

Discussion on Quality Control and Management of Municipal Engineering Road Construction

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Keywords: Municipal engineering, Road construction, Quality control, Quality management.

Abstract: The level of construction quality of municipal road works has an important significance and role in the construction and management of urban infrastructure and the speed of economic development. In view of the quality problems existing in the construction of road works, relevant government departments should improve the quality management system, improve the technical level and construction quality, strengthen supervision and management, strictly control the quality of the project, and carry out the construction of municipal road engineering projects in a scientific and orderly manner. In order to promote the smooth progress of urban infrastructure construction and the steady and rapid development of the social economy, this paper discusses the quality control and management of municipal engineering road construction.

1. Introduction

The city appearance of a city is directly related to the life of the citizens. The smooth road in life and the fast traffic are a window of the city. He can directly reflect the management level of the city. The image of the government can depend on the quality of the actual municipal road works. The urban municipal road project has high quality requirements, high frequency of use of municipal public facilities, long and narrow construction site, tight construction period, staggered underground pipelines and complicated working surfaces. If the construction is blind, it will have a bad impact on society and serious economic losses [1]. In order to prevent engineering quality problems and ensure the implementation of municipal road construction quality in municipal infrastructure road engineering, we must strengthen the control and management of municipal engineering road construction quality.

2. Characteristics of municipal engineering road construction

2.1 The construction period is tight.

Municipal road construction is generally funded by the government. In order not to have too much impact on the daily life of the city, the construction period requirements of the municipal road project are relatively tight, and the project can only be advanced and cannot be postponed. In addition, the municipal engineering has strong practicability, so the preparation period is short and the requirements are strict [2]. Therefore, when the construction unit performs the construction of the municipal road construction, it is often affected by the schedule of the construction period and the schedule of the inverted construction period.

2.2 The construction site is narrow.

Urban road works are carried out in the streets and alleys of the city. The site is narrow. If the old houses need to be demolished, the amount of work will be large, thus affecting the environment and traffic around the road construction route. This has had an important impact on the lives and production of the citizens, and has also affected the schedule and control of road works, making it difficult to manage and control [1].

2.3 The underground pipeline is complicated.

During the construction of urban road projects, the location of pipelines such as heating, water

supply, gas, electricity, and telecommunications may be unclear. If the construction is carried out blindly, there may be a situation of cutting the pipeline, which will bring great losses to the municipal engineering, and will also have a negative impact on the smooth development of the road engineering, seriously affecting the cost target and progress target of the municipal road engineering [2].

2.4 Large investment in raw materials.

In the process of urban road construction, a large amount of raw materials are needed, and the proportion of raw materials in the construction cost has reached more than half. Therefore, in the process of urban road construction, how to choose raw materials, how to carry out engineering supervision, directly affects the quality of the project [2]. In addition, how to arrange the construction site, the distance of the transportation distance is an important basis for selecting materials, and all need to be strengthened.

2.5 Geological conditions have a great impact.

In the construction process of urban road engineering, it is easy to be affected by the geological conditions of the site. If the construction is carried out without first grasping the geological conditions, it will inevitably bring negative consequences to the project [3]. For example, in urban road projects, rainwater and sewage drainage projects will encounter problems of high groundwater level and poor soil quality. It is necessary to actively take measures for well points and deep wells. Only when the water level is lowered to meet the construction conditions can the trench be opened.

3. Common quality problems in municipal engineering road construction

3.1 Municipal engineering road construction design drawings.

The design drawings of the municipal engineering road construction can provide important reference for the formulation of the construction plan and the planning of the construction process. Therefore, the drawing design work in the road construction section of the municipal engineering requires not only the internal negotiation of the designer team, but also the transfer of the municipal engineering road. All departments in the construction and management departments participate in communication and management. However, in the actual operation stage, the design work of municipal engineering road construction drawings requires more manpower and material resources to be mobilized, and some municipal engineering road construction team staff pay less attention to the formulation of construction plans. Most construction teams lacked a clear understanding of the project supervision work and adopted the method of external management personnel, which led to poor effectiveness of supervision and management [3]. After the emergence of management problems, it was impossible to solve the problem from the root cause .

3.2 Subgrade settlement problem of municipal engineering road construction.

Subgrade settlement and landslide problems are common problems in the construction of municipal engineering roads. Such problems need to be paid attention to by construction team staff. In the actual construction and construction process, the relevant fields of staff need to focus on the roadbed and compaction issues, and reduce the frequency of roadbed problems in municipal engineering road construction [3]. However, it can be concluded from the analysis of the construction and management of the actual municipal engineering road construction that the municipal engineering road construction team in some parts of the country has experienced excessive compaction or uneven roadbed in different degrees during the construction of the project. Other issues. Moreover, in the process of municipal engineering road construction, there will be a number of different links, and the management ability of the engineering management team's staff comprehensive and overall requirements is relatively high. For example, during the actual construction process, the staff in the relevant fields failed to make reasonable planning and design for the connection position of the road and bridge, which caused the sinking problem of the connection position to be very serious.

