film, linoleum, according to our experience, lubricating layer adopts spread out paraffin and talcum powder,

5mm thickness of insulating layer with plastic film effect is better.

#### 4.3. Personal safety prevention

All personnel shall not be in orbit walk, construction personnel walking on the shoulder, to pay special attention to carried tools do not invade the railway construction clearance, across the railway should stop lookout, confirm the ends were no through train can move forward. Should not allow the masses to enter the track, 0.5m at the edge of the foundation pit to set the fence, hanging tips, warning signs.

### 5. Conclusions

Construction project cost control is in the process of the formation of the project cost. Of engineering construction in the consumption of all kinds of resources and cost, guidance, supervision, regulation and restriction, timely and correct the deviation may occur, put the cost of the actual amount of control within the scope of cost plan, to ensure the implementation of target cost reduction. The purpose is to use human, material and financial resources rationally. Reduce costs, increase revenue, improve the management of the project cost management level, in order to create a better economic efficiency.

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