

PAPER • OPEN ACCESS

Analysis on Concrete Construction Technology in Civil Engineering Construction

To cite this article: Yuzhen Guo 2021 *J. Phys.: Conf. Ser.* **2011** 012023

View the [article online](#) for updates and enhancements.

You may also like

- [Effect of recycled coarse aggregate from concrete debris on the strength of concrete](#)

V S Lesovik, R V Lesovik and W S Albo Ali

- [Mechanical degradation of normal concrete due to seawater intrusion](#)

F Hamdi and H A Imran

- [Increase of Impact Strength and Frost Resistance of Concrete Hydrotechnical Piles at Deaeration of Concrete Mixture with Air-Entraining Admixtures](#)

A Goncharov



ECS
The
Electrochemical
Society
Advancing solid state &
electrochemical science & technology

DISCOVER
how sustainability
intersects with
electrochemistry & solid
state science research

Analysis on Concrete Construction Technology in Civil Engineering Construction

Yuzhen Guo

Jiangxi Vocational Technical College of Industry & Trade, Nanchang, Jiangxi, 330038, China

*Corresponding author's e-mail: 739960103@qq.com

Abstract. An important structural material in civil engineering construction is concrete. Concrete is widely used in various building structures. Concrete construction technology directly determines the construction quality of the concrete structure itself, which plays a very important role in the stability of the building structure. This paper mainly summarizes the current construction situation of concrete, and deeply analyzes some problems and technical points in the construction process, which is of great significance to improving the construction quality of concrete and optimizing the construction management of concrete. On this basis, this paper expounds the maintenance ideas of concrete pouring from the aspects of concrete mold removal, later repair and concrete maintenance operation, so as to provide a reference for the technical improvement of concrete construction.

1. Introduction

At this stage, concrete is the most widely used building materials in many civil engineering construction, because the concrete itself has the irreplaceable advantages of other building materials. With the rapid expansion of the infrastructure scale of civil engineering in China, the quality problem of construction engineering has increasingly attracted wide attention from the society. The safety of concrete technology is related to the interests of the broad masses and the economic benefits of construction enterprises. Although concrete materials have many properties and advantages, in the actual construction process, the performance of concrete is affected by many factors. In the construction process, if there is an improper control of each construction elements, it will lead to a great negative impact on the quality of concrete. This negative effect is also very similar during the construction process. In the actual construction process, the main construction problems are mainly the following categories.

2. Current status of concrete construction

In the current construction materials, concrete is one of the most widely used construction materials in many civil engineering construction. Because the concrete itself has the irreplaceable advantages of other building materials, which makes the concrete construction technology level also determines the construction level to a certain extent. With the rapid expansion of the infrastructure scale of civil engineering in China, the quality problem of construction engineering has increasingly attracted wide attention from the society. The safety of concrete technology is related to the interests of the broad masses and the economic benefits of construction enterprises. Although concrete materials have many properties and advantages, in the actual construction process, the performance of concrete is affected by many factors. In the construction process, if there is an improper control of each construction



Content from this work may be used under the terms of the [Creative Commons Attribution 3.0 licence](https://creativecommons.org/licenses/by/3.0/). Any further distribution of this work must maintain attribution to the author(s) and the title of the work, journal citation and DOI.

elements, it will lead to a great negative impact on the quality of concrete. This negative effect is also very similar during the construction process. In the actual construction process, the main construction problems are mainly the following categories.

Table 1. Main problems of concrete construction.

sequence	Principal problem
1	Raw materials used for concrete do not meet the relevant technical requirements
2	Various additives added to the concrete do not conform to the actual site conditions
3	Lack of effective management during the concrete pouring process
4	Concrete lacks effective post-stage maintenance
5	Do not strictly observe the relevant technical requirements during the concrete matching process

There are two main reasons for this situation. The first reason is that China does not implement the corresponding industry standards and norms for concrete construction, and many construction personnel can only carry out the construction based on their own basic experience. Another reason is the lack of relevant training among most of the concrete construction technicians. The professional and technical level is low, and it cannot take reasonable and effective technical measures according to the actual situation of the site to ensure the quality of concrete construction[1].

