

Application Strategy of Dynamic Management Mode in Municipal Road Survey and Design Management

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Abstract: With the continuous improvement of urbanization level, the construction of municipal roads has received more attention. The rational application of dynamic management mode to the survey and design management of municipal roads is conducive to improve the survey and design management level of municipal roads and further realizing the optimization of the construction effect of municipal roads. In this paper, the various factors which are affecting the management of municipal road survey and design as well the principles of municipal road design were discussed. Further, the recommendation of the application strategy of dynamic management mode in municipal road survey and design management was proposed in this paper.

Keywords: Dynamic management pattern; Municipal administration path; Survey and design management

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1. Introduction

With the continuous improvement of the construction level of municipal roads, the relevant survey and design work of the municipal roads has gradually changed. It is essential to fully consider the environmental factors which may influence the construction of municipal roads in order to improve the overall construction of municipal roads, further it is also conducive to the construction of municipal roads to meet the needs of urban development. Therefore, it is important to improve the survey and design work effectively and the corresponding management of the municipal road construction. Additionally, it is also essential to build a dynamic and whole process management form into a dynamic management mode by applying a flexible survey and design management methods. Give full play to the advantages of management work, and effectively improve the effect of the design management work of municipal road inspectors^[1]. However, in practice, there are still many deficiencies in the survey and design management, which may easily affect the actual construction of municipal roads. Therefore, it is essential to actively optimize the application strategy of dynamic management mode in the survey and design management of municipal roads.

2. Influencing factors of survey, design, and management of municipal roads

2.1. Preliminary land use

With the rapid development of the contemporary economy, and the increasing level of urbanization, therefore land resources are becoming more tense under the background of the continuous expansion of

urban construction scope. The planning of municipal roads is prone to phenomenon of overall and local disharmony; therefore, it is essential to consider the overall situation of the municipal road project itself and the surrounding areas before starting the construction. For example, if the project is surrounded by farmland, therefore the management departments which are involved in the municipal roads construction and farmland are different, thereby the starting points for project consideration is also different. In order to coordinate the work in different aspects, to improve the construction effect of municipal roads, and to avoid the impact on the surrounding environment, it is important to understand the surrounding of the construction scope, and conduct a detailed preliminary planning to avoid conflicts between the construction of municipal roads with the surrounding environment.

2.2. Budgetary estimate omission

In the process of municipal road construction, if a detailed geological survey is not performed initially, it is difficult to obtain survey data with good accuracy which may affect the subsequent design work, and subsequently affect the implementation effect of subgrade treatment and pit support. Additionally, during the construction process, frequent design changes may occur, which may lead to the decline in the construction efficiency, leading to serious effect on the overall construction level of municipal road construction. Therefore, it is necessary to strengthen the survey and design management, effectively improve the accuracy of the survey data, avoid missing calculations and other adverse conditions, thereby effectively improve the comprehensive benefits of municipal road construction [2].

2.3. Insufficient design rationality

Before starting the formal design work, if designers unable to fully understand the overall situation of the municipal road project site, there may be insufficient rationality in the design scheme. Therefore, the content of the construction drawings may be inconsistent with the actual situation, which will inevitably affect the construction quality and efficiency, thereby it is necessary to make a reasonable assessment on all the aspects of the municipal road data before initiating the formal design work. Based on this, more effective design work should be conducted to avoid repeated adverse conditions, such as design changes during subsequent construction, which may reduce the probability of potential safety hazards, subsequently improve the construction effect.

3. Design principles of municipal roads

3.1. Ensure normal traffic

When carrying out the municipal road design work, field investigation of the construction site based on the actual situation should be performed first, because the most basic requirement for carrying out the road design work is to ensure the convenience of traffic, to realize more convenient, full communication, and cooperation between cities and regions, and gradually realize the synchronous economic growth of different regions. For example, the lack of traffic convenience in some mountain cities, limiting, the improvement of the local economic level, as it is not conducive for travelling and economic exchanges with neighboring cities. The scientific and reasonable construction of municipal roads can effectively break this limitation in mountain cities, subsequently, improve the convenience of local people's travelling and transportation, as well as gradually realize the economic exchanges with many places, thereby improve the local economic level.

3.2. Reflect landscape characteristics

The construction of municipal roads is not only a public service, but also an important part of urban landscape construction, where municipal roads play an important role in reflecting the overall landscape elements of the city, therefore it is essential to conduct a reasonable and standardized design for municipal roads in order to improve the overall construction effect of the urban environment. Therefore, when carrying out the urban landscape design, the responsible staff should take the actual situation as the basis, fully consider the construction of municipal roads, and the elements that should be included in the design planning including the local customs, people's preferences, and the overall style of the urban landscape, to present the urban landscape as an overall green and harmonious appearance as far as possible, and realize the harmonious coexistence between people and nature [3].

3.3. Integrated into municipal infrastructure

Contemporary urban construction in China has made obvious progress, and if it can be fully combined with the development demands during that time, it can reflect more significance practical. Therefore, relevant designers should be actively changing the traditional design thinking of municipal roads, and fully integrate the design of municipal roads with municipal infrastructure, to improve the coordination between all aspects of municipal facilities. Additionally, it is also conducive to conduct a unified maintenance work, to save the cost and time.

4. Application strategy of dynamic management mode in municipal road survey and design management

4.1. Dynamic management of municipal road engineering survey and design

For the construction of municipal roads, the survey and design of the project is an important prerequisite, thereby the survey and design unit are required to participate in the construction management throughout the project. When conducting survey management for municipal road projects, focus should be given to the following aspects; (1) The scope of the investigation should be reasonably expanded; (2) The professional level of staff and safety management should be improved; (3) Based on the field investigation results and survey data, the engineering design unit should adopt the dynamic management mode to implement the optimal design for the work package that can be decomposed; (4) From the perspective of the owner, focus should be given to the professional skill level of the designers, and the design connection effect should be improved in the separate work packages; (5) The design scheme of the proposed project should be optimized and the construction cost should be effectively controlled.