3.3 Municipal engineering road construction inspection well quality problems.

Affected by the natural environment and the causes of man-made construction operations, in the stage of construction and management of municipal engineering roads, the inspection wells of urban road pavements will also have quality problems to varying degrees. During the construction process, the construction personnel will set the inspection well at a fixed distance. However, in the actual construction and management stage, the staff in the relevant fields lacked a clear overall awareness, and the construction level of construction technicians was low [4]. In addition, the quality supervision and management of municipal engineering road construction is not in place, which makes it difficult to timely and effectively deal with the quality of inspection wells in municipal road construction projects. In the long-term use process, there may be problems such as uneven road surface settlement and poor drainage.

4. Main factors affecting the quality of municipal road works

4.1 Engineering design constraints on project quality.

Engineering design is the premise of engineering construction. Without high quality design, it is impossible to have high quality engineering. A project is led by an experienced structural engineer who can select the right design concept to suit the local conditions and make a quality design [4]. In addition, the measurement data used in the design is inaccurate, the structural scheme is unreasonable, and there are obvious defects, which inevitably leave irreparable quality hazards.

4.2 Construction organization design and construction process affect project quality.

The construction unit shall prepare a complete construction organization design before the construction of the municipal road project and submit it to the supervision unit for review. It is also necessary to select the appropriate construction plan and construction process according to the actual situation of the project [4]. In addition, municipal roads are often affected by factors such as land acquisition and demolition. The construction unit should also make appropriate adjustments according to the actual changes in the construction to adapt the dynamic construction plan of the changing municipal road construction.

4.3 The impact of project participants on the quality of the project.

On-site construction personnel and supervisors have a great influence on the final formation of the project quality. As a construction technician, be familiar with the engineering situation, design intent and requirements, construction plan and construction schedule [5]. At the same time, the construction personnel should also find out the problems in the construction process in a timely manner, and actively report the situation to the supervision unit and the design unit to ensure the smooth progress of the entire construction process.

4.4 Determine the impact of reasonable project cost on project quality.

Project bidding has been widely promoted in the field of construction engineering. Municipal road projects usually use open bidding to select construction enterprises. However, due to the evaluation method and the enthusiasm of the construction unit for low quotation, the bid price is low, and some are even low. Reasonable cost. In the actual construction process, in order to be profitable, the construction company will often lower the quality standards and cut corners [5]. Therefore, the construction unit should formulate reasonable engineering price limits and select reasonable evaluation methods to effectively improve the quality of the project.

4.5 The impact of the choice of engineering materials on the quality of the project.

Municipal road engineering materials are the material basis of engineering construction. Whether the material selection and composition are reasonable, whether the quality is qualified, and whether transportation and storage are appropriate, etc., directly affect the quality and service life of the engineering entity.

5. Improvement measures for quality control and management of municipal engineering road construction

5.1 The construction plan of the municipal road should be designed reasonably.

Generally speaking, the municipal road project has a great interference to the daily life of the city. When designing the municipal road construction plan, it is necessary to comprehensively consider various aspects, avoiding the large-scale adjustment of the route and the conflict of pipeline layout during the construction process, and the road is just completed. Just break the road and other phenomena [6]. Because the design itself is to be standardized, the construction cycle must be strictly designed, and the layout and cross-over of the pipelines such as water supply and drainage, heat, electricity, gas, and communication should be considered comprehensively. It is stipulated that the construction period in the actual project can only be pushed back in advance. In order to reduce the interference during design, it is necessary to comprehensively consider various aspects to implement the monitoring and management of municipal road construction. In addition, the construction plan for designing municipal roads must comply with the requirements of standard specifications, and the structural plans should be reasonable and accurate.

5.2 Measurement control.

Because the municipal road engineering is characterized by linear layout, the plane control points are usually laid out in the form of composite conductors. Because the buildings and structures are dense, the underground pipelines are relatively complex, and the positioning accuracy of the drainage pipelines is relatively high, so it is necessary to improve its measurement accuracy to avoid the phenomenon that the matching pipeline meets or rubs the edge [6]. The elevation control of the municipal road project is roughly arranged according to the route as a compound level route. The layout of the standard point must have two permanent levels and a temporary level. It is best to set around the starting point, the end point and the key projects that need to be observed for a long time. The permanent level point should be obvious and firm, and it should be very convenient to use. The accuracy of the elevation measurement should not be lower than the third grade, and the measurement and calculation method specified by the relevant regulations should be used for retesting and visa. The measurement control must be according to the provisions of the second-level review procedure, that is, after the construction unit has staked out and verified accurately, it is reported to the supervision department for review. The error value must be controlled within the allowable error value, and the measurement protection should be implemented after the task is completed in time [6]. The supervisor shall sign for the inspection, record and review.

