Academic Journal of Business & Management

ISSN 2616-5902 Vol. 1, Issue 1: 7-16, DOI: 10.25236/AJBM.190102

Preliminary Study on Quality Control of High Standard Farmland Construction Projects

Yufei Xiong[1, 2, 3, 4], Jing He[1, 2, 3, 4]

[1] Shaanxi Provincial Land and Engineering Construction Group Co., Ltd. Xi'an 710075, China
[2] Institute of Land Engineering and Technology, Shaanxi Provincial Land Engineering Construction Group Co., Ltd. Xi'an 710075, China
[3] Key Laboratory of Degraded and Unused Land Consolidation Engineering, the Ministry of Land and Resources of China, Xi'an 710075, China
[4] Shaanxi Provincial Land Consolidation Engineering Technology Research Center. Xi'an 710075, China

ABSTRACT. *As the saying goes, "clothing, food, shelter, and travel", for people's daily life, food must always be at the forefront of people's life needs. It can be said that food is the foundation of people's livelihood and the foundation for the advancement and development of society. Due to the continuous advancement of China's urbanization process and the impact of climate change, the situation of water and soil resources in various provinces and cities in China has become more limited and constrained. In the case of such land and water resources becoming scarce, raising food production and raising farmland standards has become the primary problem that the agricultural sector needs to solve at this stage. In response to this situation, the construction of high-standard farmland implemented in various provinces and cities in China will also be an important means and means to improve food production capacity and ensure food security.*

KEYWORDS: *High standard farmland, engineering project, quality control, construction materials*

1. Preface

Land leveling, soil fertility, concentrated contiguous, well-equipped facilities, supporting agricultural power, high yield and stability, good ecology and strong resilience. It is compatible with modern agricultural production and management methods. The farmland delineated as basic farmland according to regulations is a high standard farmland. . During the "Thirteenth Five-Year Plan" period, the task of building high-standard farmland was to ensure that the high-standard farmland under

ISSN 2616-5902 Vol. 1, Issue 1: 7-16, DOI: 10.25236/AJBM.190102

construction was 0.27 billion hm2 and strive to build 40 million hm2. However, how to ensure the quality of farmland project construction is a top priority. For example, in February 2018, a video about “New Water Channels in Dong'an County, Hunan Province” was launched on the Internet. This paper elaborates on the quality control of key materials for high-standard farmland construction such as cement, clay brick, sand, stone and culvert.

2. Construction material quality control

Engineering materials are one of the important conditions that directly determine the quality of high-standard farmland projects, and are directly related to the quality of high-standard farmland projects. The management personnel of the construction party (hereinafter referred to as “the representative of Party A”) must master the screening methods for the quality of commonly used construction materials and fully guarantee the quality of high-standard farmland projects. For materials with unqualified quality, it is necessary to prevent the construction party from using it in time; if it has been used and will have a great impact on the quality of the project, the existing project should be demolished and reconstructed. The materials involved in the construction of high-standard farmland mainly include cement, clay bricks, sand, stones, gravel and culverts [1-2].

2.1 Cement

The use of cement runs through the whole process of high-standard farmland construction. Cement is used in the construction of fields, channels, convenience roads, machine farms, ponds, reservoirs and culverts, so the quality of cement should be controlled [3]. The main quality control methods are as follows: First, check whether the cement outer packaging bag is firm and has good moisture resistance, which has a direct impact on the quality of the cement. At the same time, it is necessary to check whether all the labels on the packaging bag are complete. The front printing contents of the cement packaging bag include cement brand, registered trademark graphic, cement production license number, cement product name, cement code, cement product implementation standard, cement strength grade, and cement net. Content, cement factory number, cement packaging date, cement storage conditions, and the name and origin of the cement manufacturer [4-5]. The second is to carefully check the color of the cement. Generally, the color of normal cement should be grayish white, the color is dark gray or other colors are likely to contain other impurities. The third is to check the packaging time of cement. When the packaging time is more than 30d, the strength of the cement will decrease; when the packaging time is more than 3 months, the strength of the cement will be reduced by 10% to 20%; the packaging time will exceed 1 year, and the strength will even decrease by 25% to 40% [6].

