

# Safety Management and Safety Control Analysis of Water Conservancy and Hydropower Projects

Tao Zhang

Yunnan College of Business Management, Yunnan, 650304, China

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**Abstract:** With the rapid development of our country's social economy, the demand for water conservancy and hydropower project construction is increasing, in the current water conservancy and hydropower project construction process, there are still a variety of safety hidden dangers, which pose a serious threat to the construction quality, follow-up safe use and sustainable development of resources. Firstly, the paper analyzes the present situation of water conservancy and hydropower project safety construction, and puts forward some safety management and safety control measures for reference.

## 1. Introduction

Water conservancy and hydropower project can carry forward the expected construction goal to a certain extent depends on whether there is safe construction, it can be seen that it is very necessary to do the basic work of water conservancy and hydropower project safety construction, which is of great practical significance to the sustainable development of construction enterprises and water conservancy and hydropower undertakings. In recent years, the world's resources are faced with the problem of excessive exploitation and consumption, and the shortage of resources has become a phenomenon that every country must arouse vigilance. However, in the actual situation, the construction of water conservancy and hydropower projects in our country still has the defects of insufficient safety control and inadequate safety management, which leads to the frequent occurrence of safety accidents, which causes serious losses to the resources and economy of the project construction and affects the quality of the construction. In view of this, how to adopt effective construction safety management and safety control to avoid safety accidents in the construction of water conservancy and hydropower projects has become the most important part of the current construction of water conservancy and hydropower projects.

## 2. Analysis on Safety Construction of Water Conservancy and Hydropower Projects

In order to strengthen the construction safety management and safety control work of water conservancy and hydropower projects, we must start from the actual situation, grasp the existing water conservancy and hydropower project safety construction problems, and through targeted analysis and research, we can provide the improvement direction for the next effective safety construction measures. At present, the safety construction level of water conservancy and hydropower projects in our country needs to be improved, and the safety accidents still appear from time to time, which has sounded the alarm bell of safety first to the construction units of the project. The main problems of safety construction at this stage are as follows.

### 2.1. Lack of Safety Awareness

The construction of a water conservancy and hydropower project is not a work that can be realized in a short time, which involves a longer construction period, a larger amount of work and a complicated construction procedure. In order to shorten the construction period and save the construction cost, some construction units take speeding up the construction speed as the pursuit goal, paying little attention to the safety construction work, without the corresponding construction

safety management and safety control measures, or even the special department responsible for the construction safety, which greatly increases the risk of safety accidents and brings great hidden danger to the construction personnel and the safety of the ecological environment around the construction project.[1].

## 2.2. Poor Quality Control of Construction Materials

Water conservancy and hydropower project site construction environment is very complex, the requirements of the construction materials are more stringent quality requirements, in excavation of earth and rock, tower crane demolition and installation, deep foundation pit construction operations and other links, if not strictly control the quality of concrete raw materials, pipe materials, will directly affect the accuracy of material use, easy to appear material and construction design requirements do not meet the problem, cause serious construction quality problems, reduce construction safety.

## 2.3. Construction Management Disorder

Some water conservancy and hydropower project construction units did not carry out the responsibility of construction management to the individual on the spot, the safety control work on the spot is chaotic, there are two extremes of multiple management and no one management, because of the lack of safety control system that accords with the characteristics of the project and the construction environment on the spot, the construction safety control work is lack of scientific nature, in the absence of system and clear responsibility, the execution ability is very poor, the various safety control standards cannot be implemented to the actual construction, which is also a major factor causing the safety accident.

## 3. Construction Safety Management and Safety Control Measures for Water Conservancy and Hydropower Projects

### 3.1. Follow Safety Control Principle to Implement Safety Construction

First of all, follow the construction principle of safety priority. Put the construction safety problem in the first place, hang the obvious warning sign in the construction site (as shown in figure 1), eliminate the psychology of shortening the construction period, pursuing the short-term economic profit and ignoring the construction safety, establish the safety consciousness, adhere to the basic idea of people-oriented, carry out all the safety construction work in an all-round way under the premise of safety and reasonableness, and minimize the construction risk.



Figure 1 Safety construction signs

Secondly, follow the mandatory construction control principle. With the implementation of the state policy according to law, in recent years, China has issued some laws, regulations and policies on engineering safety construction, which is the legal basis for standardizing the construction safety management and safety control of water conservancy and hydropower projects. Construction units should study and implement the legal basis conscientiously, strengthen the mandatory role of construction safety control, formulate strong construction personnel allocation, safety protection

measures, safety accident emergency plan, etc.[2].

Finally, follow the safety control principle of full participation. The construction unit should realize that the construction safety control work on the spot is not the work of a certain department or a certain person, but needs the whole staff to participate in the work highly, the construction unit leader attaches importance to this work, invests sufficient manpower, material resources and financial resources to ensure the construction safety control to carry on smoothly; the construction personnel attach importance to this work, consciously according to the standard author's instruction, wear safety helmet and other protective measures in the construction work; the construction safety control staff attach importance to this work, can use their own professional knowledge and responsibility, never let go of any safety construction hidden danger.