3. Key points of the concrete construction technology

In the actual construction process, the main points of concrete construction technology are mainly divided into the following major categories.

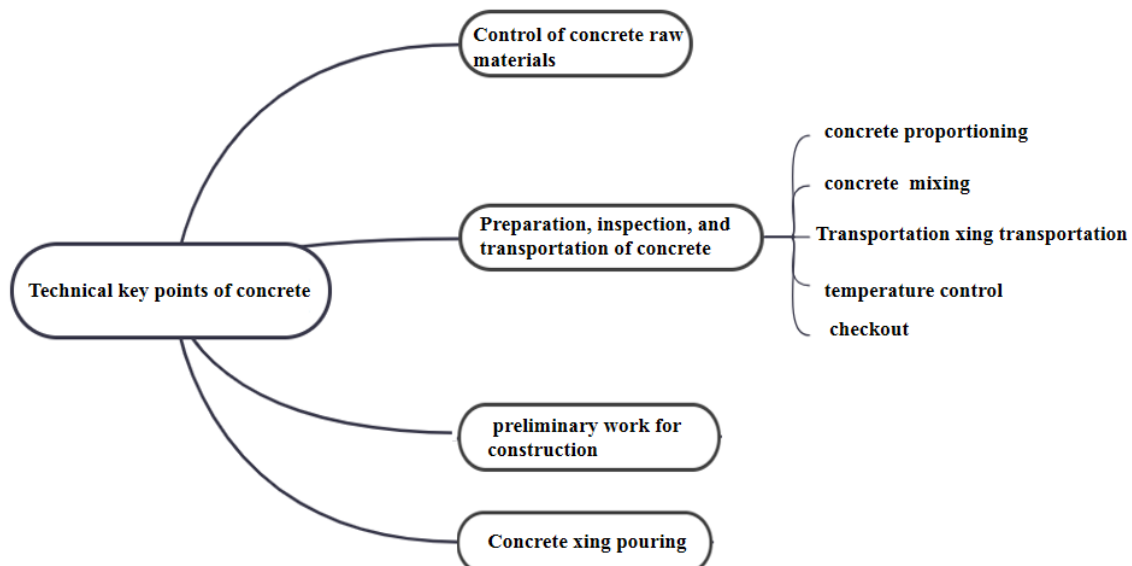


Figure 1. Technical key points of concrete.

3.1. Control of the concrete construction materials

The raw materials for making concrete are mainly cement, water, stone materials and various additives. The choice of concrete production materials will greatly affect the physical and chemical properties and mechanics of concrete, in the configuration of concrete materials, the first step to do is to carry out

a series of investigation of raw materials, to ensure that the raw materials comply with the relevant technical regulations. Relevant qualified enterprises can also carry out a series of comprehensive tests on the rational performance and geometric parameters of the raw materials through on-site testing, so as to ensure that the raw materials we choose meet the cost technical standards of the enterprise. The choice of cement is a very important part in a selection of material. When the conditions and environment of the enterprise allow, the preparation of concrete should choose the same time, the same batch of cement, avoid the mixing of cement products of different manufacturers as far as possible, avoid the technical requirements of different manufacturers, and have a certain impact on the quality of concrete[2].

3.2. Preparation, inspection and transportation of mixed concrete

3.2.1. Making of the concrete. In the process of raw materials, concrete needs to ratio different types of raw materials according to some relevant theories. In the process of concrete ratio, we should accurately understand some basic requirements of buildings for concrete performance, and determine the proportion of concrete materials on this basis. In the actual construction process, the ratio of concrete should also be appropriately adjusted according to the changes of the site construction environment, so that the performance of the concrete itself can adapt to the on-site environment. When the choice of additives, different buildings have different use requirements, and different buildings, different environments and different areas will also put forward different requirements for some main frame materials-concrete. In different buildings, we in order to better meet the use requirements of buildings, we need to add various additives to the concrete, which can make the concrete have a certain stability to qualitative, after the addition of additives. A series of experiments should also be carried out in the corresponding actual environment, and sufficient data analysis is obtained through the experiments, so as to ensure that the produced concrete can effectively meet the use requirements of the buildings. In addition to the strict control of these situations, we also need to control the construction process in the proportional pairing of concrete. Avoid the construction personnel from failing to prepare the concrete according to the specific requirements, causing a series of adverse effects to the project progress.

