

# Analysis of Construction Quality Problems of Indoor Drainage Installation

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**Abstract:** If the indoor drainage pipe is blocked and the drainage is not smooth, sewage and pollutants will enter the room and endanger human health. If the pipeline is blocked as a result, a certain intensity of water pressure may be brought, which may cause pipeline leakage. In this article, we will analyze and explain the quality problems that often occur during the construction process due to the blockage of the internal drainage pipe, and propose appropriate methods and solutions to improve the quality of the project.

**Key words:** Indoor drainage installation; Construction quality; Problem analysis

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## 1 Introduction

Interior design is very important because it is an important means to reflect the evolution of building logos based on safety and stability. Due to the rapid economic development, the people's living standards have improved, there is a certain economic foundation that can improve the quality of life, and improvement measures have been formulated. Drain pipes are very important in interior design, but there are still many things to consider during the installation process. The installation quality of the drainage pipe greatly affects the quality of the building. This article analyzes the current situation of internal sewage pipes, investigates specific problems, and puts forward suggestions and countermeasures.

## 2 Installation status of indoor drainage pipes

In residential areas and public buildings, we will improve the quality of water and wastewater to provide a comfortable environment to meet specific residential needs. Stakeholders will conduct research and improvement according to actual needs, and lay a concrete practical foundation for future construction development. In order to ensure the quality of the practice, it must be applied in accordance with certain standards during the installation process. Due to the rapid economic development and the acceleration of urbanization, the quality of urban infrastructure construction is also very eye-catching. As an important part of infrastructure construction, indoor drainage pipes put forward special requirements for its installation quality. At the same time, this will also lay the foundation for the construction of building drainage systems. With the improvement of people's living standards, people's awareness of improving the quality of life is also increasing, and the demand for indoor living environment is also increasing. In related research, we will continue to improve certain technologies. As an important part of interior decoration, internal sewers not only increase the comfort and beauty of the entire building, but also improve people's aesthetic and comfort requirements in life and the development of other structures, which is conducive to the development of the entire building project, especially civil Engineering. The construction plan under construction is a whole, and the quality or method improvement of each system should be based on the collaboration of other systems; if all these are unbalanced, you will not be able to take

advantage of the overall advantages of the hard local system, and the overall benefits will be greatly reduced. The installation and construction problems of internal drainage pipes mainly appear in the design and installation of various parts of the drainage pipe and the design and installation of the inlet pipe. As the pace of urban development accelerates, the pace of urban construction changes with each passing day. Only through special analysis and research on the installation quality of indoor drainage pipes, can it be possible to propose effective measures and methods for quality improvement. Indoor piping is an important part of construction machinery, and its installation quality will have a profound and lasting impact on the overall benefits of the construction project. This is the key to ensuring that the house's water after the completion of the construction project is closely related to people's daily life. However, in the early stages of the project, the importance of the design and installation of internal drainage pipes was reduced, and thereafter it became a common problem that seriously affected people's daily lives. Although the relevant departments and employees of the construction industry have increased the scope and intensity of the research and made corresponding improvements, the installation of internal drainage pipes is still the focus of development and research<sup>[1]</sup>.

### **3 Installation problems of indoor drainage pipes**

The internal drainage pipe is very important, but there are still some problems that need to be solved urgently during the construction process. We need to think about how to install drainage pipes indoors and avoid the problems that have been hindering development during the construction process due to environmental impacts. After related research, the author mainly discussed the problems of installing internal pipes in some actual processes from the following aspects:

#### **3.1 Emphasize weak awareness**

Since the installation of indoor pipes needs to solve many problems, some methods are also very complicated and require high-level, highly-conscious and skilled construction personnel. However, in the actual construction process, the important effect of the construction of the internal drainage pipe has not been directly revealed, because the construction personnel

paid less attention and only completed the specific process. Therefore, in principle, the construction quality of the drainage pipe cannot be guaranteed. If the quality of the internal plumbing work is not considered seriously in the early stage, then in the subsequent development process after the building is used, problems will continue to affect people's normal life and the internal design of the building. It will also affect and reduce other content and affect the quality of the entire building. This question is very important for construction managers. In order to make the system comply with current regulations, in the early stages of construction, the quality of drainage pipes must become more important<sup>[2]</sup>.