ISSN 2616-5902 Vol. 1, Issue 1: 7-16, DOI: 10.25236/AJBM.190102

2.2 Clay brick

Clay bricks (hereinafter referred to as "bricks") are mainly used for masonry in the construction of high-standard farmland. The quality of the bricks is related to the water storage capacity of Tian Hao. The main quality control methods are as follows, first, look at the brick surface. The more pores on the surface of the brick, the smaller the density of the brick, so the more the pores, the worse and the brick quality. Second, look at the color of the bricks. Bricks generally have three colors: deep red, light red, light gray, and the fire bricks are light red, light gray when under-fired, and dark red when the fire is too heavy. Third, listen to the sound. Pick up two bricks and hit them together [7-8]. If the sound is dull, it is a brick that is under fire. The sound is crisp and pleasing, it is suitable for fire bricks, that is, good bricks, and this brick has high strength and is suitable for use as a building material for high standard farmland projects. Bricks must not have cracks, delamination, lack of edges and other angles.

2.3 Stones

In the construction of high-standard farmland, the method of detecting the quality of the stone is relatively simple and quick, which is to beat the stone and listen to the sound. Usually the sound is crisp and sweet, indicating that the quality of the stone is good; on the contrary, if the sound is rough, it indicates cracks or weathering inside the stone. In addition, we must look at the appearance of the stone, can not be grotesque, can not be lack of edges and corners, the standard size of the stone should be 70 cm × 35 cm × 35 cm cuboid.

2.4 Gravel

Crushed stone is mainly used for road mix concrete in the construction of high standard farmland, and it is used for the construction of machine roads, convenience roads and field production work roads [9]. The social response to the construction quality of the roads is very large. Therefore, the convenience roads and the field production operations must be strictly controlled, and there must be no slack. First of all, the gravel grade should be good, large and small; the shape is preferably square, the content of the needle-like gravel is less than 25%, and the concrete strength C30, the content of the needle-shaped gravel should not exceed 15%. Pay attention to the presence of weathered fossils and limestone aggregates. Secondly, the mud content of the gravel should not be too high, which will seriously affect the quality of the concrete. The mud content of ordinary concrete should not exceed 2%, and the concrete with strength grade greater than C30 should not exceed 1%. The method for identifying the amount of mud is to rub the rubble with the hand and rub it on the hand, indicating that the gravel can be used. Finally, the gravel of each size should be uniform in size.

ISSN 2616-5902 Vol. 1, Issue 1: 7-16, DOI: 10.25236/AJBM.190102

2.5 Culvert

The culvert is mainly used to construct culverts in the construction of high standard farmland. First, look at whether there are pores on the surface. The pores prove that the culvert is not fully vibrated when it is prefabricated, and it is easy to break and cannot be used for the construction of culverts. Second, whether the steel bars leak outside. The steel bars leak out, there is not enough protective layer, the steel bars are easily corroded, affecting the quality of the culvert, and can not be used to construct culverts [10].

3. Problems in the construction of high standard farmland

3.1 There are many functional departments involved in the construction project

High-standard farmland construction projects are different from other agricultural construction projects, which not only require strong comprehensive management, but also involve many functional departments [11]. It includes the government departments of the high-standard farmland construction project, the National Development and Reform Commission, the agricultural sector, the water conservancy department, the land and resources department, the audit department, and the agricultural comprehensive development office. This leads to high-standard farmland construction projects that need to be done between various functional departments. Communicate, communicate, coordinate, and cooperate, and the project content that many departments need to work together to complete. However, in the process of communication, communication and coordination between various functional departments, it will inevitably lead to communication and coordination, problem detention and departmental system constraints. The emergence and retention of these situations will also be the cooperation between various functional departments. Collaboration has a very serious negative impact, which makes it difficult to get construction projects to a fast, quality solution.

