ISSN: 2688-9323

Research on the Design Scheme of the Project Linked to the Increase and Decrease of Urban and Rural Construction Land

Zexin Liu

Weibei Branch of Shaanxi Provincial Land Engineering Construction Group Co.,Ltd., Xi 'an, Shaanxi 710075, China

Abstract

The implementation of the project linking the increase and decrease of urban and rural construction land is conducive to improving the ecological environment of humanities and natural landscapes.From the design point of view, this paper analyzes the main construction content and technical standards of the project linked to the increase and decrease of urban and rural construction land, in order to provide technical support for the smooth development of the project.

Keywords

Increase or Decrease Linked Projects; Planning and Design; Construction Content; Benefits.

1. Introduction

Projects linked to increase and decrease refer to the increase of urban construction land and the decrease of rural construction land, and the linked refers to the reclamation and reclamation of a number of rural construction land, plots and plots intended for urban construction according to the overall land use plan. etc., the area together constitutes the construction of new and old project areas.Through building demolition and transportation engineering, land leveling engineering, field road engineering, farmland protection and ecological environment maintenance and other engineering construction, the requirements of ground level, road end, field formation, road connection, and forest formation have been achieved, and the farmland production conditions have been significantly improved. improvement, to achieve the goal of improving rural production and living conditions and enhancing regional overall development.

2. Project Overview

The project area is located in the northwest corner of Shaanxi Province and the westernmost part of Yulin City. It is the transition zone between the Loess Plateau and the Ordos desert steppe in Inner Mongolia. 107°69′06″.Dingbian County has a semi-arid continental monsoon climate in the warm temperate zone, with an annual average temperature of 22.3°C, an average annual sunshine duration of 2743.3 hours, and an average annual rainfall of 325 mm. The project area is suitable for over 60% of forest and grass land, suitable for planting. The land occupies 28%, and the light is sufficient, and the heat can basically meet the needs of one crop a year. The light, heat and water are basically in the same season, and the temperature difference is large, which is conducive to the growth of crops and the accumulation of sugar. At the same time, the soil layer in the county is deep, with strong arable adaptability, large area suitable for agriculture, forest and grazing, but with low organic matter content and poor fertility.According to the 2020 Dingbian County land change survey data, the total land area of the county is 682,145.03 hectares, of which: 271,164.81 hectares of arable land, accounting for 39.75% of the total land area (including 56,394.71 hectares of irrigated land, accounting for

ISSN: 2688-9323

20.80% of the total arable land area; 214,770.10 hectares of dry land) 1379.96 hectares of garden land, accounting for 0.20% of the total land area; 99,073.30 hectares of forest land, accounting for 14.52% of the total land area; 266,794.08 hectares of grassland, accounting for 39.11% of the total land area; urban villages and 14,446.68 hectares of industrial and mining land, accounting for 2.12% of the total land area; 13,843.23 hectares of transportation land, accounting for 2.03% of the total land area; 5,625.73 hectares of water and water conservancy facilities, accounting for 0.82% of the total land area; 9,817.24 hectares of other land, accounting for 2.03% of the total land area 1.44% of the total area.

3. Analysis of Project Construction Conditions

3.1. Road Transport Facilities

The current situation of the project area is an abandoned brick factory, and the surrounding traffic is relatively convenient. There are roads leading to each project plot or its vicinity, and it is connected with the main road through the village, which is convenient for mechanized construction. The road surface of individual plots is narrow and uneven, and it is necessary to improve the standard through project implementation to meet the requirements of mechanized farming and external transportation after reclamation.

3.2. Irrigation and Drainage and Power Facilities

There are no irrigation and drainage facilities in the project area, and each village in the project area has low-voltage lines and transformers, which can meet the electricity consumption for domestic production and construction.