#### **3.2 Quality problems caused by poor drainage and blockage**

After using the drainage system, the root cause of poor drainage or blockage of the pipeline is: the drainage pipe and parts were not cleaned before installation. In particular, cast iron parts cannot completely remove the remaining sand on the inner wall. If the residual sand is not disposed of in time during the construction process, it cannot be properly blocked or protected, and construction debris (especially mud) will enter the pipeline and block the pipeline after precipitation. It is also possible that the slope of the installation pipe is uneven or incomplete. Or the brackets are too far apart, the walls are irregular, and the pipes "collapse". It may also be improper selection of pipe connection parts, which leads to excessive local pipe resistance. Furthermore, it may be that the water and ball test is not carried out in accordance with the specifications, or the test is not suitable.

#### **3.3 Inaccurate pipe rejection**

There are many objective factors that affect the design of internal drainage pipes. Incorrect pipe throwing is a common quality problem, which usually affects the installation of the drainage system, and affects the quality of the project and the construction schedule. There are three main reasons for incorrect pipe entry. 1. The construction of indoor drainage pipes is an important part of the interior design, and other constructions will be carried out after the completion of the construction. As a result, some downcomer holes may collapse and be displaced during the construction of other systems in the future. Secondly,

the construction staff may have made minor changes to the design of the opening. Because the opening must be preserved, certain predictive installation work must be performed on the pipeline. There may be some problems with the reference data of the spout structure, which leads to some discrepancies between the predicted results and the actual demand. Due to the specific flaws between the structure of the entire building and the decoration and structure of the walls, it was finally found that the size of the original remaining port was different from the port required for actual work in the later stage of the actual process, causing certain construction problems.

### 3.4 Leakage of underground pipelines

The purpose of the indoor drainage pipe is to discharge domestic sewage into the sewer through the drainage pipe. However, the leakage of underground pipelines during the pipeline construction process will seriously affect the planning and construction of the entire drainage pipeline. One of the three causes of underground pipeline leakage is the problem of construction materials. The quality of building materials guarantees the quality of the structure of the object. If the materials used in the pipeline construction process do not meet the relevant standards, it will affect the foundation of the pipeline installation. In order to reduce costs, some construction units reduced the quality of building materials. The strength of building plumbing materials did not meet current standards, so some problems occurred during the construction process. The second reason is the installation link. This can also be a particular problem when making a central connection in the excretion tube. Some problems in the work of employees may cause minor damage to the water pipes during the construction period, and lead to quality problems and ultimately lead to stronger environmental factors, building construction, and the most difficult to control the environmental impact. In addition, the ambient temperature of underground pipelines varies greatly. If the temperature difference in the environment where the pipeline is located is large, and the material used to make the pipeline is more sensitive, certain cracks and leakage will inevitably occur under the influence of long-term thermal expansion and contraction, which will shorten the service life of the pipeline.



Figure 1. Leakage of underground pipelines

## 4 Installation suggestions for indoor drainage pipes

In order to fully understand the positive value of internal sewage pipes, and to ensure the quality of life of the people and the competitiveness of the development of the construction industry, research and improvement in related fields are being continuously strengthened. After studying the materials related to the internal drainage pipe and studying the actual situation, the author came up with the following suggestions, which are useful for installing drainage pipes in the room.

### 4.1 Preparation for construction

Before starting construction, certain construction preparations must be completed, and the construction quality must be significantly improved with certain experience and foundation. We need to study the construction plan specifically, understand some things to remember, predict the key issues that will arise, and first figure out how to predict them so that we can make better preparedness and response. When there is a problem, there are special requirements for the construction process, and certain manufacturing

procedures must comply with certain rules. Indoor drainage pipe construction is a bottom-up construction project, usually starting from underground and above-ground concrete construction. Please also note that we install the large diameter pipe first and then the small diameter pipe. This provides an overall advantage for the entire pipeline installation system. Building materials are also subject to special standard audits. Before carrying out specific construction, relevant personnel must arrange special supervision to prevent various construction problems caused by improper materials during the construction process. If the material is damaged during the construction process, the staff must make adjustments in time and arrange on-site construction<sup>[3]</sup>.

