

# The Role of Underground Pipelines in Municipal Power Engineering

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**Abstract:** Urban infrastructure It's support Cities Factors for stable development, underground pipelines It is essential to undertake water supply and emissions, heat supply, electricity supply and communications Transmission. For a city, the underground pipeline plays a "blood vessel" role, as important as the human body's "nerve ", is regarded as the "lifeline "of the city, and has a direct correlation with the life of urban residents. In the current municipal power engineering, underground pipeline and management, maintenance is an important work, for the safe operation of pipelines have a direct correlation. This thesis focuses on the role of underground pipelines in municipal power engineering..

## 1. Introduction

The process of urbanization in China is accelerating, the construction of infrastructure is large, the construction period is long, and the problem of underground pipeline damage occurs for a long time. Due to the barbaric construction, no necessary maintenance measures have been taken, resulting in the construction of natural gas pipeline, water conveyance pipeline, wire and cable excavation, resulting in local area water stoppage, power failure, or communication interruption problems, and even caused serious accidents of gas leakage and explosion. These are serious threats to people's lives. According to statistics, every year, there are accidents of pipeline damage and cable damage in china, with an average of more than 10000 cases. Some important cities attach great importance to the construction of underground pipelines, which usually need to be worked out before the construction of the project. In the construction of electric power engineering, it is necessary to do the inspection work well for the pipelines in the construction area, and analyze the data information obtained from the inspection as the important basis for the formulation of the scheme, to ensure that the underground pipeline laying in the electric power engineering is scientific and the construction technology is in place to ensure that the underground pipeline plays its proper role.

## 2. The Role of Detailed Investigation of Underground Pipelines in Municipal Power Engineering Design

### 2.1. Line Design in Municipal Power Engineering Design Role Played

The role of line scheme design in tunnel engineering. Tunnel works mainly include subway works and sinking road works. There are two types of excavation, namely, the open excavation tunnel and the underground excavation tunnel. In the excavation of open excavation tunnel, it is necessary to transfer the pipeline that has been laid on the road surface, or to dispose of it, which requires the detailed grasp of the relevant pipeline data. Tunnelling Works usually use Shield construction Method, will Deeper pipes Buried[1]. For example, the main pipe of drainage pipe and water supply pipe is buried deep underground, and the high-voltage power corridor is also very deep underground, in addition, there are culvert facilities and underground air defense facilities and so on. All should do well the investigation work, according to obtains the information to carry on the pipeline construction plan design. If it is a shallow surface pipeline can be ignored, including street lamp pipeline and all kinds of signal lamp pipeline, will not have a certain impact on excavation construction, so do not need to pay attention to. (Figure 1: Open excavation tunnel works)



Figure 1 Open excavation tunnel works

The role of line scheme design in underground pipeline engineering. Underground pipeline engineering, such as the construction of pipeline laying, the construction of the third line under the ground, the construction of pipeline reconstruction and the construction of pipe jacking, etc., before the construction of pipeline engineering, it is necessary to do a good job of surveying work, mainly understand the laying information of the original pipeline, but also do a good job of pipeline detection various, and draw out the relevant drawings. This work is very beneficial to the design of pipeline engineering, and it can also effectively avoid damage to other pipelines in construction.

Grid planning Central Line Scheme Design The role played. Grid planning should be based on the current grid information. In the process of drawing the underground pipeline, the main frame of the power network is established, in which the laying of the communication line, the specific location of the substation, the deterioration of the transmission line and the location of the power supply are all important elements. In addition, according to the current planning situation of the underground pipeline and the scale of the power grid, the underground resources should be reasonably utilized, which can control the cost and prevent the phenomenon of repeated labor.[2].

## **2.2. Design of Substation Location in Municipal Power Engineering Role Played**

In Substation site selection design, Substation Station Map Draw it, need to be Venue Measured and will Coordinates Do it, will Coordinates Everywhere, at a certain height Earthwork excavation obtained by the method of calculation. In addition, from Current status of underground pipelines Departure, will conform Substation access line size The underground lines are identified, and this pair Development of substations play a certain role.

## **2.3. Construction Drawing Design in Municipal Power Engineering Design Role Played**

In Municipal electricity works Construction drawing design process, if not considered Impact Underground pipeline After the construction drawings are finalized, the construction will be carried out according to the construction drawings to enable the construction process Will be Meet Some Difficulties often lead to Construction needs to be carried out as needed Design changes, not only impact Progress of works, and resulting The higher the cost, the less the project can pass Audits, even lead to Secondary disasters Occurs.