3.2 Construction projects have large scale, high difficulty and complicated management

For the construction of high-standard farmland, it is not only a comprehensive and multi-disciplinary work, but also a highly professional work project. At the same time, in the implementation stage of high-standard farmland construction projects, it will involve various laws and regulations, management systems, quality standards and budgets. Moreover, the above mentioned high-standard farmland construction projects involve a large number of functional departments, including the supervisory department, the financial department, and the fire department at the higher level, as well as the survey department, design department, and construction department involved in the project implementation. Supervision department, etc. In such a large-scale project construction, if there is a leak in a certain department or link, it will affect the construction progress and construction quality of the high-

ISSN 2616-5902 Vol. 1, Issue 1: 7-16, DOI: 10.25236/AJBM.190102

standard farmland construction project. Once there is a factor that is not conducive to the project, it will not only lead to an increase in construction costs, but will also delay the completion of the inspection and acceptance time [12]. In addition, in today's project construction office capacity areas and comprehensive capabilities are relatively scarce, in the comprehensive management, the complexity of its existence will lead to a significant increase in the difficulty of project construction.

3.3 The work foundation is difficult to break

In the high-standard farmland construction projects, there are many projects in the field, and the construction work has a strong dispersion due to the influence of regional factors. Moreover, if the design department does not conduct on-the-spot investigation and soil sampling of the farmland in the construction area, it will not be able to have a deeper understanding and mastery of the actual situation of the construction project. On this basis, if the communication and cooperation between the design department and the project construction management department is not smooth, it will be unclear about the farmland standards in the construction area, which will make it difficult to lay a solid foundation for the previous work. At the same time, as the construction of high-standard farmland in various provinces and cities continues to climb, the construction of high-standard farmland construction projects in the same period will increase simultaneously. When the design department carries out the design work of high-standard farmland construction projects, it is also very easy to appear. The design of each high-standard farmland construction project with obvious differences is similar or the same situation [13]. The emergence of such a situation will not only make the construction of the project inconsistent with the situation of the unit, but also lead to changes in the scale and style of the construction of high-standard farmland in the later period, which will affect the post-acceptance work and the management and protection work. Successfully launch.

4. Measures and recommendations for high standard farmland construction

4.1 Take functional integration and do a good job in integrated management

Many problems concerning the functional departments involved in the high-standard farmland construction project should be solved through the establishment of the project construction office and the realization of the comprehensive management functions. First, a high-standard farmland project office related to the construction project should be established, and the main leaders of the government should be the team leader to ensure the smooth development and achievement of the functional scheduling and coordination of the project construction office. Secondly, each functional department should also establish a leading group for the construction of high-standard farmland projects, and the relevant leaders and staff should be transferred from the department to jointly coordinate and cooperate with the other groups. Thirdly, an independent, stable and specific function construction office

ISSN 2616-5902 Vol. 1, Issue 1: 7-16, DOI: 10.25236/AJBM.190102

should be built to carry out the budget, investment, planning, construction and comprehensive management of the project construction. And, with the 2016 No. 1 Document, the content of high-standard farmland construction belongs to each

After the local government's assessment of the target of cultivated land protection responsibility, it will also encourage governments at all levels to further enhance their sense of responsibility for high-standard farmland construction projects. Finally, under the leadership of the head of the government leadership, each functional department team and the construction office should conduct active communication and collaborative work, not only to perform their duties, but also to meet the requirements of laws and regulations. Under the circumstance, try to open up green channels for the work of relevant departments, so that high-standard farmland construction projects can decompose tasks at different levels and implement them at all levels to promote the proper achievement of construction goals.

4.2 Improve the overall quality of the management team

With the development of high-standard farmland construction projects, it has gradually formed a system in laws and regulations, related systems and management models. And the program setting, bidding process and construction supervision in the construction are gradually improving. At the same time, in order to further strengthen the smooth development of China's high-standard farmland construction projects, the relevant departments issued the "General Rules for the Construction of High-standard Farmland" in 2014, and thus made contents for the "High-standard Farmland Construction Standards" implemented by the agricultural industry. With institutional supplements. In response to such favorable information, teams that manage high-standard farmland construction projects should actively urge relevant personnel to carry out training in professional knowledge and vocational skills, and simultaneously carry out management awareness education to promote the overall quality of the management team. Can be improved.