#### 4.2 Preventive measures for poor drainage and blockage quality problems

The main preventive and management measures are as follows: drain pipes, especially pipes and fittings used for cast iron parts, must be thoroughly cleaned before installation. The remaining sand must also be cleaned to prevent clogging of the pipeline. For example, close the pipeline tightly to prevent clogged debris and stones from entering during the construction process. The construction personnel must fully understand the installation slope of the drainage pipe so that the slope will not drop, which is the key to preventing blockage and leakage. The distance between the beam and the hanger must be correct, and the installation must be safe to prevent the pipe from pinching the waist of the pipe (clamping the waist can cause foreign matter to accumulate, block the pipe and prevent smooth flow). Elevators and brackets usually used for metal gutters must be connected to the supporting structure. The distance between the fixed part and the horizontal pipe should not exceed 2 mm, the riser should not exceed 3 m, and the floor height should not exceed 4 m. The riser or tee should be a fixed part, support or fixing device. The PVC pipe bracket and suspension gap should be installed according to the specifications and the pipe connections used must comply with the specifications. Before concealing buried drain pipes, they must be inspected, and the irrigation water level must not be lower than the top or bottom of the lower pipe or the floor level. Handling method: Check the construction drawings, find blockages, open ports for inspection or cleaning, excavate pipes, and replace accessories if necessary.

#### 4.3 Do segmental inspection of pipe irrigation

When the total filling volume of the drainage pipe capsule is checked during the construction of the drainage pipe, the drainage rate during drainage is determined by the horizontal branch organ. If you find a blockage, please check the place as soon as possible, and then remove the dust and other debris in time.



Figure 2. Sectional Inspection of Pipeline Irrigation

#### 4.4 Drain pipe installation

The drain pipe is the connecting channel between the internal drain pipe and the horizontal pipe, and also the external inspection axis, which is the key to the normal operation of the internal drain pipe. The drainage pipe is an external connection pipe and is the backbone of the entire pipeline construction project. In order to lay the foundation of the entire pipeline structure, the construction quality must be ensured. Contrary to the design requirements of other pipes, the drain pipe must be straight and must not be reconnected or twisted. However, the length of the pipeline should not be too long, so as not to be easily identified during the construction process, it is also necessary to control the slope and side. The drain pipe must be connected to the riser inspection window or the sweep hole on the ground. If it is necessary to meet the two-way and third-party requirements, it should be decided according to the actual situation. But in the last link, there are some points worth noting about the installation of the drainage device: the outlet of the drainage pipe should be in the reserved hole, and the drainage pipe should be collectible. After strengthening the strength of the socket, a drainage pipe can be installed in the already built underground passage.

#### 4.5 Standpipe installation

The installation of standpipes and branch pipes is an important part of drainage pipe installation, but in some operations, there are significant differences between the two. Riser design requires careful analysis of preliminary design drawings. If holes are needed, they need to be punched when constructing the building. If you really need to break the steel bars, you should discuss with the civil engineer to ensure that the broken steel bars will not affect the quality and stability of the entire building. In addition, the installation of the riser requires the cooperation of the operator. One person fixes the top and the other fixes the bottom. For the top layer, remove the head of the rope from the pipe, fix the pipe with screws, and then remove it from the walkway for further fixing. Usually, the quality of work is closely related to the collaboration between employees. The installation of the branch pipe is carried out with a bracket, and it is necessary to install the tilt adjustment bracket before the plumbing. After sending the tube to the finished casing, fix it and determine the purpose of the bracket. The nozzle may be blocked during the construction process, so you must be careful when cleaning it. Pipe cleaning is very important for the correct use of the pipe<sup>[4]</sup>.



Figure 3. Standpipe installation

#### 5 Conclusion

In order to prevent blockage during construction, the internal drainage pipe can be avoided as much as possible by combining the above measures. In order to ensure the quality of project construction, the water-carrying capacity of drainage pipes must be checked in accordance with standards before approval of completion. Combining a variety of anti-clogging measures and conducting appropriate water flow tests during the construction of internal drainage pipes can prevent and check the blockage of the pipes, complete the close coordination between pipe installation and civil engineering, and improve the quality of construction. Improve the construction plan. Therefore, indoor drainage pipes play a very important role.

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