

Study on construction technology and quality control of municipal drainage engineering

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Abstract: Municipal drainage works is a basic project in the process of urban construction. If there is a lack of drainage engineering in municipal engineering, it will affect the normal life of people. In other words, the quality of municipal drainage works directly relates to the development of urban processes and the quality of life of urban residents. Therefore, it is very important to ensure the quality of the municipal drainage project. This article briefly discusses the construction technology and quality control of municipal drainage engineering. Seeking for critical technologies in the construction of municipal drainage projects to provide a strong guarantee for the development of cities and people's lives.

Keywords: Municipal engineering; drainage construction; key technologies; quality control

1. Overview of municipal drainage works

Before we get to know the municipal drainage project, we should first define the meaning of municipal engineering. The so-called municipal engineering refers to a type of engineering for the construction of municipal facilities, and the municipal facilities what we usually say are simply a number of buildings and equipment used to provide paid or unpaid services or products for the surrounding residents in the process of urban and rural development planning and construction. The construction of political engineering is usually supervised by the government and belongs to the infrastructure built by our country to serve the masses. Municipal drainage engineering is an important part of municipal engineering. Municipal works include drainage works in towns, which are mainly responsible for dealing with polluting and malignant water bodies generated during the development of various industries. Specifically, the waste water is collected first and then transported to the corresponding site for purification treatment. Municipal drainage engineering has a good advancing role in building a resource-saving and environment-friendly society^[1]. If the development of the town is separated from the municipal drainage project, the sewage will remain in the town for a long time. Once the wrong sewage treatment is carried out, it will have a very bad influence on the urban environment.

In addition, municipal drainage works are not only constructed for sewage treatment, but also involve the treatment of urban water. In recent years, the process of urbanization in China has been accelerated. In order to improve the quality of life of urban residents, various public facilities are gradually perfected. Roads and buildings have been gradually covered by reinforced concrete. This is the embodiment of urban development and progress, but at the same time, such a development also brings a series of malpractices. One of them is the decline of urban drainage capacity. If man-made drainage is not carried out through municipal drainage works, there will be a problem of water accumulation, which will adversely affect the life of urban residents. The main principle of municipal drainage works is to achieve

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the purpose of treating urban sewage and rainwater by carrying out the construction of infrastructure such as canal system, pumping station and treatment plant.

Specifically, the basic tasks of municipal drainage engineering include the following points: First, the wastewater from the development of urban enterprises is treated and purified. Second, protect the ecological environment and avoid urban pollution. Third, create a green and healthy living environment for urban residents, and ensure the orderly progress of urban development. The municipal drainage works include the following specific aspects: The first is to deal with the discharge of domestic sewage produced by urban residents. Secondly, we should deal with rainwater in urban buildings. Finally, the residential district is drained.

2. The preparation stage of municipal drainage works

As we all know, no matter what kind of project is built, we need to prepare for the project ahead of schedule, and the municipal drainage works are also like this.

2.1 Engineering drawing design

Usually, engineering construction needs to be carried out according to engineering design drawings, and the accuracy of drawings is directly related to the efficiency of engineering construction. Therefore, before the design of engineering drawings, we must come to the construction site for reconnaissance. For the construction of municipal drainage works, it is necessary to fully understand the stratigraphic situation and groundwater situation before the design. According to the different requirements of different projects, the design is carried out to determine the dimension, location and type of the construction process.

2.2 Familiar with drawing design

No matter what kind of engineering construction, engineers need to know the meaning of design drawings. This puts forward a series of requirements for designers and constructors at the same time. The designer must accurately mark the data in the design drawing. The construction personnel must strengthen the communication with the designer, be familiar with the design drawing, understand the designer's intention, and make appropriate treatment according to the topography of the construction site. If the adjustment is needed, the construction personnel should not make their own opinions, but should communicate with the designer.

2.3 Strictly inspect building materials and equipment

Another important aspect in the preparation stage of municipal engineering construction is the inspection and purchase of building materials. Relevant construction personnel must be arranged to carry out the inspection of construction materials and equipment. The purchase of construction materials must be strictly and clearly defined^[2], and every engineering material entering the construction site must be strictly required. When purchasing quality materials such as related certificates and mechanical test reports, other building materials are not allowed to enter the construction site. In addition, the construction equipment should be checked in advance, so that the construction equipment can be in a state of waiting.

2.4 Measuring and discharging operation

The accuracy of this step is crucial, and if errors occur during the measurement of the line, the position of the pipe will naturally change. This requires that the relevant construction units must strictly follow the relevant measurement specifications in the preparatory stage of the construction stage, and carry out repeated protection for the exchange piles. If there is a building block in the process, the construction unit can make design changes. Besides, it can not be changed without authorization.