3.2.2. concrete mixing. The pairing ratio of concrete has a great impact on the use degree of the project. In addition to this effect, the mixing concrete also has a great impact on the preparation of concrete. In the proportional pairing of the concrete. We should effectively control the mixing process and mixing equipment, so that the concrete mixing work can meet the construction requirements of the concrete. Ready-mixed materials should also be ready-mixed materials before the actual situation begins, and then arrange the basic steps of the concrete mixing operation, so that the relevant process parameters can be obtained in the actual concrete mixing. Reprepare the concrete for buildings, effectively manage the various raw materials in the mixing process, and the effective control of the concrete mixing process can be realized with a series of modern mixing equipment. The concrete mixer shall also meet the relevant technical requirements during its use. The material in the mixer shall not exceed its maximum capacity[3].

3.3. preparations for construction

Concrete is just a link in the construction. The construction quality of concrete depends not only on its own quality, but also on a series of construction processes. Before the concrete pouring, there are two main steps, the first is to build the formwork, the second is to lay the reinforcement. In the early stage of concrete construction, we should comprehensively check a series of quality problems to ensure that the size of the formwork meets the needs of the relevant building design. The parts of the formwork are effectively supported, so that we are able to build a solid building core, which can avoid a series of effects caused from the insufficient strength of the template structure. Reinforcement plays a very big role in the building, the effective combination of concrete and reinforcement can play their carrying

function, before the concrete construction, a series of comprehensive inspection to ensure that the reinforcement we use meet the relevant technical requirements, and the spacing and quantity of reinforcement should also meet the building design standards, on this basis, the concrete constructors should according to the erection of formwork and concrete laying to develop the characteristics of a reasonable construction plan. Concrete It is a very professional and technical work, and each different building will have different requirements for concrete construction. The construction of concrete should also formulate the corresponding construction technical measures according to the actual situation of the corresponding construction project. Concrete construction personnel should carry out a series of comprehensive understanding and learning of such measures, so as to ensure that the construction personnel can understand the key points of concrete construction. In the construction process, the concrete should also fully consider the external influence factors, and try to choose the period with small temperature change for construction. This is beneficial to exert the maximum performance of the concrete[5].

3.4. Casting of concrete

In the pouring construction of concrete, the construction environment should be clean up on the site, and eliminate all kinds of waste and debris such as formwork, such as domestic waste and some abandoned construction materials. Avoid mixing various impurities and have some adverse effects on the quality of concrete. Secondly, in the pouring of concrete, it should also be necessary to carry out a series of cleaning of the site, control the water consumption, to avoid because of the more formwork water, causing a series of impact on the concrete ratio. The aim is to remove a series of dust inside the formwork, and improve the water content and crystallization degree of the formwork, which can effectively improve the stability of the concrete. During the process of pouring, we should also control the distance between the pouring surface and the feeding pipe to avoid the excessive distance between the pouring surface and the feeding pipe and causing the concrete to fall to the pouring surface. During the construction process of the concrete pouring. We should also choose the appropriate pouring method according to the site situation, and conduct the concrete pouring in strict accordance according to the relevant technical requirements. According to the characteristics of the watering structure, choose scientific and effective sales methods. The main point of pouring is vibration guide, the purpose is to ensure that the concrete material can effectively fill the gap in the formwork, rather than the gap inside the concrete, in the process of vibration leakage and vibration, this reason is the construction of a series of professional level are not enough, in this case, this pouring work should select some experienced construction personnel to vibration work, so as to meet the needs of concrete pouring operation, in order to ensure the continuity of concrete pouring operation. The construction process can not be interrupted, so as to effectively reduce the possibility of concrete producing various cracks.

