# Main Points of Self-inspection of Long-span Prestressed Concrete Cast-in-place Beam

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**Abstract:** ***Nowadays, with the continuous development of the building industry, in the high-rise building and roof structure, the construction personnel in order to effectively improve the stability of the building structure, the main use of prestressed technology, this technology can not only effectively reduce the height of the storey and the total height of the building, but also can reduce the impact of objective factors on the building structure, can reduce the operating costs of the house. Therefore, in order to ensure the construction quality of Chinese construction enterprise, this paper studies the key points of self-inspection of large-span prestressed concrete cast-in-situ beam construction.***

**Keywords:** large-span prestressing; Concrete cast-in-place beam; Key points of construction self-inspection.

## 1. INTRODUCTION

In the specific construction process, because the cast-in-place method construction has the advantages of better comprehensive performance and lower cost, so it has been widely used in the construction process of road and bridge engineering at the present stage, especially in the high pier and long span and other special-shaped structural beam construction process, not only improve the stability of these structures, but also strengthen the construction of key procedures for strict control. Therefore, in this context, the construction personnel should conduct a certain study on the self-inspection points of the large-span prestressed concrete cast-situ beam construction, so as to promote the stable development of our construction enterprise in society to provide the foundation.

## 2. CONSTRUCTION CONTENT OF LARGE-SPAN PRESTRESSED CONCRETE CAST-IN-PLACE BEAM

### 2.1 Mixing of concrete

Because concrete is one of the key factors to ensure the construction quality of large-span prestressed concrete cast-in - situ beam, so the mixing requirements for it is also very strict, the construction personnel in the process of mixing, must be carried out in accordance with the design of the mix ratio, so as to avoid concrete in transport will produce certain losses. High pouring effect, can also be timely on the bottom concrete working surface calendered, constantly improve the construction quality of long-span prestressed concrete cast-in-place beam, strengthen its self-testing ability. At the same time, the correct pouring method will not affect the pre-set formwork and prestressed pipe, so as to continuously improve the flatness of the top surface.

### 2.2 Quality control of templates

In the process of the construction of large-span prestressed concrete cast-in-place beam, in order to effectively guarantee the quality of construction, the construction personnel should pay close attention to the template throughout the whole process, take reasonable measures to strengthen the protection of the thickness of the reinforcement layer, and control it in a reasonable range. As shown in the picture below: Before the construction of concrete, the construction personnel must predict the problems in the construction process, take measures in combination with the actual construction situation, strengthen the analysis of the problems in the construction process. When controlling the temperature of concrete mix, it is best to control the initial temperature of concrete between 5℃ and 30℃ [1]. In addition, because the temperature change will affect the quality of cement, if the temperature difference is too large, it will lead to cracks in the concrete, which has a serious impact on the construction quality of long-span prestressed concrete cast-in-place beam.

### 2.3 Concrete placement

In this process, the construction personnel is mainly to strengthen the control of temperature, it is best to avoid high temperature, in winter, but also to take corresponding insulation measures. In the process of concrete pouring, in order to improve its stability and quality, the construction personnel must pay attention to the specific construction methods, especially in the concrete pouring, to the layered pouring, take measures to strengthen the thickness control. In addition, the construction personnel should reasonably choose the pouring method based on the characteristics of the construction site [2]. For example, when the bottom web of the beam body is poured, the construction personnel need Taking measures to strengthen the control of their time intervals would not only greatly improve At the same time, in the process of testing, such as loosening and leakage phenomenon, construction personnel must do a good job of emergency measures, on the basis of ensuring the quality of concrete, take

reasonable measures to control the deformation and displacement of its support, the foundation settlement and other whole process monitoring. In addition, cracks should be prevented due to the lack of moisture in concrete, so as to continuously improve the self-inspection ability of long-span prestressed concrete cast-in-place beams in construction [3].

## 3. KEY POINTS OF SELF-INSPECTION OF LARGE SPAN PRESTRESSED CONCRETE CAST-IN-PLACE BEAM CONSTRUCTION

### 3.1 Check template installation

3.1.1 Bottom die

In the detection and design of the bottom film, we can use wood plywood and high-strength laminated bamboo plywood, which can not only improve the performance of the material, but also greatly improve the self-inspection effect of long-span prestressed concrete cast-in-place beam construction. At present, in the actual construction process of cast-in-place beams, wood plywood is generally used, but if this material is used directly, its concrete appearance is not very ideal. Therefore, in order to prevent the occurrence of other quality problems, If the integrity of its appearance is impaired, special treatment should be given to it [4].