3. Construction operation of municipal drainage project

3.1 Trench excavation and support

Prior to the excavation of the trench, professional personnel shall monitor the construction site. The purpose of monitoring is to find out if underground pipelines, cables or other structures are installed underground in the construction site. After the investigation results are obtained, the relevant treatment plan is formulated and the effective scheme is submitted to the owner and the management unit for final confirmation. According to the confirmation results, relevant protection and migration measures are taken, and the project can be carried out in an orderly manner after the official excavation work. According to the relevant regulations, gravel cushion should be used for laying, flattening and compacting of groove width. When the paving part is over, it is also necessary to put a layer of concrete over the already laid gravel cushion. The quality of concrete determines the quality of the construction of the project to a certain extent. Therefore, the relevant professional personnel must be carried out when the ratio of concrete is carried out. In order to fully meet the engineering needs, small batch trial proportions can be carried out in advance. In addition, for the concrete foundation pouring, in order to ensure the standardization of the operation, the steel template vertical form should be used as far as possible. In this process, it should be noted that when the pipeline foundation is first poured, it should be as horizontal as possible, and then the pipe base should be poured. After using a concrete vibrator for insert-type tapping, a flat-plate vibrator is used to treat the surface to ensure the smoothness of the surface. In addition, during the period after the foundation casting is completed, it must be fully guaranteed that it is not affected by the water body and properly maintained.

3.2 Pipeline installation

3.2.1 Selection and inspection of building materials

When building materials come into play, the quality inspection of building materials must be carried out by professionals in the construction unit. In some cases, it is difficult to determine the quality of building materials only through the inspection of the appearance of building materials. In this case, it is necessary to carry out internal and external pressure tests. In addition, the pipes required for construction must pass the professional batch inspection by the construction unit before they can be put into use after passing the inspection.

3.2.2 Lower pipe

The lower pipe needs to be qualified after the bedding level is accepted. In the construction process of municipal drainage works, the sludge, sundries and water covered in the foundation surface must be cleaned before the discharge of the pipes, so as to ensure the cleanliness of the surface. Recheck the center position and elevation of the high elevation sample, and the arrangement must conform to the bottom up arrangement. In the lower pipe, manual and automobile should be used to cooperate with each other, and the crane will be automatically placed two meters from the edge of the groove, so that it can not be too close to the edge of the groove. This is because the crane has a certain weight, which may cause the collapse of the trench wall, and the stability of the groove slope will also decrease. In the process of laying the pipe, the pipe section is hoisted. In this process, it is necessary to ensure the quality of the pipe section, and then manually pull the hoist to lift the pipe to the interface of the pipe^[3]. Then place it, by adjusting the elevation and axis of the pipe section to smooth the pipe. In order to avoid other problems, it can be used in the construction of special sling, and the wire rope can not be used for lifting. In addition, during the whole process of hoisting, a special person must be arranged to conduct the command. It is also necessary to avoid the damage caused by the collision of the perturbation basement pipe, so as to adjust the center of gravity as much as possible when the pipe is bunched, and handle with care.

3.2.3 Installation tube method

First of all, the pouring must be carried out after the inspection of the concrete concrete is qualified. Before the concrete is completely solidified, it is not allowed to bubble water, and proper maintenance is required.

Second, for leveling base concrete height must be strictly controlled, flat basic concrete can slightly lower than the elevation, but it must not be higher than the elevation.

Thirdly, the lower pipe operation must be carried out on the basis of the strength of the flat concrete. The gap between the tubes should also be guaranteed at 10mm.

Fourthly, before carrying out the concrete of the pipe base, the pinky should be cleaned thoroughly.

Fifth, the flat base and the pipe intersection part, must use the same strength concrete.

Sixth, in order to prevent the pipes from being deviated when the concrete pipe piles are poured, the two volumes must be processed at the same time.

3.2.4 Interface method

① The specific operation of the interface section

First, the chisel should be cleaned, then the concrete part of the building. The steel wire net is inserted into the inner mortar of the pipe seat, and the first layer of cement mortar is applied to the upper half of the inner seam supporting bracket, and then second layers of cement mortar are applied in accordance with the steel wire mesh.

② Operation points

The thickness of the first layer of mortar should be controlled at about 15mm. Apply after the surface slightly solidified, the wire socket inside the pocket, make it fit closely with the bottom mortar. When the first layer of cement mortar has been solidified, second layers of cement mortar will be applied. When the second layer cement mortar is solidified, it should be compacted in time. After the two items have been processed, the surface is covered with flat soft materials, and the sprinkler maintenance will be carried out after a period of time.

4. Completion acceptance stage

4.1 Inspection before the closed water test

First of all, it is necessary to check the pipeline and confirm the appearance of the well to meet the relevant quality standard. Secondly, the pipeline should be cleaned regularly to ensure there is no water in the pipe. In addition, all the reserved holes must be closed, but the reserved access pipes can not be processed.

4.2 Determination of closed water test standard

Water immersion time must be kept above one day, when the water head meets the requirements, it can be officially timed. Regularly detect the water seepage of pipeline, and keep the test head in a constant range by replenishing water to the test section. When observing water seepage, the time should be controlled at least 30min^[4].

In addition, the backfill of the team trench must remove excess waste from the trench in time, including dust, silt, water and so on, starting from both sides of the pipeline to carry out balanced construction. The quality of the backfill must be fully guaranteed, which cannot contain broken bricks, stones, hard soil and concrete fragments.

5. Conclusion

In summary, municipal drainage works are built on the basis of serving urban residents. In other words, municipal drainage works directly related to the development of towns. As people's demand for drainage works has been strengthened, it has also put forward better requirements for drainage engineering construction technology and quality control. The relevant construction units must continue to study the relevant construction technology to the maximum extent to guarantee the construction quality of municipal engineering and provide a guarantee for the development of urban residents.

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