

# Research on the implementation plan of planning, design and implementation of Mayietan Irrigation and Drainage Project in DC County

Wanying Li

Shaanxi Construction of Hospitality Management Co. Ltd, Xi 'an, Shaanxi 710075, China

## Abstract

Designed for gansu hong chang xian the land development in the preliminary design, the main contents including the survey and distributed in addition, the rate of water, irrigation channels and the project. Irrigation channels for the entire section design and channels in the design project . This design means to consolidate the basic theoretical and professional knowledge and practical for use in design, cultivate the independent analysis of the problem and solve the problem, a correct designing thoughts, good use of icons and express design use of reference, the secretary and norms.

## Keywords

Land Channels; Irrigation and drainage engineering; planning and design; implementation plan; research.

## 1. Introduction

DC County is located in the south of Gansu Province, in the northwest of Longnan City, and in the upper reaches of Bailong River. Due to the advantages of climate, the county has unique conditions for the development of agriculture, but the agricultural area has more people and less land. The county conditions with agriculture as the leading industry determine that for a long period of time, cultivated land is still an important basis for driving the economy and the most basic living guarantee for farmers. Therefore, it is a long-term task for the county to carry out land development and consolidation, increase the area of arable land, improve the quality of arable land, and then improve the basic production conditions of farmers. Under the guidance of this idea, on the basis of in-depth investigation, the relevant personnel determined that the terrain along the Lichuan River, the Guan'e River and the two sides of the Minjiang section between the entrances of the two rivers are relatively flat, the water resources guarantee rate is high, and the water and soil configuration is relatively flat. The relatively large inland tidal flats, barren grasslands and mountains with frequent disasters are used as the project area, involving Chengguan Town, Lichuan Town, Hejiabao Township and Nanhe Township. Through unified planning and rational layout of the project area, the area of effective arable land can be increased, the quality of arable land can be improved, the dynamic balance of the total amount of arable land in the region can be achieved, the stamina of agricultural development can be enhanced, the production and living conditions of farmers can be covered, the economic income of farmers can be increased, and agriculture in the county can be promoted. The sustainable development of the economy will further provide strong support for the county party committee and county government to solve the "three rural" problems and accelerate the construction of new socialist countryside.

## 2. Basic information of the project area

The Dashe and Majie beaches in the project area are affected by the Min'e Mountains, and the terrain is relatively flat, dominated by Tertiary and Quaternary red and loess structures; Influenced, the terrain is steep and eroded by the Minjiang and Bailongjiang rivers, forming deep-cut middle and high mountain landforms, mainly stony mountains in the Triassic period. The county's total soil area is 331,643 hectares, accounting for 99.8% of the total land area, of which 83,511 hectares of cultivated soil and the rest are natural soils. The annual average precipitation in the project area is 633.8 mm, and the maximum precipitation is 775.8 mm; the precipitation is concentrated in July-September, up to 304.6 mm, accounting for 48% of the total annual precipitation; the precipitation in the crop growing season (April-October) is 581.7 mm, accounting for 92% of the total annual precipitation: the number of precipitation days  $\geq 0.1$ ,  $\geq 10$ ,  $\geq 25$ , and  $\geq 50$  mm in the whole year, which were 134.0 days, 19.4 days, 3.0 days, and 0.1 days respectively; the annual evaporation was 1348.6 mm, The annual relative humidity is 68%.

## 3. Infrastructure condition

The project area is 10 kilometers away from the county seat, and the national highway "212" has laid unique conditions for the highway economy of the project area. With the expansion of Dangchang County to the northwest, the project area will become a prime location for the combination of urban and rural areas in Dangchang in the future, with convenient transportation. Especially in recent years, 10 county and township highways have been renovated, which has greatly facilitated the county's transportation and created conditions for the county's economic development. In addition, China Unicom, China Mobile and broadband networks cover the entire project area. There are Minjiang River and its tributaries Lichuan River and Guan'e River in the project area. The project builds a "U"-shaped canal for water diversion and irrigation, and self-flow irrigation ensures the growth of crops. As the terrain decreases from north to south, there is no problem of flood discharge in the project area. The project area is located in the south of Qinling Mountains, with abundant rainfall and lush forests. Especially after several years of returning farmland to forests, the forest network around the fields has formed a scale, which plays a certain role in preventing soil erosion and preserving moisture.