5.3 Raw material quality control.

Under the economic conditions of the market, the sales of various materials are quite numerous, and it is easy to mislead the procurement personnel. Therefore, the procurement personnel must strictly control the materials, timely understand the relevant information of the market, select the supplier, and control the materials in time. The quality, price, and supplier's supply status, select qualified enterprises with national production license, have certain technical inspection, strong capital, high social credibility of the manufacturers, all raw materials, finished products, semi-finished products, structural parts and the equipment must have the factory quality certificate, the factory inspection (test) inspection report and the re-test report, and indicate the name, model, quantity, arrival date, recipient's signature and original storage point of the project, and the materials arrive at the construction [7]. Before the scene, it must be sampled and inspected according to the current national standards. It should be submitted to the testing and testing department with relevant qualifications for re-testing. The results of the re-test can only be used after passing the test.

5.4 Filling roadbed construction quality control.

Before the construction of the filling subgrade, it is necessary to carry out the filling method to test the road section. The type of compaction equipment, the best combination form, the number of rolling times, the rolling speed, the procedure, and the thickness of the looseness of each layer of packing

should be recorded during the test [6]. The water content of the material, etc., the technical parameters obtained through the test can be the basis for the construction of the filler. Before the filling of the roadbed, all the weeds, crops and surface humus on the original ground should be removed, leveled with a grader, and the compaction work before backfilling should be carried out by the road roller. If the water content of the original ground and topsoil is large, it is necessary to carry out the work of loosening, breaking, drying, etc., and directly rolling through the heavy-duty vibratory roller under the condition of achieving the optimal water content or tolerance [7]. The thickness of the loose pavement should be strictly controlled. The quality problem of the embankment stratified filling is the key to ensure the quality of the entire subgrade. Therefore, the thickness of each layer of the loose paving should be compacted after passing the inspection, and the roller is in progress. The roadbed filling pressure is in real time, and it should be operated according to the first light and heavy, the first static pressure and the vibration, the first two sides, the middle, the first low and the high.

5.5 Tracking inspection management.

We know that the tracking and inspection management of engineering projects can find many hidden quality problems in the construction of road engineering. For engineering quality management personnel, it is necessary to do the worksite, be good at observation, carefully record, and eliminate the quality accidents in the bud as much as possible to avoid economic losses. Construction quality management personnel should do a good job in the supervision and management of the road construction site, as far as possible to ensure that all construction personnel can strictly follow the relevant specifications to ensure that the construction materials and construction equipment can meet the construction requirements [7]. As the construction quality manager, the construction personnel should be accurately demonstrated at the construction site. The quality problems existing in the construction process should be dealt with in the first time instead of pushing the responsibility to the construction personnel. Only after doing the tracking and inspection management work can we ensure the actual results of the municipal road engineering quality management work.

6. Summary

The technical difficulty of the actual municipal engineering roadbed construction is not great, but the construction site is small, the traffic flow is large, and the process is complicated, which brings resistance to the construction. Therefore, we should put the construction-related specifications and procedures in the first place of learning, and then strictly control the various processes in the construction according to the regulations, so that the management of the system and the whole process of control will improve the quality of municipal road construction for the sake of progress.

References

- [1] R.B. Li, Talking about the Importance of Municipal Road Construction Quality Management, Knowledge Economy, 2016, vol.14, pp.65-68.
- [2] W.J. Li, Analysis of municipal road construction quality management issues, China New Technology and New Products, 2014, vol.18, pp.113-116.
- [3] W.T. Yu and B.T. Hao, On the difficulties and measures of municipal road construction quality control, Heilongjiang Science and Technology Information, 2013, vol.25, pp.42-45.
- [4] J.G. Zhao and J.Sh. Gu, Discussion on quality control and management of municipal engineering road construction, Henan Science and Technology, 2014, vol. 9, pp.19-23.
- [5] L.Y. Chao and K.B. Wu, Control Measures for Construction Quality of Municipal Road Engineering, Enterprise Herald, 2018, vol.5, pp.55-57.
- [6] G.L. Zhu, Quality Control and Management of Municipal Road Construction, Science and Technology Information Development and Economy, 2010, vol.21, pp.34-37.
- [7] W.Q. Huang, Quality Control and Management in Construction Process, Building Materials and Decoration, 2018, vol.2, pp.76-78.