4.2. Project bidding and contract control

4.2.1. Bidding management

When performing dynamic management for the municipal road bidding, the survey and the design unit should be entrusted to conduct comprehensive and detailed survey jointly for the road engineering project, and implement the design work based on the survey results. It should be noted that the work effect may play an important role in the follow-up construction's effect, therefore the human resource management of the relevant work should be strengthened to promote the quality and efficiency of the survey work, which is more conducive to the improvement of the level of follow-up design work [4].

4.2.2. Contract management

The project construction personnel inevitably prepare a contract, and the construction progress should be carefully reviewed according to the contents of the contract. The management staff also required to fully control the construction cost, quality, and duration according to the contract. In addition, it is important to

comprehensively consider various factors which may cause adverse effects on the construction; therefore, the supervision of the whole construction process should be strengthened ^[5]. During the actual construction process, with the continuous progress of construction the intensity of contract management will be inevitably increase, therefore requires a dynamic supervision of the implementation of the contract.

4.3. Improve management level by means of design

In order to improve the dynamic management level in the survey, design, and management of municipal roads, it is important for the relevant staff to comprehensively understand the survey and design work content based on the overall actual situation of the project, master the data scheme, timely identify the existing deficiencies, and make timely adjustments, to provide guarantees for the improvement of the construction quality ^[6]. Next, the municipal roads shall be taken as a supervision object, where the survey data shall be comprehensively sorted, meanwhile the survey results, survey reports, relevant design contents, management reports, and other aspects in the area should be included in the data files, therefore a reasonable guidance should be given to the construction work, to effectively maintain the economic benefits, environmental protection benefits, and other benefits in the process of municipal road construction ^[7].

4.4. Strengthening the quality management of municipal road construction

During the design and construction of municipal road projects, a dynamic management should be reasonably implemented, and the corresponding risk management, control system, and evaluation system should be built based on this basis to further improve the information construction ^[8]. Generally, there are large number of technical measures and means that can be applied for a quality inspection during the construction process, such as mechanical equipment and a number of materials that need to be applied during the construction process, which may have an important impact on the construction quality. Therefore, the control should be strengthened to avoid the factors which may affect the construction quality from the source, which is more conducive to improve the overall effect of the supervision. In addition, during the construction process, construction information collection can also be conducted on site to accurately predict various problems that may occur in the subsequent construction process, and formulate targeted emergency plans in advance ^[9].

In this construction process, it is essential to strengthen the control of key construction links, such as the basis, foundation, pavement, tunnel and rainwater, and sewage pipes of the municipal roads. In addition, quality control must be fully implemented to improve the construction quality, and to avoid the overall impact of the municipal road project caused by quality problems. Further, the construction quality control system should be established as far as possible, especially the complexity of the construction process and the difficult parts of the management work should be fully considered ^[10]. During technical management, the construction quality and technical management mechanism should be established. Based on the actual characteristics of municipal roads and in combination with the construction requirements, the scientific of construction technology control should be improved as much as possible to ensure the reasonable implementation of various construction technologies.

If it is required to connect the new and old roads during the construction process, attention must be given to the optimization of the connection process, and reasonably control the application of construction technology, to improve the overall quality of municipal roads construction ^[11].

4.5. Safety management

In contemporary China, more attention has been given for the construction of municipal roads, and under the background of the continuous improvement of urbanization level, the construction scale of urban areas continues to expand, further the urban branches have been placed in many communities ^[12]. Based on this,

in the process of dynamic management attention should be given to the implementation of safety management. Therefore, a practical safety management mechanism should be developed at first, and comprehensive safety management should be performed for the municipal road construction site in combination with the relevant laws and regulations. The relevant management personnel are required to have a strong sense of responsibility, be able to clearly define their own work content, performed various works in a strict attitude accordance with the rules and regulations, and properly apply laws and regulations to deal with the existing problems in the construction process when necessary, to effectively improve the safety of municipal road construction, further to ensure the safety of construction personnel and the surrounding people during the construction process ^[13].

4.6. Management measures at acceptance stage

After the municipal road construction is completed and enters the completion acceptance stage, attention should be given to the completion acceptance and related project evaluation: (1) Completion acceptance and settlement: A comprehensive inspection should be conducted to confirm the construction conditions fully meet the project approval requirements by using the data indicators to confirm whether the construction period and the cost of municipal roads construction meet the expected objectives ^[14]; (2) Project evaluation: According to the actual characteristics of the municipal roads, the performance evaluation indicators and evaluation system should be further improved. Generally, it should include three indicators which are the cost, quality, and the construction period; (3) System construction: Various information data regarding the municipal road construction should be collected, and the project evaluation standard should be established by using mathematical and management theory, to conduct a dynamic management evaluation of the project ^[15].

5. Conclusion

For the construction of municipal roads, it is very important to carry out scientific and reasonable survey and design management. If a dynamic management mode can be fully applied, it will help to improve the construction quality, relieve the local traffic pressure more effectively, and facilitate the daily travel of the people. In fact, from the beginning of project bidding to the final acceptance stage, a dynamic management mode should give full play to its own role, therefore it is necessary to conduct more in-depth research on it, to promote the application effect of the dynamic management mode in the survey, design, and management of the municipal roads, and lastly realize the improvement of the overall application effect of municipal roads.

Disclosure statement

The author declares no conflict of interest.

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