3.3. Land Use Constraints

The total amount of rainfall in the project area is small, the distribution of time and space is uneven, and there are many torrential rains, and the effective rainfall is very limited. In addition, the groundwater resources have not been effectively utilized, so that drought and water shortage have become the main limiting factors for land use and agricultural production development. The soil in the project area is mainly sandy soil with large soil porosity, poor water and fertilizer retention capacity, and poor soil organic matter content, which affects the emergence and growth of crops. During the implementation of the project, the soil conditions were improved and the land production level was increased by applying more organic fertilizers and topdressing carbon ammonia, urea and phosphate fertilizers at the same time. The project area is located in the wind-sand area along the Great Wall in northern Shaanxi. Wind erosion occurs more frequently, and sand blowing is more serious, which erodes topsoil, reduces fertility, weakens soil fertility, and deteriorates soil structure, which are important reasons for soil degradation and land productivity decline. In addition, frequent occurrence of natural disasters such as strong winds, land desertification, frost, hail, and torrential rain are also important limiting factors for land use.

4. Project Construction Content

4.1. Building Demolition and Removal Works

The buildings to be demolished mainly include brick houses, brick kilns and simple houses. The brick houses and brick kilns are all single-layer brick walls and are all brick-concrete structures. The masonry is demolished by mechanical demolition. Based on the actual situation, the main material of the waste solid waste after the demolition of the building is bricks, which will not pollute the environment, so it can be transported to the low-lying places near the plot for burial, and the transportation distance of construction waste to landfill is 0.1 between ~0.5km.

ISSN: 2688-9323

4.2. Land Formation Works

According to the topographic map of the project area, the leveling plots are divided for land leveling. Due to the deep mining pits in the project area, the mining pits are leveled separately from the ground construction site. The side slope of the mining pit shall be graded according to the actual situation or the inner padding shall be carried out to eliminate the hidden danger of geological disasters. The land leveling area in the project area is 16.3228 hm^2, the leveling earthwork is 115448 m^3, and the passenger soil backfilling is 78935 m^3.

4.3. Field Road Engineering

One production road is newly built in the project area, covering an area of 669.6m^2 and a total length of 186m.

4.4. Farmland Protection and Ecological Environment Conservation Project

Planting alfalfa on the outer slopes of the ridges in the project area reduces soil erosion and plays the role of windbreak and soil consolidation. The planting area is 0.1942hm^2. Quality requirements for sowing alfalfa: (1) The full coverage rate of sowing alfalfa reaches 90%; (2) The densely spread alfalfa does not die, grows normally, and the coverage rate reaches 95%. A row of dry willows was planted on the sloping ridge, with a spacing of 1.5m between the willows, and a total of 410 dry willows were planted

5. General Layout of the Project

5.1. General Layout

The engineering design content of the project is based on the current topographical conditions, and is designed according to local conditions, overall planning, and rational layout. The main construction contents include building demolition and clearing and transportation engineering, land leveling engineering, field road engineering, farmland protection and ecological environment preservation engineering. The overall project layout is mainly based on building demolition, removal and transportation and land leveling. The old reclaimed land in the project area was originally an abandoned brick factory. In order to meet the needs of agricultural production, it is determined that the original land will be leveled according to the natural conditions of the project area. The terrain and size of the field, the project area is divided into fields. The interior of the field requires the land to be leveled. The length and width of the field vary according to the terrain. The shape of the field is roughly a regular rectangle. line layout. After the project is completed, the fields will be flat, the fields will be tidy, the production roads will be complete, the production conditions will be fundamentally improved, and the quality of the newly added arable land will reach the same level as the surrounding arable land.

5.1.1. Building Demolition and Removal Works

The existing buildings in the project area will be uniformly demolished. Most of the houses in the project area are abandoned brick-concrete structure houses and brick kilns. The total area of the demolished buildings is 439.46m2. The demolition of buildings and structures should generally adopt the method of mechanical excavation, and take safety protection measures. The demolition objects are composed of materials and should be stacked in categories. For soil walls and geotechnical buildings whose soil quality meets the requirements for cultivation, they can be stacked nearby for easy utilization. For bricks (tiles), stones, wood, etc. that still have value in use and utilization, they can be used by manual dismantling or sorting. Nearby landfill abandoned mining pit for construction waste

5.1.2. Land Formation Works

After the building is demolished, the planned plots are used as a unit for land leveling and excavation. Finally, soil fertilization is carried out to increase the soil organic matter content,

ISSN: 2688-9323

and the organic matter content is higher than 0.5%, so that the reclaimed land can meet the farming requirements. The side slopes of deep mining pits can be trimmed or compacted into steps to enhance their stability and eliminate hidden dangers of geological disasters. The slope angle of the side slope of the mining pit is 50°, the height is 5m, and the width of the step is 5m. According to the requirements of the "Land Consolidation Project Planning and Design Specifications", according to the terrain conditions of the project area, local agricultural production, social and economic development, crop planting structure, ground slope and other actual conditions, combined with terrain, machine farming requirements, land leveling is carried out.