4. Maintenance work of the concrete pouring

4.1. Concrete removal removal

After the concrete pouring, after a certain time, the concrete was solidified, and the comprehensive mechanical performance of the concrete has reached a certain standard. In this case, the mold removal of the concrete can be done. In the concrete formwork removal work, we should strictly abide by the relevant technical specifications and requirements, in general circumstances, the concrete formwork removal work is mainly to follow the principle of first dismantling, after first dismantling. When the demolition of concrete formwork, the part of lower importance should be removed first, and then the part of higher importance should be removed. The demolition time will directly affect the comprehensive performance of the concrete. Only the corresponding formwork can be removed when the properties of the concrete meet the corresponding requirements. In order to ensure the quality and construction progress during construction, the properties of concrete in real time. When the relevant technical parameters meet the relevant technical requirements, the formwork should be immediately

removed, and dismantled scientifically and reasonable, to avoid the blind and violent construction of causing a certain impact on the construction materials. In this process, we should remove the formwork in time, so that it can create favorable conditions for the maintenance and construction of concrete.

4.2. Later-repair process

After the concrete formwork removal work is completed, relevant technical personnel to conduct a comprehensive inspection of the structure of the concrete. Effective measures are taken to repair the defects and problems existing in the soil structure to enable the structure of the concrete to meet the technical requirements of the specification. The two main common problems of concrete after the formwork removal are explicit and honeycomb problems. For surface honeycomb problems, polish the cover with a wire ball, and then according to the matching ratio of the concrete. With suitable grout, in order to solve the problem of exposed reinforcement and exposed bone, it is necessary to remove the concrete layer at the exposed tendon and exposed position, making the original concrete layer have better comprehensive performance. In doing such work, we may need to re-erect the formwork and vibrwork, threatening the safety of the safety of the building. In this case, it is necessary to timely organize the construction and design, formulate effective solutions, and eliminate a series of problems existing in the concrete in time, to ensure the safety of the buildings. In the construction environment of concrete, due to the limitation of the site construction environment, the poured concrete may have some problems, so that the late repair work can solve this problem very well. In this restoration work in the later stage, the relevant enterprises should pay more attention to actively carrying out a series of inspection work in the later stage, so as to eliminate the safety hidden dangers in the construction process and improve the stability of the building[6].

5. Conclusion

In the actual construction process, the concrete has many design problems and technical problems. In order to ensure the construction quality, it is necessary to avoid a series of engineering quality problems. Relevant enterprises construction before construction should consider good technical and material problems. The quality of concrete will determine the quality of the engineering foundation, it is both a safety problem, but also a technical problem. In the construction, the relevant personnel should strictly control the matching proportion of concrete, and control a series of sudden problems in the construction process of concrete. At the same time, the construction unit should also actively take a series of effective measures to improve the relevant technical level of the construction personnel, to ensure the construction safety from the source, and ultimately can also promote the benign development of concrete construction technology.

References

- [1] Zhao,D.Y.(2019)On the Construction Technology of Mass Concrete Structure in Civil Engineering.Residential Property & Real Estate.28:211.
- [2] Xu,J.Y.(2019)Analysis on the Construction Technology of Mass Concrete Structure in Civil Engineering Construction.Residential Property & Real Estate.27:165.
- [3] Sun,G.F.(2019)Discussion on the Construction Technology of Mass Concrete Structure in Civil Engineering Buildings. doors and windows .16:89-91.
- [4] Sun,J.(2019)Discussion on the Construction Technology of Mass Concrete Structure in Civil Engineering Buildings.Residential Property & Real Estate.22:186.
- [5] Cao,Q.(2019)Application of Concrete Construction Technology in Civil Engineering.Building materials and decoration.26:16-17.