## **3. The Role of Detailed Investigation of Underground Pipelines in the Construction of Municipal Power Projects**

### **3.1. Electrical Engineering During Excavation Detailed Investigation Underground Pipeline Played Role**

In the excavation construction of electric power engineering, if there are detailed and accurate pipeline data to play a guiding role, the construction unit can investigate the underground pipeline, find out the laying situation and layout of the underground pipeline, and draw the underground pipeline map as the reference for excavation construction, which can avoid the problem of underground pipeline being damaged in mechanical excavation. Before construction, we should

make effective measures to solve the problem of underground pipeline conflict, use scientific and reasonable isolation method to protect the inherent underground pipeline, or use suspension method to protect or use support method to protect, all of them should avoid the problem of damaging pipeline in the process of moving earth. In laying the pipe or tower pole and construction, we should strictly follow the regulations to reduce the incidence of pipeline accidents. It is not enough to stop at the level of understanding in the construction of electric power engineering, but also to resort to action to make the role of pipeline play better, but also to reduce the workload and reduce the cost of construction. For example, the electric power design institute in the construction of cable crossing highway, it is necessary to do a good investigation of the underground pipeline, the results of the investigation as the basis for the cable laying design, to ensure that the design drawings play a guiding role, construction smoothly.

### **3.2. On Electrical Engineering Non-Excavation Construction Detailed Investigation Underground Pipeline Played Role**

Drilling is required when laying the underground pipeline at the bottom of the power project. In the recovery of drilling guide holes, each drill pipe should be carried out according to the fixed angle when it is required to build the oblique section, although the angle should be changed according to the construction needs, and the quantity of the change should be limited to 0.50, if the continuous 5 drill pipes, then the cumulative amount of the change angle should not exceed 20. For the main information of the underground pipeline, such as the diameter of the pipe, the material of the pipe, the number of holes in the pipe, the number of cables laid, the direction of the groundwater flow and the elevation at both ends of the pipeline point, etc., are clearly marked on the electronic diagram of the pipeline[3]. (Figure 2: Drilling of underground pipelines)



Figure 2 Drilling of underground pipeline

Using CAD software when drawing a pipeline diagram, the properties of all points of the pipeline and the properties of the line are expressed on the diagram. If you use BIM software to draw graphics, you can realize the three-dimensional design of graphics, and also realize the perspective drawing of the design drawing, any detail of the pipeline can be observed, for the inappropriate timely modification, for the smooth development of pipeline construction to play an important guiding role. Technology A detailed look at the information obtained from the underground pipeline could help Parameters The role of concrete implementation can Click directly on the pipeline point and Pipeline section will be Parameters Read it, you don't have to Pipeline Point Results Table Access to more accurate information is made possible Drilling direction of drill bit Make timely adjustments to ensure Guide hole curve Design requirements Match.(Figure 3: Construction of unexcavated underground pipelines)



Figure 3 Construction of unexcavated underground pipelines

### **3.3. Detailed Investigation Underground Pipeline Help Electrical Equipment and Access Maintenance and Technical Maintenance**

Because of the concealment of underground pipelines, there are many underground pipelines in the city. As a basic project, power engineering needs to lay underground pipelines, the main purpose of which is to maintain the safety of pipeline operation, and also to improve the beauty of urban environment. However, in the face of many problems of various underground pipelines in the city, it is necessary to investigate the underground pipelines before the construction of electric power projects, including the specific location of the pipelines and the relevant geographic information. When all the information is clear, all kinds of underground pipelines can be laid. Other pipelines should be avoided in the project, and the power underground pipelines can be reasonably laid out. In the concrete construction, it is important to consider the need for regular maintenance of the bottom line pipeline in the process of power engineering operation has been daily maintenance of various, therefore, the reasonable layout of underground pipelines, but also to ensure the smooth development of subsequent work. The relevant construction drawings should be preserved to ensure that the detailed and accurate information is not lost[4].

### **4. Conclusion**

Through the above research, it can be clear that in urban construction, basic engineering is very important, among which electric power engineering needs to attach great importance to it. The current scale of urban electric power projects is becoming larger and larger to better meet the demand of electric energy in urban production and life. In order to do the design work well before the electric power project construction, it is necessary for the designer to enter the construction site to carry on the survey, especially the city underground pipeline is many, it needs the detailed measurement, for the pipeline accurate position is clear, avoids the damage pipeline problem in the construction, causes the serious consequence. In the course of the underground pipeline survey, in addition to the detailed inspection of the underground pipelines already laid within the scope of the project, it is also necessary to investigate the surrounding underground pipelines, to find out the context of the pipelines, and to collect the relevant data information, and to lay the pipeline drawings out to provide reference for the construction of the electric engineering pipelines. The inspection of the pipeline should be meticulous, cannot have a trace of negligence, although the detection of certain difficulties, but also to take measures to overcome, cannot hold a fluke mentality. In the municipal power engineering, the underground pipeline plays an important role, so it needs to be attached great importance to.

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