### **3.2. Safety Construction Training and Promotion Safety Prevention Capacity**

Some water conservancy and hydropower projects in the construction process of safety control work after the problem of rectification, this serious lag of safety control work lack of prevention function, cannot achieve the effect of prevention. Therefore, the construction unit should start from the angle of strengthening the safety construction training, and improve the overall ability of safety prevention in the construction site through the systematic training of all the safety construction participants such as the site safety management department, the construction personnel, the warehouse administrator and so on. It should be noted that in order to ensure the effectiveness of the training, the corresponding assessment mechanism (as shown in figure 2) should be adopted, and only after the training personnel have passed the examination, can they take up their posts to carry out all work to ensure that the personnel of various departments on the construction site have the ability to prevent safety accidents, so that they can properly solve the sudden safety problems at any time and build a strong safety barrier to the quality of water conservancy and hydropower projects.



Figure 2 Regulations on the management of safety technical training for special operators

### **3.3. Strict Quality Supervision to Eliminate Hidden Dangers in Time**

The quality supervision of water conservancy and hydropower project construction should start from the following two aspects. First, strictly supervise the quality of construction materials, construction equipment and facilities, inspect the qualification of material suppliers, make clear that all data such as material specifications are in accordance with the construction requirements, ensure the accuracy of construction in each link, and increase the quality supervision and management of construction equipment and facilities, ensure that all parameters are in accordance with the construction standard, be able to successfully complete the expected construction tasks, carry out the maintenance and repair of equipment and facilities on a regular basis, and reduce the probability of safety accidents caused by equipment failure[3]. Second, strict quality supervision of construction technology, the need to carry out adequate climate, topography, geology and other aspects of the survey work before the site construction, timely find out where the construction design needs to be adjusted, in the construction of clear communication of technical difficulties and key points, with the full process, all-round supervision and management work to enhance the quality awareness and responsibility of construction personnel, in the timely exchange and

cooperation of various departments, reasonable solution of various problems encountered in the construction process, timely eliminate hidden dangers, ensure construction quality and maximize the benefits of all aspects.

### 3.4. Increase Security Inspection and Safety File Management

In the face of the complex construction environment and complicated construction procedures of water conservancy and hydropower projects, construction units should consciously increase the frequency and intensity of safety inspection work, record the safety inspection situation of each site construction work in a timely and truthful manner, arrange it into the safety construction file, do a good job of safety file management, and provide a reliable basis for the following safety construction and the orderly development of various work. It should be noted that the safety inspection should be carried out in two parts, one is the daily routine inspection, the other is the professional and meticulous inspection of the main links and dangerous links of the construction, which has certain requirements for the professional level of the personnel responsible for carrying out the work, and the need to be equipped with the inspectors with the professional ability to meet the standards, so that the relevant problems can be found in the inspection in a timely manner, and the suggestions for rectification can be put forward, the accident loss and control plan (as shown in figure 3), the specialized karma quantity of the contribution to the safety hidden danger investigation and release, and the professional safety inspection duty can be carried out.

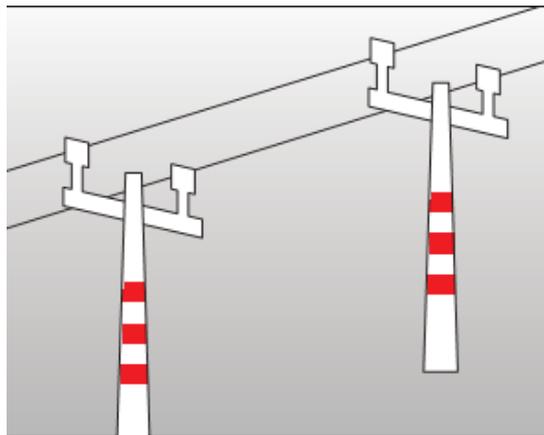


Figure 3 Schematic diagram of accident loss and control

## 4. Conclusion

To sum up, the safety management and safety control work of water conservancy and hydropower projects in our country need to be strengthened urgently, and there are outstanding problems in the lack of safety construction consciousness, poor quality control of construction materials, disorder of site management and so on, which increase the possibility of safety accidents and need the attention of construction units. Facing the demand of the society for the construction of water conservancy and hydropower projects and the severe shortage of resources, the construction units should make great efforts to strengthen the construction safety management and safety control measures, follow the principle of safety control in practice, and carry out the safety construction in an all-round way; do a good job of safety construction training and enhance the ability of safety prevention; strictly supervise the work of quality, eliminate the hidden danger in time; increase the work of safety inspection, do a good job of safety file management, and strive to control the probability of safety accidents to the minimum, and promote the safe and stable development of water conservancy and hydropower project construction in our country.

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