5.1.3. Field Road Engineering

The traffic around the project area is convenient, the main roads are crisscrossed, and the traffic is convenient. The field roads in the project area are relatively complete, which can basically meet the existing manpower and small mechanical farming requirements. Therefore, the project does not carry out the planning of the field road, but only the design of the production road. Connect the fields in the project area through the new production road, which is convenient for mechanized farming of farmland.

5.1.4. Farmland Protection and Ecological Environment Conservation Project

The planning of farmland protection projects should be based on the topography and other conditions of the project area, taking into account local conditions and comprehensive consideration, and the protection forest should be carried out in accordance with the corresponding standards and norms promulgated by the forestry administrative department. The project area is located in the windy beach area with a lot of windy sand. Therefore, dry willow is designed to be planted on the ridge on the side slope of the mining pit, and alfalfa is planted on the slope of the side slope.

5.2. Land Use Layout

According to the requirements of social development and local natural and social economic conditions, optimize the spatial layout of land use within the project construction scope, achieve the combination of sustainable rural economic development and agricultural industrial structure adjustment, take into account the unity of social, ecological and economic benefits, and increase the Effective arable land area, improve land utilization. Combined with the latest annual change data, the land in the project area before reclamation was abandoned mining land, with a total area of 244.8 mu. After the reclamation project was implemented, the land in the project area was classified as dry land, and the newly increased cultivated land area was 236.8 mu. mu, accounting for 96.73% of the total project area.

6. Benefit Analysis

On the basis of the balance between the quantity and quality of cultivated land, the implementation of the project linked to increase and decrease can increase the effective cultivated land area in the project area. Cultivated land plays a role in social stability for the country and the government. The State Council has proposed that it is of great significance to maintain the bottom line of 1.8 billion mu of cultivated land nationwide. The use of urban and rural construction land can increase the effective cultivated land area, which is of great significance to the country's food security and social stability. Guarantee role.

The implementation of the project linking the increase and decrease of urban and rural construction land has an obvious role in promoting the process of urbanization. This benefit should be analyzed by the urban change rate before and after the implementation of the project. Considering that the implementation of the project mainly involves the increase of urban construction land and rural construction There are two aspects to the reduction of land use.

ISSN: 2688-9323

The great development of rural urbanization is conducive to improving the living environment in rural areas, improving rural infrastructure construction and improving traffic conditions.

After the demolition of the old plots in the project area is reclaimed, the economic benefits are shown as the economic benefits brought by the increase in output after land reclamation. The area of the old demolition plot is 244.8 mu. After the reclamation, it is estimated that the newly added cultivated land area is 236.8 mu. The planting is mainly corn. The yield per mu of dry land is 550kg. According to the current purchase price of 2.2 yuan/kg, it can be calculated that the planned reclamation of the demolition area can be calculated. The direct economic benefit can be increased by 268,500 yuan in the following years.

References

[1] YANG Xilian, YANG Qiqi, ZHOU Bingbing, et al. Potential calculation and time-series zoning for rural residential land consolidation at county scale[J]. Transactions of the Chinese Society of Agricultural Engineering,2013, (12):235-245.

[2] JI Yafei. Discussion on Implementation of Increase-decrease Linkage Projects of Urban and Rural Construction Land: Taking Project in Xiangquan Town, Baoji City as an Example[J]. Modern Agricultural Science and Technology,2022, (8):232-234.

[3] HAN Haiyan. Suitability Evaluation of Cultivated Land after Reclamation with the Increase and Decrease Connection Potential Project--A Case Study of Suide County[J].Journal of Anhui Agricultural Sciences, 2019, 47(22):71-72,110

[4] PAN Yuanqing, LIU Xiaoli, GU Zhiyun, et al. A Study of Land Suitability Evaluation and Reclamation of Coal Mining Areas--A Case Study of Coal Mining Areas in Henan Province[J]. Scientific and technological management of land and resources,2007, 24(4):112-116.