4.3 Develop a detailed and comprehensive implementation plan

The formulation of the implementation plan is a key factor in the declaration of high-standard farmland construction projects. In this regard, we should make a detailed analysis from the application point of the project unit, combine various factors with institutional standards, and carry out detailed stratification and practical classification of engineering tasks, so as to promote the coordinated construction of the project construction. At the same time, the construction unit should also actively cooperate with the design unit, not only to provide real and effective data information, but also to clearly inform the design unit of the appeal. As a design unit, after mastering the first-hand information, it is necessary not only to carry out work on site surveys and soil sampling, but also to conduct more detailed feasibility studies on the implementation plan. Accurate and perfect, will also be a good

ISSN 2616-5902 Vol. 1, Issue 1: 7-16, DOI: 10.25236/AJBM.190102

theoretical and practical basis for the construction of high-standard farmland projects.

4.4 Strengthen construction management and improve management and protection work

As we all know, the engineering quantity and engineering process involved in high-standard farmland construction projects are complex, and affected by geological factors, environmental factors and climatic factors, resulting in short construction period, heavy tasks, and technical requirements. It also has a high standard. This requires relevant technical personnel to do high-quality engineering management and protection work during the construction process. At the same time, after the completion of the high-standard farmland construction project, a system combining government-led management with the management of rural collective economic organizations and management of full-time personnel should also be established. In accordance with the relevant management and protection system, the responsibilities and obligations are clearly implemented on the heads of farmers or full-time management and protection personnel to ensure that the management and protection entities are clear and to avoid loss of fixed assets.

4.5 Establish a sound public participation mechanism

The reason why farmers stop construction is that the reason is that farmers do not fully understand the significance of the project and the benefits to the farmers themselves. The farmers only passively accept the government’s notice and transformation without too much voice. . Therefore, the establishment of a sound public participation mechanism can enable farmers to participate in the site survey, implementation and site selection of the field.

Going through the festival and making your own opinions, let the farmers become the masters of high-standard farmland construction projects. And by increasing the propaganda of high-standard farmland construction, farmers can fully understand the significance of the project, thereby increasing their enthusiasm for participation. In order to ensure farmers' participation in the standardization of project construction activities, a sound public participation system must be established for farmers.

The principles and requirements in the participation process are detailed and the efficiency of farmers' participation is improved.

5. High standard farmland engineering design example

At present, the main infrastructure of the high-standard farmland design area is the irrigation and drainage facilities for field roads and farmland water that are connected between farmland and villages. The field road facilities are divided into

ISSN 2616-5902 Vol. 1, Issue 1: 7-16, DOI: 10.25236/AJBM.190102

two types: machine-farming road and production road according to the materials used in the road surface. The total length of the machine-grown road and production road are 958.25m and 98.32m, respectively, and the area is 0.39hm2 and 0.06hm2 respectively. According to the canal structure, the irrigation and drainage facilities can be divided into two types: soil and concrete. The total length of soil ditches and concrete ditches is 1758.63m and 1536.65m, respectively, and the area is 0.12hm2 and 0.21hm2 respectively.

5.1 Field Road

The field roads and production roads in the field mainly supply small agricultural machinery, agricultural vehicles and farmers in the village to walk on their own, so the field road engineering design can utilize the ecological design of concrete pavement, considering that the road is repaired only for small agricultural machinery. , agricultural vehicles and electric vehicles travel. The actual strength of concrete is C20. In the process of designing the field road, in addition to the 100m interval to set up the corresponding Shimoda access road, in addition to the eco-passage pipe with a diameter of 9cm every 100m, the height of the pipeline is 10cm higher than the field ground, so that small field creatures can pass through the field road.

5.2 Irrigation channel design

According to the relevant provisions of the "China's high standard basic farmland construction norms (trial)", combined with the design of regional topography and water source characteristics, the design guarantee rate of irrigation channels is above 90%, and the drainage index is "one year after the storm, within 2 days. Excluded, so the irrigation channel design is based on the current design of the brick and concrete, with reference to the experience of other scholars' channel design. According to the section of the conveying water, the irrigation channel is divided into two types: farmland canal I and farmland canal II. The farmland canal I uses rectangular side wall, the ditch is 0.45m deep, and the bottom of the canal is 0.45m; the farmland canal II uses rectangular side wall and the ditch is deep. The width of the bottom of the canal and the bottom of the canal are 0.85m respectively. The side wall designed by the farmland canal is constructed by 0.2m concrete. The roughness ratio of the design channel is 0.013, the design flow rate is lower than or equal to 0.15m3/s, and the design flow rate is lower than 0.31 m/s. The design of the irrigation channel mainly adopts the bottom design of the common channel, so that the aquatic plants can grow at the bottom of the canal, providing the necessary habitat for the field animals and breeding for the offspring.