In addition, the construction personnel in the installation of the bottom die, but also combined with the actual construction situation, calculate the pre-camber and precompression settlement, so as to be able to combine the specific data detection structure, adjust the bottom die. At the same time, technical personnel also need to pay attention to is that after the installation of the bottom die, but also take measures to ensure the smoothness of the joint.

3.1.2 Side mold

In the inspection of the side die, in order to ensure the quality of its construction, constantly improve its leveling. Construction personnel need to analyze the positioning of its support, combined with the actual situation, and constantly reinforce it, when necessary, but also the design of the inner and outer die pull rod, so that not only can prevent the bottom of the mold between the slurry leakage, but also can further improve the structure of the outer die form, to ensure the stability of its structure.

3.1.3 Intima

The inner mold is the key to ensure the rigidity of the formwork, so technicians should take measures to strengthen the inspection of the inner membrane of the long-span prestressed concrete cast-in-place beam. The inner mold can be covered with ordinary wood boards such as linoleum and plastic paper. At the same time, the construction personnel in the first pouring box girder, to advance the analysis of the problems in the use of the inner mold in the process of the second pouring of the roof concrete, can use a combination of steel and wood support, so as to ensure its repeated use.

### 3.2 Test the binding of steel bars and the penetration of prestressed tendons

In the process of self-inspection of long-span prestressed concrete cast-in - situ beam construction, in order to improve the accuracy of its detection, the construction personnel carried out some engineering tests, especially the binding way and characteristics of the reinforcement on the support, were studied and analyzed. First of all, it is necessary to carry out the bottom plate and web reinforcement binding, so as to effectively improve its stability. At the same time, in the process of reinforcement construction, to keep the template clean, take measures to protect the surface of the template, so as not only to improve the integrity of its appearance, but also to ensure the robustness of the beam reinforcement.

When the prestressed steel bar and the beam steel bar collide, the construction personnel should move the beam steel bar properly and adjust its position properly. In addition, in the concrete long span prestressed concrete cast-in-place beam construction self-test process. As for the accuracy of the position of the steel bar and the bottom plate, the construction personnel should set the position of the erection steel bar reasonably according to the actual situation, so as to prevent safety accidents in the actual construction process [5].

Construction personnel in the binding of the steel skeleton, in order to ensure its stability, in addition to pay attention to their own binding, but also combined with the specific construction situation, the location of the design, because this can not only ensure that in the process of pouring concrete, no bellows damage and other problems, will further improve its stability. Therefore, with the continuous development of the construction enterprise in our country, the related construction technology has also got some innovation, so as to ensure the quality of self-inspection of the large span prestressed concrete cast-in-situ beams construction, the technicians should analyze the specific problems in the construction process of the large span prestressed concrete beams, and take measures to strengthen the detection of reinforcement bunting and prestressed tendons penetration. To ensure the stable operation of long-span prestressed concrete cast-in-place beams in the construction process, a reasonable self-inspection scheme and model are formulated.

### 3.3 Self-test of bellows fixation mode

In the process of fixing the bellows, the construction personnel mainly want to strengthen the control of the distance, the most important is to take measures to control it. About 600mm. At the same time, after the installation of the technical personnel, it is also necessary to combine the actual construction characteristics, to detect the top of the bellows, so as to effectively prevent the occurrence of quality accidents. At the same time, technicians in the process of installing and fixing the bellows try to avoid repeated bending, which can effectively prevent pipe wall cracking. In addition, in the process of checking the bellows fixing method, the main content of the bellows is checked. If the wall is found to be damaged, it must be repaired in time.

## 4. CONCLUSION

To sum up, in the continuous development of construction in our country today, in order to improve the quality of the large span prestressed concrete cast-in-place beams construction, we should make a comprehensive analysis of the key points in the field self-inspection process, and constantly improve the comprehensive quality of the detection personnel, perfect the large span prestressed concrete cast-in-place beams construction self-inspection mode. Thus, it provides the basis for promoting the stable development of our construction enterprise in social economy.

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