## 4. Proposal

According to the natural conditions of the project area and the comprehensive social and economic development, combined with local production traditions and habits, and under the premise of technical feasibility, economic rationality, and consideration of social, economic and ecological benefits, the engineering projects shall be planned and arranged in a unified manner. The main types of land use in the project area after reorganization are: arable land, rural roads, ditches, etc., and crops such as wheat, potatoes, corn, and angelica are grown.

### 1) Land formation works

The project area belongs to the river tidal flat area in terms of landform type. The terrain is undulating and the internal potholes are uneven. The sub-fields are leveled to form relatively regular fields, and then the external soil source is used to cover the soil with a thickness of 40cm.

### 2) Farmland water conservancy projects

According to the topography of the project area, the project area is mainly irrigated by means of surface water self-flow irrigation. Therefore, the irrigation channels and drainage channels in the project area, according to the terrain conditions of the project area, adopt the principle

of separation of irrigation and drainage, which is conducive to the accumulation of water in the fields Timely and smooth discharge.

### 3) Road works

In order to facilitate the agricultural production in the project area, the necessary road network must be established. The field road is 2.6m wide and 0.4m above the ground. It is arranged in parallel with the standard fields, and the pavement adopts mud-bonded gravel pavement. The production road is 1.6 m wide, 0.3 m above the ground, parallel to the agricultural canal, and perpendicular to the standard field. The road is made of mud-bound gravel.

### 4) Farmland shelter forest project

In order to improve the natural ecological environment in the project area, in order to achieve the purpose of windbreak and sand fixation, conservation of soil and water, and beautification of the environment, protective forests are planted on both sides of the field roads.

In the project area, through land development and consolidation, construction of drainage facilities and improvement of traffic conditions and other measures, in accordance with the principles of unified planning, unified implementation, and comprehensive management, through comprehensive management of fields, water, roads and forests, the "field leveling, irrigation and drainage" have been realized. Permanent drainage and road network." Soil erosion has been effectively controlled, the ecological environment has been improved, a composite agricultural ecosystem with strong stability and high production capacity has been formed, an economical and reasonable flow of material and energy has been formed, and the ability to resist natural disasters has been improved.

Through follow-up agricultural production, application of organic fertilizers, and implementation of biological improvement measures, the soil structure and properties of the project area can be improved, the content of soil organic matter can be improved, the virtuous circle between various agricultural ecosystems can be promoted and maintained, and the biodiversity in the project area can be maintained and improved. , the development of a variety of crops has a positive impact. Provide a good space for people's production and life to the greatest extent, and lay a good foundation for the further development of ecological agriculture in the project area.

## References

- [1] Wang Panpan,Song Ge,Wang Yue. Application of agricultural land gradation and land consolidation to cultivated land requisition-compensation balance[J]. Transactions of the Chinese Society of Agricultural Engineering,2016, 32(11): 258-264.
- [2] Yang Xiaoyan,Zhu Deju,Yun Wenju,et al. Analysis of the landscape spatial pattern influence caused by land development and consolidation[J]. Transactions of the Chinese Society of Agricultural Engineering, 2005, 21(9): 67-71.
- [3] 67-71.
- [4] Li Min,Zhao Xiaomin,Gong Shaoqi. Approaches of enhancing economic profit of land development and consolidation item[J]. Transactions of the Chinese Society of Agricultural Engineering, 2004, 20(3): 262-265.
- [5] Liu Haojie,Liu Hongjuan,Yuan Yuan,et al. Estimation of Potential Effects of Land Consolidation on Regional Environment: A Case Study in Hebei Province[J]. Areal Research and Development, 2013, 32(1): 117-122.