ISSN 2616-5902 Vol. 1, Issue 1: 7-16, DOI: 10.25236/AJBM.190102

6. Comprehensive measures to further improve the evaluation mechanism for high-standard farmland construction

First, we must improve agricultural production conditions. It is necessary to focus on the actual conditions of the local agricultural industry and adapt to local conditions. Through the comprehensive management of the ditches and forests, the bridges and culverts will be equipped with electrical science to improve the agricultural infrastructure and benefit the farmers. Second, we must do a good job of stripping and reuse of farming. Cultivated land tillage layer is a high-quality topsoil suitable for crop growth through long-term natural evolution and cultivation and fertilization, and is the essence of cultivated land. In the process of land leveling, it is necessary to do a good job of the separation and reuse of the tillage layer. In the land reclamation, it is necessary to strengthen the work of reusing the tillage layer. Third, we must optimize the farmland ecology. The construction of high-standard farmland should consider the farmland ecology, improve the physical and chemical properties of the soil, improve the flood control and drainage capacity and irrigation efficiency, and truly realize the storage of grain.

References

[1] Liu Zhiqiang. Clarify the high-standard farmland “What to build and how to build”——Interpret China's first national standard for high-standard farmland construction [J]. Rural. Agriculture. Farmers (A version), 2014 (7): 19.

[2] CCTV. During the “Thirteenth Five-Year Plan” period, China strives to build 600 million mu of high standard farmland [EB/OL]. (2017-01-24)

[3]18-04 09. http://news.cctv .com/ 2017/01/24/ ARTI8EIR4VyyikTkBnWtrsHM 170124. shtml

[4] General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China, China National Standardization Administration Committee. Cement Packaging Bag: GB 9774-2010 [S]. Beijing: China Standard Press, 2011.

[5] General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China, China National Standardization Administration Committee. Construction sand: GB/T 14684-2011 [S]. Beijing: China Standard Press, 2012.

[6] Wei Xing. Problems and countermeasures of high standard basic farmland construction projects [J]. Modern Agricultural Science and Technology, 2016, (5): 197, 201.

[7] Li Shaoshuai, Yan Wenju. Problems and Countermeasures of High Standard Basic Farmland Construction [J]. Resources & Industries, 2012, 14(3): 195-199.

[8] Wang Songlin. Carrying out land consolidation and building standard farmland [A]; 2004 China Association for Science and Technology Annual Meeting 3 minutes conference abstracts [C]; 2004.

[9] Feng Shoujie, Li Youqing. Strengthening the construction of high-standard farmland in mountainous areas and improving the comprehensive agricultural production capacity——Investigation report on the construction of high-standard

ISSN 2616-5902 Vol. 1, Issue 1: 7-16, DOI: 10.25236/AJBM.190102

farmland demonstration project in Tianzhu Tibetan Autonomous County [J].Accounting Research. 2009.17.

[10] Zhao Jichang. High-standard basic farmland for arable land quality construction [J].Agricultural Mechanization Research.2006-01.

[11] Intern Li Yong. Completed high-standard farmland of 128 million mu in five years [N]. Peasant Daily. 2002

[12] Li Jianru, Zeng Lisheng, Qi Haiwei, Ma Jianjun, Jia Hongmei, Liu Fuhua. Renovation of low- and medium-yield fields and improvement of agricultural integration Production capacity [J]. Ningxia Agriculture and Forestry Science and Technology. 2006 05.

[13] Li Xia. Necessity and Feasibility Analysis of High Standard Farmland Construction in Tongbai County [J].Henan Water Resources and South-to-North Water Transfer, 2015 (15): 57- 58.